Trails Master Plan for Prince George's County

Public Review Draft | *May 2016*

Parks & Recreation
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CONTENTS

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ABSTRACT

TITLE: Trails Master Plan for Prince George's County

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ABSTRACT: This document contains text, figures, graphics, and maps of the Trails Master Plan for Prince George's County (TMP). The plan implements the trail recommendations found in the Formula 2040 Functional Master Plan for Parks, Recreation and Open Spaces. Developed with the assistance of stakeholders and the community, this document provides a series of strategies and recommendations to develop and implement a countywide network of trails. The TMP specifies necessary actions to design, build, maintain, program, promote and measure impact for hundreds of miles of existing and new trails in Prince George's County.

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M-NCPPC

The Maryland-National Capital Park and Planning Commission

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The Maryland-National Capital Park and Planning Commission is a bicounty agency, created by the General Assembly of Maryland in 1927. The Commission's geographic authority extends to the great majority of Montgomery and Prince George's Counties: the Maryland-Washington Regional District (M-NCPPC planning jurisdiction) comprises 1,001 square miles, while the Metropolitan District (parks) comprises 919 square miles, in the two counties.

The Commission has three major functions:

- The preparation, adoption, and, from time to time, amendment or extension of the General Plan for the physical development of the Maryland-Washington Regional District;
- The acquisition, development, operation, and maintenance of a public park system; and
- In Prince George's County only, the operation of the entire county public recreation program.

The Commission operates in each county through a Planning Board appointed by and responsible to the county government. All local plans, recommendations on zoning amendments, administration of subdivision regulations, and general administration of parks are responsibilities of the Planning Boards.

The Prince George's County Department of Parks and Recreation (M-NCPPC)

Mission Statement

In partnership with our citizens, the Department of Parks and Recreation provides comprehensive park and recreation programs, facilities, and services which respond to changing needs within our communities. We strive to preserve, enhance, and protect our open spaces to enrich the quality of life for present and future generations in a safe and secure environment.

Vision Statement

The Department of Parks and Recreation pledges to:

- Provide stewardship of our county's natural, cultural, and historical resources.
- Foster the need of our citizens for recreational pursuits in a leisure environment.

Provide the highest standard of excellence in public service through cooperative partnership with our diverse community.

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PRINCE GEORGE'S COUNTY

Prince George's County

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The County Council has three main responsibilities in the planning process: (1) setting policy, (2) plan approval, and (3) plan implementation. Applicable policies are incorporated into area plans, functional plans, and the General Plan. The Council, after holding a hearing on the plan adopted by the Planning Board, may approve the plan as adopted, approve the plan with amendments based on the public record, or disapprove the plan and return it to the Planning Board for revision. Implementation is primarily through adoption of the annual Capital Improvement Program, the annual budget, the water and sewer plan, and adoption of zoning map amendments.

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The citizens, community associations, and elected officials from the municipalities in the County without whom the Plan would not be possible.

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Introduction

CHAPTER 1

Introduction

Why trails in Prince George's County?

Prince George's County is at a pivotal point. The county is undergoing significant economic investment and redevelopment in different regions. New trail and transit projects are connecting people to parks and the existing transportation systems. By 2030, the county is projected to have a population of nearly one million. This future growth coupled with the existing demand for more parks and trails is driving the county to look for innovative ways to fund, design and implement more trail facilities.

One of the ways the county is addressing such demands, and ensuring it maintains its award-winning parks and recreational system, is through the implementation of the *Formula 2040 Plan*. The *Formula 2040 Plan* recommends the completion of 400 miles of trails to ensure that the nearly one million residents of all abilities and ages have an opportunity to be physically active and improve their well-being. A cornerstone of *Formula 2040* is that all Prince George's County residents should be able to access a trail (preferably by walking or biking) within 15 minutes. This recommendation is overwhelmingly supported by the Community Interest and Opinion Survey included in the plan:

55% of households have used County trails in the past 12 months.

79% of residents think it's very important to add, expand and improve trails.

28% would like to walk, bike or take transit, but 94% currently drive to recreational facilities.

67% of residents said these are the most important activities to prioritize in Prince George's Parks.

The message from residents is clear—give us more trails that are close to work and home. The Trails Master Plan that follows is in direct response to this public outcry and is a recognition of the shifting demographic needs in a growing region.

Keeping Prince George's County competitive—the county must address how the influence of the two largest population groups—Baby Boomers and Millennials—will influence and impact where new development, transportation infrastructure, and recreation venues will be needed? Surveys have shown that both groups prefer walkable environments with recreation, shopping, and other amenities within walking distance; and understand the value and benefits of trails and parks on their health and quality of life.

Building a Trails Culture

Prince George's County is fortunate to have a strong foundation of existing trails and, like most emerging trail networks, there are many challenges to growing the system while upgrading what's already on the ground. Residents understand the value of trails and desire more. This public support influenced the development of the plan recommendations. The recommendations are also informed by a clear understanding of the challenges and costs associated with development, operation and maintenance of trails. The Plan offers a detailed vision of future trail development to transform the County into a premier trail destination and provides a streamlined approach to trail management. To achieve the ambitious Formula 2040 Plan goals the county and M-NCPPC's traditional roles and approach to trails will evolve. A new "trails culture" needs to be promoted internally and communicated to the public. Trail development and maintenance need to be prioritized within each department responsible for these services. Trail specific authority, responsibility and accountability will need to be built into every function of the park service. For the residents and visitors of the county to fully realize the many benefits of this public infrastructure, trails need to become an essential function and priority that is shared by officials and staff at all levels of government. This new role will include developing trails to facilitate commuter travel that requires addressing lighting, policing and personal security, and trail design issues. A new trails culture may also open up opportunities for M-NCPPC to extend their trail development role outside of the park system, working in tandem with local communities who may lack resources but understand the value of linking into the larger system. Facilitating this change could be a new staffing structure of trail-oriented positions within M-NCPPC representing planning, maintenance, programming and the executive level. To keep Prince George's County competitive, building out the trails network can be a unique contribution that sets the county apart. To achieve this will require a new paradigm that fully recognizes how to make trails essential.

Trails Vision

Creating a trail system that provides all residents and visitors with access to nature, recreation and daily destinations; enriching the economy, promoting sustainability; and increasing opportunities for health.

This powerful vision to make Prince George's County a great place for everyone to use a trail was developed in collaboration with the project technical committee and shared at the stakeholder and public meetings for comment. The final version sets forth an aspirational vision that can be achieved through implementation of this plan.

Building the Trails Plan

This plan built on past planning efforts like the *2009 Countywide Master Plan of Transportation*, the plan for *Parks and Recreation 2010 and Beyond*, the *Countywide Green Infrastructure Plan*, and others to provide an ambitious, yet clear and practical roadmap for achieving the Formula 2040 vision. These plans provide both a foundation for the trails master plan as well as benchmarks for establishing equitable trail development. See appendix: *Plan Review*.

This Trails Master Plan leverages the county's existing assets and provides tools and recommendations to better manage and promote existing and future trails. To accomplish this a range of stakeholders were engaged, including current and potential trail users, state and county agencies and departments, neighboring jurisdictions, local governments, civic associations and community institutions to identify shared priorities and opportunities for implementing and maintaining a premier trails network. Techniques for public outreach included face-to-face public meetings, online engagement through the project WikiMap, stakeholder sessions, and bike/walking tours. Throughout the process the team was guided by M-NCPPC departments involved in trails and recreational planning, programming, construction, operations and maintenance. External organizations and entities involved with trails throughout Prince George's County were engaged in the process to ensure regional connection and cross-jurisdictional cooperation. See appendix: *Public and Stakeholder Feedback*, for a breakdown of the public outreach comments.

Here's what we heard....

Plan Organization

The TMP contains the following elements to help planners, designers, program and maintenance staff to implement trail projects and policies.

Chapter 2: The Countywide Trails Network

This chapter summarizes the existing state of trails in the county, provides network analysis and describes the existing and proposed network in narrative and map formats.

Chapter 3: Building the Network

This chapter lays out the key functional aspects of how a trail network comes together. It focuses on implementation processes including planning, design, funding and environmental guidance.

Chapter 4: Designing the Network

This chapter provides design guidelines about developing quality trails and adequately accommodate trail users in a variety of environments.

Chapter 5: Managing and Maintaining the Network

This chapter provides a framework for maintaining a growing network of quality trails cost effectively. It also explores issues of staffing, management, partnerships and new tools.

Chapter 6: Promoting and Programming the Network

This chapter focuses on how to increase use and awareness of the existing and future trail network.

Chapter 7: Impact of the Network

This chapter discusses the multiple benefits of trails and offers recommendations on techniques for measuring performance through trail use counting and analysis.

Chapter 8: Implementation Action Plan

This chapter provides key activities that should be taken to implement a trails network in Prince George's County.

Appendices

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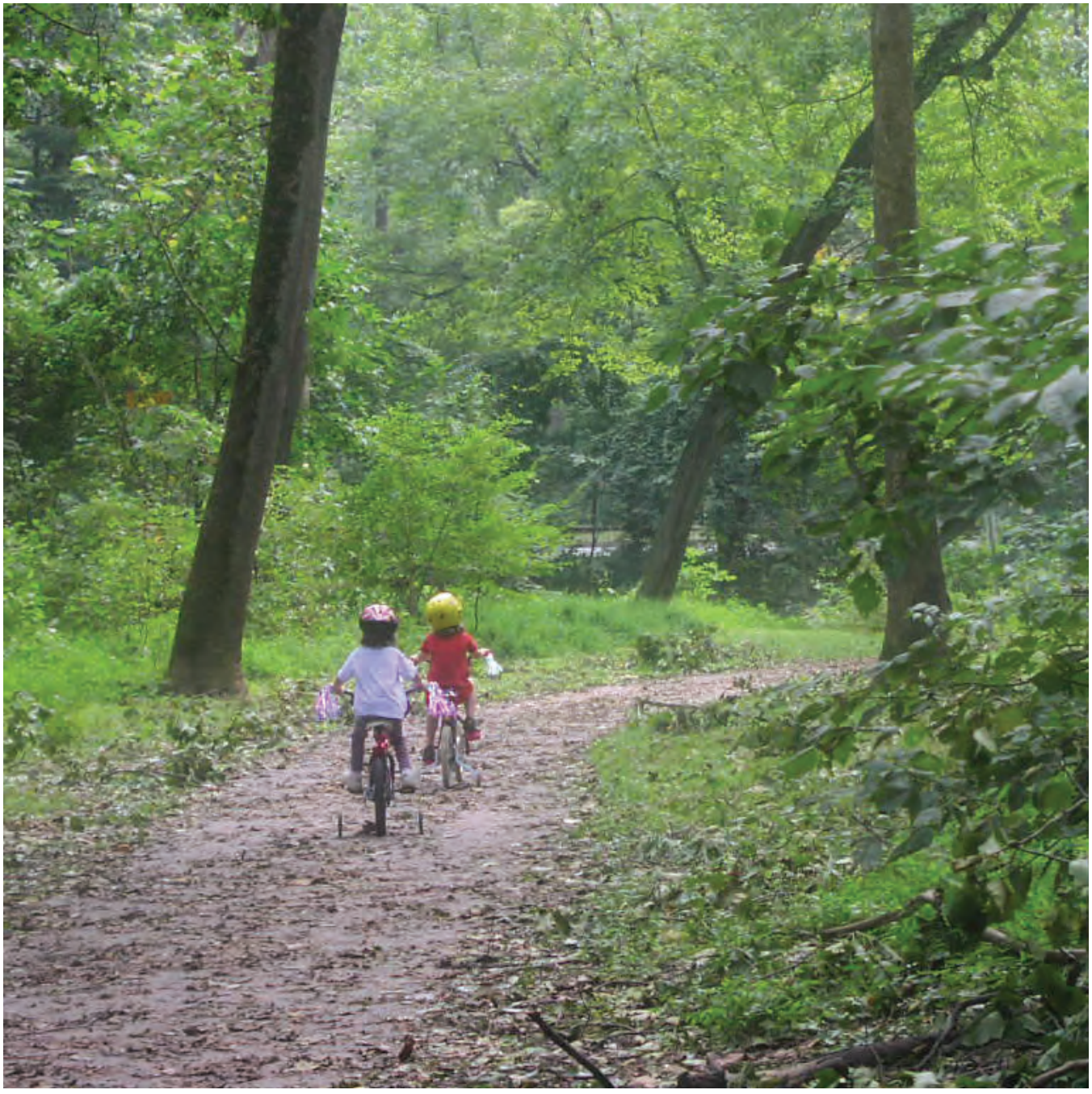
The Countywide Trails Network

CHAPTER 2



Existing Conditions

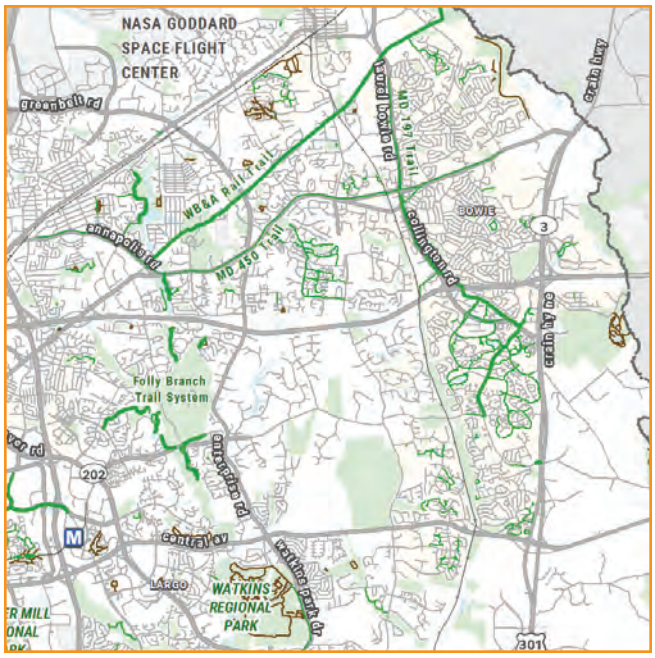
An existing conditions assessment of trails in Prince George's County was conducted in 2015, in the early stages of the planning process. Conditions were assessed predominantly using existing geographic information system data, but also included video recording (by bicycle) of 42 miles of trail, consultation with M-NCPPC staff and other stakeholders, extensive public comments and the knowledge of the local planning consultant team. A complete report about existing conditions is provided in a supplement to this Plan, titled: Summary of Public Outreach and Existing Conditions.

This chapter provides a summary of the existing conditions report. To provide a firm benchmark for future trail planning, it focuses on five key aspects of existing conditions:

1. GIS Data for Trail Planning and Mapping
2. Trail Ownership
3. Physical Trail Conditions
4. Status of Ongoing Trail Development Activity
5. Status of the Countywide Trail Network

A large set of maps are provided at the end of chapter two. Throughout the narrative, clips from these maps are provided to introduce the reader to the look and content of each map.

Map A: Existing Trails



GIS Data for Trail Planning and Mapping

A variety of GIS trail data layers were collected and analyzed. The M-NCPPC's GIS data for trails is generally comprehensive in covering the entire county, however the accuracy and completeness of the data is inconsistent. This Plan provides extensive refinement and updating of the main trail layer, and develops a number of new supporting layers that are directly associated with the recommendations in this Plan.

Key attributes that are provided for the line segments in the trail layers include the following:

- Status: Existing or Planned/Proposed (because future trails are at various stages of development planned and proposed trails are combined in one category).
- Functional Type: Primary, Secondary, or Recreational (all trails are attributed into one of these three categories).
  - Primary and Secondary trails are predominantly hard surface trails, such as concrete or asphalt, and typically intended for bicycle and pedestrian use
  - Recreational trails are predominantly earth, stone dust, grass, or another natural surface and typically intended for hikers, mountain bicyclists and/or equestrians
- Ownership: M-NCPPC, State, Federal, Municipal, HOA, etc. (About 80 percent of existing trails are attributed by owning agency or entity).

Additionally, much of the existing trail network includes attributes related to trail surface.

Map A: Existing Trails show all of the existing trails based upon their functional type. Map B: Trail Ownership shows existing trails by functional type and ownership.

Trail Ownership

Of the 335 miles of existing trails that were mapped in this planning process, 49 percent (164 miles) are owned by the M-NCPPC. The remaining miles of trail are owned by a wide range of entities, including municipalities, state and federal agencies, and private organizations, such as homeowners associations (See Figure 1 and Map B).

- Municipalities own about 9 percent of the existing trails in the County. The City of Bowie has the

largest municipal trail network, with 19 miles of paved and unpaved pathways.

- The State of Maryland owns approximately 10 percent of the existing trails in Prince George's County; primarily in Rosaryville State Park, in state lands along the Patuxent River, and within state highway rights-of-way.[1]
- The National Park Service (NPS) owns about 5.5 percent of existing trails, mostly in Greenbelt Park and in NPS lands along the Potomac River.
- Other Federal agencies that own trails in the County include the Fish and Wildlife Service, the U.S. Department of Agriculture (Beltsville Agricultural Research Center) and the Department of Defense (Andrews Air Force Base).
- Private entities, such as conservation groups, civic associations, and homeowners associations, own 4.3 percent of trails in the County.

Ownership is unknown for about 19 percent of existing trails. Future GIS work should seek to determine ownership for this portion of the existing trail system.

Map B: Trail Ownership

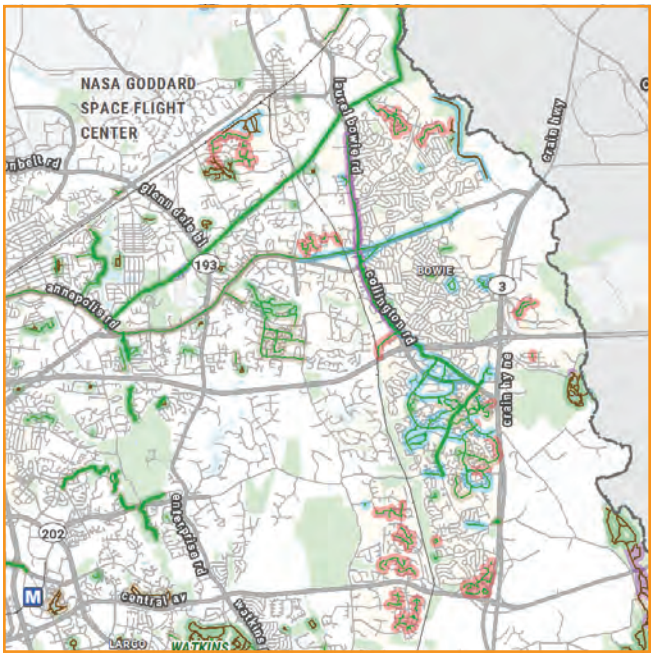
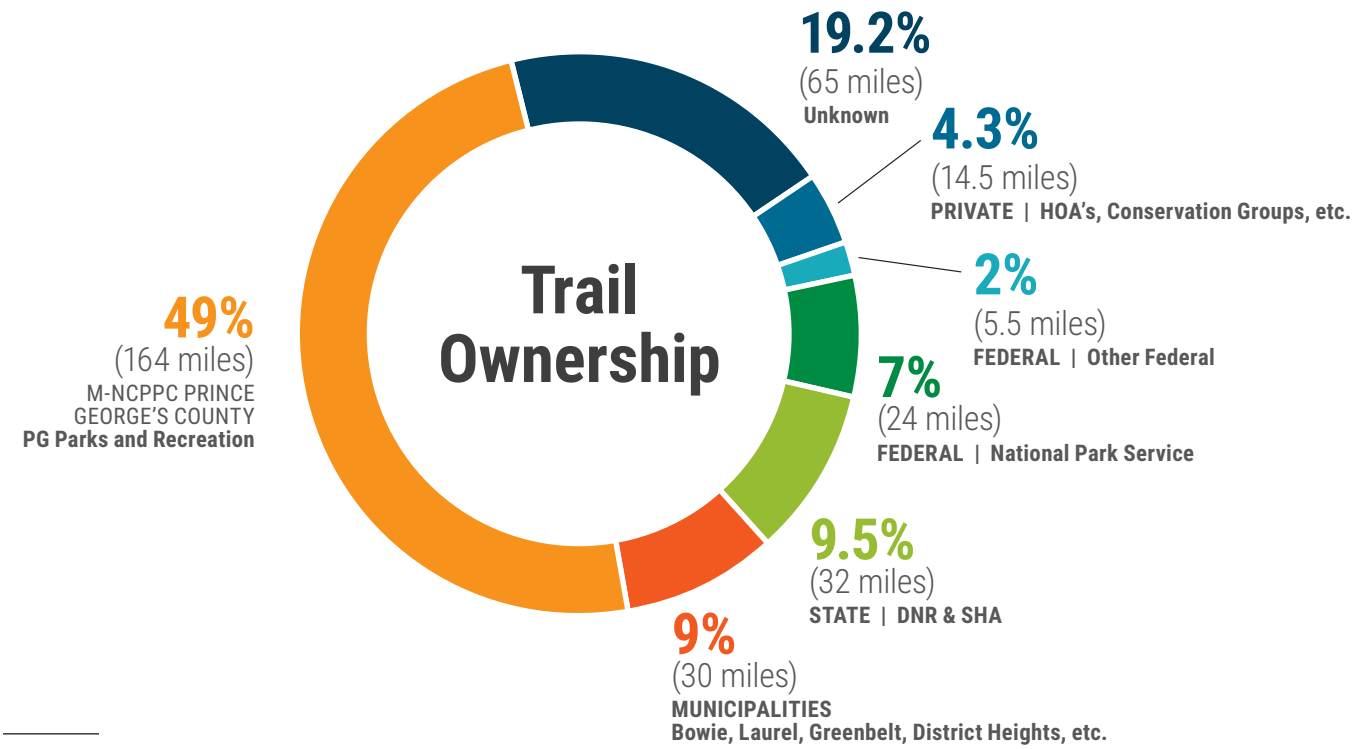


Figure 1: Trail Ownership



1 In past years considerable trail mileage has been added to the system as sidepaths adjacent to State owned highways. These paths are often in the State's right of way, but are maintained by a local agency, such as M-NCPPC or the Prince George's County Department of Public Works and Transportation.

Physical Trail Conditions

The physical conditions of M-NCPPC trails vary widely depending on the age of the trail. The physical condition of paved shared use paths can be assessed based on surface width and condition, evidence of mowing, encroachment of vegetation, bridge maintenance, intersection safety, ADA compliance, signs and the presence of hazards.

General physical conditions can be summarized as follows:

Trail widths—Widths vary widely throughout the County with Secondary trails generally varying between 4 and 8 feet wide and Primary trails between 6 and 10 feet wide, with most sections being 8 or 10 feet in width.

Trail surfaces—Surfaces/treadways are generally in good condition on Seabrook Area trails (Bowman, Day Spring, and Galaxy) and the Anacostia Tributary Trails; the WB&A Trail surface is aging and showing signs of wear. The Folly Branch Trail, Western Branch and Henson Creek Trails all have issues related to plant growth and surface disruption, lateral cracking and age. Some trails have numerous locations where tree roots have caused upheaval of the pavement. The Henson Creek Trail has a number of areas where flooding and changes in the stream's meanders has either undermined the trail and left the surface cracked, or washed out major portions of the subgrade and surface asphalt. Some detours have been established but difficult to use because they were not created with smooth paved surfaces.

Maintenance—Generally mowing, the trimming of vegetation and clearing of downed branches and debris after storms occurs regularly, however there are areas where heavy vegetation encroaches on trails during high growth seasons needing frequent attention. Basic trail maintenance along the access paths and spurs leading to the major trails could be enhanced.

Infrastructure—Bridges, culverts, boardwalks and bollards require maintenance. Most culverts appear to be in good to fair condition and functioning well, however many of the bridges have deficiencies, including a) not being as wide as the approaching treadways and trail shoulders (as recommended by AASHTO); b) having well worn decking; and c) including bollards at bridge entry points that narrow bridge entryways creating potential crash hazards. Bollards vary widely in style and are often installed where they can cause crashes. Many bollards are not visible in the dark.

Intersections and ADA compliance—Generally, curb ramps are present where needed at road crossings and in parking lots, however their quality varies widely. Some are not compliant with current ADA standards and many are too narrow to serve the full width of the trail at the roadway crossing. Many road crossings are poorly located, poorly striped, faded, and, if controlled by signals, lacking easily accessible and functional actuators and pedestrian signalheads; countdown signals are uncommon. It appears that many trail/roadway crossings are not designed using common traffic engineering and safety principles.

Signs, Markings and Wayfinding—On the Anacostia Tributaries Trail System, wayfinding signs and color-coded pavement markings appear to function well for trail identification and wayfinding. Regulatory, warning, detour, visitor information and rules signs are frequently missing from locations where they are needed.

Status of Ongoing Trail Development Activity

Trail planning, funding, design and construction has been ongoing since the mid-1990s. In recent years, M-NCPPC has undertaken the following activities to develop its physical trail network:

Recently Completed Trails

- WB&A Trail – 1.5 mile extension to the future bridge over the Patuxent River to Anne Arundel County and to Lemon Bridge Road
- Folly Branch Trail- connection of the WB&A Trail to the Folly Branch Trail at Lakeview subdivision and Vista Gardens Marketplace
- Rhode Island Avenue Trolley Trail – completion of a one mile trail segment connecting Riverdale Park and Hyattsville
- Fairland Regional Park Trail – connection between the Anacostia Tributary Trail System and Bentley Subdivision (developer built)
- Suitland Bog Trail – trail at the Suitland Community Center (Trail Conservancy)

Trails Under Construction in 2015

- Anacostia Riverwalk Trail – 4 mile trail connecting the Anacostia River Trail network in the District of Columbia with the Anacostia Tributary Trail System in the County. (District of Columbia Department of Transportation with support from M-NCPPC and the National Park Service)
- Loop Trail and Fitness Stations for seniors at J. E Howard Community Center
- Hillcrest Heights Community Center Loop Trail
- Mellwood Hills Loop Trail

Trails in Design & Permitting

- Little Paint Branch Trail – two mile trail connecting Little Paint Branch Trail at the Beltsville Community Center to the Anacostia Tributary Trail System
- Southern Regional Tech/Rec Community Center– connection of the new community center with the Henson Creek Trail in Fort Washington Maryland, American Institute of Architects 2015 Public Building of the Year Winner
- Central Avenue Corridor Trail Phase 1 – preliminary plans for a new trail to link the Addison Road Metro Station to the Chesapeake Beach Rail Trail in Seat Pleasant and Peppermill Road
- Bowie Heritage Trail Connection – trail connection to Adnell Park (M-NCPPC) and Jericho Park (City of Bowie)

Trails Pending Procurement for Design

- College Park Woods Connector Trail – ½ mile trail to connecting College Park Woods to the Anacostia Tributary Trail System
- Central Avenue Corridor Trail – preliminary design from Peppermill Road to Largo

Getting Trails Funded

- Rhode Island Avenue Trolley Trail—Armentrout Drive Segment—½ mile trail to extend the southern terminous in downtown Hyattsville further south
  to the Anacostia Tributary Trail System at Armentrout Drive

Trails Damaged

- Henson Creek Trail – a portion of the trail is closed due to a streambank washout located south of Tucker Road; emergency repairs pending.
- Northwest Branch Trail – a portion of the trail is washed out under the PEPCO transmission line near Cool Springs Road; emergency repairs pending.

Trail Wayfinding

- Anacostia Tributary Trail System – project underway to design and plan a new wayfinding system for 30+ miles of trail.

Status of the Countywide Trail Network

Prince George's County has an extensive network of trails, however some are not well connected to the overall trail network (see Map A). The Anacostia Tributaries Trail System is mostly complete and a well-connected system of trails. However, most other trails in the county exist in a fairly isolated context. The existing primary and secondary trail system is generally located in the northern and central parts of the county. The Recreational trails are largely located in M-NCPPC regional parks, in state or federal parks, or along the Patuxent River in state and M-NCPPC-managed natural areas. Sixty-five in-park fitness loop trails of between 1/4 and 1 mile in length are distributed fairly widely throughout the county. Table 1, provides a snapshot of the existing trails in the county as of 2016.

In the past, M-NCPPC has focused on developing trails along stream valleys where M-NCPPC owns park land and can develop linear greenway trails that are relatively easy to maintain and manage. The M-NCPPC has also taken the lead in developing rail-trails, such as the WB&A trail in Glen Dale and Bowie; and the Rhode Island Avenue Trolley Trail in Hyattsville and College Park.

Known Trail Network Needs

In previous trail, park and transportation plans, the public has articulated the need to develop more connected trail systems like the Anacostia Tributaries Trails. Related to this, is the need to address key gaps in the trail system, build trails in parts of the county that are underserved by trails, and improve trailheads, wayfinding signage and street crossings. M-NCPPC staff have identified the need to improve maintenance practices and outcomes and better plan trail layouts in stream valleys where water channels shift over time causing undermining of trails and washouts.

New Trail Network Needs

The Plan identifies a number of additional needs that should inform the development of the countywide trails network as the county continues to grow:

1. provide trails that are convenient and easy to use for close-to-home recreation and daily transportation by bicycle or on foot.
2. quantify the impact a countywide trail network can contribute to improved public health for the residents of the county and reduced health costs for individuals, employers and taxpayers.
3. ensure that traditional town centers, existing suburban commercial centers, and future development areas (largely established around public transit stations), are all well served by connected trail networks.
4. ensure that the municipalities within the county are served by the countywide trail network and that they develop their opportunities to contribute to overall network connectivity.
5. develop a system to ensure trails are incorporated into every community, commercial, federal, transportation, and utility project.
6. determine how best to develop Recreational trails that meet the needs of equestrians, mountain bicyclists, hikers, and anglers who want to have low impact access to nature, wildlife, natural landscapes, rivers and streams.
7. determine how best to design, develop and maintain trails adjacent to roadways as part of the larger trail network.
8. determine the extent to which power transmission line corridors could be used for co-locating trails.
9. determine how and where environmentally sensitive areas may limit trail development, or make it exceedingly difficult or costly.

This inventory includes trails owned by all agencies: M-NCPPC, State, Federal, Municipal, etc.	Primary and Secondary Trails (+95% paved)	Recreational Trails (75% unpaved)	Total
Miles of Existing Trails	**177**	**153 (total)**	**330**
In-Park Fitness Loops	--	46	
Other Recreational Trails	--	107	

Table 1: Existing Trails as of March 2016.

2040 Proposed Network

Physical Trail Types

This Plan establishes three basic trail classifications: Primary, Secondary and Recreational.[2] The purpose of these classifications is to provide a simple framework for trail planning, mapping, programming, management and maintenance. This framework is based upon the functional role each segment of trail plays in the overall network (see definitions below).

This Plan includes maps of trail alignments for all three trail classifications and for trails either existing or planned/proposed. A fourth classification, Trail Desire Lines and Alternatives, has been established for "potential" trails.

Primary Trails

The network of Primary trails includes both existing and planned/proposed trails (see Map C). Primary trails are multi-use trails developed and designed primarily for bicycle and pedestrian use. They provide a mostly-contiguous network of shared use paths that serve all parts of the county for which M-NCPPC is responsible for providing parks. The Primary Network links all of the activity centers as identified in the 2035 Countywide Comprehensive Plan, as well as most of the traditional town centers and major suburban commercial nodes.

Primary trails are so designated to ensure that they are designed to the highest standards, of safety, durability, aesthetic quality, and access for people with disabilities. They are generally characterized by providing a high quality, park-like experience that will be appealing to a variety of modal groups, trip purposes, ages and abilities. They are designed to serve both bicyclists and pedestrians who may be using the trail for either recreation or transportation. They may be built with a variety of surface materials and widths, based upon their context and the amount of expected use, however

Map C: 2040 Proposed Network (Primary/Secondary)

2 This Plan uses the term "trail" to refer to all types of trails, paved and natural surface, shared use and single use. The term "shared use path" is used to refer to hard surface and stone dust trails that are used by bicycles and pedestrians. The term "path" or "pathway" may also be used to refer to these trails. The term "sidepath" is used to refer to paved (concrete or asphalt) trails located adjacent to a roadway, of at least 8 feet in width. The term "Recreational Trail" is used to refer to natural surface trails and boardwalks that are for hiking, mountain biking, nature access, and/or equestrian use (or some combination thereof).

it is recommended that most be paved with asphalt and a minimum of ten feet wide. Based on need, context and available space, some may be designed with dual treadways[3] (hard and soft surface) or otherwise configured to serve mountain bicyclists, runners, and/or equestrians, in addition to typical bicycle and pedestrian users.

The Primary Trail Network includes a number of lengthy trails in higher density areas that serve as efficient bicycle/pedestrian transportation (commuter) routes. It should be noted, however, that pathways (both existing and planned) adjacent to major highways, suburban arterials or rural roads (i.e. sidepaths) are designated as Primary only in locations where there is a reasonable expectation that the character of the road[4] and the design of the trail creates a high quality trail experience comparable to other Primary trails in park and stream valley settings.

Secondary Trails

The network of Secondary trails includes both existing and planned/proposed trails (see Map C). This category includes most of the remaining paved pathways in the county, and may include unpaved paths as well, where they are built primarily to provide local access within the built environment. This classification includes spurs that connect the Primary Network to adjacent neighborhoods, HOA trails built in residential communities, standard sidepaths along roads that enhance transportation access to destinations and extend the Primary Network into adjacent communities. This category also includes short pathway links through parks and school grounds, or along other easements that provide connections to M-NCPPC facilities, sidewalk networks and low speed neighborhood streets.

Secondary trails will be designed for shared use among pedestrians and bicyclists and will serve both transportation and recreation users. However, Secondary trails may be built to somewhat lower standards in terms of width, durability and surface materials because they typically serve shorter trips, support lighter loads, and do not need to accommodate bicyclists traveling at higher speeds. Generally, Secondary trails need to be ADA compliant, however, due to severe slopes in some areas, some exceptions may be needed. Where appropriate, Secondary trails may also be designed to serve equestrians.

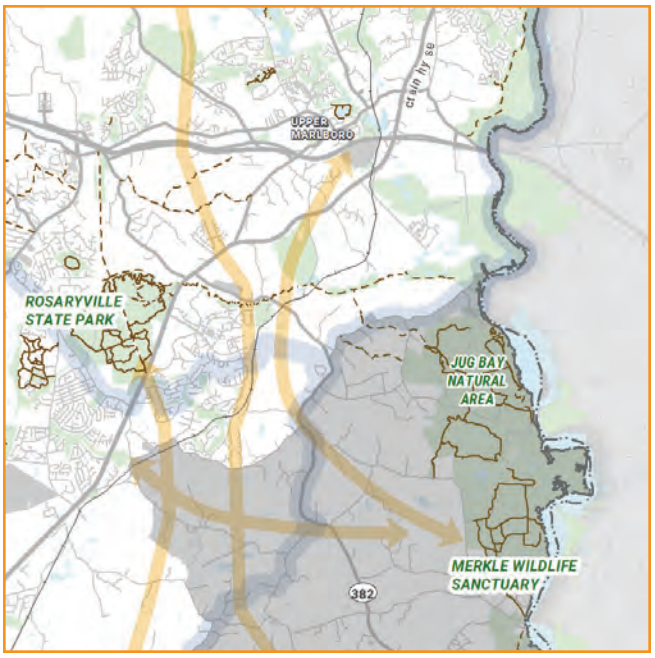
Together, the Primary and Secondary Network provides a core set of trails that can easily be accessed by most residents for close-to-home recreation and bicycle and pedestrian transportation.

Recreation Trails

The Recreation Trail classification includes both existing and planned/proposed trails (see Map D). It includes three subtypes of trails that are used primarily for recreation, 1) in-park (usually M-NCPPC parks) fitness loop trails, 2) natural surface and unpaved trails in M-NCPPC and other park lands (most of which are open to hiking, mountain biking and equestrian use, and 3) natural surface trails that are designed and managed for specific uses, such as mountain bike trails, equestrian trails, or hiking only trails.

1. Fitness loops are typically one mile or less in length and may be paved, stone dust, or natural surface, and they are designed primarily for walking, jogging and other exercise activities.
2. Shared use natural surface trails are typically used for hiking, mountain bicycling, equestrian use and nature observation. They exist in a variety of settings, including national park lands, state parks and wildlife management areas, along the Patuxent River corridor, in M-NCPPC Regional Parks, and

Map D: 2040 Proposed Network (Recreational)



3 "Treadway" refers to the travel surface portion of a trail corridor and/or the surface material.

4 Research should be conducted to determine the ROW width for Primary trails proposed as sidepaths to State or County roads.

in some stream valley parks. While M-NCPPC typically does not restrict access for particular user groups (mountain bicyclists or equestrians) from its natural surface trails, other land managing agencies may choose to do so. Trails in this classification often include boardwalk sections, narrow bridges and other features designed to tread lightly on the landscape. In some locations, single-track, natural surface trails may be the only trail type compatible with environmental conditions and regulatory limitations.

3. Natural surface trails designed and/or managed for a single use, make up the third subtype. This trail type is new in Prince George's County Parks. As mountain bicycling, equestrian and/or hiking user groups grow, or their needs become more acute, new natural surface trails may be built with the intent to serve particular uses and user groups.

Desire Lines and Alternative Trail Alignments

Because this Trail Master Plan is long-range in scope (2040), this classification of trail was developed for planning purposes only (see Maps C & D). Mapped alignment for these trails represent both short and long linkages, connections and alternative alignments that were identified in the planning process as potentially desirable trail routes.[5] While the desire lines represent the least specific corridor where trails may be needed, each line has been assigned to the one of the three trail classifications described above—Primary, Secondary, or Recreational.

In many cases, future development of trails along these corridors is likely to be dependent on environmental regulations, right-of-way acquisition and permitting. Generally, topography and impacts to private property have not been assessed as part of this planning process. Pursuing a trail in one of these corridors might include the following: loss of adjacent/nearby trail alignment opportunity, population growth in the area that needs to be served, public expression of need, and/or an opportunity for future acquisition/dedication of land or trail easements.

Table 1: Trails Network

	Existing	Planned Proposed	Desire Lines	Total
	Miles	Miles	Count	Miles
Primary Trails	**65.5**	**293.0**	**17**	**358.5**
Secondary Trails Network	**111.0**	**399.0**	**7**	**510.0**
Recreational Trails Network	**153.0**	**102.5**	**14**	**255.5**
Fitness Loops	46.0	--	--	--
Other Hiking, Mtn. Biking & Equestrian	107.0	--	--	--
Park Roads Used as Trails	**5.3**	**--**	**--**	**5.3**
Total	**334.8**	**--**	**--**	**--**

5 These corridors were identified by members of the public, M-NCPPC staff planners and the consulting team.

Trail Overlays

Trail overlays are another way to think about components of the countywide trail network. Overlays include concepts like Destination Trails and Recreational Bicycling Loops, which are discretely named trails or designated trail routes that can be effectively marketed because they provide a particular type of user experience. Overlays also include Thematic Trails which are defined in this Plan as trail concepts and designated routes that are organized around a geographic or historical theme. These trails typically extend beyond the boundaries of Prince George's County, but pass through and use physical trails and on-road routes within the County.

The key to trail overlays is the idea that these select trails and trail routes provide special user experiences, which can be marketed and promoted to populations within and outside the County, and thus will generate economic benefits from recreation and tourism related spending.

Destination Trails

The Plan identifies a set of trails with the characteristics and potential for development and promotion as Destination Trails. Destination trails are those with sufficient length, scenic and/or historic qualities, amenities, and quality of design that they will attract people from within the County and afar to make recreational or tourist visits to the trail. These visits may include bicycling, hiking, walking, or observing nature and scenic environments.

Table 2a: Existing Destination Trails

Trail Name	Trail Users	Planned/Proposed Extensions
Anacostia Tributaries Trail System	Bike & Pedestrian	Yes—Extend Paint Branch Trail to Konterra, and Indian Creek Trail to Greenbelt
WB&A Rail-Trail	Bike & Pedestrian	Yes—Extend along MD 704 to DC
Henson Creek Trail	Bike & Pedestrian	Yes—Extend north to Suitland Bog, and south to Harmony Hall CC/Art Center
Woodrow Wilson Bridge	Bike & Pedestrian	
Jug Bay Trails	Hiking & Nature Observation	
Cosca Regional Park Mountain Bike Trails	Mtn. Bicycling	Yes—Extend MTB trails in park.
Rosaryville State Park Trails	Hiking, Mtn. Biking, Equestrian	

Table 2b: Future Destination Trails

Trail Name	Trail Users
Piscataway Creek Trail	Bike & Pedestrian
Mattawoman Creek Trail	Hiking, Mtn. Biking, Equestrian
Chesapeake Beach Rail-Trail	Bike & Pedestrian
Tinkers Creek Trail	Bike & Pedestrian
Linked trails in the Patuxent River Park	Hiking, Mtn. Biking, Equestrian, Nature Observation

Recreational Bicycling Loops

Through the implementation of this Plan the portions of the Primary and Secondary Network will create a number of long distance bicycling loops which can be marketed to cyclists who are looking for more extensive riding opportunities, but who are not ready for the stress of interacting with motor vehicle traffic on State and County roadways. Prince George's County has a number of scenic areas that are already popular among recreational riders, including the Beltsville Agricultural Research Center, the highlands along the Potomac River, and rural areas in the southern part of the County. By linking the existing trail systems in these areas and expanding the reach of the trail network, a number of enticing long distance loops can be created which will be unique in the Washington metropolitan region (see Map E).

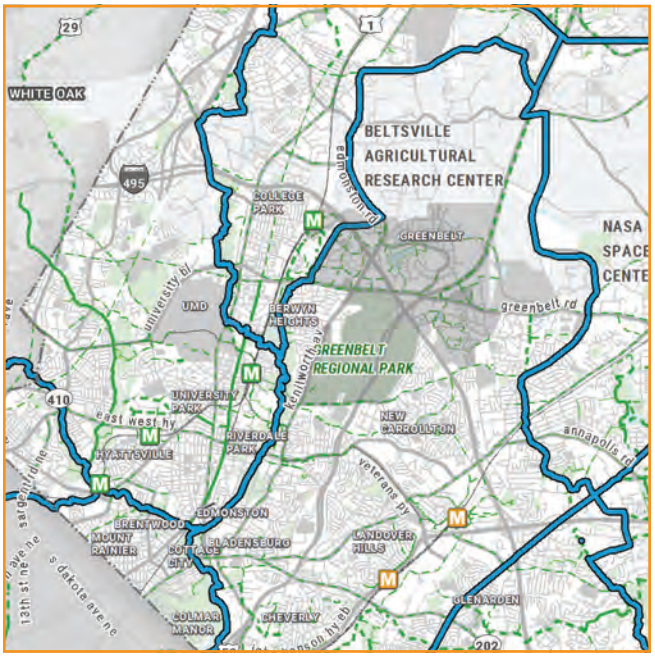
Thematic Trails

Thematic Trails are a discrete set of nationally or regionally designated trails that pass through Prince George's County (see Map F). Due to its location adjacent to the nation's capital, a number of federally designated and privately designated trails are routed through the County, including the following:

- The Potomac Heritage National Scenic Trail
- The East Coast Greenway
- The American Discovery Trail
- The Grand History Trail
- The Star Spangled Banner National Historic Trail

These trails are overlays of existing shared use paths and interim on-road bicycling/walking routes that have been mapped by other entities, in conjunction with Prince George's County, and state and federal trail and road management agencies.

Map E: Destination Trails and Bike Loops



Map F: Thematic Trails

Trail Network Planning and Performance

Because of advances in geographic information system and mapping technologies, this Trails Master Plan is able to establish an important set of planning criteria and performance measures for the Prince George's County trail network. These include the following ten measures:

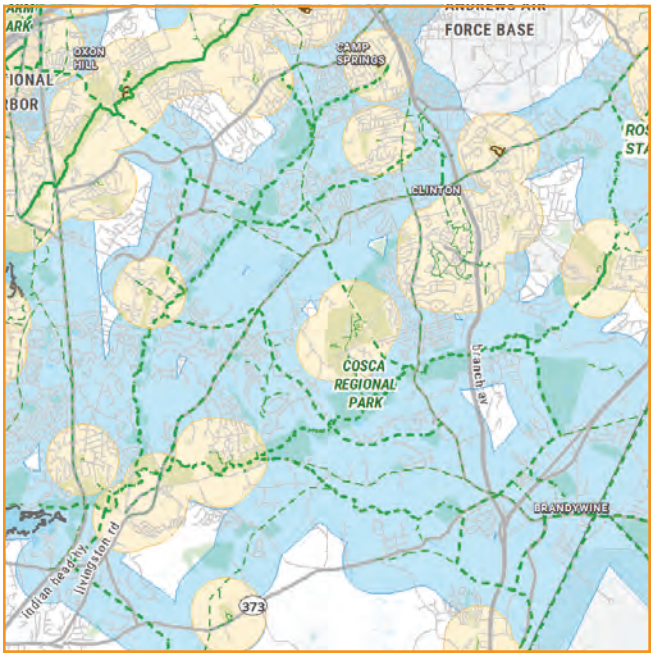
1. The proximity of residential populations to the trail network;
2. The geographic distribution of trails throughout the County;
3. How well existing, planned and proposed trails serve priority M-NCPPC park, recreation and community facilities;
4. How existing and planned trails serve existing and future activity/development centers;
5. How existing and planned trails serve municipalities and other jurisdictions within the County;
6. How planned and proposed trails will address currently identified gaps in the trail network;
7. How existing, planned and proposed connectivity features address barriers created by the built environment;
8. How existing, planned and proposed trails link to neighboring jurisdictions;
9. How existing, planned and proposed trails use highway, railroad and utility corridors; and
10. How planned and proposed trails interact with key environmental constraints.

Trail Proximity to Residential Population

Based on GIS analysis of the existing primary and secondary trail network (and the existing in-park fitness loops), approximately 71 percent (588, 000)[6] of County residents live within ½ mile radius of these core elements of the trail network. If, by 2040, the entire 700 miles of planned and proposed primary and Secondary trails were built, it is estimated that over 95 percent of the estimated 1 million County residents would live within ½ mile of the core trail network (see Map G).

6 This analysis uses 2010 Census data which reports that 863,420 people lived in Prince George's County at that time.

Map G: Proximity to Residential Population

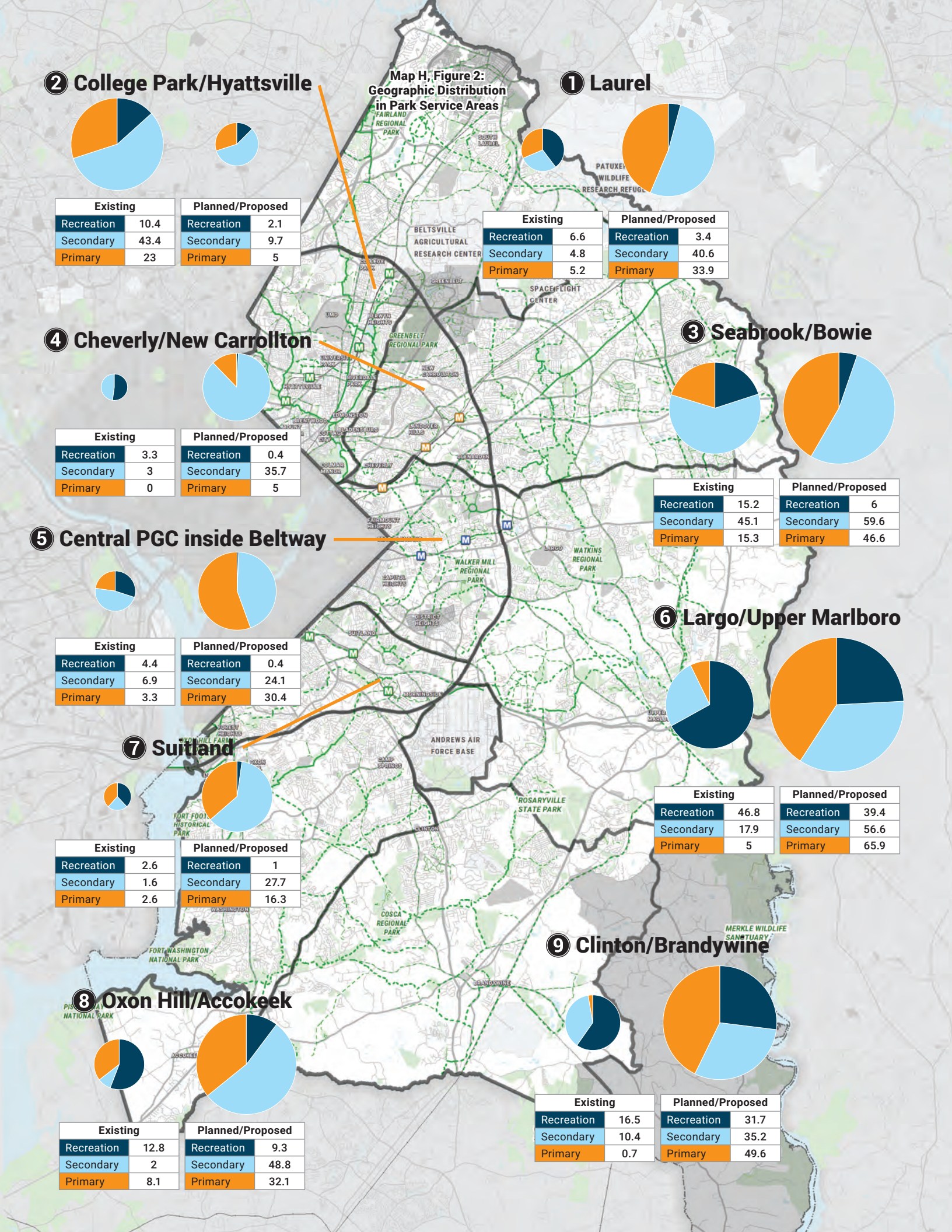


Geographic Distribution of Trails

To assess the geographic distribution of trails throughout the County, two geographic subsets of the County were analyzed using GIS, 1) park and recreation service areas as defined by the Formula 2040 Plan, and 2) the Metropolitan District boundary (a boundary around County land subject to the Park Tax levied by the M-NCPPC (i.e. tax revenues from which park trails are funded).

Service Areas

The 2040 Plan identifies nine service areas, distributed around the County (see Map H). Currently, existing primary and Secondary trails are not evenly distributed throughout the County. Service Areas 2 and 3, College Park/Hyattsville and Seabrook/North Bowie respectively, have a disproportionate amount of existing trails. All other service areas have a much smaller share of the existing trail mileage. See Figure 2.


Map H, Figure 2:
Geographic Distribution
in Park Service Areas
2 College Park/Hyattsville
Existing
Recreation 10.4
Secondary 43.4
Primary 23
Planned/Proposed
Recreation 2.1
Secondary 9.7
Primary 5
1 Laurel
Existing
Recreation 6.6
Secondary 4.8
Primary 5.2
Planned/Proposed
Recreation 3.4
Secondary 40.6
Primary 33.9
4 Cheverly/New Carrollton
Existing
Recreation 3.3
Secondary 3
Primary 0
Planned/Proposed
Recreation 0.4
Secondary 35.7
Primary 5
3 Seabrook/Bowie
Existing
Recreation 15.2
Secondary 45.1
Primary 15.3
Planned/Proposed
Recreation 6
Secondary 59.6
Primary 46.6
5 Central PGC inside Beltway
Existing
Recreation 4.4
Secondary 6.9
Primary 3.3
Planned/Proposed
Recreation 0.4
Secondary 24.1
Primary 30.4
6 Largo/Upper Marlboro
Existing
Recreation 46.8
Secondary 17.9
Primary 5
Planned/Proposed
Recreation 39.4
Secondary 56.6
Primary 65.9
7 Suitland
Existing
Recreation 2.6
Secondary 1.6
Primary 2.6
Planned/Proposed
Recreation 1
Secondary 27.7
Primary 16.3
9 Clinton/Brandywine
Existing
Recreation 16.5
Secondary 10.4
Primary 0.7
Planned/Proposed
Recreation 31.7
Secondary 35.2
Primary 49.6
8 Oxon Hill/Accokeek
Existing
Recreation 12.8
Secondary 2
Primary 8.1
Planned/Proposed
Recreation 9.3
Secondary 48.8
Primary 32.1
FAIRLAND REGIONAL PARK
BELTSVILLE AGRICULTURAL RESEARCH CENTER
GREENBELT
SPACEFLIGHT CENTER
GREENBELT REGIONAL PARK
HYATTSVILLE
BLADENSBURG
LANDOVER HILLS
CHEVERLY
FAIRMOUNT HEIGHTS
WALKER MILL REGIONAL PARK
WATKINS REGIONAL PARK
DISTRICT HEIGHTS
SUITLAND
ANDREWS AIR FORCE BASE
CAMP SPRINGS
ROSARYVILLE STATE PARK
COSCA REGIONAL PARK
FORT WASHINGTON NATIONAL PARK
MERKLE WILDLIFE SANCTUARY
BRANDYWINE

Development of a modest portion of the planned and proposed trails identified in this Plan will dramatically shift this imbalance and ensure that the parts of the county that are currently underserved by trails will not be underserved in the future (see table 3).

Table 1: Potential Future Trail Miles in Currently Underserved Areas

~40-85 miles per service area	More than 100 Miles per service area
Area 1: Laurel/Beltsville	Area 3: Seabrook/North Bowie
Area 4: Cheverly/New Carrollton	Area 6: Largo/Upper Marlboro
Area 5: Central P.G., inside Beltway	
Area 7: Suitland, inside Beltway	
Area 8: Oxon Hill/Accokeek	
Area 9: Clinton/Brandywine	

Figure 2 indicates that Park Service Areas 3 and 6 have both a large share of existing trails and a large share of planned and proposed trails. While this approach appears to perpetuate a geographic imbalance, there are three reasons: 1) these two service areas are among the largest in land area, 2) they are experiencing the most rapid population growth, and 3) these service areas are in the middle of the County, so their trails are key to creating both north-south and east-west trail connectivity for all the other service areas.

The Metropolitan District

This Plan is focused primarily on addressing trail development needs within the Metropolitan District, the part of the county that is taxed to support the Parks portion of the M-NCPPC budget.

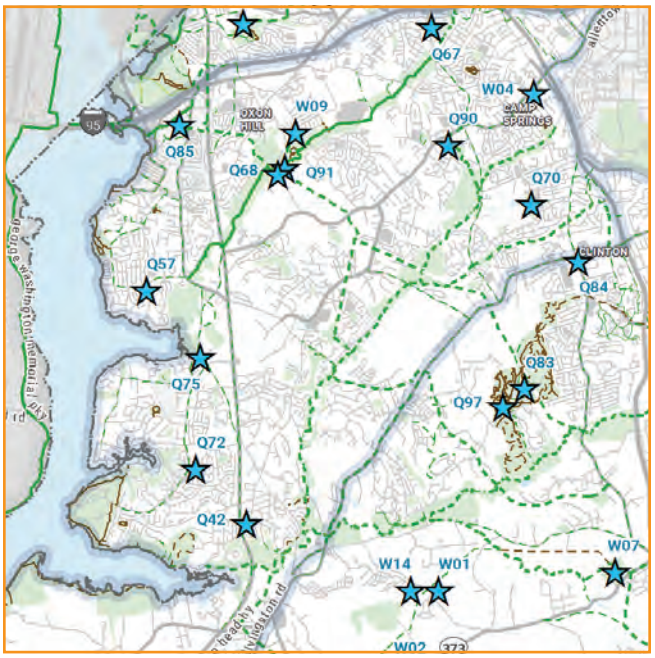
Of the 176 miles of existing Primary and Secondary trails, only 10 miles exist outside of the Metropolitan District, primarily in Greenbelt, Laurel and District Heights. All of these trails are owned and operated by their respective municipality. Existing Recreational trails outside of the Metropolitan District are located in Greenbelt Park (NPS) and in the southeast corner of the county along the Patuxent River. Of those trails only a portion of them along the Patuxent River are owned and managed by M-NCPPC.

Planned and proposed trails shown in this Plan outside of the Metropolitan District are shown primarily for continuity purposes. These trails illustrate potential connectivity and trail service to the entire county. Authority for planning, funding, constructing and managing trails within Greenbelt, Laurel, District Heights, NPS park land and the Andrews Air Force Base is solely the responsibility of each respective jurisdiction. If the county considers pursuit of any of these trails, M-NCPPC trail planners would expect to consult and coordinate with the appropriate planning agencies and legislative bodies within these jurisdictions.

Connectivity to Priority M-NCPPC Facilities

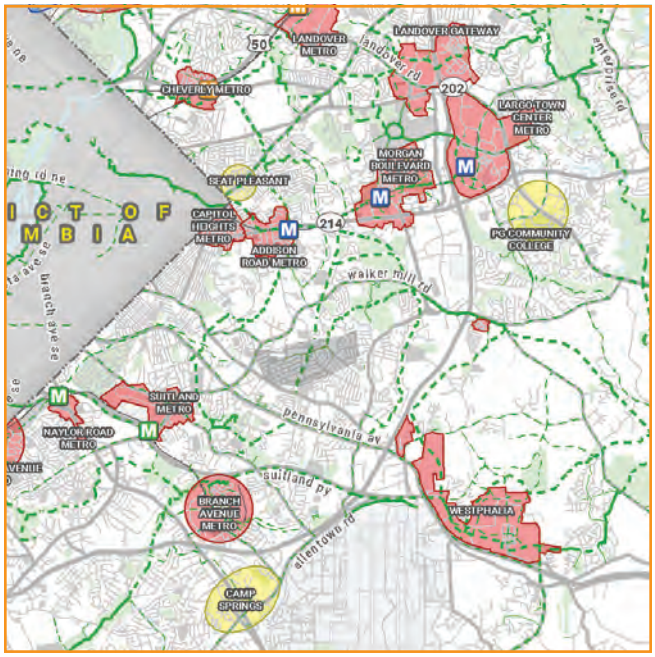
Map I shows a total of 92 priority M-NCPPC parks and community centers and their proximity to the existing and planned/proposed Primary and Secondary Trail Network. Seventeen of these facilities are directly served by the existing trail network[7]. Seventy-one of these facilities can be served in the future through development of select trails in the planned and proposed

Map I: Trail Connectivity to Priority M-NCPPC Parks and Facilities

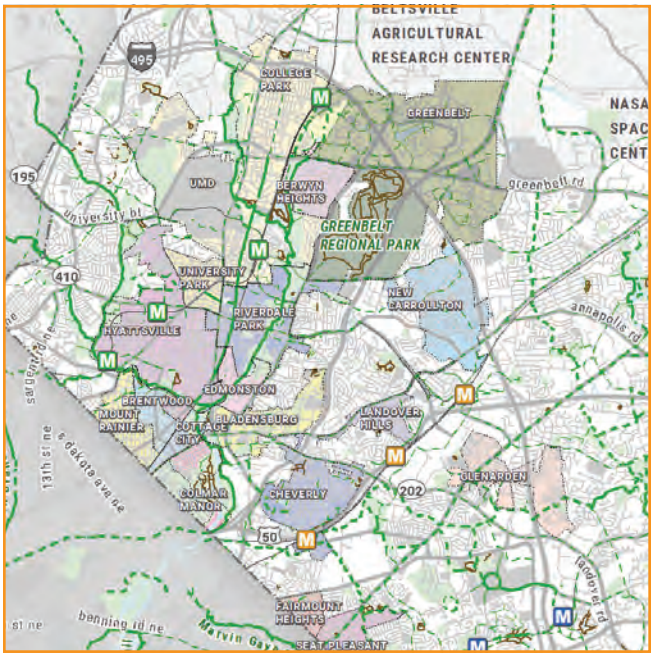


7 Direct linkage to the existing, planned and proposed Primary and Secondary trail network means that a trail connected to the countywide network already is or can be developed within 2-3 blocks proximity to the park/facility, and the final few blocks can be traversed on low traffic streets or sidewalks.

Map J: Trail Connectivity to 2035 Development/Activity Centers



Map K: Connectivity to Municipalities and Jurisdictions



network. Only six of these facilities are not directly accessible by an existing or planned trail; however they are accessible to bicyclists and pedestrians willing to use low speed neighborhood streets and/or sidewalks.

Trail Connectivity to Existing and Future Activity Centers

For the Trail Network to effectively serve close-to-home recreation and non-motorized transportation, it is important that it provide proximate and direct links between residential communities and activity centers such as transit hubs, town centers, commercial areas, recreation areas and entertainment venues. To evaluate the Network's connectivity to these types of land uses, forty-five activity centers were identified and trail opportunities within and between these centers were proposed. The forty-five activity centers include the following locations:

- Plan Prince George's identifies 27 centers where mixed use development is encouraged and much future growth is targeted.
- Eight (8) traditional/existing town centers were included, such as Mount Rainier, Bowie's Old Town and Laurel's Main Street.
- Ten (10) suburban style commercial centers were included, such as Beltsville, Clinton, Camp Springs, and the Lanham business park.

For a complete list of activity centers see appendix: *Development/Activity Centers*.

The combined existing and planned/proposed Primary and Secondary Network will link all but one of these 45 activity centers (see Map J).[8]

Connectivity to Municipalities within the County

There are twenty-seven municipalities within Prince George's County. As of 2015, most had little or no mileage of shared use paths within their jurisdiction. The largest jurisdictions (by population and land area) Bowie, Greenbelt, Laurel, College Park, and Hyattsville had the most mileage of existing shared use paths; and Bowie had the largest existing network of unpaved paths for hiking, equestrian use and mountain biking.

To evaluate the relationship between each of the twenty-seven municipalities and the Plan network of shared use paths (existing, planned & proposed; primary and secondary) a simple rating system was created. Sixteen municipalities were rated poor or fair regarding access to shared use paths within or adjacent to their communities; eleven were rated good or excellent because they had direct access to the existing primary trail system. See Table 4 for details and Map K.

While state tax law makes the residents of Greenbelt, Laurel, District Heights, and the southeast corner of

8 Eagle Harbor is the only incorporated community that is not connected by an existing or planned/proposed trail in the Primary or Secondary system. It is, however, connected by a Desire Line representing a potential Hiking/Mountain Bicycling/Equestrian trail that may be desired in the future.

Table 1: Municipal Access to the Existing and Future Primary and Secondary Trail Network

	Municipality	Existing Access to Trails	Future Access with Buildout of Planned/ Proposed Primary & Secondary Network	Municipality moves from disconnected to connected
1	Laurel	Fair	Good	Yes
2	College Park	Excellent	Excellent	
3	Berwyn Heights	Excellent	Excellent	
4	Greenbelt	Fair	Excellent	Yes
5	Bowie	Good	Excellent	
6	New Carrollton	Poor	Good	Yes
7	Riverdale Park	Excellent	Excellent	
8	University Park	Poor	Good	Yes
9	Hyattsville	Excellent	Excellent	
10	Edmonston	Excellent	Excellent	
11	Mount Rainier	Good	Good	
12	Brentwood	Excellent	Excellent	
13	North Brentwood	Excellent	Excellent	
14	Bladensburg	Fair	Good	Yes
15	Colmar Manor	Good	Good	
16	Cottage City	Good	Good	
17	Landover Hills	Poor	Fair	Yes
18	Cheverly	Poor	Good	Yes
19	Glenarden	Poor	Good	Yes
20	Fairmont Heights	Poor	Fair	Yes
21	Seat Pleasant	Poor	Good	Yes
22	Capitol Heights	Poor	Good	Yes
23	District Heights	Poor	Excellent	Yes
24	Morningside	Poor	Good	Yes
25	Forest Heights	Fair	Excellent	Yes
26	Upper Marlboro	Poor	Excellent	Yes
27	Eagle Harbor	Poor	Poor	

the county exempt from paying into the M-NCPPC park maintenance and development program, this plan considered connectivity to, from and through these areas because the Plan is addressing trail needs for transportation, as well as a recreation and open space component of public services.

The buildout of the planned and proposed trail network will improve trail access for most all of the municipalities within the county[9]. It will also create new access to the countywide network for fifteen communities that have minimal or no trail access today.

9 All of the municipalities except Eagle Harbor which is in the southeast corner of the County, where share use path development is not possible using M-NCPPC funds, and the need for such trails is very low.

Closing Gaps in the Existing Trail System

A gap in a countywide trail system is somewhat hard to define. Some may point to a trail that is aligned adjacent to a neighborhood, but has no spur path connecting to it, and say, "there is a gap." Others may point to a trail that ends at an interstate highway and does not cross it to the next community, and say, "there is a gap." As a result, gaps in a trail network may be as short as a few hundred feet or as long as multiple miles; they may have an obvious proposed alignment, or be totally uninvestigated.

Nonetheless, the perception of gaps in a trail network is very real for trail users. If a lack of pathway seemingly prevents them from accessing their desired destination, people sense there is a gap in the transportation or recreation infrastructure.

In the planning process for this Plan, gaps were identified at public workshops, meetings with stakeholders, and by the public who gave input on a Wiki-map (an online mapping tool used to collect geographically-oriented public comments). More than eighty comments were received about gaps in the existing trail network. A number of gaps were mentioned more than once. In total, more than fifty unique gap locations (large and small) were given a desk top review (aerial photography and street view) by the consultant team. Some were evaluated in the county's GIS data as well, available on PG Atlas. Developing potential trail alignments and other solutions for closing these gaps was a primary activity of the project consultant team and M-NCPPC planning staff.

Three Ways this Plan Addresses Gaps

1. As a result of this work, many miles of proposed Primary or Secondary trails were added to the Plan map. These additional trails will close almost all of the gaps identified in the planning process; certainly all of the most important ones.
2. Proposed Recreational trails were also added to the Network to address gaps in the Recreational trail network. The additional Recreational trails will connect park and natural resources and expand recreational opportunities in parts of the county where paved shared use paths are not likely to be feasible, desirable or even needed.
3. In a number of locations where built and/or natural environmental challenges are present or land acquisition is needed, but could not be fully assessed given the scope of this plan, the desire for trail connectivity is shown on the Plan map as a *Desire Line*.

Gaps Not Addressed in the Plan

Fewer than ten gaps identified by the public could not easily be solved in this planning process. Reasons include expected low demand, existence of reasonable alternatives, lack of potential right-of-way, existence of major barriers, lack of jurisdictional support, topography, and environmental constraints. A few examples include the following:

- developing a trail in the Riggs Road Corridor;
- developing mountain bike or hiking trails in the eastern quadrant of Greenbelt National Park and connecting surrounding portions of the county to this quadrant of the Park;
- developing a hard surface trail along the full length of the Patuxent River;
- developing a trail along portions of the Southwest Branch and developing a grade separated trail crossing of the Beltway between the proposed Central Avenue Trail crossing and D'Acy Road; and
- developing hard surface trails in the southeastern part of the county sometimes referred to as Aquasco; or along the Mattawoman Creek.

Key Gaps Addressed in the Plan

More importantly, a number of gaps that were raised in the planning process numerous times, were addressed in the plan, sometimes with multiple alignment options. For example…

- the Beltsville Agricultural Research Center (BARC) is a major barrier that has long limited trail development between College Park and Laurel. This Plan proposes a pathway along MD 201 (Edmonston Road) as well as one along Soil Conservation Road. A trail along the Baltimore-Washington Parkway was identified as an option that deserves further study to which the National Park Service expressed openness. MD 197 (Laurel-Bowie Road) is also a key roadway corridor crossing BARC, and a trail should be seriously considered adjacent to it, as this would also provide access to the Visitors Center at the Patuxent Wildlife Research Center.

- Other large institutional lands that function as barriers to bicycle and pedestrian travel and trail development, include the Goddard Space Flight Center, the Andrews Air Force Base and Greenbelt Park (NPS).
  - This plan proposes a trail along MD 193 and Good Luck Road to get around Goddard, as well as improved trail access to the NASA facility from Greenbelt.
  - To address the barrier effect of Andrews AFB, a system of trails circumnavigating the base will enable neighborhoods inside the Beltway to be linked with Camp Springs, Clinton and the newly developing Westphalia area, as well as the Base itself.
  - To improve access to Greenbelt Park, two bridges are proposed on the north side of the park to link Greenbelt proper across the Beltway and MD 201 to the business park that provides access to the north entrance. Along the south side of the Park, a trail is proposed along Good Luck Road, along with bicycle and pedestrian crossing and access improvements to the southern park entrance.

Built Environment Barriers

In addition to large institutional lands, barriers like the Beltway, U.S. 50, and I-95 divide the County in ways that are hard to overcome. This plan identifies both major and smaller-but-significant barriers that must be addressed to create a connected countywide trail network (See Table 5: Major and Minor Barriers).

The types of barriers listed in table 5 include the following: interstate highways (including highway interchanges), large Maryland state highways, railroads, and institutional lands.

Table 5: Major and Minor Barriers

Major Barriers	Minor Barriers
Joint Base Andrews (DOD)	Maryland State Highways with limited access characteristics
Baltimore - Washington Parkway	MD 5 (Branch Avenue)
Beltsville Agricultural Research Center (USDA)	MD 4 (Pennsylvania Avenue)
Goddard Space Flight Center (NASA)	MD 193, 197 & 198
Greenbelt Park (NPS)	MD 214 (Central Avenue)
I-95 north of the Beltway	MD 202
MD 210 (portions)	MD 210 (portions)
Patuxent Wildlife Research Center (USF&WS)	US Route 301
Southern Maryland spur railroad	
Suitland Parkway	
The Capital Beltway (I-95)	
The Northeast Corridor (Amtrak and MARC Railroad; paralleled by Metrorail inside the Beltway)	
US Route 50 (John Hanson Highway)	
US Route 1/CSX Railroad (outside the Beltway)	

Ways that major barriers can be overcome include the following: building bridges or tunnels, retrofitting existing roadway underpasses and overpasses (preferably at non-interchange locations), building trails in public roadway ROW and retrofitting stream culverts. Secondary barriers, (large state highways that are not limited access) can be addressed in the same way, but also by improving existing at-grade crossings or creating new at-grade trail crossings.

Addressing barriers is one of the most costly components of developing a trail system; however, it is also one of the most important. For example, until recently, the presence of the Capital Beltway had prevented the Anacostia Tributaries Trail System from extending to Beltsville and other communities outside the Beltway.[10] Additionally, the Beltway and Maryland 5 Branch Avenue has kept the Henson Creek Trail from extending to the Branch Avenue Metrorail station, which is inside the Beltway.

Appendix: *Build Environment Barriers* lists sixty-four (64) locations along the major and minor barriers listed above, where trail crossings may be needed or desired as the network is developed. Some are more important than others, and it should be noted that it is not expected that every one of these locations will be addressed by 2040. In some areas, two or three closely spaced crossing locations can be viewed as alternatives, because some may not be feasible, or simply improving one may be sufficient to meet trail user needs (see Map L).

A strategic approach to addressing barriers will help the County focus on pursuit of the most feasible and affordable fixes. The following is a list of approaches and the number of locations identified in the Master plan where each solution is recommended:

Address the barrier effect of the Beltway and other limited access highways:

1. Retrofit existing interstate and highway crossings that are grade separated by underpasses or overpasses, but do not have interchange ramps linking the crossing road to the highway:
   - 17 locations at the Beltway, Baltimore Washington Parkway and US Route 50. These locations are the easiest and least expensive places to address, by constructing new connecting trails along existing medium volume roads that have available right-of-way.
2. Reconstruct existing culverts/bridges or build separate trail tunnels adjacent to stream culverts where highways cross streams that have stream valley trails along them:
   - 2 Locations along the Beltway.
   - 2 Locations along U.S. 50.
3. Require the State Highway Administration to address trail access through interchanges when these facilities come up for rehabilitation or reconfiguration:
   - 16 locations along the Beltway, I-95, Branch Avenue, the Baltimore-Washington Parkway, Suitland Parkway and Pennsylvania Avenue.

Map L: Addressing Built Environment Barriers

Address the barrier effect of railroads:

1. Provide grade-separated (or at-grade) crossings at new and rehabilitated passenger stations that are outside the fare gates or otherwise available to bicyclists and pedestrians on a 24/7 basis:
   - 3 MARC stations: Murkirk, Bowie State University, and Seabrook. There may also be potential at New Carrollton and Landover Metro Stations.

10 Current plans call for detouring the Paint Branch Trail as a sidepath along Cherry Hill Road, which crosses the Beltway near the I-95 interchange.

2. Provide trail crossings as a part of roadway bridge or underpass rehabilitation/replacement projects.
3. Combine trail crossings with at-grade road crossings of freight railroads.

Address a variety of barrier types:

1. Request that developers of property adjacent to the Beltway and other major highways consider planning for and contributing funding toward grade separated, bicycle and pedestrian only, bridge or tunnel crossings that will enhance their development:
   - 18 locations along the Beltway, I-95, the Baltimore-Washington Parkway, CSX Railroad/Camden Line, Suitland Parkway and US Route 50.
2. Ensure that new infrastructure for public transit systems accommodate trails as a part of busways or light rail lines; both along the transit way, and at locations where trail crossings of the transit way are needed.

Address the barrier effect of large institutions:

1. Study alternative alignments; consider co-locating trails with roadways or other linear corridors, such as water and sewer lines or power transmission lines that already pass through the institutional lands.
   - See prior discussion about closing gaps.

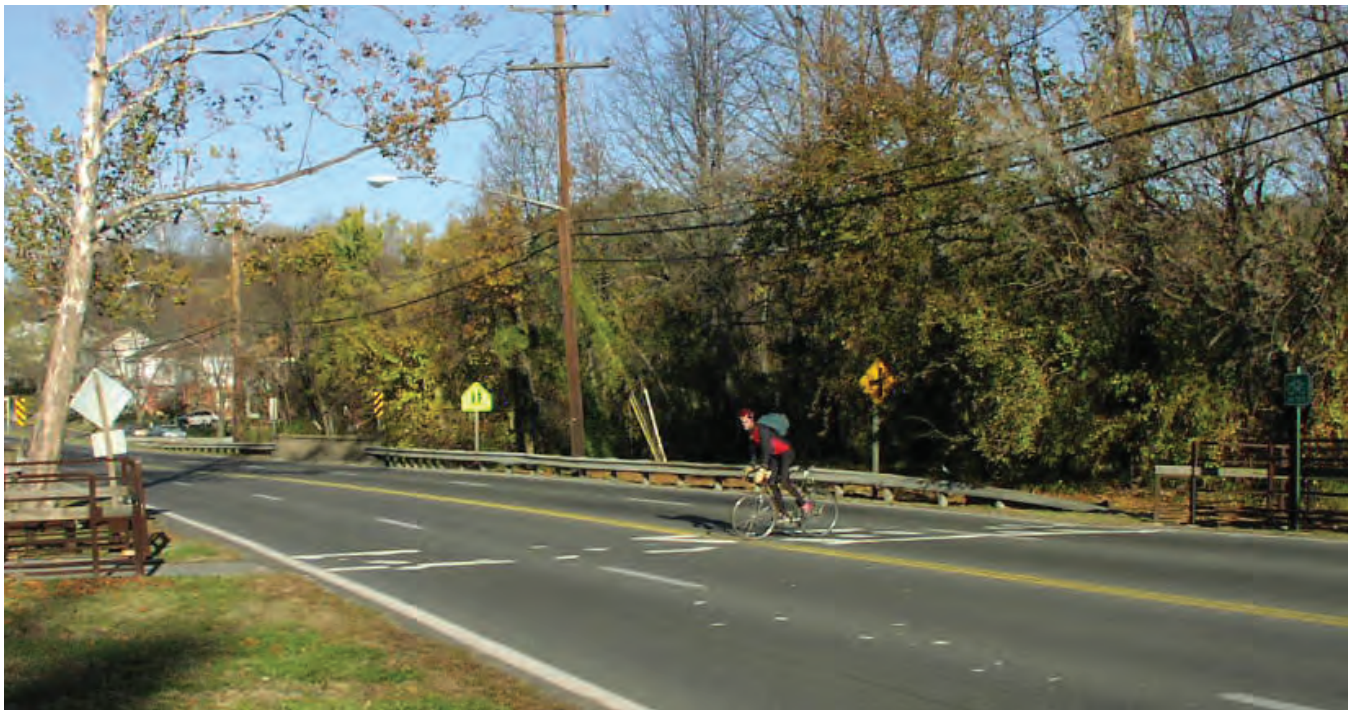
Address the barrier effect of minor barriers

1. Work with the State Highway Administration and Prince George's County Department of Public Works and Transportation (DPW&T) to improve existing at-grade trail crossings of large highways:
   - 9 locations are identified in the plan, however there are many locations were these types of improvements can and should be made.

Prioritization

Based upon an analysis of network connectivity needs and considering public input during the planning process, the following barriers should be considered the most important to overcome:

1. The Capital Beltway
2. The Beltsville Agricultural Research/Patuxent Wildlife Research Center/NASA Goddard Space Flight Center
3. Maryland 210 – Indian Head Highway
4. US 50/AMTRAK/Metro rail line inside the Beltway.
5. Suitland Parkway



Connectivity to Neighboring Jurisdictions

Forty-six (46) locations are identified in the Plan where the Prince George's County's Trail Network links with surrounding jurisdictions, such as the District of Columbia and Montgomery County (see Map M). These locations include places where existing trails link across jurisdictional boundaries, as well as places where future linkages are planned or proposed. Some locations represent places where one jurisdiction has an existing or planned link, and the other jurisdiction does not. Table 6 provides a count of interjurisdictional links by jurisdiction and status. A detailed list of all 46 locations and their attributes and status is provided in the appendix: *Connectivity to Neighboring Jurisdictions*.

Map M: Connections to Neighboring Jurisdictions

Table 6: Connectivity to Neighborhood Jurisdictions

Neighbor Jurisdiction	PGC Status: Existing	PGC Status Planned/ Proposed	PGC Status: Desire Line or Alternative	Total Locations
Howard County (HC)	None	2	1	3
Anne Arundel County (AAC)	2 [1]	4	1	7
Charles County (CC)	None	1	2	3
Virginia (Alexandria)	1	None	None	1
District of Columbia (DC)	3[2]	14	2	19
Montgomery County (MC)	5	7	1	13

At the following locations, coordinated planning between jurisdictions is likely to yield positive results for trail linkages with surrounding communities.

- The District of Columbia plans to build a South Capitol Street trail to link with the Oxon Run Trail in Prince George's County at Oxon Hill Farm.
- This Plan proposes that Prince George's County pursue trail linkages at the following locations to link with existing trails in the neighboring jurisdiction: Suitland Parkway Trail (DC); Pennsylvania Avenue Sidepath (DC); Cherry Hill Road Sidepath (MC).
- At the following locations both jurisdictions (PGC and neighbor) are either proposing or planning trail links:
  - At four locations: 1) Adelphi Road/MD 650, 2) Briggs Chaney Road, 3) Greencastle Road and 4) MD 198; MC and PGC trail plans call for trail links.
  - At University Boulevard, the Purple Line transit project should provide trail or protected bike lane links between MC and PGC.
  - Between PGC and DC, trail links are planned by both jurisdictions at Mississippi Avenue, SE, and along the Chesapeake Beach Rail-Trail alignment, which connects to the Marvin Gaye Trail at Seat Pleasant, MD.
  - Across the Patuxent River, along MD 214 and near Route 1, both HC and PGC plans propose consideration of trail or other bicycle/pedestrian facility links.

Use of Highway, Railroad and Utility Corridors

In addition to Stream Valley park lands, use of other types of corridors will be needed to create a fully-connected network that provides access to neighborhoods, town centers and employment sites. These corridors include abandoned and little-used railroads, major power transmission lines, sewer lines, and highway rights-of-way. Table 7 shows how each of these corridor types contributes to the existing and planned/proposed network (see Map N for geographic locations).

Map N: Use of Highway, Railroad, and Utility Corridors

Table 7: Highway, Railroad and Utility Corridors

Corridor Type	Existing (Miles)	Existing (%)	Potential (Miles)	Planned/Proposed (%)
Highway	24	7.3%	208	26%
Railroad	4	1.2%	14	1.8%
Power Lines	2.8	1%	32	4%
Stream Valley & Other Corridor Types	305	91%	550	68%

Highways

Among the built environment corridors, major highway are the most common location for trails. Typically they exist as sidepaths on one or both sides of the roadway. They may be within the highway right-of-way or paralleling it with a substantial landscaped buffer.

This Plan proposes three ways of using roadway corridors to further develop the Trail Network:

1. Trails that are planned/proposed to be in the Primary Network classification should be built to provide a more park-like trail experience. The buffer from the road should be 15-25 feet wide and well-landscaped to provide a safe and enjoyable experience for trails users. These types of trails will be well used because they provide high quality recreation and transportation.
2. Trails that are planned/proposed to be in the Secondary Network should be built to typical shared use path standards, for a sidepath setting; using a 5-8 foot setback from the curb, and a low maintenance lawn or tree buffer.
3. This Plan also recommends that the DPW&T consider adopting a policy to consider using protected bicycle lanes along arterial roads as an alternative to approaches 1) and 2) above. Protected bicycle lanes (or cycle tracks) may be more feasible or appropriate along certain roadways. Reasons for using this alternative may include reduced costs, increased safety, better compatibility with adjacent land uses, engineering efficiencies, or other factors. It should also be noted that as appropriate, protected bicycle lanes should also be considered for some arterial roads that were slated for bicycle lanes in the Countywide Master Plan of Transportation (2009 Master Plan of Bikeways Trails).

This Plan acknowledges that the cross-section for development of a Primary Trail along a highway or arterial road will typically be more expensive than development of a Secondary Trail, or protected bicycle lane. For this reason, a limited number of Primary trails along roads and highways are proposed in this plan, and they are typically proposed where it is expected that future road re-development will provide the opportunity to make sufficient right-of-way available (See Table 8 below). Road re-development opportunities may include road widening related to development or re-development, or road-diets.

It should be noted that all three alternatives above provide an opportunity to slow the increase of impervious surface being added to the landscape and provide locations where LID stormwater treatments can be integrated into the public right-of-way.

Regarding the recommended trail classifications and accommodation standards outlined above, this plan is meant to refine the recommendations of the 2009 Master Plan of Bikeways Trails that was done as part of the Master Plan of Transportation.

Table 8: Primary Trails Along Roadway Corridors

Road Corridor	From	To
MD 198 (west of Laurel)	I-95	Van Dusen Road
MD 197	B-W Parkway	WB&A Trail
Baltimore-Washington Parkway	Greenbelt	MD 197
MD 450	White Marsh Park	Anne Arundel County Line
MD 3 (in Bowie)		
MD 223 Woodyard Road	Rosaryville Road	MD 4 (Pennsylvania Avenue)
MD 223 Woodyard Road	Washington Executive Air Park	Piscataway Creek Trail
Suitland Parkway	MD 4 (Pennsylvania Ave)	District of Columbia
MD 202 Largo Road	Kettering Drive	MD 4 in Upper Marlboro
MD 704	WB&A Trail/MD 450	District of Columbia
MD 381 Brandywine Road	Mattawoman Drive	Mattawoman Creek Trail

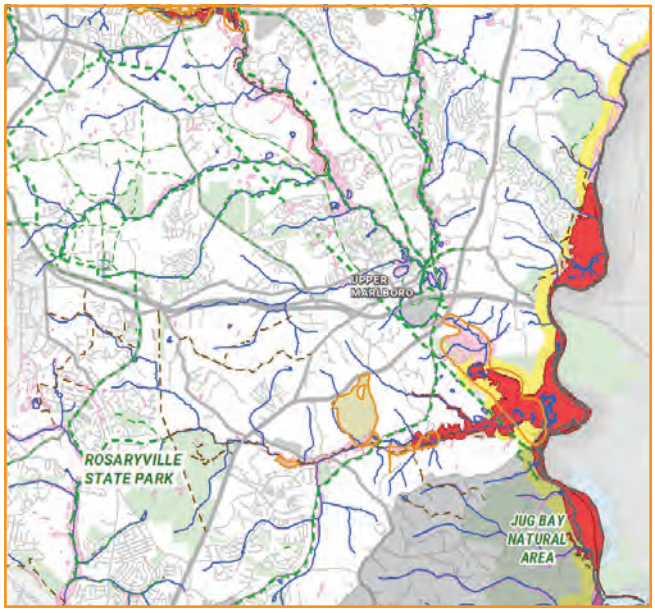
Railroads

Use of all or portions of the freight rail line that follows the Collington Branch in Bowie is the primary proposed rail-trail conversion. This line is little used, but may not be abandoned for some time as it provides coal resources to a power plant near Eagle Harbor, and serves other destinations in southern Maryland. There are some abandoned spurs that may be useful as trails along Cabin Branch near the Cheverly Metro Station. The Chesapeake Beach rail line has largely reverted to private ownership, however a trail along its alignment is being built as development occurs along the corridor. The trolley line that ran along Rhode Island Avenue has been redeveloped as a rail-trail in the Hyattsville and College Park areas. Potential for further development of this corridor, through Beltsville and into Laurel, is unknown but could be further investigated.

Electric Power Transmission lines

Power lines offer important trail connections in a variety of locations around the County. In the southern tier a transmission line may offer an alternative to MD 210 in the Accokeek area. A transmission line may provide a needed link from the Tinker's Creek corridor to the Henson Trail and to National Harbor. Power lines also connect Watkins Mill Regional Park with Rosaryville State Park, providing access to these recreational areas from the developing Westphalia community which lies between the two parks. A power line corridor may provide a cross-county linkage in the northern part of the County between Konterra and a proposed trail along MD 197 through the Patuxent Wildlife Research Center. In other areas inside the Beltway power line corridors can provide short linkages that are good alternatives to roadways which can no longer be expanded.

Map O: Natural Environment Barriers



Natural Environmental Barriers

There are a wide range of environmental factors that have an impact on trail development. These include the alignments of rivers and streams, the presence of wetlands and habits for species that need protection, and areas with steep slopes and unstable soils that present engineering challenges.

Related to these environmental barriers are a set of environmental regulations which are crafted to protect the environment from unnecessary or inappropriate intrusions of the built environment. These regulations are related to the Chesapeake Bay, other state and federal environmental protection goals, and constraints placed on development by Prince George's County itself.

Mapping Environmental Constraints

The planned and proposed Trail Network presented in this chapter takes into account some of the most limiting environmental factors and some of those that could be addressed at a master plan level; including the following: 1) the Chesapeake Bay Critical Area, 2) Wetlands of Special State Concern, and 3) key environmentally sensitive areas as identified by M-NCPPC's environmental planning specialists (shown on Map O).

- Chesapeake Bay Critical Area (CBCA): The CBCA is defined as all waters and lands of the Chesapeake Bay that are 1,000 feet from the Mean High Tide line and tidal wetland areas.
- Wetlands of Special State Concern (WSSC): Non-tidal Wetlands of Special State Concern are the best examples of Maryland's non-tidal wetland habitats and are designated for special protection under the State's non-tidal wetlands regulations. Over 350 wetland sites statewide have exceptional ecological and educational value and offer the community opportunities to observe and safeguard the beauty and natural diversity of Maryland's best remaining wetlands. Many of these special wetlands contain the last remaining populations of native plants and animals that are now rare and threatened with extinction in the state.

- Prince George's County Areas of Special Consideration: M-NCPPC staff identified the following locations within the M-NCPPC park system where trail development should either be avoided, designed as natural surface trails, or designed and limited in other ways that respect the environmental issues present. .
  - Fairland Regional Park--Newly acquired park north of the existing Fairland Regional Park.
  - Portions of Watkins Regional Park along the Western Branch
  - Church Road Conservation Area (Belt Woods)
  - Walker Mill Regional Park--Forested area north of Walker Mill Road
  - Suitland Bog
  - Tidal areas and Parks on the Patuxent River
  - Charles Branch Stream Valley Park
  - Buck Lodge Road Bog Area
  - Southwest Branch Bottom land forest near Watkins Regional Park
  - Riparian areas along the Western Branch south of Upper Marlboro

Because of the large scale effort of this Trails Plan[11], a number of relevant environmental factors could not be fully factored in at the master plan level; they include the following: tree conservation areas, floodplains, wetlands, stream buffers, historic sites and known/ potential archeological sites. In general, these factors will need to be addressed as more detailed feasibility studies are done for proposed trails in the Plan. To address these factors, it is assumed that the following approach will be applied in the trail planning and development process: first, avoid environmentally sensitive landscapes if possible; second, minimize impacts; third, mitigate unavoidable impacts. When trails in stream valleys are designed it is important to consider how the stream's meaders are likely to change over time. In many areas it is important to locate the trail well away from the stream bank, so that trails are not washed out or undermined by flooding and the natural process of stream channel changes.

11 Related to this, it is important to note that the alignments shown in the Master Plan for many proposed trails are not intended to be extremely precise. It is recognized that determining where exactly a new path is to be located in the landscape is a task that is fleshed out in a feasibility study and during preliminary design.

Major River and Stream Barriers

The most significant water barriers to trail development include the Patuxent River, the tributaries of the Western Branch, Piscataway Creek and Mattawoman Creek. Each of these waterways present issues related to parallel trail development as well as trails that cross the waterway. A brief discussion of the barrier effects and possible solutions follows:

Patuxent River

Travel along the Patuxent River by trail is a long held vision of many trail enthusiasts in the County. The river's low lying riparian zone makes it almost impossible to provide a hard surface shared use path along the entire river corridor in Prince George's County, however, a hiking and/or equestrian path along much or all of the corridor is desired.

In addition to environmental factors and frequent flooding, much of the land adjacent to the river is not in public ownership or control. For this reason, this Trails Plan shows Desire Lines for Recreational trail connections between existing Recreational trails in the corridor. On the east edge of Laurel, this Plan does propose a hard surface trail, but well back from the shoreline and out of the river's wetland edges and riparian zone.

Trail crossings of the Patuxent are proposed in a number of locations: At Rocky Gorge Dam, MD 214, US Route 1, MD 198, MD 450/MD 3; at Governor's Bridge; MD 212; MD 4; and near Jug Bay where the old Chesapeake Beach Railroad crossed. A bridge crossing for the WB&A Trail is planned near Bowie State University, and is expected to serve the East Coast Greenway, as well as a large number of central Maryland cyclists and hikers and pedestrians[12].

Tributaries of the Western Branch

Western Branch tributaries include the Collington Branch, which runs through Bowie, the Lottsford Branch, Folly Branch, Bald Hill Branch, Cabin Branch and Southwest Branch. Trails are proposed along the Collington, Folly, Bald Hill and Cabin Branches, and portions of these trails are already built. Barrier areas include the following:

- The section of the Collington Branch between Central Avenue and US 50, where there is very little available space that is out of the wetlands adjacent to the stream (a CSX rail line runs along one side of the stream blocking use of that shoreline and riparian area).

12 The bridge over the Patuxent River at Governor's Bridge Road is periodically closed due to flood/storm damage. The WB&A Trail extension to a future Patuxent River crossing north of MD 3/450 is expected to be completed when funding is secured.

- An environmentally sensitive area blocks use of a portion of the Southwest Branch east of the Beltway, and the Beltway itself makes passage of a trail along the stream and under the beltway difficult.
- US Route 50 makes continuous trails along the Bald Hill, Folly and Lottsford Branches challenging, as culverts retrofits or new trail tunnels may not be feasible.
- Extensive wetlands along the main stem of the Western Branch south of Watkins Regional Park may limit trail development between the park and Upper Marlboro.

For the most part, crossing these streams with bridges is not a difficult challenge, however maintaining continuity of trails along these streams is an issue.

Piscataway Creek

Development of a trail along this creek would create a tremendous recreational and economic asset for the southern part of the County. It would allow for a Potomac-to-Patuxent trail link and enable residents in the region a means to get to know two of the County's most important waterways and much of its history. Initially, development of an unpaved multi-use path should be considered for the corridor, to minimize environmental impacts.

Mattawoman Creek

The Mattawoman Creek and its low lying riparian zone is a major barrier to making connections into Charles County, which is the home of the Indian Head Rail-Trail. Development of a trail along this creek and some key links in Accokeek and Brandywine, would enable a recreational loop system to be developed using the Piscataway Creek Trail, the Mattawoman and the Indian Head Rail-Trail, and create a gateway to additional Southern Maryland bicycle touring. This network of paved and unpaved trails could become a destination trail system for hiking, mountain biking, family cycling and nature enthusiasts that like wetlands, woods and watching wildlife.

Anacostia River and Anacostia Gateway

In 2016 or 2017, the District of Columbia (DC) expects to complete construction on the final phase of the Anacostia River Trail which will link the Bladensburg Waterfront Park with River Terrace (the current DC end point of the East and West Bank Trails along the Anacostia River. This trail will open up a new link between Prince George's County and the heart of the District of Columbia, and is expected to serve a significant number of commuter and recreational bicycle trips.

The Anacostia Gateway Trail is a long planned link between the Metropolitan Branch Trail and the Northwest Branch trail in the Avondale/West Hyattsville area. M-NCPPC has built a portion of this. The District of Columbia expects to complete a few hundred feet of trail to cross the border and link Avondale Park to the sidewalk and roadway of Eastern Avenue. Using sidewalks and Eastern Avenue and Gallatin Street trail users will be able to bicycle and walk between Fort Totten and West Hyattsville.

RECOMMENDATIONS

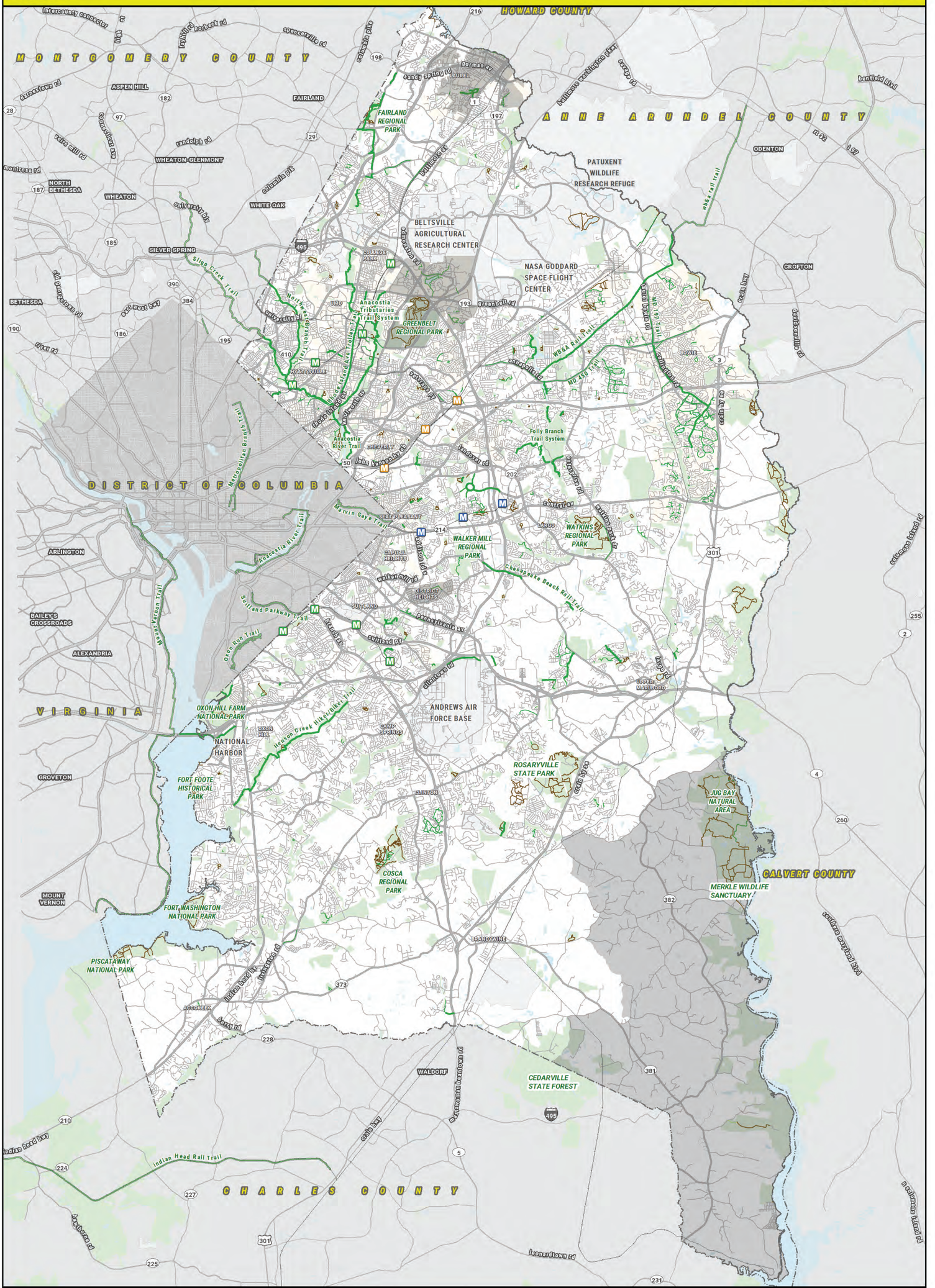
Policy and Planning

- Adopt trail classifications: Primary, Secondary and Recreational
- Prioritize projects that address barriers created by the built environment, such as the Beltway
- Prioritize trail development projects in communities that are currently underserved by trails, e.g. the southern half of the county
- Build a trails network where 95% of the population live within ½ mile of a trail
- Engage utility companies and agencies, and pursue trail development opportunities on utility corridors: Exelon/Pepco & WSSC.
- Engage the National Park Service (2016 Paved Trail Study)
- Improve trail connectivity to priority M-NCPPC facilities and parks

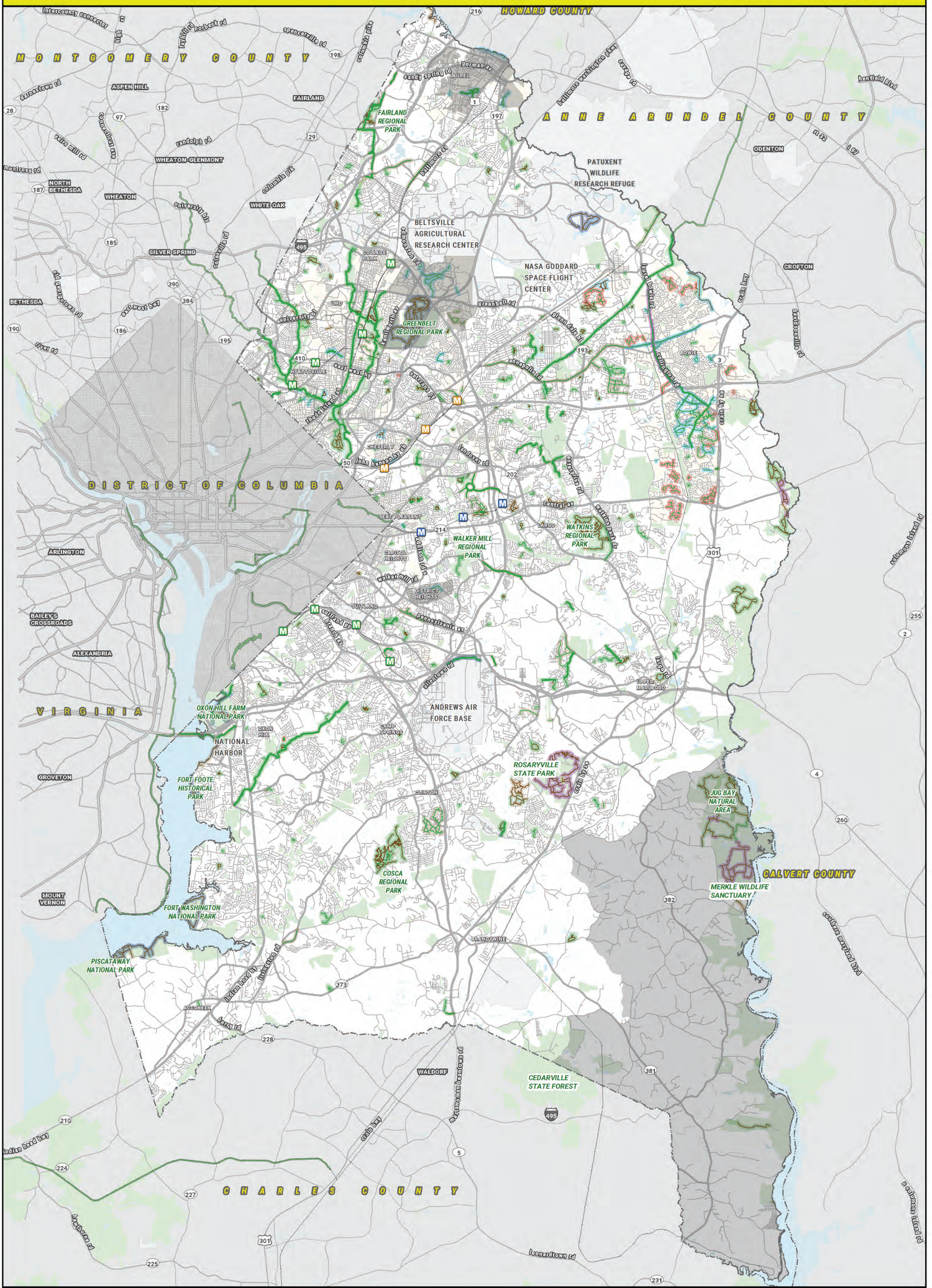
DPR Follow-up Activities

- Complete updating of GIS data set: Ownership, Surface Type, Integrity of the line work, Trailheads, Waysides, subsets of Secondary System.
- Educate staff throughout M-NCPPC about the Plan.
- Communicate and coordinate relevant components of the plan with respective stakeholders, prospective partners, and regional jurisdictions.

Map A Existing Trails DRAFT April 11, 2016



Map B Trail Ownership DRAFT April 11, 2016



Existing Trails
- Primary (64.5 mi)
- Secondary (111 mi)
- Recreation (152.5 mi)
- Park Road (5.5 mi)

Total: 333.5 mi

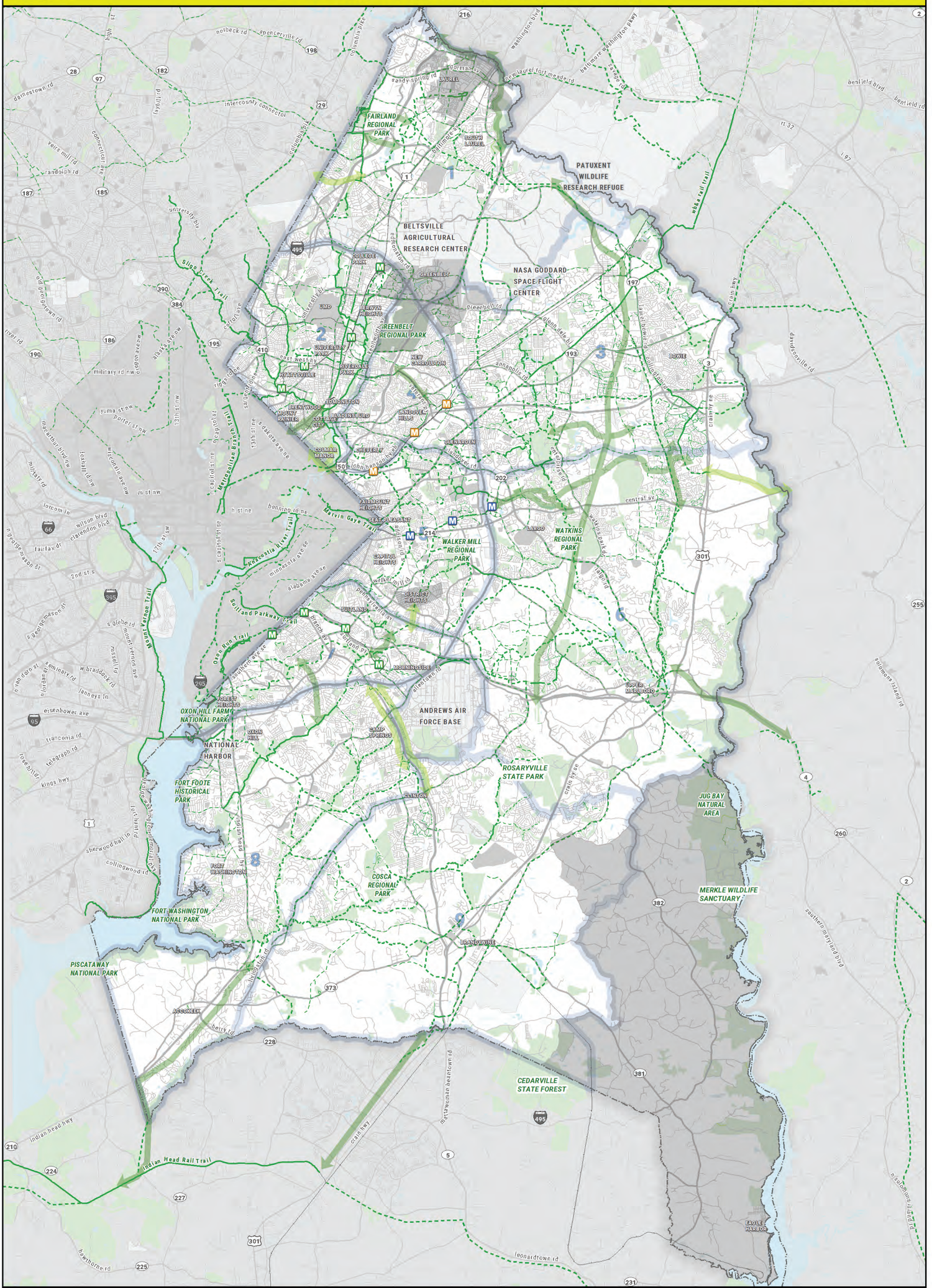
Existing Trail Ownership
- M-NCPPC (164 mi)
- Municipal (30 mi)
- State of Maryland (32 mi)
- Federal (29.5 mi)
- Private (14.5 mi)
- Unknown (65 mi)

Metro Stations
- Blue Line
- Orange Line
- Green Line

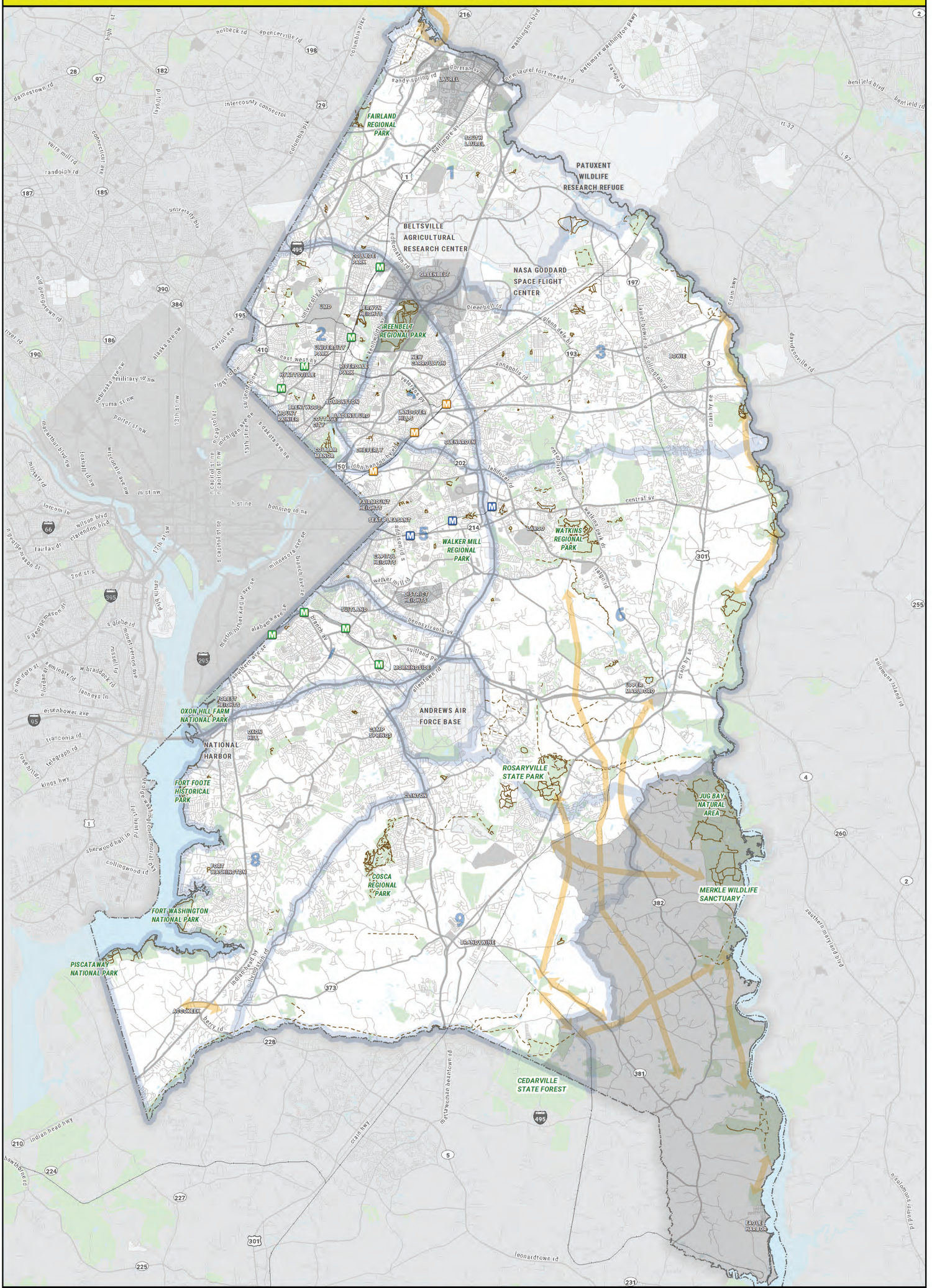
- Water
- County Parks/Golf Courses
- Area Outside of the Metropolitan District Boundary
- Municipal Boundaries
- County Boundary

0 1 2 Miles

Map C — 2040 Proposed Network (Primary/Secondary) — *DRAFT April 11, 2016*



Map D 2040 Proposed Network (Recreational) *DRAFT April 11, 2016*



Recreation Trails
- Recreation, Existing (107 mi)
- Recreation, Planned (94.5 mi)
- Fitness Loop, Existing (46 mi)
- Fitness Loop, Planned (7.5 mi)

Total: 255 mi

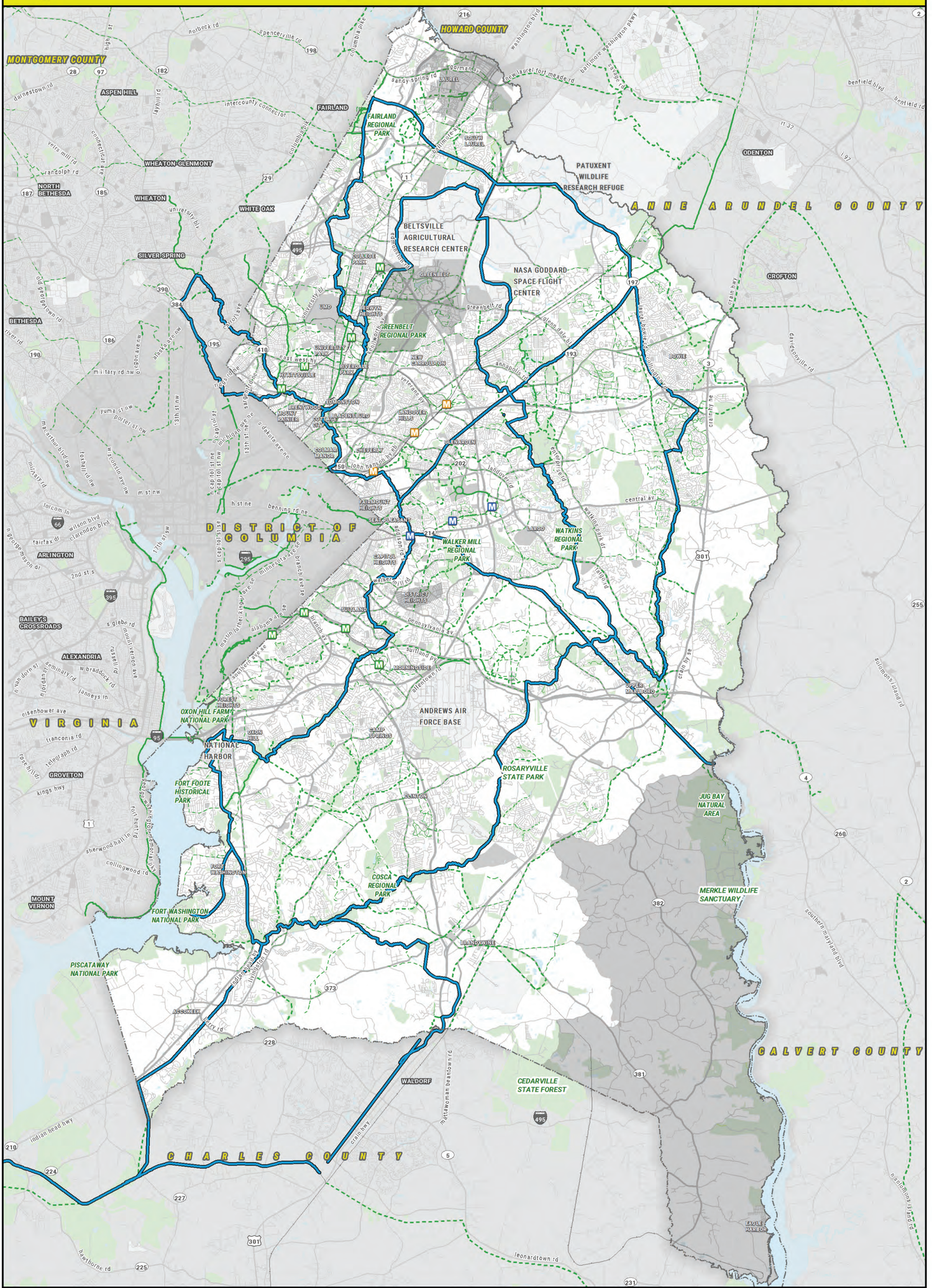
Desire Lines
- Recreational (14)

Metro Stations
- Blue Line
- Orange Line
- Green Line

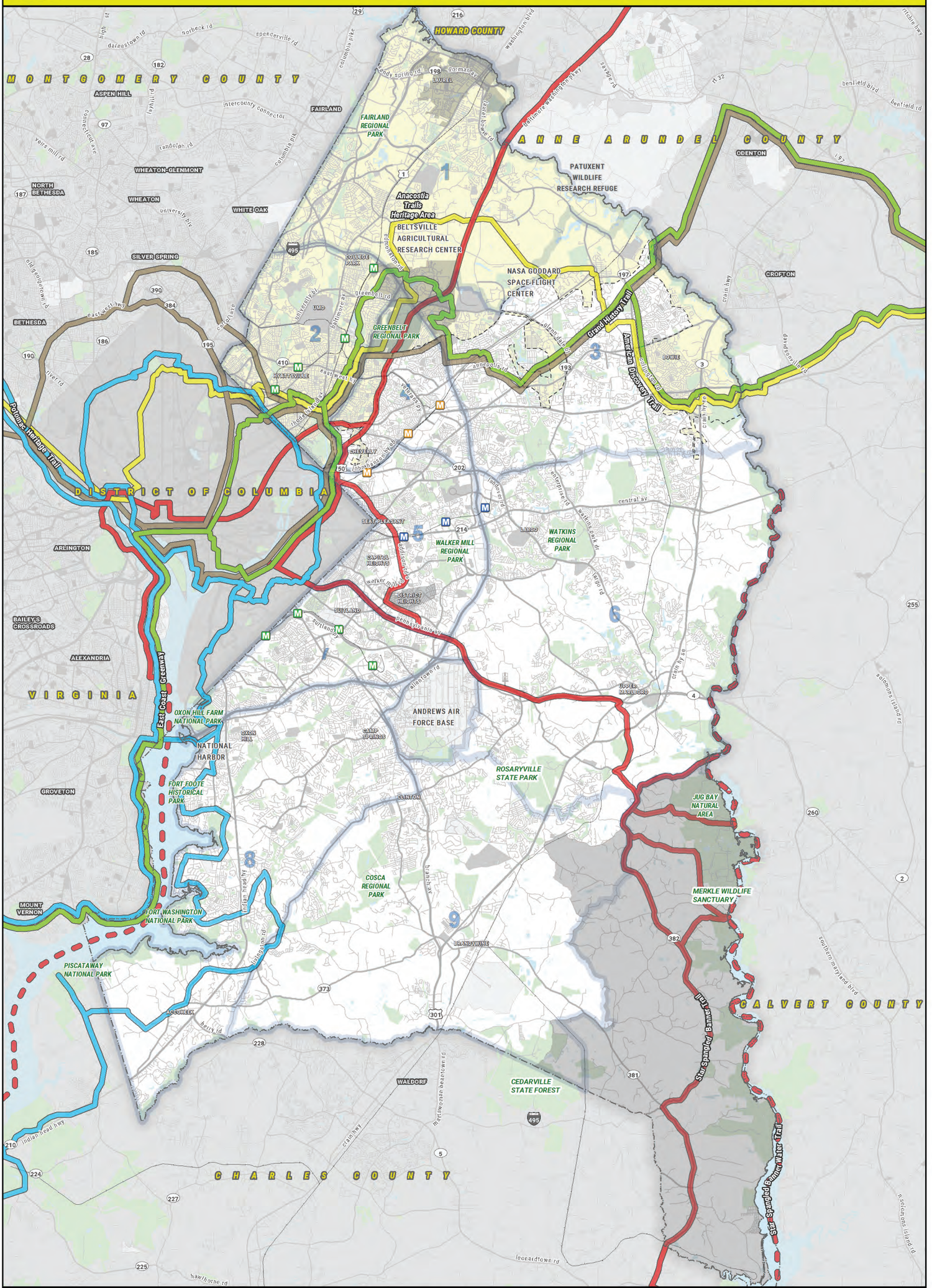
- Water
- Institution
- County Parks
- Area Outside of the Metropolitan District Boundary
- Park Service Areas
- County Boundary

0 1 2 Miles

Map E — Destination Trails and Bike Loops — *DRAFT May 6, 2016*



Map F **Thematic Trails** ***DRAFT April 11, 2016***



Thematic Trails
- American Discovery Trail
- East Coast Greenway
- Grand History Trail
- Potomac Heritage Trail
- Star Spangled Banner Trail
- Star Spangled Banner Water Trail

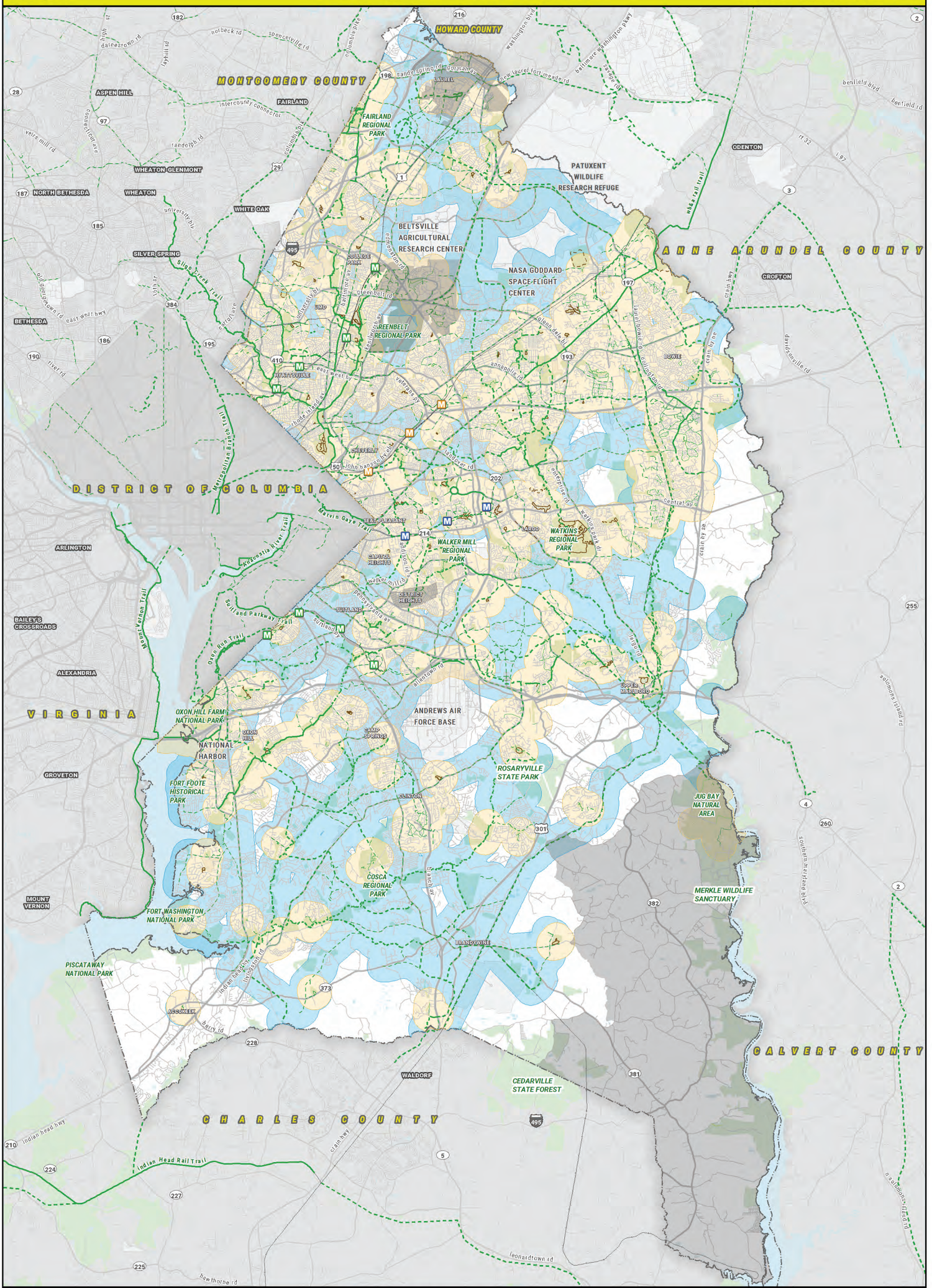
Anacostia Trails Heritage Area (ATHA)

Metro Stations
- Blue Line
- Orange Line
- Green Line

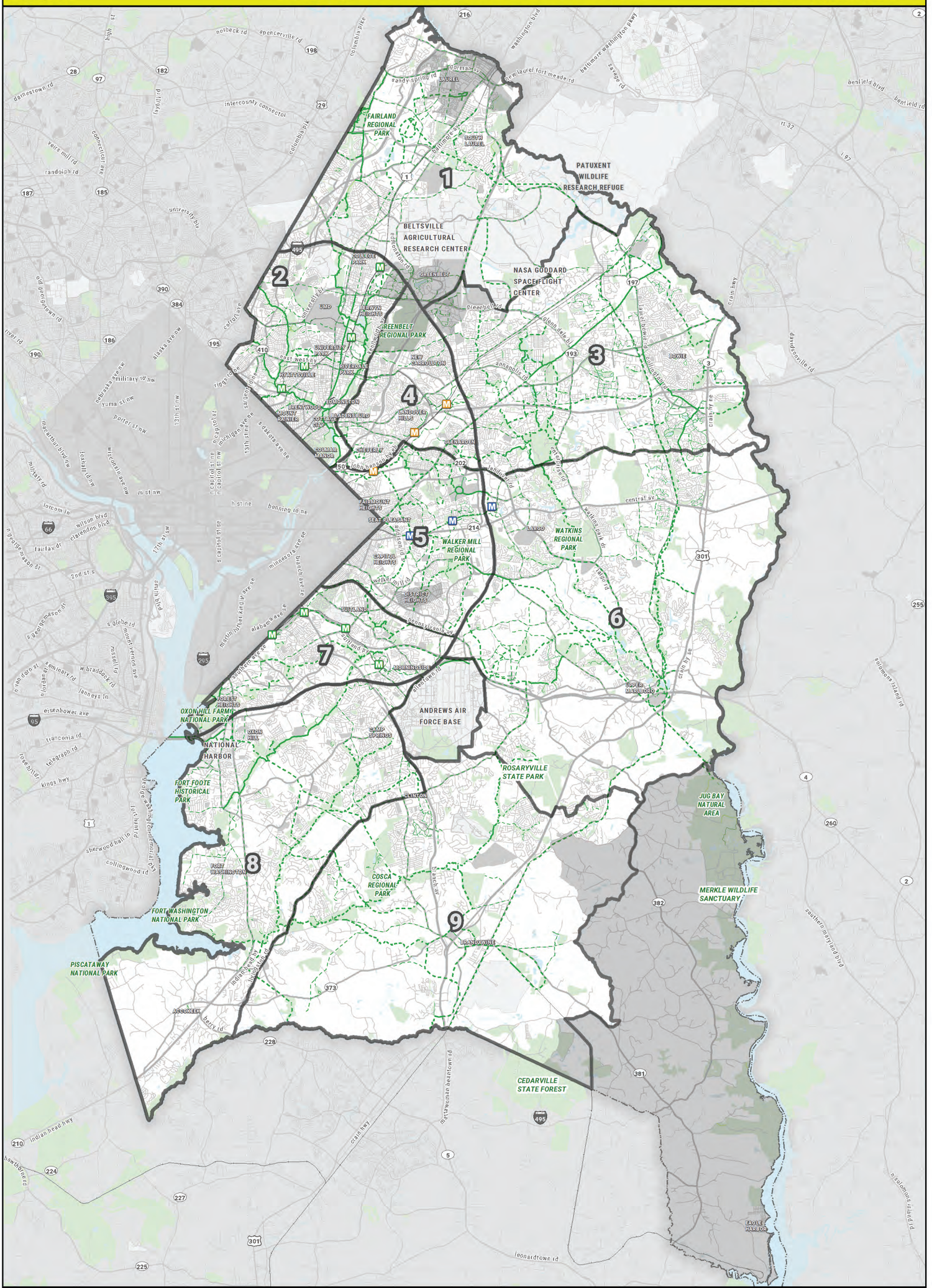
- Water
- Institution
- County Parks
- PUMA Boundaries
- County Boundary

0 1 2 Miles

Map G — Proximity to Residential Population — *DRAFT April 11, 2016*

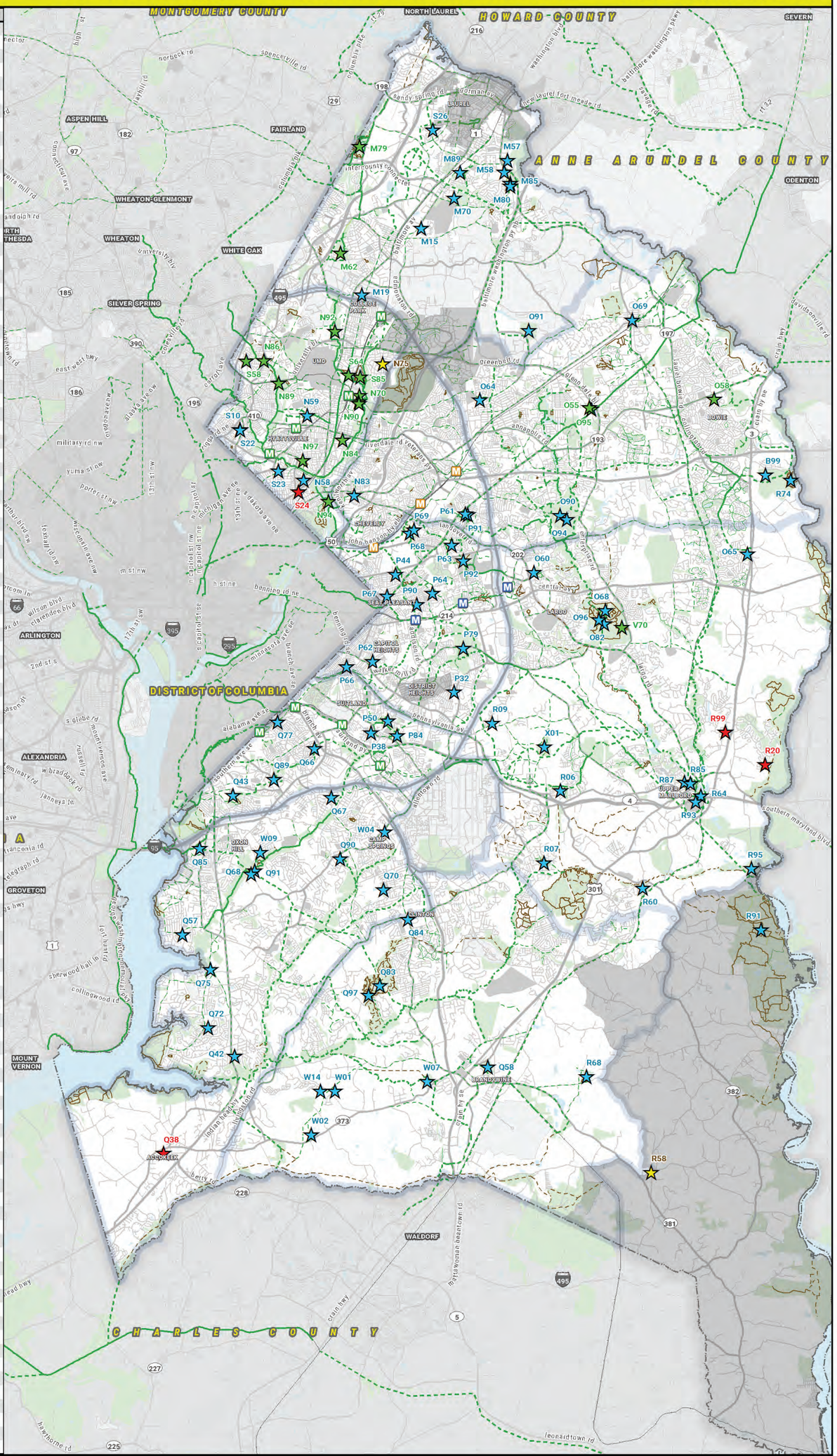


Map H — Geographic Distribution in Park Service Areas — *DRAFT April 8, 2016*



Map I — Trail Connectivity to Priority M-NCPPC Parks & Facilities — DRAFT April 11, 2016

Park ID	Name
B99	Prince George's Stadium
M15	Vansville Park Building
M19	Sunnyside Park
M57	Snow Hill Manor Historic Site
M58	Deerfield Run School Community Center
M62	Beltsville Community Center
M70	Abraham Hall Historic Site
M79	Fairland Regional Park
M80	Montpelier Arts Center
M85	Montpelier Historic Site
M89	Dinosaur Park
N58	North Brentwood Community Center
N59	Prince George's Plaza Community Center
N70	College Park Aviation Museum
N75	Berwyn Heights School Community Center
N83	Publick Playhouse Cultural Arts Center
N84	Riversdale Historic Site
N86	Adelphi Mill Historic Site
N89	Lane Manor Aquatic Center
N90	Ellen E. Linson Aquatic Center
N91	Herbert W. Wells Ice Skating Center
N92	Paint Branch Golf Complex
N94	Bladensburg Waterfront Park
N97	Hamilton Splash Park
O55	Glenn Dale Community Center
O58	Bowie Community Center
O60	Lake Arbor Community Center
O64	Good Luck Community Center
O65	South Bowie Community Center
O68	Old Maryland Farm
O69	Huntington Community Center
O82	Watkins Regional Park
O90	Enterprise Golf Course
O91	Prince George's Sports Center
O94	Newton White Mansion
O95	Glenn Dale Aquatic Center
O96	Watkins Nature Center
P32	North Forestville Community Center
P38	William Beanes Community Center
P44	Cedar Heights Community Center
P50	Suitland Community Center
P61	Glenarden Community Center
P62	Oakcrest Community Center
P63	Palmer Park Community Center
P64	Peppermill Village Community Center
P66	John E. Howard Community Center
P67	Seat Pleasant Community Center
P68	Kentland Community Center
P69	Prince George's Ballroom
P79	Walker Mill Regional Park
P84	Suitland Bog Park
P90	J. Franklyn Bourne Aquatic Center
P91	Theresa Banks Aquatic Center
P92	Prince George's Sports and Learning Complex
Q38	Accokeek Park
Q42	Fort Washington Forest Park
Q43	Glassmanor Community Center
Q57	Indian Queen Community Center
Q58	Brandywine Area Park
Q66	Marlow Heights Community Center
Q67	Temple Hills Community Center
Q68	Tucker Road Community Center
Q70	Stephen Decatur Community Center
Q72	Potomac Landing Community Center
Q75	Harmony Hall Regional Arts Center
Q77	Hillcrest Heights Community Center
Q83	Cosca Regional Park
Q84	Surratt House Historic Site
Q85	Oxon Hill Manor Historic Site
Q89	North Barnaby Splash Park
Q90	Allentown Aquatic and Fitness Center
Q91	Tucker Road Ice Skating Rink
Q97	Clearwater Nature Center
R06	Mellwood Parke Park
R07	Mellwood Hills Park
R09	Westphalia Community Center
R20	Patuxent Community Center
R58	Baden Community Center
R60	Marlton Park
R64	Upper Marlboro Community Center
R68	Brandywine-North Keys Park
R74	Governor Bridge Park
R85	Darnall's Chance Historic Site
R87	School House Pond Park
R91	Jug Bay Natural Area
R93	Prince George's Equestrian Center
R95	Mount Calvert Historic Site
R99	Beechtree East Park
S10	Rollingcrest/Chillum Community Center
S22	Rollingcrest Aquatic Center
S23	Mt. Rainier Nature Center
S24	Brentwood Arts Center
S26	Beltsville-Laurel Senior Activity Center
S58	Langley Park Community Center
S64	College Park Community Center
S85	Lake Artemesia Park
V70	Largo/Kettering/Perrywood Community Center
W01	Danville Park
W02	Accokeek East Park
W04	Camp Springs Senior Center
W07	Pleasant Springs Park
W09	Southern Technical Recreation Complex
W14	Danville Estates Park
X01	Wetphalia Central Park



Priority M-NCPPC Facilities Linkage Score

- 1. Directly Served by Existing Trail (18)
- 2. Directly Served by Planned/Proposed Trail (80)
- 3. Difficult to Link to Network with a Trail (2)
- 4. Potential Trail Link to Network Uninvestigated (4)

Trails

- Primary, Existing
- Primary, Planned
- Secondary, Existing
- Secondary, Planned
- Recreation, Existing
- Recreation, Planned
- Park Road, Existing

Metro Stations

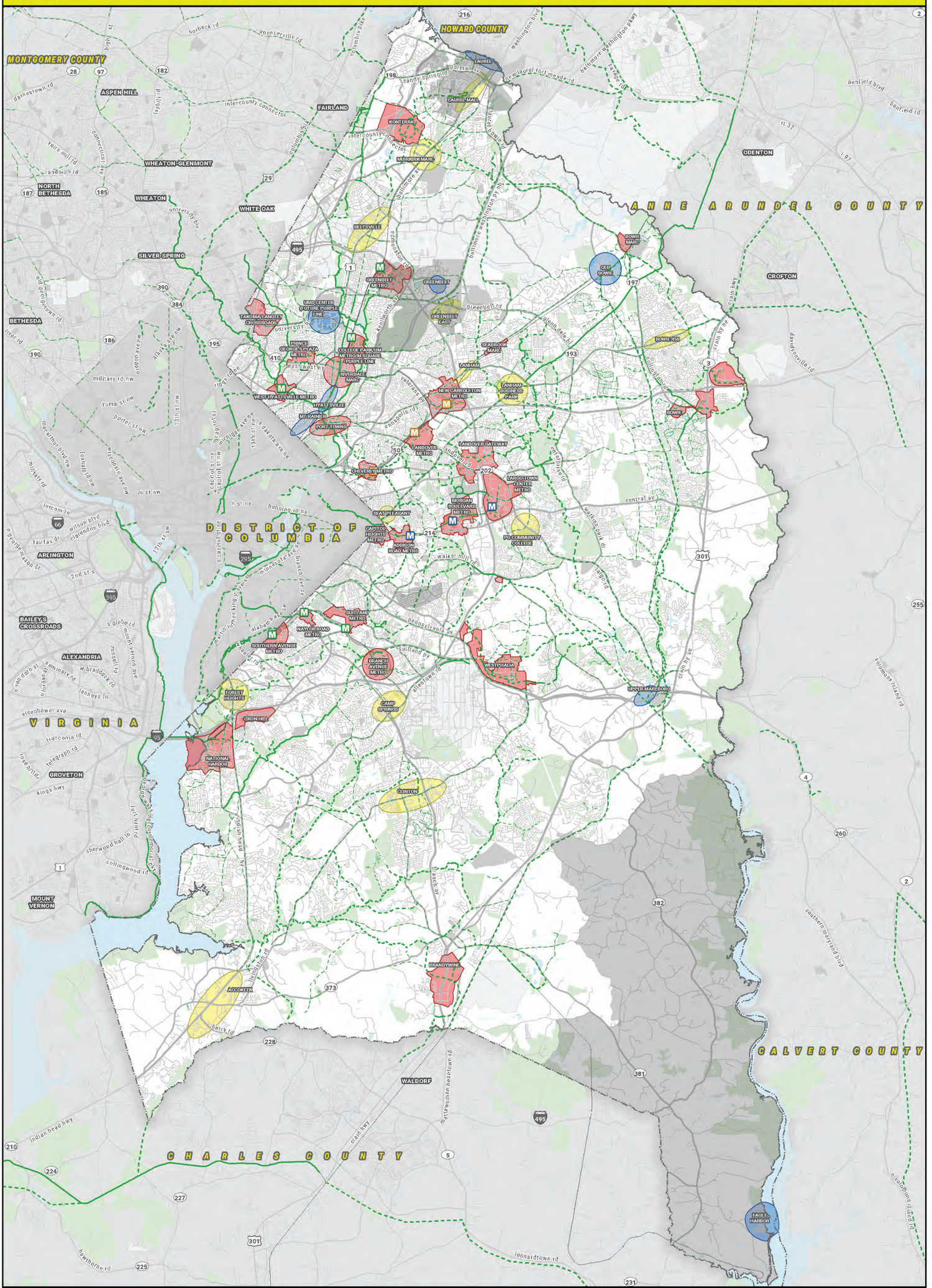
- Blue Line
- Orange Line
- Green Line

- Water
- Institution
- County Parks
- Area Outside of the Metropolitan District
- PUMA Boundaries
- County Boundary

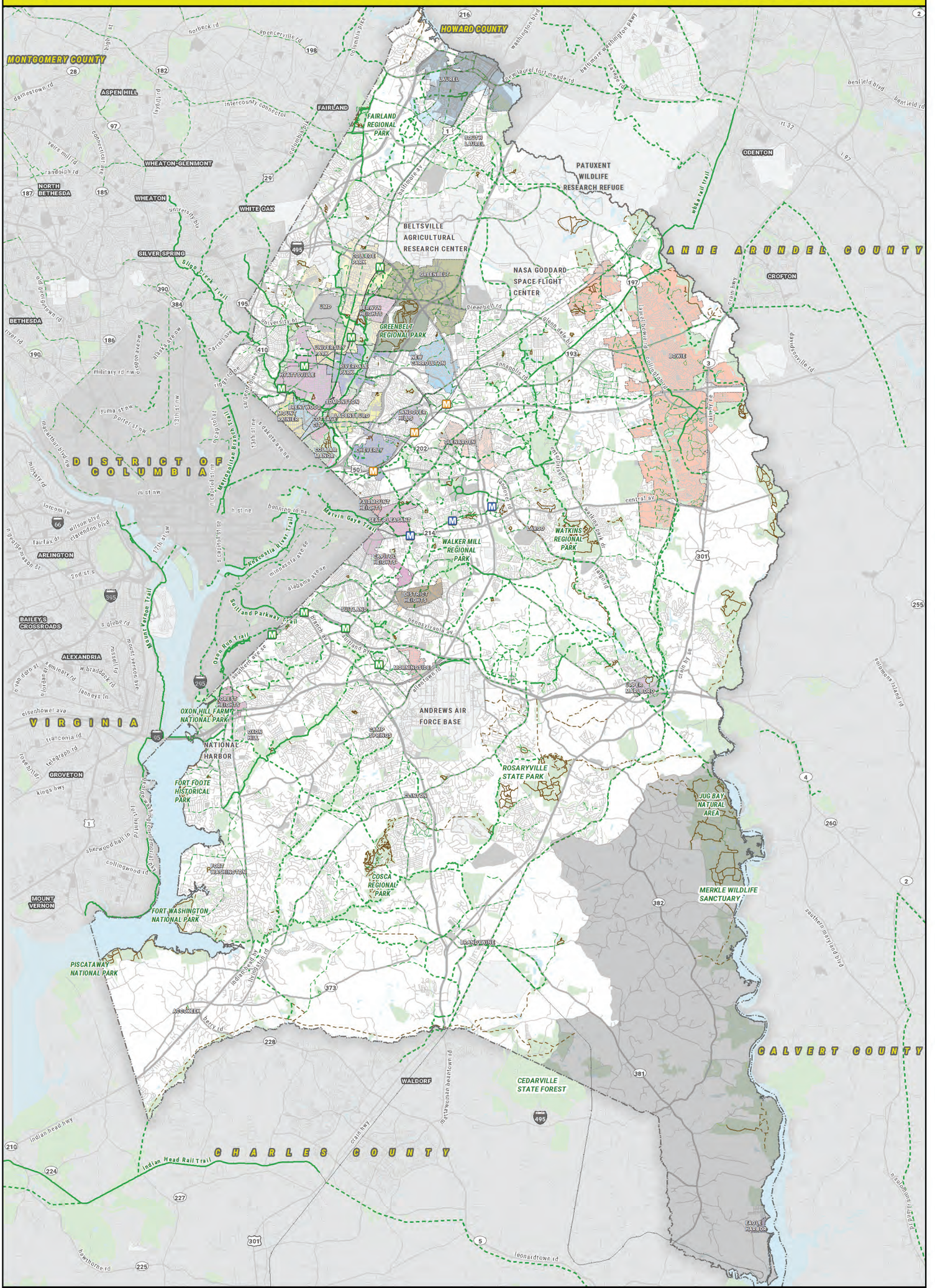
N

0 1 2 Miles

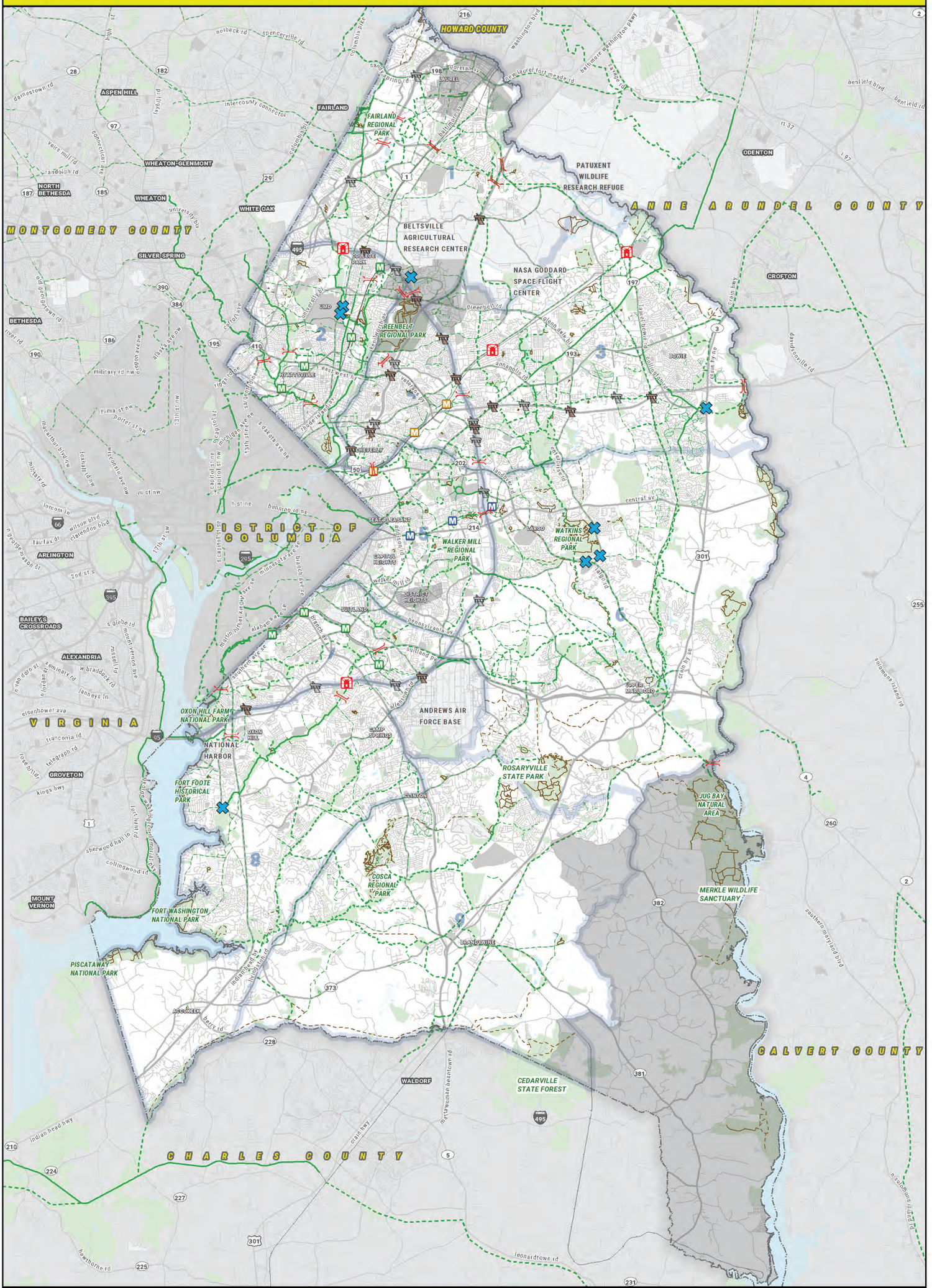
Map J Trail Connectivity to 2035 Development and Other Activity Centers *DRAFT April 11, 2016*



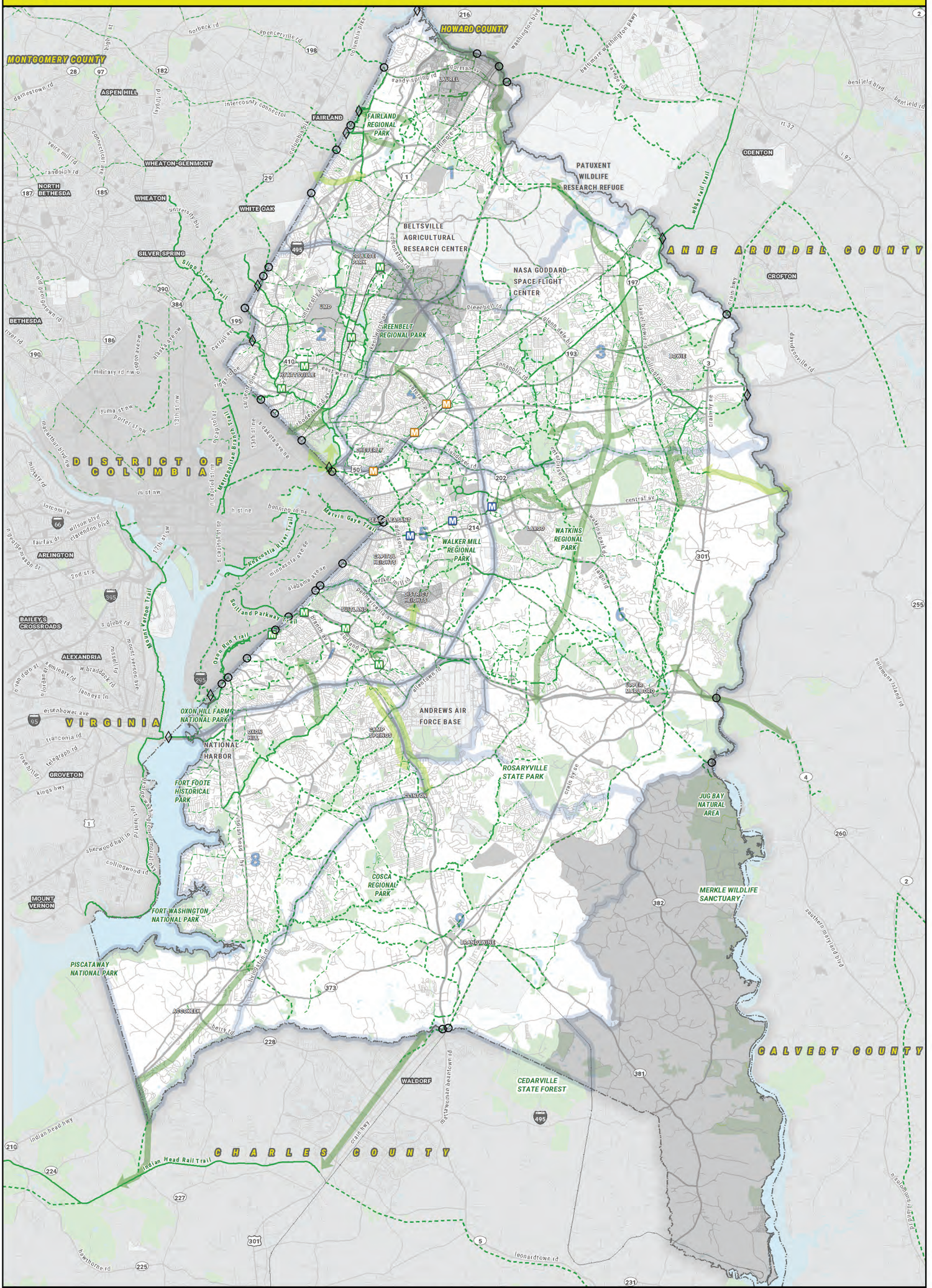
Map K Connectivity to Municipalities & Jurisdictions within the County *DRAFT April 11, 2016*



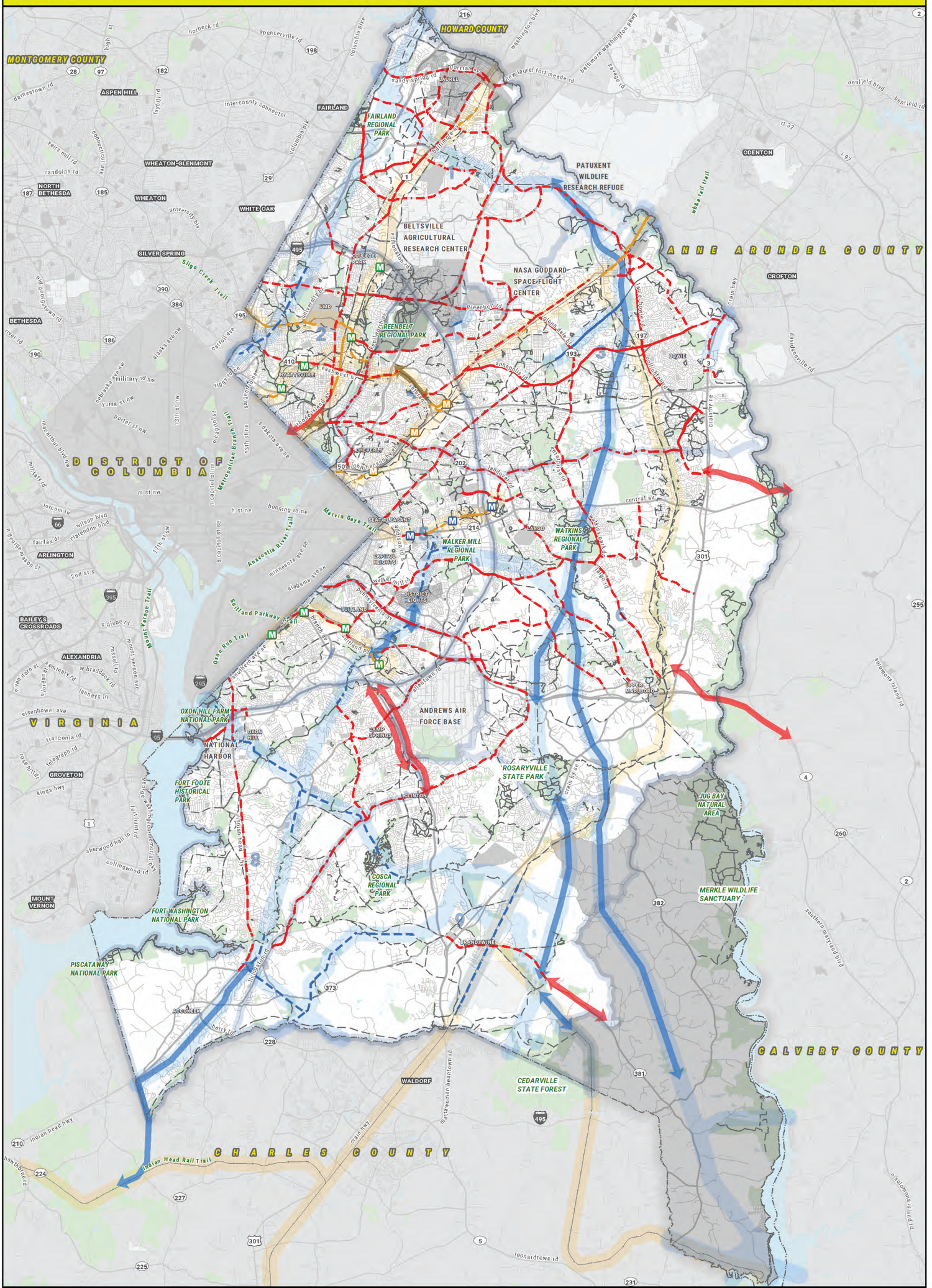
Map L Addressing Built Environment Barriers DRAFT April 11, 2016



Map M — Connections to Neighboring Jurisdictions — DRAFT April 8, 2016



Map N — Use of Highway, Railroad, & Utility Corridors — DRAFT April 8, 2016



Trails by Corridor Type
- Highway, Existing (24.5 mi)
- Highway, Planned (207.5 mi)
- Railroad, Existing (4 mi)
- Railroad, Planned (14 mi)
- Utility, Existing (3 mi)
- Utility, Planned (32 mi)
- Non-Corridor Existing (304.5 mi)
- Non-Corridor Planned (550.5 mi)

Desire Lines by Corridor Type
- Highway (6)
- Railroad (2)
- Utility (7)

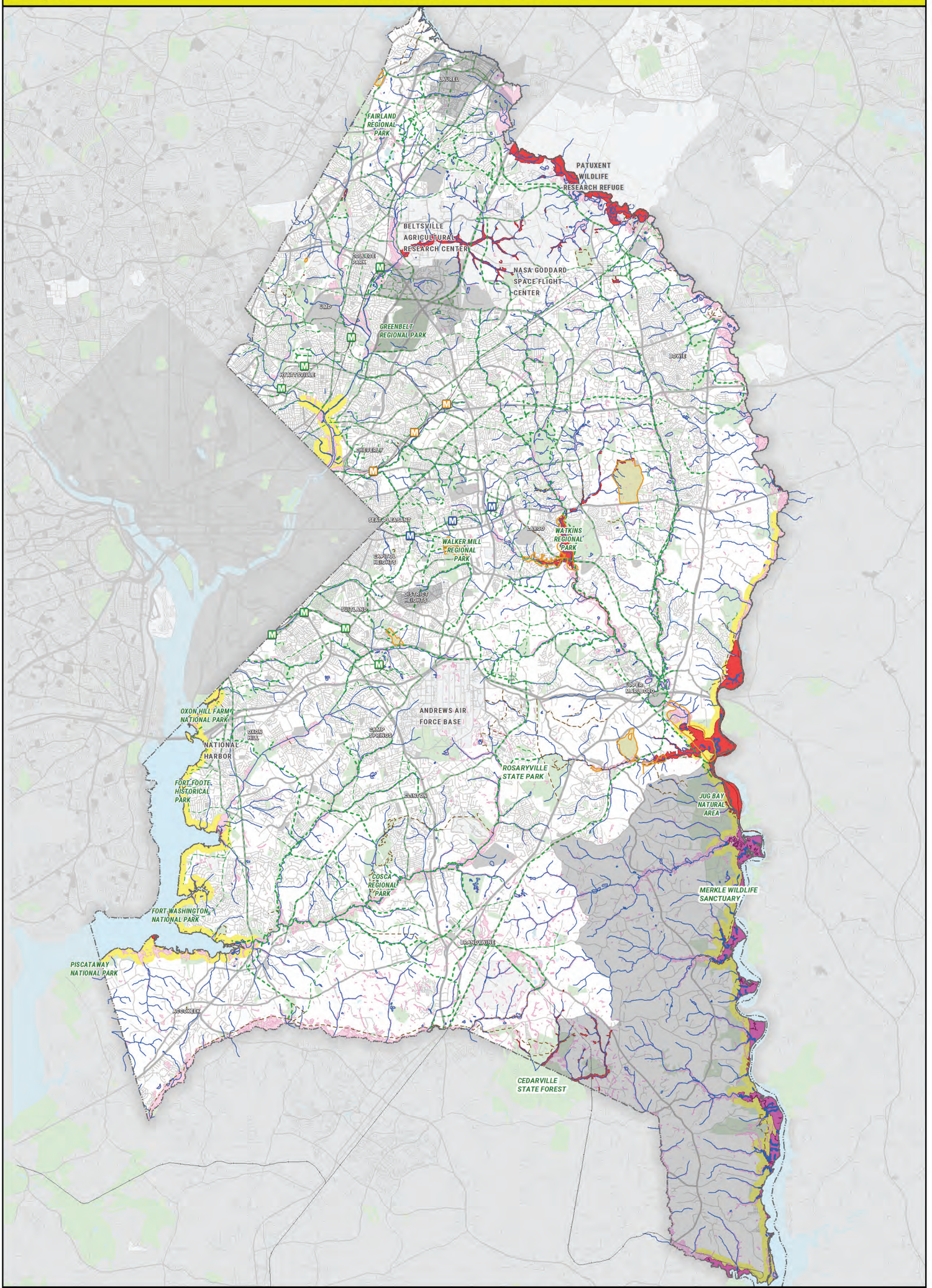
- Utility Corridor
- Rail Corridor

Metro Stations
- Blue Line
- Orange Line
- Green Line

- Water
- Institution
- County Parks
- Area Outside of the Metropolitan District Boundary
- PUMA Boundaries
- County Boundary

0 1 2 Miles

Map O Natural Environmental Barriers *DRAFT April 8, 2016*



Building the Network

CHAPTER 3

Introduction

Building the trail network is one of the most daunting yet rewarding parts of delivering a premier trail system. This chapter focuses on the following topics:

- Creating planning strategies that support community-based trail planning;
- pursuing trail development and funding strategies that leverage resources from many partners;
- accurately estimating trail costs;
- developing achievable project priorities; and
- efficiently moving construction projects through the permitting process.

Planning Strategies

While a Countywide Master Plan of Trails is important for setting broad goals, identifying needs and creating a framework for ongoing trail development, many questions related to trails can only be answered in more focused planning efforts. These planning efforts should be shaped by the existing community and master planning protocols and augmented by planning methods that are more particular to trail issues. The following discussion provides a set of trail planning scopes that will assist both park planners in the Department of Parks and Recreation (DPR) and community planners in the Planning Department.

Stream Valley Trail Plans

The Anacostia Tributaries Trail System has been a trail-development success. In the near term, DPR should conduct a study to determine the potential for other stream valley trails in the central and southern parts of the county. This study could be scoped to include a large number of stream valley trails proposed in this Plan, or more narrowly focused as a comparative study of two or three opportunities. This Plan proposes the following stream valley trails:

- Collington Branch
- Lottsford Branch
- Both Cabin Branches
- Richie Branch
- Oxon Run
- Barnaby Run
- Bald Hill Branch
- Beaver Dam Creek
- Western Branch
- Piscataway Creek
- Tinkers Creek and Pea Hill Branch
- Mattawoman Creek

The objectives of a broad study of stream valleys for potential trails should include an assessment of M-NCPPC and other public land ownership and potential for future dedications, a closer look at environmental issues including steep slopes, flood plains, stream setback requirements, forest cover and the implications of compliance with environmental regulations. Park Service Areas 4, 5, 6, 7, 8, and 9 are currently underserved by trails. A key outcome of this proposed study would be to select a top priority trail for development in each of these park service areas. A comparative study might look at Piscataway Creek and Tinkers Creek and Pea Hill Branch with an eye toward which would be the best opportunity from a cost benefit analysis.

Activity/Development Center/ Transit Oriented Development Plans

Future planning should focus on small area trail planning focused on individual activity and development centers. Most of these areas are fairly built out but will incur major redevelopments and greater density. In constrained areas, it is important to think about where trails should be and how they can be designed to serve both recreation and transportation needs. Property consolidations, roadway reconfigurations and increased transit services create both opportunities and constraints for trail development. A key follow-up trail planning issue is determining which trails within a development/ growth center should be developed as a Primary trail, and which can be Secondary trails. Every Activity and Development Center identified in this Plan should have a goal to have a direct link to the countywide trail network.

Additionally, trails must be coordinated with other bicycle and pedestrian accommodations to determine how best to use public space and provide low stress walking and bicycling environments. The form and layout of new transit-oriented development surrounding a transit center should not block bicycle, pedestrian and trail access.

Subregion Master Plans, Sector Plans and Small Area Plans

The subregion master plans informed the development of this Plan, but often lack specific trail recommendations. Future subregional and small area planning efforts should always include a significant trail, bicycle and pedestrian planning component, addressing recreation, transportation, health and school access needs. For the most part, bicycling and walking occurs at the subregional and small area plan scale. Engaging county residents and other stakeholders at this level may be the best way to determine local trail needs, as well as bicycle and pedestrian safety and transportation needs that can be addressed through trail development. Planning at this scale should also address the needs for loop trails in parks to meet close to home health and fitness needs. The East Riverdale-Beacon Heights Sector Plan is a good example of this.

Regional Park Plans

Trail planning needs to be integrated into planning activities for M-NCPPC's major new parks in developing neighborhoods. Most of the Regional Parks have extensive and diverse trail networks. The following recommendations were identified in the planning process:

- Undertake a trail development plan for Walker Mill Regional Park. There is great potential for trails within the park. It could emerge as a key trail hub inside the beltway for the central part of the county.
- Assess Watkins Regional Park for potential through-trail alignments and paved or unpaved pathways. Watkins Regional Park needs a park access and safety plan to develop recommendations to improve traffic safety for bicyclists and pedestrians crossing the roads bordering the park.
- Address trail development in new regional parks and major recreation facilities, like the multi-generational centers, to identify what types of trails are needed and how the facilities will be connected to the larger countywide trail network.

Alternative Alignments Feasibility Study

As trail development proceeds over the next twenty-five years, the county is likely to encounter situations where there are multiple possible alignments within the same corridor or that make the same trail connection. For example, this Plan outlines a number of options for developing trails through the Beltsville Agricultural Research Center, and there are two potential options between Watkins Regional Park and Upper Marlboro – one along the Western Branch and one along MD 202.

When studying alternative alignments a variety of factors, benefits and constraints should be examined, including availability of right-of-way, recreational values, transportation values, environmental impacts, integration with and linkages to surrounding development, trail user safety and comfort, maintenance impacts, sustainability, environmental constraints and implications, public safety and security, costs, and public desires.

Alternative alignment feasibility studies should be narrowly scoped and typically focused on no more than three alternative alignments and less than 4 miles in length.

Recreational Trails Plan

Prince George's County has a number of unique places for hiking and observing nature, including the Patuxent Wildlife Visitor's Center and the Jug Bay and Merkle natural areas. Mountain biking trails are being developed in Cosca Regional Park, and horseback riding is available on fire roads near Rocky Gorge Dam, in Rosaryville State Park and elsewhere. This plan identifies a number of locations for additional Recreational trails. The county should conduct a focused study to determine needs for hiking, equestrian and mountain biking trails and how trail development opportunities in Prince George's County can meet those needs. Such as study could also examine the feasibility of developing a longer, contiguous recreational trail along the Patuxent River corridor.

Development Strategies

Development strategies answer the question, "How are we going to acquire the right-of-way and design, engineer, fund and construct the trail?" After they are built, trails appear to be quite simple pieces of public infrastructure, however, the process can be quite complicated. This is true, in part, because the use of condemnation authority is controversial and, unlike roads, trails have no dedicated revenue stream.

This section discusses a few key strategies for developing the trails included in this Plan. Most are already being used by the M-NCPPC and other trail-developing agencies. However, some may be new ideas, and others may be known, but under-used approaches.

M-NCPPC Park Development Capital Budget

The M-NCPPC Capital Improvement Program (CIP) contains all sources of funding for capital improvements, which include major trail maintenance, rehabilitation and new construction projects.

Funding sources listed in the CIP include: grants, developer contributions, M-NCPPC bonds, Maryland General Assembly Bond Bills, etc. The majority of the funding in the CIP comes from M-NCPPC bonds. The amount of bonds sold is based on a spending affordability plan which is based on projected property tax revenue. Additionally, through the mandatory dedication requirement in the subdivision code, developers of residential developments may provide land and/or build sections of trail through the subdivision.

Funding from state and federal grant programs can be used to complement and stretch local dollars. The Maryland DOT administers federal TAP funding and Recreational trails grants; the State provides program Open Space funding and a number of private foundations are now providing grants that can be used for small capital projects. Additionally, the regional government provides planning and design grants for bicycle and pedestrian projects through its TLC program (see the *Funding Sources for Trails* section on the following pages). Based upon the typical amounts of grant awards for these programs and the stipulations that come attached to the money, it is important to be strategic in selecting the right project for each outside funding source.

An advantage of using M-NCPPC capital development funds is that it enables DPR staff to be in full control of trail development projects, making it easy to adjust scope if costs estimates are off, or to adjust the schedule when there are delays. Sometimes this mechanism can be a disadvantage because it means that DPR staff are required to provide hands on leadership throughout the entire planning, design, engineering and construction process, which consumes a significant amount of staff time.

Funding Sources for Trails

Trails can be one of the more expensive bicycle, pedestrian and equestrian facilities especially if they require land acquisition, environmental mitigation and or need to be built in constrained conditions. The following list provides resources at the federal and state levels. It also suggests foundations that provides grants for trail development and innovative programs that have helped to build trails across the country.

Federal

Bicycle and Pedestrian Funding Opportunities: US Department of Transportation, Federal Transit, and Federal Highway Funds

The Federal Highway Administration created a data-table to assist communities in understanding which Federal funding programs could be used for bicycle and pedestrian projects. The table provides an overview; specific program requirements must be met and eligibility must be determined on a case-by-case basis. For example: transit funds must provide access to transit and Congestion Mitigation and Air Quality Improvement (CMAQ) funds must benefit air quality in eligible areas.
www.fhwa.dot.gov/environment/bicycle_pedestrian/funding/funding_opportunities.cfm

New Federal Funding from the 2015 transportation bill, the FAST Act

Surface Transportation Block Grant Program Set-Aside

This set-aside, established in the 2015 transportation bill, Fixing America's Surface Transportation Act (FAST Act), replaces the Transportation Alternatives Program (TAP). Activities which were eligible under the Transportation Alternatives Program, which itself included the former Transportation Enhancements Program, the Safe Routes to School Program, and the Recreational Trails Program are now eligible under this set-aside. Larger Metropolitan Planning Organizations control a share of the funds to distribute locally through a competitive process.

Surface Transportation Block Grant

Under the FAST Act, the Surface Transportation Program (STP) was renamed the Surface Transportation Block Grant Program. Bicycle and pedestrian activities are broadly eligible under this large and flexible program.

Rivers, Trails, and Conservation Assistance Program (RTCA)

This program, administered by the National Park Service, helps to connect Americans to their parks, trails, rivers, and other places. Where M-NCPPC planning staff needs to coordinate with an NPS park or build a trail generally in the County, RTCA staff can provides free, on-location facilitation and planning expertise. Assistance can include visioning and planning, developing concept plans for trails, parks and natural areas, setting priorities and identifying funding sources.
www.nps.gov/orgs/rtca/index.htm

New Freedom Program (5217)

The New Freedom grant program funds projects that help Americans with disabilities participate in the work force and in society. Lack of adequate transportation is a primary barrier to work for individuals with disabilities. The New Freedom program seeks to reduce barriers to transportation services and expand the transportation mobility options available to people with disabilities. Trails in Prince George's County that provide a transportation purpose could access this funding.
www.fta.dot.gov/grants/13093_3549.html

Transportation Investment Generating Economic Recovery (TIGER) Grant

TIGER grants fund a broad array of road, rail, transit, and bicycle and pedestrian projects. The program focuses on capital projects that generate economic development and improve access to reliable, safe, and affordable transportation especially for disadvantaged communities. The grant funds projects that have gone through preliminary design stages and prioritizes projects with broad stakeholder support. Applicants are required to demonstrate that project benefits outweigh the costs. Projects in urban areas must request at least $10 million (with a 20% match) and projects in rural areas must request at least $1 million (with no required match).
www.transportation.gov/tiger

Safety Grant Program

The Section 402 program provides grants to states to improve driver behavior and reduce deaths and injuries from motor vehicle-related crashes. The program is jointly administered by the National Highway Traffic Safety Administration (NHTSA) and the Federal Highway Administration (FHWA) at the federal level and by State Highway Safety Offices at the state level. Funds may be used to reduce impaired driving, reduce speeding, improve pedestrian and bicycle safety, and reduce school bus deaths and injuries, among other activities. Child and adult bicycle safety education is eligible for funding. Funding for trail projects adjacent to roadways with high crash rates may be eligible for funding.
www.ghsa.org/html/stateinfo/programs/402.html

Recreational Trails Program (RTP)

The RTP provides funds to States to develop and maintain trails and trail-related facilities. Projects can include: planning and design; land acquisition; maintenance and the purchase of maintenance equipment, and educational programming. Although under the FAST Act the program has been consolidated into the Surface Transportation Block Grant Set-Aside, each state administers it independently with funding set at 2009 levels.
www.fhwa.dot.gov/environment/recreational_trails

Federal Lands Access Program (FLAP)
The FLAP program provides funding to improve transportation facilities that provide access to, are adjacent to, or are located within Federal lands. The Access Program supplements State and local resources for public roads, transit systems, and other transportation facilities, with an emphasis on high-use recreation sites and economic generators.
http://flh.fhwa.dot.gov/programs/flap

Congestion Mitigation and Air Quality Improvement (CMAQ) Program
The CMAQ program supports surface transportation projects and other related efforts that contribute air quality improvements and provide congestion relief. Non-motorized projects can be funded through this program because of their link to air quality improvements. Projects must be located in areas that do not meet, or have recently not met, minimum air quality standards, such as the Washington Metropolitan Region.
www.fhwa.dot.gov/environment/air_quality/cmaq

Community Services Block Grant Program (CSBG)
The Community Services Block Grant provides funds to alleviate the causes and conditions of poverty in communities and includes transportation projects. Administered by the Department of Health and Human Services, funding is allocated to states who then make it available to local communities.
www.acf.hhs.gov/programs/ocs/programs/csbg/about

Sustainable Communities Regional Planning Grants and the Partnership for Sustainable Communities
This grant program supports locally-led collaborative efforts that bring together diverse interests to determine how best to target housing, economic and workforce development, and infrastructure investments to create more jobs and regional economic activity. The Program places a priority on investing in partnerships, including nontraditional partnerships (e.g., arts and culture, recreation, public health, food systems, regional planning agencies and public education entities). The program is a key initiative of the Partnership for Sustainable Communities, in which HUD works with the U.S. Department of Transportation (DOT) and the U.S. Environmental Protection Agency (EPA) to coordinate and leverage programs and investments.
http://portal.hud.gov/hudportal/HUD?src=/program_offices/economic_resilience/sustainable_communities_regional_planning_grants https://www.sustainablecommunities.gov/partnership-resources

Partnerships to Improve Community Health (PICH)
The PICH program supports programs tailored to individual community needs, across various settings (community organizations, health care facilities, schools, and worksites), to create greater access to healthier environments with the goal of reducing the prevalence of chronic diseases. Funding priorities include addressing physical inactivity and lack of access to places such as parks and schools.
www.cdc.gov/nccdphp/dch/programs/partnershipstoimprovecommunityhealth/index.html

National Implementation and Dissemination for Chronic Disease Prevention
This initiative supports national organizations and their local chapters/affiliates in building and strengthening community infrastructure to implement population-based strategies to improve community health.
www.cdc.gov/nccdphp/dch/programs/nationalimplementationanddissemination/index.html

State

Safe Routes to Schools
This program provides funding for education, enforcement, evaluations and infrastructure improvements near elementary and middle schools that promote students walking and cycling to school. This was a federally funded program between 2005 and 2012. Funds provided to States during that time do not expire and in Maryland are still available. Trails that provide safe connections to schools within Prince George's County would be eligible for this funding.
http://www.saferoutesinfo.org and www.roads.maryland.gov/Index.aspx?PageId=735

Maryland Heritage Areas Program
The Maryland Heritage Areas Program is governed by the Maryland Heritage Areas Authority (MHAA). MHAA provides targeted financial and technical assistance within thirteen locally designated Heritage Areas, each of which has a distinct focus or theme that represents a unique aspect of Maryland's character. Management entities may receive MHAA matching grant funding for support of their operations, marketing, and management plan updates. The Anacostia Tributary Trails System, among others, is part of a Maryland Heritage Area.
http://mht.maryland.gov/heritageareas.shtml

Chesapeake Bay Stewardship Fund
The Chesapeake Bay Stewardship Fund provides funding focused on protecting and restoring the Bay by helping local communities clean up and restore their polluted rivers and streams including projects such as adding stormwater management with transportation projects. Technical assistance is also provided.
www.nfwf.org/chesapeake/Pages/home.aspx

Local Government Infrastructure Financing
Local Government Infrastructure Financing offers a cost effective way to finance public purpose capital projects; enabling the delivery of essential services to support communities and the people they serve. The Maryland Department of Housing and Community Development's Community Development Administration issues bonds, on behalf of counties, municipalities and/or their instrumentalities, to finance projects that serve the community at large. These projects can include, but are not limited to, streetscape improvements and transportation enhancements.
http://dhcd.maryland.gov/Communities/Pages/lgif/default.aspx

Urban Reconstruction (SHA Fund 84)
Formerly known as "Community and Safety Enhancement" this fund is for improvements including for pedestrians and bicyclists along SHA roadways within urban centers that promote safety and economic development.

Maryland Bikeways Program
The Maryland Bikeways Program supports projects that maximize bicycle access and fill missing links in the state's bicycle system, focusing on connecting bicycle-friendly trails and roads and enhancing last-mile connections to work, school, shopping and transit. On-road bicycle projects, such as bike lane striping, sharrows, and wayfinding signage and off-road trails are eligible for funding. Eligible project types include: feasibility and design studies; environmental impacts, right-of-way issues, ADA compatibility, outreach, and cost estimates; minor retrofit such as signing, pavement markings, parking, drainage grate replacement; construction.
www.mdot.maryland.gov/Office_of_Planning_and_Capital_Programming/Bike/Bikeways.html

Bicycle Retrofit (SHA Fund 88)
This fund focuses on upgrading existing facilities along a state highway to promote connectivity to existing bicycle facilities and retrofitting areas along state highway where there is an established safety concern that affects bicyclists.

Transportation/Land-Use Connections (TLC) Program
The TLC Program funds planning and preliminary design for local jurisdictions on projects that integrate land-use and transportation planning at the community level. Example projects include: transit corridor and station area planning; pedestrian and bicyclist safety and access studies; streetscape improvement plans; trail design; Safe Routes to School planning; Complete Streets policy guidance; transit-oriented development studies. (Note: only local jurisdictions in the Metropolitan Washington region that are a member of the TPB are eligible to apply)
www.mwcog.org/transportation/activities/tlc/program/default.asp

Foundation Grants

People for Bikes Grant
People for Bikes grants support bicycle infrastructure projects and advocacy initiatives that make it easier and safer for all people to ride. Most grant funds are awarded towards infrastructure projects such as bike paths, lanes, trails, and bridges, and end-of-trip facilities such as bike racks, bike parking, and bike storage.
www.peopleforbikes.org/pages/community-grants

The Conservation Fund
The Conservation Fund provides loans for land acquisition to support the creation of bicycle and pedestrian facilities. Their loan program offers flexible financing as well as sustained and expert technical assistance to organizations aiming to protect key properties in their communities.
www.conservationfund.org/what-we-do/land-conservation-loans

American Hiking Society
Through its National Trail Fund, the American Hiking Society offers "hiking trail improvement" grants to active member organizations of their Hiking Alliance. Once a year, Alliance Members have the opportunity to apply for a grant ($500-$5,000) to improve hiking access or hiker safety on a trail.
www.americanhiking.org/national-trails-fund

National Recreation and Park Association (NRPA)
NRPA routinely partners with foundations to provide grants for projects in parks, such as the Walk With Ease Grant, which is a partnership between the NRPA and the Centers for Disease Control, or the NFL Play 60 After-School Kick Off Grant, a partnership with the NFL Network to fund fields, equipment and staff. Additional fundraising resources and strategies are also provided.
www.nrpa.org/Grant-Fundraising-Resources

Alternative Funding Opportunities

Home Owners Associations
As more and more communities recognize the benefits of biking and walking, they are willing to support extensions of existing systems or connections to their neighborhood. Home Owners Associations and other neighborhood groups are often willing to fund all or part of a trail project to hasten its completion.

Boy Scouts of America
The Boy Scouts of America is one of the nation's largest youth development organizations. The BSA provides a program for young people that builds character, trains them in the responsibilities of participating citizenship, and develops personal fitness. Many Scout troops embrace the opportunity to build or clear trails, small bridges, benches, and address other transportation barriers.
www.scouting.org

Bike Shop Sponsorships
Trail and bicycle programs have a positive effect on the economy. Many of those who benefit would like to give back. Bike shops are often willing to donate a portion of their proceeds towards community events or the completion of a particular project such as a trail.

Army National Guard
The Army National Guard is a great partner for community activities, such as trail building. Their desire to work in communities and their need for community-based work makes them excellent partners especially for trail building and clearing.
www.nationalguard.com

Specialty License Plates
States, such as North Carolina, have offered special license plates with proceeds funding specialized projects such as trail development and construction.

Workplace Giving
Workplace giving programs let employees donate to the charities they care about, primarily through payroll deductions, often contributing a few dollars per paycheck. Once a year the donor decides which issues and organizations are most important to them and contributes accordingly. Donations through workplace giving enables organizations to spend less time and money fundraising and more time working toward their goals. EarthShare is an example non-profit which coordinates campaigns focused on the environment. The Combined Federal Campaign (CFC) is another example program, which focuses on federal and military donors.
www.earthshare.org

American Conservation Corps and Conservation Volunteers
The Conservation Corps program provides young people aged 18-25 who are considering a land management career 3-6 month paid service programs where they explore future outdoor careers, learn practical field skills, and develop confidence as emerging leaders in the field of conservation. Working alongside Conservation Volunteers, projects focus typically on trail building and maintenance on federally-owned land. The Corps can be contacted about engaging teams to work on local projects.
www.usaconservation.org

Student Conservation Association (SCA)
SCA's mission is to build the next generation of conservation leaders and inspire lifelong stewardship of the environment and communities by engaging young people in hands-on service to the land. SCA teams are often looking for service projects, typically focused on trail building and maintenance, in which to get youth involved.
www.thesca.org

Crowdfunding
Crowdfunding focuses on raising money for projects through many small donations, typically via the internet. Websites, such as gofundme.com and indiegogo.com, allow fundraising campaigns to be easily established. In 2014, Memphis raised $70,000 in this way to build a separated bicycle lane. In 2015, Denver launched a crowdfunding campaign focused on corporate donors for the planning and design of bicycle facilities.

Transportation Projects

Major transportation projects present opportunities to build trails in a number of ways. For example, the Woodrow Wilson Bridge replacement provided a new trail across the Potomac River, linking Alexandria, Virginia with the National Harbor development; and the Intercounty Connector Community Stewardship Program is funding the design and construction of the Little Paint Branch Trail between College Park and Beltsville.

Moreover, where trails proposed by this master plan (or, the Countywide Master Plan of Transportation) coincide with roadway reconstruction or widening projects, the lead transportation agency (DPW&T or the State Highway Administration) should include the trail in the overall project. The County's Complete Streets policy/ordinance underscores this requirement. It should be noted however, that where this plan shows a secondary trail adjacent to a roadway, provision of protected bicycle lanes and sidewalks will typically be viewed as an acceptable alternative to a shared use path on one side of the roadway (in fact, in the view of DPR and the Planning Department, it may be the preferred alternative.)

Roadway projects should fund proposed sidepaths (or protected bicycle lanes and sidewalks) as a part of the overall road project, easing the burden on the M-NCPPC capital budget, however the roadway agency will be in the lead regarding design and construction. It is important that DPR and Planning Department staff remain actively involved in reviewing the design and engineering as it goes through multiple phases to ensure that the trail is not compromised in favor of design features for motorists or cost savings for the lead agency. Before SHA will build a trail called for in a local plan, they must have a local agency agree to maintain it. In the past, this has been a problem because DPW&T funding is limited and DPR is not well equipped to begin maintaining trails that are well outside their park boundaries.

It is recommended that DPR and DPW&T develop a Trail Memorandum of Understanding (MOU) allowing M-NCPPC to design, construct and maintain trails that are located in the County (DPW&T) right-of-way. While the MOU should identify specific trail segments, it should be developed as a programmatic agreement that can be amended as needed, so that a separate MOU does not have to be executed for each

new trail segment of this type.

Developers

Developers will continue to build trails as a part of major developments, especially large residential neighborhoods, and as contributions to the planned network segments that border their development properties. Additionally, in the development centers identified in the 2035 Plan, developers can be required to contribute to off-site bicycle and pedestrian improvements. This additional provision in the County subdivision regulations is referred to as the *Adequate Public Pedestrian and Bikeway Facilities Required in County Centers and Corridors* provision (Section 24-124.01).

Another important component of a well-connected trail network is the reservation of small strips of land between buildings or at the end of cul-de-sacs that can be used to link the "back side" of one residential or commercial development with a development on an adjoining property. Short sections of trail can be built on these easements that provide direct travel links for pedestrians and bicyclists. It is important that developers design their building lots and street layouts to facilitate these linkages. Development approval agencies should require them to do so.

Municipal Partners

Within the County there are a number of small and medium sized municipalities that should be partners for projects within or nearby their communities. Some municipalities may be able to contribute funds or participate in maintenance agreements as part of their partnership.

Local Corporate Sponsors

Increasingly, corporate sponsors are interested in making periodic or special contributions to capital projects, especially if those projects have a high profile in the community and the company can reap public relations and brand awareness benefits through a strong association with the project. M-NCPPC should partner with the Parks and Recreation Foundation and the Prince George's Economic Development Corporation to explore opportunities where large corporations located in the County can participate directly in trail development. Trails in close proximity to major employment sites can be a significant health benefit to employees, which can help reduce health care costs and improve work force reliability.

Youth Corps

Both Montgomery County and the District of Columbia have Youth Conservation Corps, which help young people gain job and life skills while they are earning their GED. These corps provide professional leadership to help youth take on small scale conservation projects, many of which can be trail-related. They can build and install fencing, construct trail waysides, install landscaping, install wayfinding sign systems, build soft surface trails, and a variety of other trail projects.

Prince George's County should develop a robust youth employment and training program based around its trail system, as a way to build community support for pubic trails, get work done inexpensively, and enable County residents to develop ownership in the network.

Utility Rehabilitation and Co-Location Projects

The rehabilitation of the water and sewer system is providing a great opportunity to establish trails along stream valleys. Land cleared by water and sewer utilities

along stream corridors provides an opportunity to create new trails. Habitat and forest restoration is required by these projects. Frequently a graded and open corridor must be maintained to ensure future access to the sewer system in the event of blockages or failures. Natural surface trails should be considered in these corridors. Some corridors may even present opportunities to establish stone dust or asphalt trails that can contribute to the Primary or Secondary trail network.

High-tension power lines also provide cleared corridors that may be appropriate for trails. The new regional electric company, Exelon, has expressed interest in allowing use of the power line corridors for co-location of paved shared use paths. Utility corridors may be appropriate for unpaved Recreational trails as well. Key issues that must be assessed corridor by corridor include topography crossing major highways, railroad lines and streams, and creating access paths from the corridor to neighborhoods and commercial centers. It is unclear if Exelon will be a financial partner as well, however access to the right-of-way will save millions of dollars in property acquisition costs. See appendix: *Utilities and Trails Fact Sheet*.

Calculating Trail Costs

Understanding the potential costs of trail development is an essential component in determining the rate of growth for the network, selecting priority projects and planning project phasing. The cost of new trail construction is difficult to generalize because of the many variables that are involved. Trail surface, width, location, needed structures, signage, and amenities all affect total construction cost. To assist in this process a trail cost calculator previously developed for Prince George's County was updated and expanded to account for changes in material costs, new technology and inflation. The calculator is able to produce per/mile cost estimates that take into consideration, environmental mitigation, variations in topography, needs for grade separations, security infrastructure needs, ROW acquisition, constructability and permitting, and design. It is recommended that the DPR regularly use this tool to develop order of magnitude cost estimates to assist with mid-term and long-term planning for trails. More detailed cost estimation should be performed at other points in the trail implementation process, particularly at the time of application for funding, during preliminary design, and prior to bidding for construction.

Project Prioritization

Like many communities in the Washington metropolitan region, Prince George's County faces aging infrastructure, but continued growth. This leads to difficult investment choices regarding capital investments related to park facilities, park system maintenance, transportation infrastructure and trails. Moreover, climate change, which appears to spur extremes in weather patterns is making efficient management of public lands and trails in the county increasingly challenging.

The reality of the county's constrained capital improvement budget requires cost-effective and strategic investments in trail network infrastructure. Because of the county's success in developing a true system of trails over the past 25 years, the demands related to the trail system have increased. Over the next 25 years the following trail network needs are expected to be ongoing and/or reoccurring:

1. Resurfacing of older and underbuilt trails and paths.
2. Re-building, relocating, and/or protecting stream valley trails that are vulnerable to changes resulting from floods, erosion, and natural changes in stream channels.
3. Widening and reconstructing paths that are substandard, due to changes in design standards resulting on increased knowledge of what is safe and adequate for shared use paths, and increased use and diversity of path users and uses.
4. Improving and rehabilitating roadway crossings, bridges, underpasses, and other infrastructure heavy components of the system.
5. Increasing spur connections and trail linkages to public facilities, neighborhoods, and higher density development centers that need access to the trail network.
6. Addressing major barriers created by the typical built environment of an American suburb.
7. Expanding the trail system into and through the central and southern parts of the County, much of which is *trails poor.*

Within the countywide M-NCPPC CIP, establishing a minimum dedicated amount of funds to be used annually for major and minor trail projects. Within the trail funding portion of the CIP, establish discreet

"pots" of money organized around the needs described above and the size and scope of projects typically generated by the trail development process.

See Figure 3 for an illustration of what a framework might look like. This framework is based on an assumption that ~$2 million in grants and local funds would be available for/allocated to trail development on an annual basis.

Currently, the M-NCPPC prepares a 5-year CIP every year, with the out years (Years 2-5) serving as projections. The CIP includes line items for major trail projects only when they are in the final design and construction phase. To get to this stage, a feasibility study (or preliminary design) with costs estimates must be completed. A general line item called the trail development fund provides funds to the park planning and development division to use for feasibility studies, small trail construction projects, trail repaving projects and any other ancillary trail project like signage, waysides, trailheads, etc.

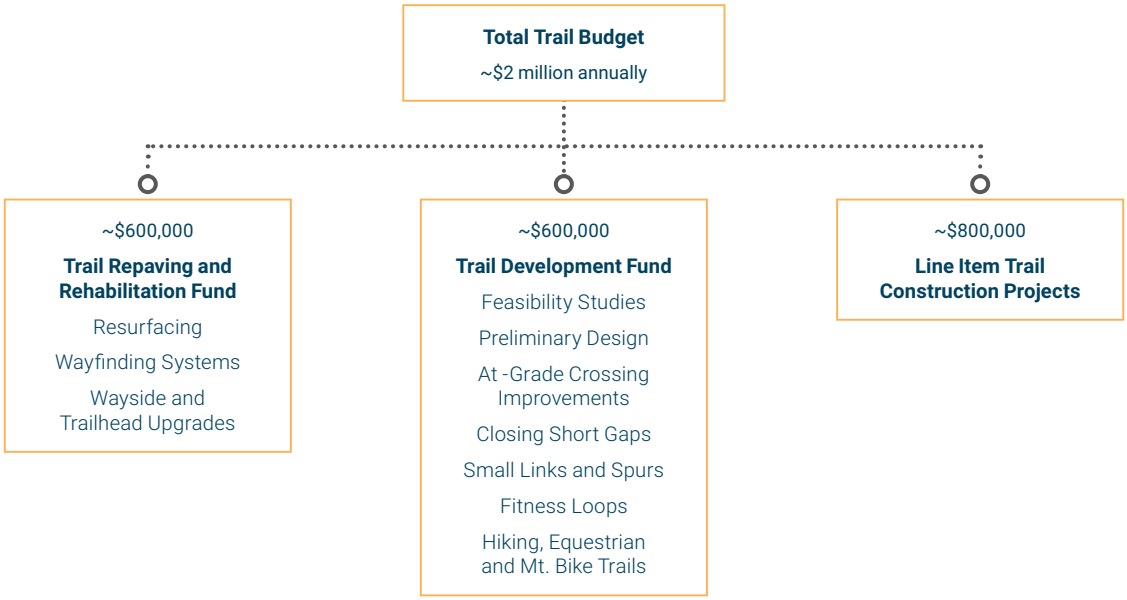
It is recommended that a slightly expanded version of this budgeting process be developed. This new approach would add a line item for Trail Repaving and Rehabilitation. Ideally, the Commission would set minimal levels of funding for each of these line items for a duration of 10 years, and provide additional levels when bonding authority and tax revenue allow it to do so. It is assumed that much of the funding for final design and construction would be provided by grants or other sources that support major public projects.

Timing

To keep this trail development process on track with the goals of this Trails Plan a two-step budgeting and prioritization process would be established:

- Every three years conduct a long range prioritization process that develops a list of projects for each of the three funding categories in Figure 3. This process should be based upon 10 years of funding at the minimum levels. and a conservative estimate of leveraged funding.
  - This process should involve citizens, municipalities within the county and other stakeholders.
  - This process should use criteria related to the long range goals of the plan and the performance measures and recommendations identified in Chapter 2.
- Every year develop a priority project list for the M-NCPPC annual update of the CIP. This project list should be based on the priorities set in the Ten-Year plan, what has been accomplished in recent years, and project readiness.
  - This process should be staff driven by a Trails Leadership Team involving representatives from maintenance, park planning and other DPR staff, as well as from the Planning Department.
  - This process would primarily use criteria related to project readiness as well as other temporal and institutional concerns.

Figure 3: Example Budget Categories



Use of Criteria

Whether prioritization is conducted by a select set of staff from within an agency or the public and outside stakeholders are involved a first step is to identify and organize projects that are similar in size and scope. A second step is to identify a projected amount of available funding. And a third step is to develop order of magnitude cost estimates. With these elements in place, criteria can be established for different project types. Useful criteria may be drawn from the following list:

Potential Project Rating Criteria

- Does it serve a community currently underserved by trails?
- Does it contribute significantly to the connectivity of the trail network, or address a key gap?
- Does it serve a trail user group that has been identified as having limited options?
- How many people would likely use it and for what activities—transportation, recreation, fitness, socialization, fundraising, etc. This criteria relates to transportation, health, economic and other social impacts?
- What would the environmental impacts be?
- Is it on M-NCPPC land, or right-of-way that can easily be secured?
- Does it improve trail access to M-NCPPC priority facilities and destinations?
- Does it provide access to transit?
- Does it serve a traditional town center, suburban commercial area or Plan 2035 development and activity focus area?
- Does it address a major or minor barrier in the built environment or the natural environment?
- Does it improve bicycle and pedestrian safety? Provide a low stress alternative to a major arterial road or highway?
- Does it improve connectivity to surrounding jurisdictions?
- Does it improve access to a school, library or other public facility?
- Does it improve access to jobs, shopping areas, fresh food, or other vital services?
- Does it relate to a national or regional trail that passes through PGC?
- Does it have strong local public support?

To use criteria in a structured way usually requires data of some kind that measures the project's characteristics that relate to the criteria. Additionally, a weighting system has to be established to determine how important each selected criteria is to the final project rating.

Permitting

Environmental and construction permitting is a highly technical but essential step in building the trail network. This section of the Plan identified the key agencies involved in the permitting process. It also provides a brief description of the different types of permits that may be needed for trail development project along with the conditions in which they are applicable. An appendix: *Guidance for Requesting and Receiving Construction and Environmental Permits,* provides detailed information about the steps involved in the permitting process, types of documentation needed, and links to agency websites that provide *how-to* guidance.

Construction Permits

The Prince George's County Department of Permitting, Inspections and Enforcement (DPIE) issues permits for site and roadway construction plans in County rights-of-way and on private property. Trail construction and rehabilitation projects are reviewed by the Site/Road Plan Review Division of DPIE.

The new consolidated DPIE can be an important partner in trail development. In addition to providing a streamlined process for permitting trail construction, the staff at DPIE can use their knowledge of future construction activities slated by private parties and any number of public agencies to help DPR stay aware of potential trail development opportunities.

Wetland and Water Related Permits

Both the Maryland Department of the Environment (MDE) and the U.S. Army Corps of Engineers (COE) issue permits for construction projects that may impact jurisdictional wetlands and waterways (including non-tidal wetlands, non-tidal wetland buffers, tidal wetlands, and 100-year floodplains). These permit applications may be submitted jointly through the Joint Federal State Permit Application (JPA) process; and are submitted through the MDE.

Key steps in the preparation of JPA permits include the following: 1) identification of the study area, 2) delineation of the relevant resources, and 3) determination of impacts. Additionally, these permits should also be addressed to the Maryland Historical Trust (MHT), Maryland Department of Natural Resources (DNR), and the U.S. Fish and Wildlife Service (USFWS).

In response to permit applications, a variety of permit types may be received. For a detailed list of the required types of documents to be included in permit applications, and the types of permits that may be received, see the appendix: *Guidance for Requesting and Receiving Construction and Environmental Permits.*

Critical Area Commission Approval

If a project is located within 1,000 feet of the landward edge of tidal waters or wetlands, approval from the Critical Area Commission for the Chesapeake & Atlantic Coastal Bays is required. Projects impacting the Critical Area may require mitigation for tree clearing, new impervious surfaces or permanent disturbances. Projects impacting the Critical Area Buffer (the first landward 100 feet of the Critical Area) require mitigation for all impacts, temporary or permanent. Generally, mitigation is in the form of tree planting or a water quality best management practice.

The Critical Area Commission has developed a checklist of information required for submittals. A project with minor impacts may be submitted and reviewed at the staff-level of the Critical Area Commission. Larger projects may require a full Commission review. For a full commission review, once a project application has been deemed complete by the Commission reviewer, the project is presented to the full Critical Area Commission for review and approval. The process for a full Commission review can take upwards of six months as the full Commission does not meet regularly throughout the year.

RECOMMENDATIONS

- In major development areas (both ongoing and new; TOD and otherwise) re-engage developers to educate them about the Plan's new approaches to trail classifications, trail connectivity needs, relationship to complete streets, and trail design.
- Initiate one major trail feasibility study every two years.
- Integrate the Plan with other master plans and all local planning activities undertaken by M-NCPPC and municipal jurisdictions.
- Continue restructuring of M-NCPPC trail funding to develop different "pots" of money for different types of projects: planning & design, small capital, major capital, grant matching, etc.
- Develop team approach to design and permitting with DPIE, DPW&T, M-NCPPC, SHA District 3
- Establish a secure funding source for trail construction
- Develop a corporate partnership program to leverage additional trail funding from the private sector
- Establish a Youth Corps to help in the maintenance of trails
- Work with state agencies and state legislators to seek regulatory relief from onerous environmental regulations that have not been crafted with trails in mind.

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Designing the Network

CHAPTER 4

Trail Design Principles and Guidelines

Trail design guidelines provide information on how to develop quality trails and adequately accommodate trail users in a variety of environments. Guidelines provide best practice design information including engineering principles, key design considerations, and values and criteria based on research, studies, and the experience of practitioners in the field. As more and more trails are designed throughout the country, a greater understanding of what makes a trail safer and more enjoyable to users has taken shape.

The information in this chapter is organized as follows:

- Types of trails that make up the Prince George's County Trail Network.
- Overview of good trail design for Primary and Secondary trails, including annotated design graphics of four important trail features.
- Recreational trail design for equestrians and mountain bicyclists

Trail Types

In chapter 2, this Plan recommends that Prince George's County adopt a simple trail classification system to provide a structure for network planning and design. A brief summary follows:

1. Primary trails—A path designed primarily for use by bicyclists and pedestrians, typically hard surface and designed to AASHTO Shared Use Path guidelines and Accessibility standards.
2. Secondary trails—A path designed primarily for use by bicyclists and pedestrians, usually hard surface and generally designed to AASHTO Shared Use Path guidelines and Accessibility standards.
3. Recreational trails
    a. Fitness Loops in Parks—Typically, shared use, may be hard or soft surface with width determined by expected usage levels; they will be designed to meet Accessibility standards.
    b. Hiking, Mountain Biking and Equestrian Trails—Unpaved trails using earth, stone, wood chip, turf and boardwalk surfaces.

In general, Primary and Secondary trails will be designed to accommodate both recreation and transportation use. They may be unpaved in select locations to address historic, environmental or other site specific needs, however they will typically use a crushed

stone surface that meets Accessibility guidelines.

Recreational trails will be designed to meet fitness, recreation, and nature-access needs. Many natural surface trails will be open to hiking, mountain biking and equestrian use. Single mode usage and modal exclusions will be managed on a case-by-case basis, not determined by surface type.

In addition to the formal trail system, M-NCPPC builds and maintains additional paths and sidewalks to provide circulation and access between activity areas at parks, community centers and regional recreation facilities. This infrastructure is not considered part of the formal shared use and recreational trail system, and is built to standard pedestrian and Accessibility guidelines to serve site specific needs.

Designing the Primary and Secondary Trail Network

How to Use this Section

This section discusses important trail engineering principles and key design considerations that are recommended to guide the development of the Primary and Secondary Trail Network over the next twenty-five years. When designing trails, this section should be used in conjunction with national guidelines, as well as appropriate state and local standards and specifications, such as:

- American Association of State Highway and Transportation Official's *Guide for the Development of Bicycle Facilities* (AASHTO Bike Guide)
- Federal Highway Administration's *Shared Use Path Level of Service Calculator* (FHWA Shared Use Path LOS Calculator) - for determining trail widths
- U.S. Access Board's *Public Rights-of-Way Accessibility Guidelines* (PROWAG), the *Guidelines for Outdoor Developed Areas, and the Advanced Noticed of Proposed Rulemaking on Shared Use Paths* - designing public paths for accessibility is a requirement of the Americans with Disabilities Act (ADA).

Collectively, this guidance is designed to give practitioners the tools to develop appropriate, high quality trails. It should be used by the public and private sector in the development of trail construction documents. It should also be used to assist development review, approval and inspection authorities in ensuring that appropriate designs are developed and constructed.

Principles of Trail Design

Good trail design is based on understanding a number of principles related to how trails are used, who uses trails, and how trail design accommodates user needs. Trails are used by a wide variety of people. Trails are used by people riding bikes, of which there are an increasing diversity of designs, including tandems, trail-a-bikes, recumbents, bikes pulling trailers and handcycles (which usually have 3 wheels). Trails are used by pedestrians which includes walkers, hikers, and people walking dogs, pushing strollers, walking in small groups, jogging and running. They are also used by in-line skaters, people with scooters or skateboards, and disabled people using small electric carts and other assistive equipment. Sometimes Primary and Secondary trails are able to accommodate equestrians as well; however they are typically not the design user.

One key factor designers need to remember is that these users have a wide range of speeds which can result in a lot of passing and potential conflicts. For this reason, safety is the most important consideration related to trail design.

Other important factors include:

- the trail's context
- planned growth in the trail's service area
- alignment opportunities and limitations presented by the corridor
- the needs of the community, and
- the needs of property owners.

General Guidance and Standards

Good design is based on the designer's understanding of the purpose of key design elements. Aspects of trail design not addressed in detail here are addressed in the resources previously cited.

Accessibility: Designing based on accessibility guidelines benefits all users. Amenities such as benches, drinking fountains, and interpretive signage should be designed to be accessible to all people. Trails should be designed with a maximum cross slope of two percent, a maximum running grade of five percent, and ADA compliant curb ramps and interpretive signs should be designed at a height of twenty-seven inches, to allow viewing by a person in a wheelchair. To ensure ADA compliance, consult the U.S. Access Board's *Public Rights-of-Way Accessibility Guidelines* (PROWAG), the *Guidelines for Outdoor Developed Areas*, and the *Advanced Noticed of Proposed Rulemaking on Shared Use Paths*.

Trail Material Types: In Prince George's County, the following materials can be used for trails in the Primary and Secondary network: asphalt, pervious pavement, concrete, crushed stone compacted with stone dust, flexible pavement or boardwalks. The surface(s) selected for each trail will depend on its length and a variety of other factors, including impacts on the environment, durability, capital costs, maintenance requirements and cost, expected usage, and contextual setting. For example, a gravel and stone dust trail may be used in certain areas because it will absorb and filter stormwater better than an asphalt or concrete trail.

Trail Width: Determining trail width is a key task for trail planners and designers. Trail width should be determined based on the volume of expected users, both today and in the future, and on the mix of expected user types such as pedestrians, runners, bicyclists, equestrians, children, etc. A diverse mix of trail users will travel at wide ranging speeds. As a result, trail users often overtake each other and a wider trail makes it easier and safer to do so. When the need to overtake occurs frequently on a narrow trail, safety is affected.

For this reason, trail widths should be designed to accommodate both the volume and mix of trail users. The Federal Highway Administration's Shared Use Path Level of Service Calculator (SUPLOS) can be used to identify optimum trail widths based on predicted volumes and mix of user types. It can be found at this website: https://www.fhwa.dot.gov/publications/research/safety/pedbike/05138/

Using this model, the AASHTO Bike Guide has established 10 feet as the standard width for the typical shared use path. Assuming a typical mix of trail users, a 10 foot path will accommodate up to 200 total users per hour (peak hour of peak period) while maintaining a C Level of Service (on an A-F scale).

Where more than 200 users per hour are expected, an 11 or 12 foot trail is recommended. The study behind development of the SUPLOS Calculator found that an extra foot (11 feet) enables the middle of a trail to function as a passing lane, which increases the volume of users that can be comfortably accommodated.

New Primary and Secondary trails in Prince George's County should be constructed to provide an LOS grade of C or better based upon user mix and volume estimates pegged to a 15-year time horizon, as measured from the estimated date of construction. Because trails are planned, designed and built in various lengths, and pass through changing contexts, trails should be built with variable widths. For example, a trail that connects denser urban and suburban areas to a metrorail station that is slated for even more transit oriented development (TOD) adjacent to the station might be best built with 11- or 12-foot widths within a ¼ to ½ mile of the station, and 10-foot widths in less dense areas that are further from the station, where pedestrian traffic will be much lower.

For reference, the SUPLOS study collected trail user data on fifteen diverse trails across the U.S. and established the following benchmarks.

Typical User Volumes (two-way, peak hour, peak day, peak season)

Range of User Volumes	Total users per hour
Low User Volume	50-125
Medium User Volume	150-250
High User Volume	300-500
Extra High User Volume	500 +

Typical Mode Splits

Trail User Type	Average Mode Split	High Bicycle Mode Split
Adult Bicyclist	55.0%	75.0%
Pedestrians	20.0%	7.5%
Runners	10.0%	7.5%
In-Line Skaters	10.0%	5.0%
Child Bicyclists	5.0%	5.0%

Typical User Speeds

Trail User Type	Average Speed (MPH)	Standard Deviation (MPH)
Adult Bicyclist	12.8	3.4
Pedestrians	3.4	0.6
Runners	6.5	1.2
In-Line Skaters	10.1	2.7
Child Bicyclists	7.9	1.9

Separating Users: In areas with high volumes of pedestrians (30+ percent), or high volumes of overall trail users (300+ per hour), it may be appropriate to separate users by mode or speed. While this is typically done by mode, the key to improved safety is to separate by speed differential. Separation can be accomplished in a number of ways, by creating two asphalt treadways with a landscaped buffer between them, by using striping to separate users, or by using different surface materials. A simple design approach is to include a 3-foot stone dust or natural surface jogging path on each side of the trail that slower modes can use to keep right and allow faster modes to pass.

Design Speed, Sight Distances and Alignments: Trail alignments are often constrained by right-of-way limitations, topography and/or environmental features. Because trails are used by bicyclists and other wheeled vehicles, it is important to understand the relationship between design speed, sight distances, trail geometry and safety. The speed of wheeled users is dependent on the type of user, the slope of the trail, and the trail material. As the expected speeds of trail users increase, adjustments to trail alignments, sight distances and trail widths should be made to enhance safety. Additional detailed information is provided in the AASHTO Bike Guide.

Trail/Roadway Intersections: Many trails cross roadways and designing safe intersections is an especially important element of trail design. Trails can be designed to cross at existing intersections or at mid-block locations. Detailed recommendations for trail/roadway crossings can be found in the AASHTO Bike Guide. These recommendations address using the proper operating controls; identifying right of way priority; good geometric design, proper signing and marking; and crossing enhancements such as refuge islands, traffic calming measures and lighting.

Trail Connections: Safe and comfortable access for all trail users, whether in rural, suburban or urban settings is an often overlooked design feature. Access

design is especially important for vulnerable users, such as children and physically disabled people. At trailheads and other multi-modal access points separate treadways that do not pass through parking lots should be provided and shared use of driveways should be avoided. Where trail access points and through trails must pass through parking lots or share motor vehicle lanes, designers should take care to appropriately layout, stripe and sign the spaces shared by trail users and motor vehicles.

Trail Shoulders: A trail shoulder is a recoverable edge for the purposes of increasing trail safety. It acts as a place where trail users can safely leave the main trail surface to dodge an obstruction, swerve to avoid a collision with an oncoming trail user, or step aside to let other users pass. The AASHTO Bike Guide recommends that standard shoulders meet the following criteria:

- be at least three to five feet in width,
- be graded smooth, within an inch of flush with the main treadway,
- be clear of vertical obstructions and vegetation, and
- have no more than a 6:1 slope.

Shoulder surface materials can be lawn, fines, or other generally smooth, traversable materials that will prevent erosion.

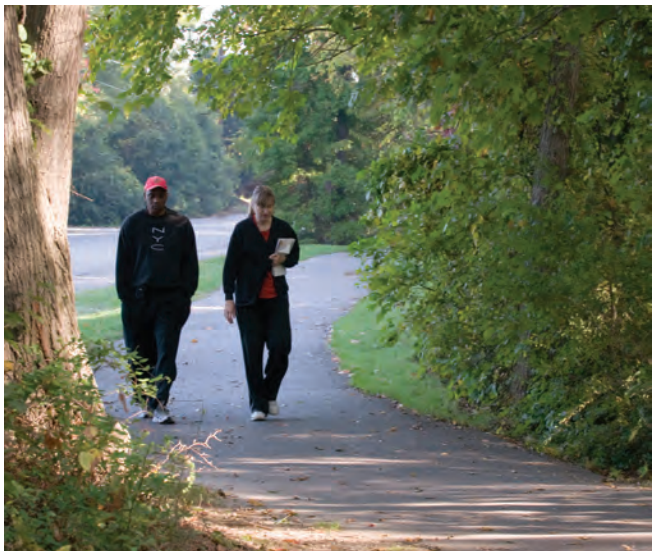
The AASHTO Bike Guide provides additional detail (including reduced minimum widths) to help designers address shoulder design and horizontal clearances adjacent to steep slopes, on bridge and boardwalks and any other constrained circumstances with potentially hazardous conditions adjacent to the trail.

Trail Clearances: Clearance from obstructions is needed in both the vertical and horizontal directions. The AASHTO Bike Guide establishes trail clearances to ensure basic operational safety for trail users.

Horizontal clearance is the distance from the pavement or main treadway to an obstruction. Designing without proper horizontal clearances reduces the usable width of the trail's treadway. The AASHTO Bike Guide recommends a minimum two-foot horizontal clearance on each side of a shared use path. This applies to signs (edge of the closest panel, not where the post goes in the ground), lighting, trees, and other vegetation.

In Prince George's County, a minimum of five feet is recommended for trailside amenities used by stopped or paused trail users; this includes trail furniture such as such as benches, kiosk maps and message boards, drinking fountains, and trash cans. The additional clearance distance includes the width needed to safely accommodate the furniture user's operating space, such as a person sitting on a bench, a person standing in front of the kiosk map or a person in a wheelchair drinking from a fountain.

Vertical Clearance is the distance from the trail surface to any obstructions above the trail treadway, such as the nearest overhead structure in an underpass, the ceiling or overhead light fixtures in a tunnel, or tree limbs that overhang the trail. In Prince George's County, the standard vertical clearance provided in new construction should be 12 or more feet. The AASHTO Bike Guide says that 8 feet is an acceptable minimum in constrained areas. This minimum should



only be accepted for retrofits of existing structures. If passage of maintenance or emergency vehicles is needed, horizontal and vertical clearances should be sufficient to accommodate an ambulance and the type of maintenance vehicle used by the responsible maintenance agency.

Transportation Trails

Trails that are used for transportation purposes require special design and maintenance considerations. Because Prince George's County has an extensive trail system with some areas that are highly connected and some trails that are short or relatively limited and isolated, transportation usage will vary greatly. Moreover, certain portions of some trails will be used more heavily for transportation than others. For this reason, management, maintenance and design of trails to effectively provide utilitarian transportation is most beneficial along the segments of trail that actually carry this load.

Existing Trails: Transportation use for existing trail segments can be confirmed and quantified in a number of ways: a) by using automated trail counting technologies, b) by conducting periodic spot counts using volunteers and/or DPR staff, c) by establishing routine and easily accessible communication channels between the trail using public and the DPR, d) by gathering information from bicycling organizations, other trail user groups, and stakeholder advisory groups, and/or e) by acquiring data from private services that cyclists and runners use to track their trips and miles logged, such as Strava.

- Design trails to connect to destinations such as homes, schools, recreation centers, parks, transit, commercial centers
- Include connections to other trails, bike lanes, sidewalks and bus stops
- Over time, widen transportation trails where they are less than 8-feet, provide lighting in key areas, police at key times of day and remove snow, puddles, soils, and debris promptly after storm events.
- Close only when absolutely necessary, establish detours and promptly communicate closures to users.

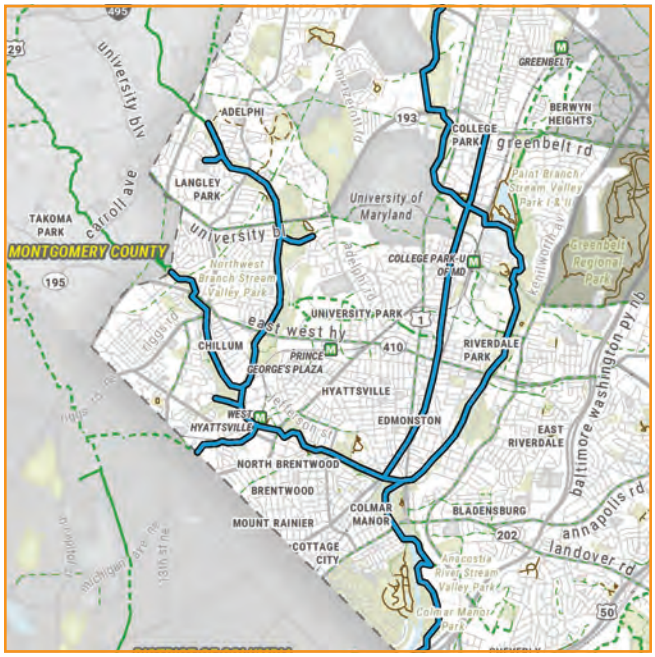
Preliminary Transportation Trails

New Trails: For new trails and trail segments predicting levels of transportation use is not an exact science, however by employing some basic bicycle and pedestrian planning principles, the potential for transportation use can be described in relative terms. New trails will be used for transportation when they provide efficient connections between common trip origins and destinations, such as linking homes to transit, jobs, schools, commercial areas or recreation activities. Trails may attract bicycle trips of up to ten miles in length. Trail use for walking is most attractive for trips of 1 mile or less.

The actual number of transportation users will vary over time and will be based upon a host of factors, such as the following:

- How direct, safe and comfortable the trail route is compared to other routes?
- What is the density of people living in the trail corridor and the market power of the destinations served by the trail?
- What are the demographics of residents and workers in the trail corridor?
- What are the transportation needs and travel habits of the surrounding population?
- How many people actually know that the trail exists and understand what origins and destinations it serves?

Preliminary Transportation Trails



Trails that connect people to transit, job sites and schools tend to generate more trips because those that use the trail will do so regularly. Trails that link to shopping areas and recreation sites may generate fewer trips, and the trips may be spread out over a much broader portion of the day and across every day of the week. Another major factor is if the trail offers grade separated crossings of highways, railroads, or major arterial roads, which can be both a timesaver and safety enhancement.

Primary and Secondary trails should be built with direct access to residential and commercial areas by which it passes in close proximity (1/4 mile), wherever possible. New trails should be built with connections to nearby trails, bike lanes, sidewalks, bus stops and transit stations. Provision of wayfinding signs is also highly recommended for transportation trails.

For many months of the year, work and school commutes have to be made in am and/or pm darkness. Trails that are used for transportation at both heavy and modest levels should remain open and accessible during these times. The DPR should seek to provide lighting, policing and snow removal for as many transportation trail segments as is fiscally feasible. To help defray these costs, the DPR should seek financial and staff support from agencies and public funding sources that are typically dedicated to maintenance and management of our transportation system.

Trail width, surface material and routine maintenance practices are especially important because regular commuters and utilitarian trail users may have limited or no access to alternative routes. Recreational trail users can adjust their usage habits to respond to crowding on narrow trails, deteriorating pavement, overgrown trails, washouts and debris brought down by storms; whereas transportation users need these issues to be addressed and rectified promptly and routinely. It is also important to communicate trail closures to the public, and establish trail detours where full restoration of service will take considerable time.

Trails that serve transportation purposes should receive routine maintenance attention. They should be mowed regularly, kept clean, and in good working order. When unforeseen events divert maintenance attention from the trail system, transportation trail segments should be prioritized over other trails because of their importance to the traveling public.

Trail widths can be determined by using counts on comparable trails (sharing similar origin and destination densities and demographic communities) and using the FHWA *Shared-Use Trails Level of Service Calculator.*

The AASHTO Bike Guide

In addition to the topics discussed above, the AASHTO Bike Guide provides detailed guidance on a number of other topics that will be relevant for planners and designers of Primary and Secondary trails in Prince George's County, including the following:

- Design vehicle (operational characteristics of various bicycle types)
- Shared use paths adjacent to roadways (sidepaths)
- Trail alignment and geometry
- Bridges, underpasses
- Intersection, crossing design
- Pavement markings, signs, and signals

Illustrated Design Guidance

The following section provides illustrated design guidance for two important auxiliary facilities and two scenarios that will occur repeatedly in Prince George's County. The topics include Trailhead Design, Wayside Design, Design of Mid-block Crossings, and Design of Connectivity to M-NCPPC Facilities and Neighborhoods.

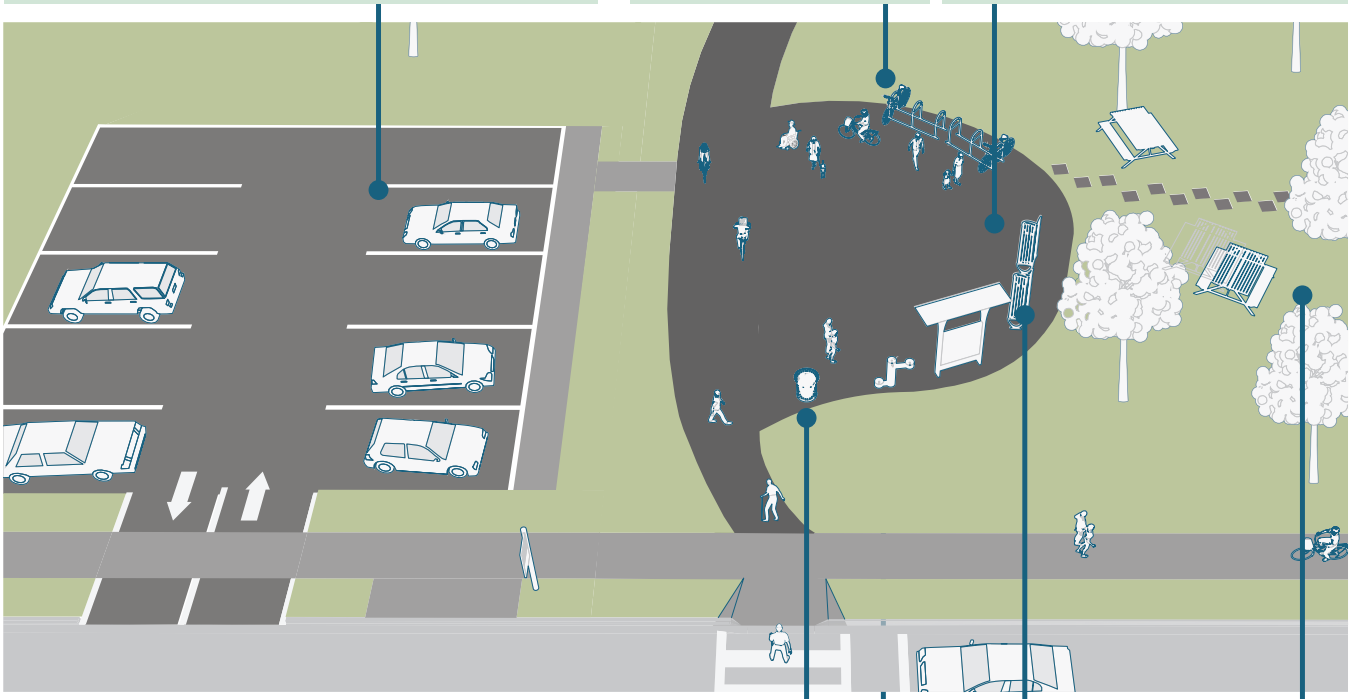
Trailheads

Trailheads serve as major gateways that provide access to the trail system. Most commonly a trailhead provides a motor vehicle parking area, bicycle parking, seating areas, bathroom facilities, water, and a kiosk map to provide guidance and other information about the trails system.

VEHICULAR PARKING. The number of parking spaces should be based on the expected number of users who are likely to need to drive to access the trail. Parking areas should be built with pervious material where possible such as crushed stone or pervious asphalt. Back in parking with a clear area behind the vehicle is ideal for bicycle loading and unloading.

BICYCLE RACKS. Trailheads serve people accessing a trail via all modes, including bicycling. Bicycle racks are especially important at hiking trails that may be accessed by people arriving by bicycle.

INFORMATIONAL KIOSKS AND BULLETIN BOARDS. Information provided should include the trail name, trail maps, park operating hours, contact information to report problems, emergency response information - such as contact information and trailhead identification - and trail regulations.



Create access for all modes. Design the trailhead to serve all access modes including bicycling, walking, transit and motor vehicles.

Consider Bike Repair Stands and an Air Pump which are attractive amenities for trails heavily used by bicyclists.

BENCHES. Trailheads often act as meeting places and benches allow visitors to rest while waiting for other trail users. Trail users may also wish to rest after a long walk or bicycle ride.

TRASH CANS. Trash cans at trailsheads are typically easy to maintain because trailheads are usually located near roadways.

WATER FOUNTAINS. Use water fountains that are accessible and provide a water source for pets.

LIGHTING. Lighting provided safety and security at trailheads that will be used after dusk or dark.

PICNIC TABLES. People who use trails often start or end their journey with a meal.

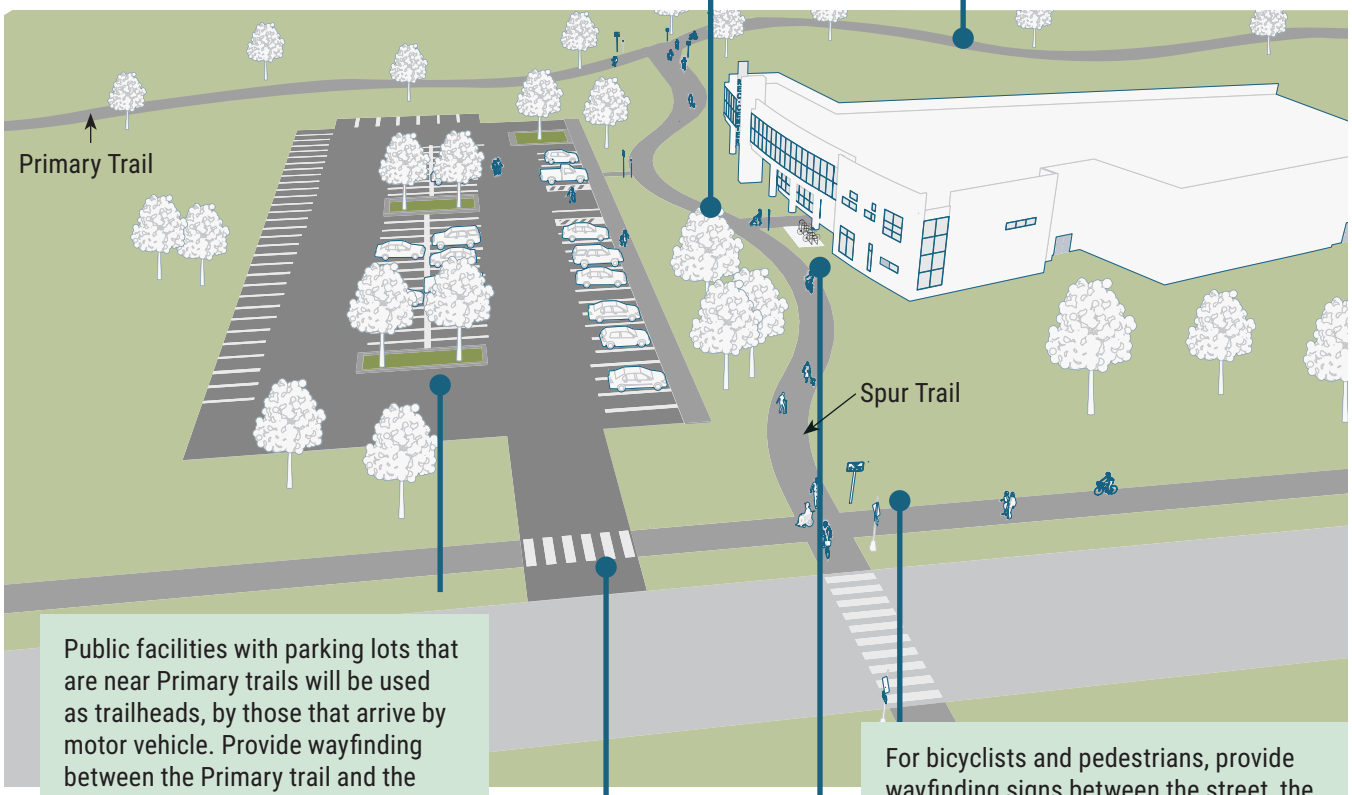
Trail Connectivity at Public Facilities

Use spur trails to connect the Primary trail to public facilities and nearby communities. Spur trails should connect directly to building entrances, neighborhood sidewalks and on-road bicycle facilities.

Where ever possible avoid using driveways, park access roads and parking lots as access routes through public facilities and large parks to primary and Secondary trails. Access routes need to consider safety for the most vulnerable trail and public facility users, such as children and people with physical disabilities who travel in the public right-of-way.

Where it is necessary or prudent, such as in locations with very low traffic volumes and speeds, or very small parking lots with good sight distances, mixing trail user and motor vehicle traffic is acceptable. Set low speed limits, provide traffic calming measures if needed, and use appropriate warning signs, and markings to inform all users that the travel space is shared use.

Connect secondary and spur trails into the larger trail network. Design considerations include avoiding sharp turns, which are difficult for people especially novice bicyclists, to navigate. Adequate sight lines should also be provided.



Public facilities with parking lots that are near Primary trails will be used as trailheads, by those that arrive by motor vehicle. Provide wayfinding between the Primary trail and the parking lot. Use signs to guide trail users to select parts of large parking lots where trail access is most convenient.

For bicyclists and pedestrians, provide wayfinding signs between the street, the facility entrance and the Primary trail; and if needed, other park activity areas. Provide a map and information kiosk about the trail network. Locate kiosks near the building entrance and/or near the trailhead parking area.

Minimize the number of roadway, driveway, and parking lot crossings. Intersections of trails and vehicular travelways should be limited to the extent possible. Where crossings do occur, provide appropriate crosswalk markings, warning signs and traffic calming measures.

Place bicycle parking at building entrances where it is visible and convenient (and near other major park activity areas, as needed). Bicycle parking at high use community centers should be covered.

Mid-block Trail Crossings

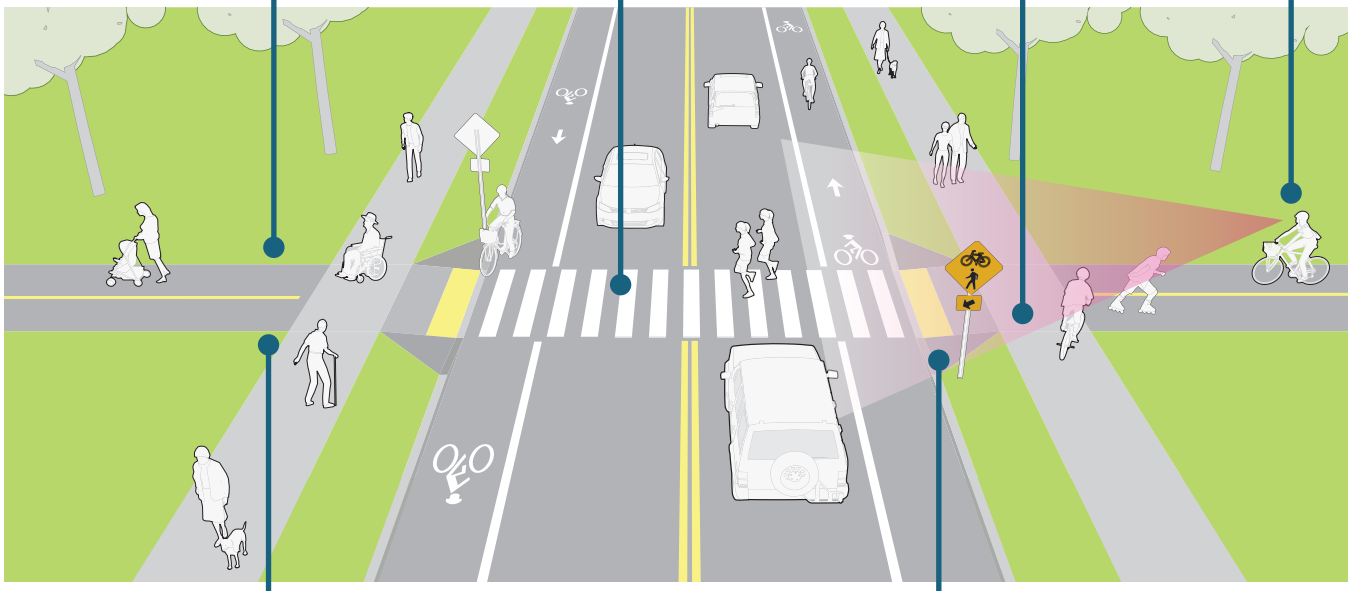
Mid-Block trail crossings can be highly advantageous to trail users by eliminating detours to the nearest existing intersection. Evaluation of the roadway geometry and traffic operations is required to ensure that a safe crossing can be installed at the candidate location. Determining appropriate priority and assessing stopping distances and sight lines, can create a safer and more enjoyable experience for all users. Additionally, design and construction of a crossing that works for motorists, bicyclists and pedestrians is essential.

Design trail and roadway intersections to meet as close to 90° as possible. Skewed intersections reduce visibility, maneuverability, and increase crossing distances.

Design trails for access from the roadway and sidewalk. Pedestrians, children and novice cyclists will often access a trail via the sidewalk while experienced cyclists will access a trail via the roadway. Providing wide ramps and turning space will create better connectivity.

Minimize objects at intersections that may distract trail users. Elements such as sharp curves, barriers, vegetation, and signs that may destabilize or distract trail users should be avoided. At intersections, trail users need to focus their attention on intersecting traffic.

Provide clear site lines. Ensure that both motor vehicles and bicyclists (the fastest users) can see each other in time to yield or stop.



PRIORITIZE USERS BASED ON VOLUME AND NETWORK IMPORTANCE. Are there more people using the trail or the street? While posted and actual speed of traffic is an important consideration, the MUTCD states, "Speed should not be the sole factor used to determine priority, as it is sometimes appropriate to give priority to a high-volume shared use path crossing a low-volume street, or to a regional shared use path crossing a minor collector street." (Manual on Uniform Traffic Control Devices (MUTCD), 2009, p. 794, Sec. 9B.03)

CHOOSE YIELD OR STOP CONTROL. Over-use of stop signs on trails has led to a lack of compliance and may diminish safety if ignored when truly needed. "At intersections… consideration should first be given to using less restrictive measures such as YIELD signs." (MUTCD, p. 52, Sec. 2B.06). Use STOP controls when a lack of sight lines, motor vehicle speeds and volumes warrant it.

Other mid-block trail crossing treatments may include:

Raised crossings to slow traffic and clarify priority.

Median refuge islands to break up longer crossing distances.

Curb extensions to improve visibility and shorten crosswalk distances.

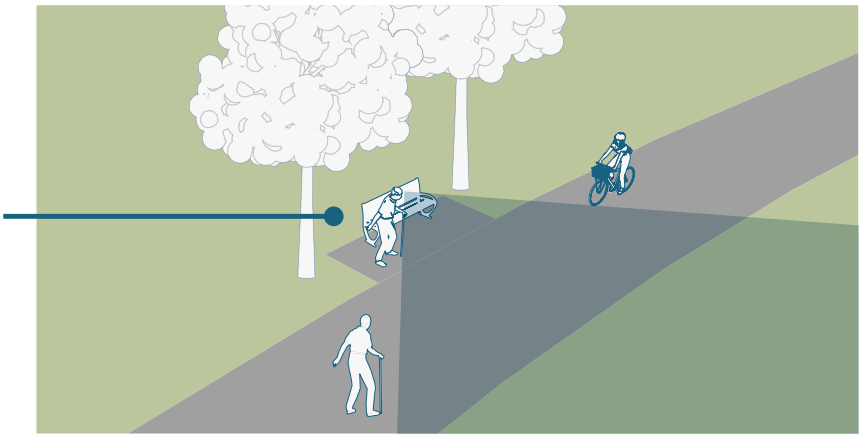
High-visibility crosswalks and advance stop or yield lines to improve visibility.

Warning signs, rectangular rapid flashing beacons, or pedestrian hybrid beacons to improve motorist yielding/ stopping compliance.

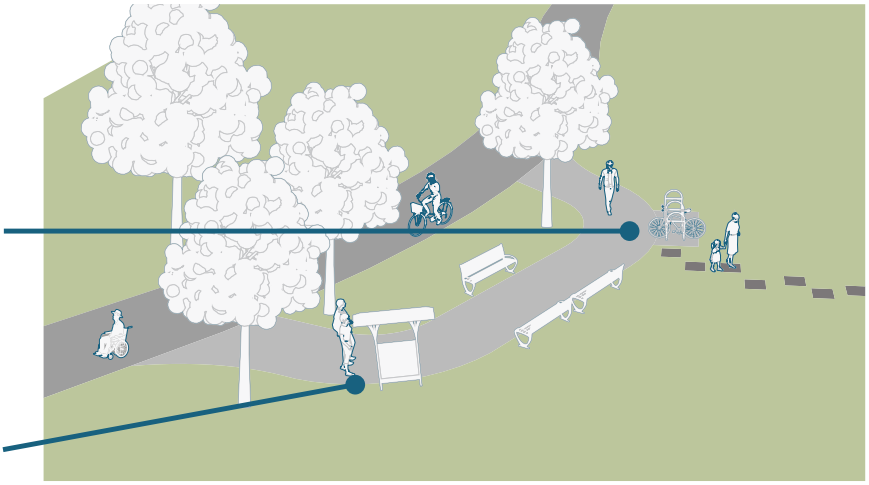
Waysides

Trail waysides provide a place for trail users to rest, meet other trail users, take in the view, or to orient themselves. They serve both practical and aesthetic purposes and greatly enhance trail experiences. Waysides come in many shapes and sizes from a bench along a trail, to kiosks and waiting areas or gateway waysides at a community entrance.

BENCHES. Benches provide a place to rest and are especially important for people who need frequent breaks. Benches also provide a place for people to wait for others, to socialize, or for individual contemplation. They should be located far enough away from the trail so as not to create conflict with trail users. A minimum distance of 5 feet is recommended. They should be positioned to create the most enjoyable experience for the trail user – either by being located along the trail to accommodate people-watching or placed to enjoy a particular viewshed such as a lake, stream, or natural area.



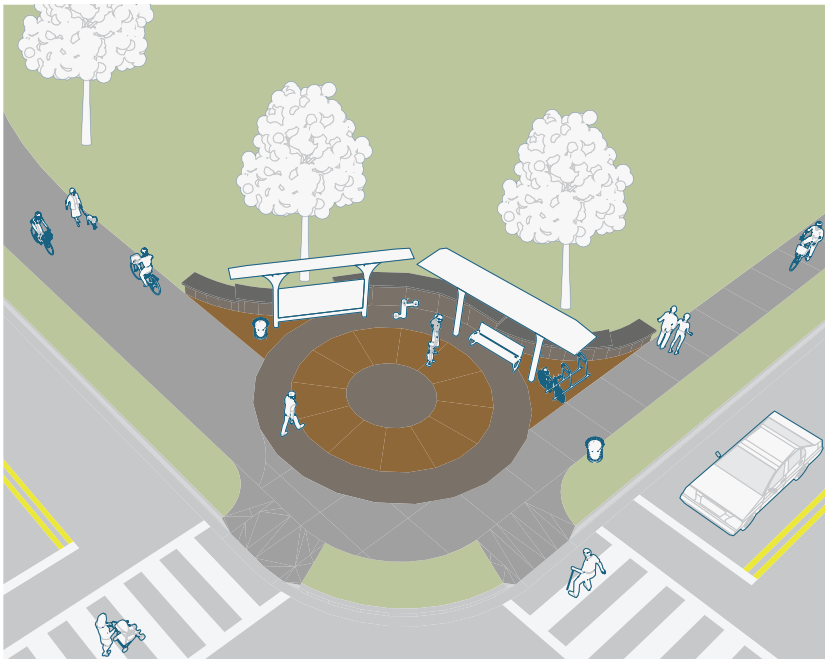
BIKE RACKS. Bike parking is often needed as many bikes do not have kickstands or a trail user may leave their bike to continue along a hiking path.



INTERPRETIVE SIGNAGE, MESSAGE BOARDS, TRAIL SYSTEM MAPS AND EXHIBIT STRUCTURES. Waysides are often placed at locations of interest where interpretive signs are especially important and can help educate users.

WATER FOUNTAINS. Use water fountain designs that are accessible. Consider fountains that allow for use by pets as well.

TRASH CANS AND PICNIC TABLES. Waysides may accommodate more active uses, such as picnicking, or serve predominately as a place to take a short break. Trash cans should be placed at waysides, depending on an expected need, and maintenance staff's ability to service them at regular intervals.



Trail System Orientation and Wayfinding Signage

Providing system orientation and wayfinding guidance along the trails network is absolutely essential to ensure full realization of the benefits of this public investment.

Methods

Spatial orientation and navigational guidance information can be provided in a number of ways, including the following:

- Guide signs along the trails
- Trail naming and development of graphic branding for sub-county regional trail networks
- Orientation maps provided at trailheads (kiosks)
- Printed paper maps, available through a variety of outlets
- Coordination with national companies that provide mapping for handheld devices
- Coordination with regional companies that publish maps of Prince George's County
- Creation of a Prince George's Parks Trails App

Why Wayfinding Information Systems are Important

Basic Navigation

Wayfinding guidance is important for its purely practical purposes. It helps people remain oriented in areas that may be away from roads and other familiar land marks. It enables trail users, especially cyclists, to use the trails for routine transportation. It will create awareness of the fact that there is a useful and connected network of trails throughout the County, not just a random set of asphalt paths here and there.

It helps educate the public about how public space connects the various parts of their community, and how they might be able to bike, walk or run to a destination that they previously thought was only accessible to them by motor vehicle.

Wayfinding signs along a trail are especially helpful for children and young people who typically use trails before driving. Signs will enable them to better know their neighborhood, learn their local geography and develop independence and autonomy in their teenage years.

Comfort and Security

Signage in public space is an important element of public safety and security. If emergency assistance is needed, it helps those in need know where they are, and it enables responders to find them quickly. Additionally, it provides trails users psychological comfort and confidence while using public space. Coherent wayfinding systems generate user confidence, which also contributes to safety and security by generating larger numbers of users.

The provision of on-trail guide signs sends a larger message to the public; i.e. that it is M-NCPPC's expectation that the trails be used, be used heavily, and be used for a wide variety of activities.

A Reflection on the Responsible Agencies

The provision of organized and graphically coherent orientation and wayfinding guidance demonstrates that the agencies responsible for oversight and management of the trail system are organized and paying attention, which further supports user confidence and the sense of public welcome. Most importantly provision and maintenance of wayfinding information will foster development of a large, caring and active user base, which is essential for long term support and vitality.

Who are they for?

It is important to remember that guide signs are typically not needed for trail users once they are familiar with trails that they use on a regular basis. However, guide signs can be essential for the first time user of a trail system-- to know which way to go, to understand where every spur path and "fork" in the trail leads, to track their progress, and to make a successful return to their starting point.

First time users are not just visitors from out of town; they are members of the Prince George's community; for example:

- They may have just moved to a new neighborhood and need to walk the dog,
- They may want to branch out on the weekend and visit a park they have never been to before,
- They may decide to go for a walk near the office on their lunch break and find a nearby trail because it is well-marked.
- They may want to take up a new recreational activity to get fit, and need to know where they can go
- They may have decided to bike (not drive) over to that new ice cream shop in the strip mall.

At some point in time, all trail users have a first-time user experience and wayfinding signs help make it a trip worth repeating.

Recommendations

1) M-NCPPC should develop a multi-dimensional trail orientation and wayfinding system that includes the following:

- Graphically effective and coordinated guide signs along trails including all M-NCPPC park trails, trails along roadways, public HOA trails and other pathways in the Primary and Secondary trail Network.
- Trail naming conventions for the Primary trail Network and development of graphic branding for sub-county trail networks associated with stream valleys, particular communities, or activity/ development centers.
- Orientation maps provided at trailheads (kiosks), and other high traffic locations.
- Continue providing its high quality printed paper maps, and expand availability through a wide variety of outlets.
- Coordination with national companies that provide mapping for handheld devices.
- Coordination with regional companies that publish maps of Prince George's County, and state and regional agencies that also provide wayfinding maps and information, such as SHA, the WMATA, and MARC rail systems, and the WMATA and Connector bus systems.
- Create a geo-locator sign panel and code system to effectively coordinate emergency response on trails.
- Create a Prince George's Parks Trails App.

2) M-NCPPC and other agencies involved in providing signage and wayfinding information for trails should apply best practice principles in the planning, design and management of these wayfinding systems. The section of the appendix on trail wayfinding provides a set of best practices for the design of wayfinding sign systems.

Recreational Trail Design: Best Practices

Design of Equestrian Trails

Equestrian access to trails is generally needed in areas outside the beltway, however in the past portions of the Anacostia Tributaries Trail System have been designed to provide parallel treadways for horseback riding. Equestrian trails will be more heavily utilized if they are connected to stables, small businesses that teach horseback riding, and public equestrian centers. Equestrian trails that are not connected to these types of facilities need to provide trailheads with vehicle and horse trailer parking.

Design guidelines for equestrian trails include the following:

- Equestrian trails can be designed as loops or connections between large open spaces. They can also be designed as longer linear corridors. Corridor trails, which facilitate out-and-back trips, should lead to a place or natural area that is of interest, perhaps an attractive landscape, a historic site, a waterfront setting, or a place where food and refreshment is available for horse and rider. At stopping points, simple horse tie-ups, water, feed bins and picnic tables may be needed amenities.
- Horses require a tread that is at least 2 feet wide and animal and rider requires at least 4 feet in width.
- Equestrian trails should be built to include 2-foot cleared shoulders.
- Vertical clearance should be 12 or more feet.
- Equestrians prefer softer trail treads such as fine aggregate or dry woodchips. Grass areas or mowed meadows can also serve equestrians, however heavy use when wet or rain-soaked will severely damage vegetation and may contribute to long term conversion of the surface to dirt/mud.
- In the rural parts of Prince George's County, old farm and fire roads present great opportunities for equestrian and multi-use Recreational trails, as they come with a well compacted natural surface and are usually 8-16 feet wide.
- Horses can scale steep slopes, of 10 to 20 percent, fairly easily; however, it is recommended that steep trails be built with switchbacks to ensure that stormwater does not severely erode the treadways. Switchbacks also allow resting areas for groups or horses that are out of condition.
- Recreational trails that serve multiple users (equestrians, mountain bikers, and hikers) should include signs at trailheads educating users about the appropriate etiquette to use in sharing the trail, e.g. who yields to who. These trails should also provide periodic locations where trail users can easily pass each other.

Design of Mountain Bike Trails

Mountain biking has grown exponentially as a sport and land management practice since its inception in the 1970s. Mountain biking is primarily a recreational form of bicycling which utilizes natural surface trails, but vary in width, terrain, difficulty and rideable features. While most trails utilized for mountain biking are also used by hikers, many mountain bike trails offers a variety of features including in-sloped turns, tabletops, and rock gardens which cater to the varied skills level of riders. Mountain bike parks with multiple trails and loops can be designed to provide a range of challenge levels, as well as a special area for beginners and children.

Mountain biking trails can be designed in a series of loops or in longer linear alignments. Linear trails, which facilitate out-and-back trips, should lead to a place or natural area that is of interest, perhaps an attractive landscape, a historic site, a waterfront setting, or a place where food and refreshment is available. At stopping points, bike parking, water, restrooms, and picnic tables may be valued amenities.

Mountain biking trails or parks need to provide trailhead areas with vehicle parking, bicycle racks, restrooms and picnic tables. Safety and etiquette information is also important to provide, along with trail orientation maps, and information about the key challenges to be faced on each trail segment or loop.

Lead by the International Mountain Bicycling Association (IMBA), the development of sustainable trail designs enables local trail builders to develop quality trails that provide an enjoyable mountain bike experience while minimally impacting the natural environment. IMBA developed the *"Trail Solutions"* trail building manual which provides an international standard for designing quality trails for mountain bikers and hikers alike.

While trail width may vary from 3 to 12 feet, slopes vary from 0 – 20% and features may be placed which are appropriate for the targeted riding population. Prince George's County local IMBA chapter MORE (Mid-Atlantic Off-Road Enthusiasts) actively build and maintain numerous trails including those at Cosca Regional Park.

RECOMMENDATIONS

- Develop state-of-the-art trail design guidelines and training
- Provide staff training about trail design
- Provide developers an orientation to the Plan, and training regarding trail design.
- Develop a wayfinding sign protocol that can be applied countywide.

Managing and Maintaining the Network

CHAPTER 5

Managing and Maintaining the Network

Successful trail systems across the nation provide staff and resources to manage and operate the trails that cross their communities. Successful trail operation programs focus staff and volunteers on visitor services, patrol, maintenance tasks and long-term care and rehabilitation of trail facilities. Trails that are not monitored and maintained can easily fall victim to neglect and activities that are a detriment to the communities that host them.

Citizens in Prince George's County have embraced their trails. The size and impact of the trail system developed by the M-NCPPC Department of Parks and Recreation (DPR) justifies a dedicated staff to plan, construct, manage, maintain and grow the system. Currently the Office of the Director, all three Deputy Directors and eight Division Chiefs share responsibility for trail development and management issues, while no specific individual or unit focuses on trail maintenance. In addition, trail-focused expenditures are dispersed and difficult to identify in administrative reports.

Trail-Focused Operations

This Trails Plan recommends that trail-focused operations be established. This would include goals and standards, baseline information for trails, managing the budget, measuring progress, and promoting the system for the benefit of the citizens. Key components of a coordinated approach to trail-focused operations include the following:

- Capital projects should include a trail-focused line item with funds allocated for major maintenance and repairs, such as trail resurfacing or bridge replacements, that have already been identified, and on short term construction projects to improve the system.
- Park Police should participate in this trail-oriented perspective to ensure that coordination and cooperation of patrol duties and information sharing continue to occur. Crime needs to be understood based on what segment of which trails it took place so patrols, as well as additional maintenance and programming, can be focused there.
- Discrete trail-oriented funds and staff should also be allocated to trail planning and construction responsibilities to ensure that future trail projects progress through the acquisition and development stages and arrive on time in the growing system.

Adopt Uniform Operations Guidelines for Trails

Currently, there are over 100 miles of trail maintained among a variety of staff within three Area Operations Divisions. Because the units' lack basic guidelines, a broad spectrum of maintenance practices has emerged. Current conditions reveal that mowing patterns, invasive growth management, placement of safety and regulation signs, and tree trimming vary among the districts and trails. Some practices are effective and promote visitor safety and a welcoming experience and some do not. It is recommended that DPR adopt standardized trail maintenance guidelines to manage costs and provide a safe, efficient and uniform trail system to the public. The FHWA has collected sample manuals and guidance for design, construction, operation and maintenance issues, as well as sign regulations at http://www.fhwa.dot.gov/environment/recreational_trails/guidance/manuals.cfm.

Staff Safety Training Program

Maintaining a trail offers many challenges and DPR will benefit from a well-trained and equipped maintenance staff that understands the unique characteristics of trail maintenance. It is recommended that DPR establish a comprehensive safety training program for all employees and contractors involved in trail maintenance. Working in close quarters to the public with machinery requires extra vigilance from employees and equipment configured to maximize public safety. Maintenance staff must know how to properly use their equipment. They should also continue good practices in anticipating and preventing the public from stumbling into dangerous equipment

Anne Arundel County's Baltimore and Annapolis Trail Park suffered from vandalism, drug dealing and associated crimes like robberies and theft, before an active trail operation was enacted. Six months after assigning and equipping park personnel to manage and operate the trail the situation was reversed. Within a year citizens were calling for more trails in the community.

that is designed to cut grass but is also capable of causing grievous injuries to those who come too close. The one safety wall between the public and the machinery needed to maintain the trails is an alert well-trained staff. Equipment assigned or purchased for trail-work will need unique safety characteristics. Ideally, mowing will use smaller to mid-range size equipment with 36 – 60 inch mowing decks that discharge clippings at the rear to eliminate thrown debris on visitors and trail surfaces.

Data Gathering

Become Experts on the Current Conditions

Collecting the basic measurements of the existing trail system should be among the first priorities. Much of this information already exists in DPR records. Baseline information like trail lengths, surface types and condition, the location and condition of at-grade crossings, trailside benches, kiosks, crosswalks, bridges and turf acreage are vital to present day operations and future planning. The location and condition of information and safety signs are vital to bringing the current signage and wayfinding system up to MUTCD standards. Intimate knowledge of the physical characteristics and the unique conditions of the trail system will be vital to planning for the future and making successful decisions about the system.

Asset, Inspection and Maintenance Database

M-NCPPC has established an Enterprise Asset Management (EAM) database which includes park assets and maintenance programs. As part of this plan, the EAM system is being adapted to include information specific to trails within each park. Information in the EAM system includes trail (width, material, users, snow clearance), trail signs (type, style, material), trail kiosks, shelters, bike racks, hitching posts, bollards, gates, fencing, benches, picnic tables and lighting among others.

Use Current Measurements to Forecast Future Needs

Once information has been collected it can be used to forecast future maintenance and operational needs. Projections for staffing, equipment purchases and distribution, and maintenance tasking can all be based on the information gathered and staff experience. This

will provide a clear vision for operational goals and allow DPR to communicate reasonable expectations to the public.

Trail Maintenance

Trail maintenance is typically divided into routine and irregular maintenance activities. Routine maintenance includes:

- Mowing
- Trash pick-up and emptying of trash containers
- Sweeping and debris removal
- Tree and shrub pruning
- Graffiti removal
- Sign monitoring and replacement
- Furniture and infrastructure inspection

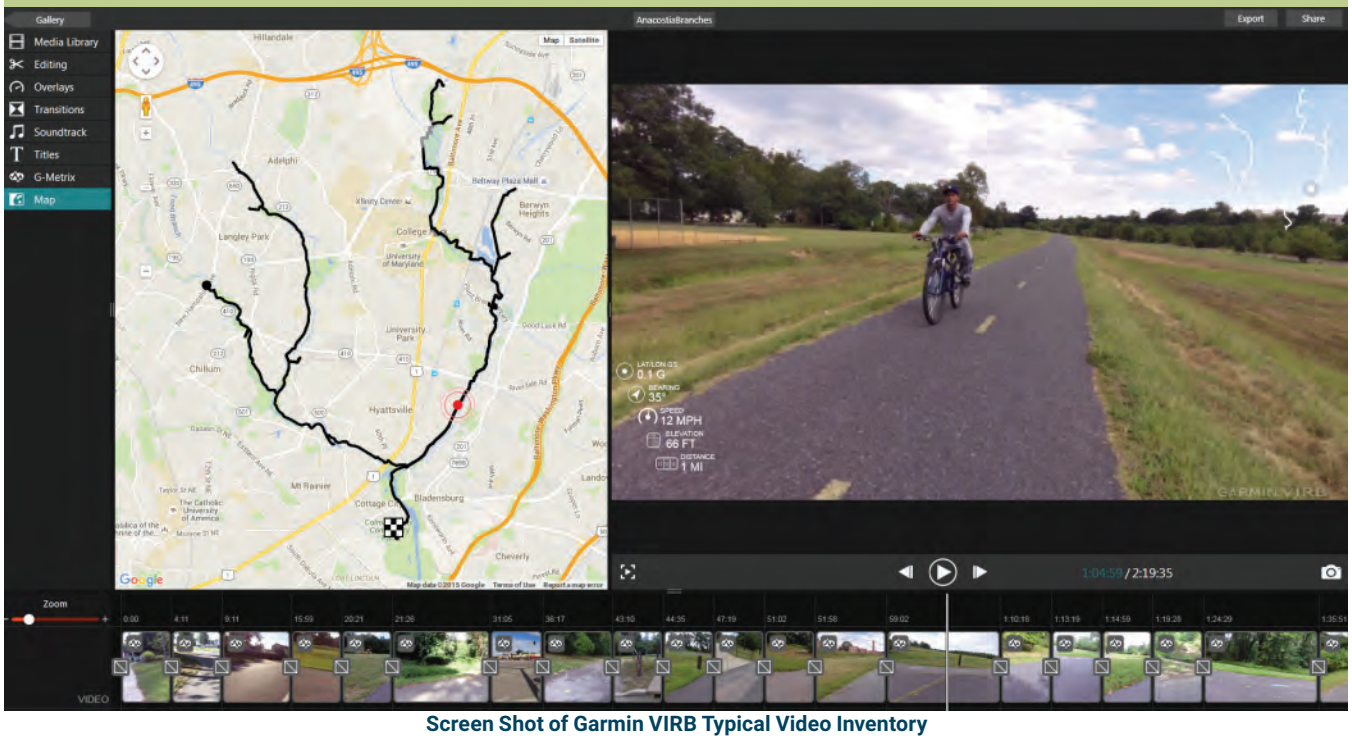
Irregular maintenance includes:

- Trail tread repair or replacement
- Bridge repair or replacement
- Snow and ice removal
- Drainage
- Revegetation
- Furniture and infrastructure replacement
  - Waysides
  - Kiosks,
  - Trailheads
  - Parking lots
  - Fencing
  - Walls

The EAM system will be assigned specific maintenance and inspection schedules. This state-of-the-art monitoring system is a key component

Trail Video Mapping

A video-mapping inventory of forty-two miles of Prince George's County trails has been created as part of this Trails Plan. The inventory allows county staff to scroll along a video-linked map to specific locations along a trail. Much like Google Streetview, this minimizes the need for staff site visits while helping staff more efficiently evaluate on-the-ground trail conditions and determine the type and extent of trail maintenance or rehabilitation activities such as repaving, re-aligning, or widening needs. The video was recorded using a Garmin VIRB geo-referenced video camera and demonstrates how technology can be used to support efficient maintenance and management practices.



Screen Shot of Garmin VIRB Typical Video Inventory

in streamlining the maintenance process for Prince George's growing trail system. See appendix: *EAM Trail Maintenance Functions* for a comprehensive breakdown of assets and inspection criteria.

The best trail maintenance programs inspect and respond to the maintenance issue at the same time. For example, a tree which has fallen across a trail should be reported into the EAM system and at the same time, the tree should be cut and moved from the trail and entered into the EAM system as a completed task. When possible, responding to issues immediately saves considerable time and provides a better trail environment to the community. However, it does require planning and equipment, such as paint, saws, weed killer, graffiti removal supplies and trash bags be carried with trail maintenance staff at all times.

Routine Trail Maintenance Scheduling

Routine inspections and maintenance should occur on a daily, weekly or monthly basis based on the frequency of the trail's use, history of maintenance needs, season and vegetation growth rate.

Mowing is one of the more important and challenging aspects of trail maintenance because it must occur on a regular basis and a lack of mowing may communicate to trail users that the trail is uncared for and therefore unsafe. Therefore, turf maintenance provides a good example of how to establish a routine maintenance program even factoring in the effect of weather on need and opportunity, especially in the spring months.

Example: Mowing Zones

Trail turf areas are commonly divided into mowing zones. Mowing zones are simple mowing patterns that show and direct the frequency and location of mowing operations. Mowing zones enhance staff and visitor safety, reduce maintenance costs and create a uniform, predictable look for a trail corridor. Mowing zones are simple to establish and self-evident after the initial cut. Mowing zones can easily be programmed into Autonomous Robotic Mowers (ARM) as GPS programs or mowing maps.

Mowing Zone 1

The turf area in Mowing Zone 1 is mowed every time the grass is cut. MZ1 areas include both sides of hard surface trails, and around benches, kiosks, and other trail amenities. MZ1 areas are used as a trailside safe zone for visitors to congregate, to avoid collisions, and stop and repair equipment without congesting the travel portion of the trail. In general MZ1 areas are between 48 - 60 inches wide.

Mowing Zone 2

Mowing Zone 2 turf areas are typically mowed quarterly. MZ2 picks up from the edge of MZ1 and continues to the edge of the property, to a wood line or to the edge of MZ1 along a parallel road. MZ2 includes drainage areas and ditches, steep slopes, and areas that are only marginally impacted by higher vegetation.

Non-Mowing Zone 3

Mowing Zone 3 are areas that are not mowed. Wooded lots, forest regeneration areas and the hard surface trail and parking lots where turf is not growing are all classified as MZ3.

New Ideas: Browsing

Not all vegetation needs to be managed with equipment. Some park areas and utility corridors can be browsed annually with herbivores that will efficiently keep vegetation like young woody plant growth, shrubs and invasive species under control at a very reasonable cost. Goat herds are particularly effective and have been used by agencies across the country to manage vegetation, reduce wildfire risks and eliminate invasive species like Asiatic tearthumb, bamboos, Bradford Pear, kudzu and privet. Once an area is browsed the introduction of desirable plant species like wildflowers can help ensure invasive plants do not return and trailside aesthetics are enhanced.

Irregular Trail Maintenance Scheduling

During trail inspections, maintenance issues that cannot be addresses immediately, will be apparent. These repair needs should be noted in the EAM system. The EAM system will provide maintenance reports which should be provided to the proper entity - such as a faded roadway crosswalk or damaged signs at intersections being submitted to DPW&T or SHA.

Maintenance Priority Process

Trails should be prioritized based on repair and maintenance needs. As trails are inspected, it is recommended that trails be classified into the following categories:

- List 1 - PROJECTS FOR CONSTRUCTION: Projects to move forward based on funding a combination of projects (from List 2 and 3).
- List 2 – NEEDED: high priority issues such as wash- outs, undercut trails, etc.
- List 3 – SPECIAL PROJECT: public requests, political requests, minor projects on trail segments of higher use
- List 4 - LOCATIONS TO MONITOR: areas likely to develop into maintenance issues

As work is completed and trails are inspected, projects are removed from List 1, projects are shifted from Lists 2 and 3 to List 1, and new projects are added to lists 2, 3, and 4.

For example, in year 1 the survey identifies locations that require maintenance. A list of maintenance (major or minor) is developed. These projects may include a minor project on a heavily used trail, a repair request resulting from public comment or a project requested by a local politician.

Example: Trails Along Waterways

In Prince George's County, trails along waterways pose physical and administrative challenges that require complex coordination between staff across multiple agencies. Trails often experience disruptions caused by weather, erosion or other impacts. Addressing maintenance needs for trails along waterways often requires environmental permits (see Chapter 3). The following discussion provides some basic steps and prioritization processes for addressing common environmental issues.

This plan recommends that M-NCPPC establish a prioritization process to address these disruptions.

The ideal trail maintenance process focuses on addressing larger stream stability issues that impact trails instead of applying temporary solutions. As such, this plan recommends establishing a process that prioritizes stream stabilization projects in the short and long term. Below is a description of the basic steps:

- Develop an inventory of *all* trail segments near streams to monitor

- Develop a Priority List of trails near streams for *repairs*, based on:
- Priority Issues (high level of degradation and environmental impact)
- Priority Needs (high trail use, limited alternative routes)
- Estimated Costs
- Organize Stream Stability Projects by fiscal year
- Establish Scope of Work (scope, budget, and schedule) for each project and Project Management (staff/consultants needed to manage/design projects)
- Begin Permitting Process (see Chapter 3, Environmental Permitting Section)

From these initial lists, a list of projects to move forward will be developed. This list could include projects prioritized by budget, need and special circumstances. For example, a major repair on a little-used section of trail may not be as high a priority as a less expensive, smaller maintenance project brought to the county's attention by an elected official or a minor project on a heavily used trail. Based on budget and circumstances, the construction list would include the projects the county chooses to move forward.

As projects are completed, the number of higher priority projects will be reduced, leaving only smaller maintenance and monitoring which will reduce the annual costs associated with trail maintenance. The process will also aid in budgeting for and scheduling work annually. See appendix: *Environmental Permitting* for guidance on requesting and receiving construction and environmental permits.

Maintenance staff must recognize that the citizens of Prince George's County love their trails. They live, play, commute and exercise throughout the system, every day. Staff must develop relationships with the people who are their greatest advocates. They must know their neighbors, the groups, the volunteers, and school children who rely on maintenance staff to enhance their quality of life, improve their health, increase their property values, advance their education, and provide them with opportunities to love the trails they own. Building the trail into the community will require maintenance staff to have solid people skills and the ability to engage with people face to face. Maintenance staff must become not only trail experts but people experts and become engaged with the people who live, commute and play along the system they own.

Recognition of Transportation and Commuting Trails Needs

Trails designated as transportation and commuting trails enjoy the highest visitation as people rely on these corridors to commute to work and travel to school, shopping and other important destinations. Transportation and commuting trails require higher levels of inspection and maintenance. DPR should adopt guidelines for tasks and conditions that disrupt or interfere with the use of transportation and commuting trails. Guidelines for snow removal, mowing, and major maintenance and repairs can be adopted to increase user safety, minimize disruptions and optimize opportunity. Transportation trails should be maintained under standard public safety definitions that govern need and regulatory compliance.

Adopt New Technologies for Operations and Maintenance Tasks

Similar to the county's adoption of the EAM system, identifying and embracing new and emerging technologies will play a key role in the future success of DPR's expanding trail system. Staff and visitor safety are crucial to every park agency's success and have a direct impact on the public purse. Personnel costs are the bulk of every public budget. New technologies can allow a small number of employees to perform a wide range of duties more efficiently. New technologies can become a staff multiplier throughout DPR. Examples include:

SECURITY CAMERAS

Security Cameras are also useful in recording site conditions in remote areas or on trail segments with long expanses of open territory. They can be mounted at remote parking areas, along trails in remote areas and in

high visitor activity areas. They can remotely send data to rangers and security personnel in offices, in vehicles or in the field. Fixed security cameras on utility towers in shared corridors offer added protection to both trail users and critical utility infrastructure.

INTEGRATED RADIOS

Integrated radio communications are vital for sharing routine and emergency communications across a wide band of employees with a small band of shared frequencies. DPR employees can be segregated into talk groups that allow prioritized communications among staff without overwhelming the system. At the same time DPRs hand held radios can allow employees to switch talk groups to share information. This ability to both isolate and share information makes the system useful for daily operations and special events and in times of emergencies.

Autonomous Robotic Mowers (ARM)

Several corporations and universities are developing ARMs that will soon revolutionize ground maintenance tasks. These commercial mowing machines are programmed to cut grass following a GPS program or an embedded map in the machine's CPU. They have the ability to avoid obstacles, stop if something crosses the mowing path and diagnose and self-report internal maintenance issues. Because they are robots they can operate 7 days per week, 24 hours per day if needed. While applications abound for these machines throughout the DPR, their introduction along the trail system will help reduce maintenance and personnel costs while increasing safety for visitors and staff. Machines that are programmed to cut large open fields during the day can be redirected to smaller trail corridors at night when visitor numbers on trails are low.

SEGWAYS

Segways are used for patrol and event management by police agencies and parks across the nation. The machines are available with extra stabilization and off road capabilities. They are useful for many applications and are a cost-effective alternative to carts and vehicles while also having a lighter impact on a trail's surface.

Visitor Services and Patrol

Park rangers provide visitor services and patrol DPR's trails. Park rangers provide public information and assistance to trail visitors routinely. But they also provide services to neighbors and neighborhoods, schools and businesses, youth groups and clubs that are part of the diverse communities that host trails in Prince George's County. It is recommended that rangers become immersed in community projects and programs to promote the trails. Rangers should manage volunteer projects, meet with trailside neighbors and neighborhoods to solve issues, visit schools and civic clubs, and create events and activities that promote the many benefits of trails.

Welcome Volunteers

Americans enjoy volunteering and the citizens of Prince George's County reflect this special American trait. It is recommended that DPR continue to grow and manage their Adopt a Trail program to allow more citizens to care for the trails they own. Volunteers can assist with trail monitoring, act as trail ambassadors, lead groups, manage other volunteers, plant gardens and keep trail areas tidy. Successful volunteer programs offer worthwhile, meaningful tasks to volunteers who have been selected, trained and equipped for success.

Coordinate All Activities with Outside Agencies

A number of agencies will perform tasks within the DPR's trail right of way. Contractors, other government agencies, utility and communication companies may have the right to make repairs and install equipment in public trail corridors. It is essential that all workers within the trail corridor, both DPR and others, be oriented to the presence of trail users and be considerate of their needs and limitations. It is recommended that DPR establish work guidelines for crews working overhead, excavating or performing other tasks to maximize safety for trail users.

RECOMMENDATIONS

- Establish trail-focused maintenance program
- Use the Asset Management System (EAM)for data gathering, inspections and reporting
- Establish protocols and priorities for routine vs irregular maintenance
- Engage volunteers
- Coordinate with outside agencies

Promoting and Programming the Network

CHAPTER 6

Promoting the Network through Partnerships and Programming

Trail usage and the comfort, enjoyment and safety of trail users can be enhanced through a program of trail promotion, activities and partnerships. While many programs take place on the M-NCPPC trail network today, growing the network of partners involved in programing, promotion and even maintenance, will cost-effectively reach new audiences and ensure the trail system is well-utilized.

Partnerships

Trail managers across the country rely on strong and diverse partnerships for the stewardship, promotion, and programming of trails in order to extend the benefits of the trail to the communities and neighborhoods to which they connect. Many government entities that manage trails receive support from public and private organizations, large and small, finding innovative ways to increase and encourage trail use and stewardship through outreach, events and activities. Organizations like the Washington Area Bicyclist Association and the Anacostia Trails Heritage Association, Inc. play a special role in advocating for trails and in sponsoring a variety of events and activities along many of the trails in Prince George's County.

Currently, trail programming in Prince George's County is organized and staffed by DPR, or coordinated and hosted by community groups and private organizations that partner with DPR. Countywide or regional events such as walks or runs provide fun and healthy recreational opportunities and are sometimes used as fundraising opportunities for organizations. Programs range from volunteer clean-ups to fitness and nature activities, occurring annually, monthly or weekly. In 2014, there were 52 privately-run special events hosted on DPR trails. Notable programs include: Prince George's County Audubon Society Bird Hikes, Wegmans Food Market's park and trail use incentive program (Wegmans Passport to Family), guided bike rides organized by College Park Aviation Museum, REI's 5k/10k race series, and a large trail clean-up by University of Maryland. This Plan recommends strengthening existing partnerships and creating new ones.

GET FIT: Walks, runs, healthy living classes and wellness programs are scheduled through the DPR's #GETFITPG program. Due to positive public response DPR is working to expand these types of activities.

Health Partners

Public health departments, hospitals and health care providers are increasingly involved in trail development and programming. From capital investments (Little Rock, Arkansas's Medical Mile) to research and programming (Greenville Hospital System Swamp Rabbit Trail in South Carolina), health sector partners often understand and value the community and health benefits that trails bring. Kaiser Permanente Mid-Atlantic has supported trail programming on D.C. and Baltimore trails, including the development of trailside community gardens and "Docs in the Park," an initiative to reconnect children and families to nature. Health organizations also see trails as a way to connect physical activity and healthy eating by incorporating trails as a way to access farmer's markets by foot or by bike. For example, UnityPoint Health sponsors the Downtown Farmer's Market in Des Moines, IA, which provides an interactive trail map to encourage trips to the market by foot or by bike.

Public Programs offered by DPR Partner Organizations

Bird Hikes with Prince George's County Audubon Society: Bird hikes happen monthly and take place along various trails in the county including the Jug Bay Natural River Trail.

Wegmans Passport to Family Programs: Wegmans Food Market partners with the County to promote trail use for well-being through this incentive program. Participants are encouraged to visit seven trails in exchange for a Wegmans coupon. Participating trails are located at Birchwood City Community Park, Buck Lodge Park, Cosca Regional Park, Cross Creek Trail, Fairwood Park, Henson Creek Trail, Kings Grant Community Park, Lake Artemisia Loop Trail, Little Paint Brach Fitness Trail, Millwood Park, Northeast Branch Trail, WB&A Trail, Watkins Regional Park, and Woodrow Wilson Bridge Trail.

Cycle through Aviation History: The College Park Aviation Museum offers an annual guided bike ride along the Anacostia Trail System to teach the public more about the County's aviation history.

REI Run Series Mid Atlantic 5k/10k: In 2015, Recreational Equipment, Inc. (REI) hosted a series of local races across the US. One such race was on the Patuxent River Trail. Though this event is not scheduled annually, REI has expressed interest in hosting similar events.

University of Maryland College Park Scholars Day: The annual volunteer program of 50-100 freshmen provides trail clean up near Lake Artemesia, which includes the Paint Branch Trail, Indian Creek Trail, and the East Coast Greenway.

Community Partners

Trail systems that become woven into the fabric of a community are often the most used and cared for. Actively involving schools, churches, neighborhood civic associations and other community groups should continue beyond the trail planning and development phases. Partnerships with schools may include Safe Routes to School programs, including using trails as primary routes for one-time or annual events like Walk and Bike to School Day or working closely with nearby schools to utilize the trails for physical activity programming and bicycle safety instruction throughout the school year. Promoting community trails should extend beyond schools to other community-based and faith-based organizations. Partners can include churches that are involved in – or interested in starting - health initiatives, including walking clubs. For example, Michigan Trails and Greenways helped promote a Detroit health initiative grant, encouraging churches and community groups incorporate trails into their walking clubs. Additionally, partnerships with police departments should familiarize community police officers with the trails in their districts and to encourage the incorporation of trails in regular patrols. Hosting events like National Night Out on and along trails are opportunities to engage community members and police departments in a fun, friendly environment.

Environment Partners

Where trail systems intersect with stream valleys and rivers – as many of Prince George's County's existing and planned trails do – partnerships with environmental and watershed-focused organizations are essential. Across the country, many watershed organizations also lead or assist with trail development and stewardship activities. For example, the Bronx River Alliance is the coordinating voice for the River and also promotes, supports and coordinates the completion of the Bronx River Greenway, offering community outreach and programs to connect neighbors to the Greenway and the Bronx River. Groups like the Earth Conservation Corps, the

Anacostia Watershed Society and Maryland Clean Water Action may be interested in using trails for public education and stewardship events, or offer resources for community activities that incorporate trails along waterways.

Trail Building and Maintenance Partners

Organizations like the Student Conservation Association (SCA) often work with watershed organizations and trail managers to build, improve and restore trails. In fact, SCA has worked closely with local municipalities, federal agencies and other nonprofit organizations in both Washington, D.C., and Baltimore, MD, metro regions to successfully provide many services related to trail building and maintenance. Locally, Prince George's County Department of Public Works and Transportation can offer support to community-led initiatives through events like "Clean Up Green Up" and the Mid-Atlantic Off-Road Enthusiasts (MORE), representing thousands of area mountain bikers, actively builds and maintains hundreds of miles of trails in the region, including Prince George's County.

Public Art Partners

Public art highlights community identity and adds aesthetic interest to trails. Murals, sculptures and other installations can provide a welcoming environment and create opportunities for public engagement and youth programming. Local arts and cultural affairs commissions, similar to Prince George's County Arts and Humanities Council, often provide funding for murals and other public art projects. In Washington, D.C., the Commission for Arts and Humanities sponsored several large murals along the Metropolitan Branch Trail, serving the dual purpose of trailside beautification and graffiti abatement. In Cleveland, OH, seeing trails as an important part of community revitalization, the Cleveland Public Art and ParkWorks partnered with a community development corporation in the Slavic Village neighborhood to create a public art master plan for the Morgana Run Trail and worked with local artists to install murals and sculptures along the trail.

Trail Rangers and Volunteers

The Natural and Historic Resources Division park rangers manage the trail volunteer groups and answer non-emergency citizen calls and complaints. The ten rangers take care of on the spot repair issues and refer larger tasks to the appropriate maintenance section. Rangers notify Park Police if evidence or complaints of criminal behavior is encountered. Although very present on the trail network, rangers are currently not assigned exclusively to trail operations.

- Park rangers respond to non-emergency citizen reports and complaints, assist with some special event and programming tasks and oversee the volunteer trail adoption program.
- Trail segments can be adopted by volunteers who clean up litter and take care of small tasks while reporting larger problems to the park rangers. Groups and businesses adopt sections of the paved trail system as well as single track mountain bike trails.

Business and Economic Development

As the private sector continues to understand and experience the many benefits of trails, businesses and corporations are becoming important partners to trail managers, sometimes supporting trail planning efforts, trail maintenance and improvement projects and trail construction. In Prince George's County, there are opportunities to explore a partnership with Exelon, the region's leading power utility company. Exelon was a supporter of the recently completed 606 Trail in Chicago and also helped fund the trails and greenways master plan for Limerick Township, PA. The Power Line Trail in Horsham Township, PA, also sets precedence for trail development within an Exelon high-tension power line right-of-way.

Real estate developers can also be valuable partners and should be engaged to support trail development and promotion, especially where trails connect or intersect major developments (e.g., National Harbor). For example, the D.C.-based Douglas Development Corporation recently funded a study for a conceptual trail along the New York Avenue corridor that would link two of its major developments. The Prince George's County Economic Development Corporation can be engaged to support trails and function to help open doors with the area's largest employers. Additionally, incentives or assistance associated with Enterprise Zones can provide resources or support as part of the implementation of this Plan. As the trail network continues to expand, linking residents and visitors to destinations within the County, their potential for economic impact should not be overlooked. Strategic partnerships with state and local tourism organizations, like the Convention and Visitor's Bureau and the State of Maryland Tourism, should be prioritized to ensure that trails are promoted as one of Prince George's County's top attractions.

Programing on Trails

Successful activation of a trail network can increase the number of users by making it a more desirable place to visit. This can be accomplished through the creation of opportunities for activity and beautification of the trail surroundings, making the trail network a local and regional destination. DPR's regular events are an important tool to increase use on trails. However, trail managers around the country have developed additional strategies to increase trail use, including the installation of art, gardens, and other trailside amenities. These aesthetic factors, often viewed as afterthoughts when designing and maintaining trails, have proven to have a positive correlation with boosting trail use. DPR should continue working with community partners to grow their existing amenity programs and look to establish new programs and installations that increase trail activation.

The majority of the activation of the existing Prince George's County trail system consists of DPR-facilitated programming, including walks, runs, wellness programs and healthy living classes. While these events are popular, DPR's lack of a dedicated staff member to manage events and develop new programming may hinder growth. The Plan recommends a focused approach to partnering with community groups and private organizations to

Highlight of DPR Sponsored Programs

Art on Trails: This program introduces nature and the environment to youth as well as teaches and creates environmental art along trails. Pilot art projects have been installed on trails at Watkins Regional Park, Bladensburg Waterfront Park, and Fox Hills Park.

Club 300: This walking program for seniors holds weekly group walks on different trails throughout the county. Walks in the past have been on the Henson Creek Trail, Northeast Branch Trail, Paint Branch Trail, WB&A Trail, Watkins Regional Park Loop Trail, Woodrow Wilson Bridge Trail, Governor's Bridge Trail, Patuxent River Park, and the trails around Lake Artemesia.

Winter Festival of Lights Trot for a Turkey: This event is held annually at Watkins Regional Park. Participants can walk or run and tour the festival lights along the trail. At the end of the festival turkeys are donated to families in need.

Adopt-a-Trail: Groups or individuals are able to adopt a portion of paved trails, which include the Anacostia Trail System, WB&A Trail, and the Henson Creek Trail. Currently, the majority of trails in the county have been adopted by volunteer groups.

Bike Rentals: Bicycles can be rented for a fee from Bladensburg Waterfront Park with access to the Anacostia River Tributary Trails System.

Recreation Center Activities: Recreation centers at Watkins Regional Park and Bladensburg Waterfront offer programming such as guided hikes and nature walks along the trails near their facilities. Individuals sign-up through Smartlink, a system used by DPR that allows online sign-up for classes and activities. Programming is year round and advertised on the recreation center calendars. The busiest time for trail use is during the school year and summer for class and camp field trips.

Trail Uses by Private Groups for Non-Public Events

A wide range of religious organizations and social groups use park trails and nearby park facilities for private group activities, including walking and biking. Unless there is a large event that may require use of park personnel, or the group seeks use of facilities that are available by permit, the private parties typically do not register their event with the DPR. Some groups with on-going permitted programs include the following:

- Mid Atlantic Off Road Enthusiast (Mountain Bicycling)
- Prince George's Running Club
- Prince George's Audubon Society
- Alpha Xi Delta (for Autism Speaks)
- Alpha Omega Epsilon (for Girls Excelling in Math and Science, G.E.M.S)
- Church World Service (CROP Hunger Walk)
- Anacostia Trails Heritage Area, Inc.
- Strive 2 Tri Jr. Triathlon Club
- Vecna Cares Charitable Trust
- College Park Nursery School
- Dematha Catholic High School (Music Program)
- St. Columba School
- Emmanuel Baptist Church
- Philippine Nurses Association of Metropolitan DC, Inc.
- National Law Enforcement Officers Memorial Fund
- American Softball Association (ASA) Women USA

augment DPR-led efforts.

Art

Trailside art can highlight community identity, add interest to trails, and provide a sense of destination. Along Washington, D.C.'s Metropolitan Branch Trail, the D.C. Commission for the Arts and Humanities worked with local artists to create several large-scale murals. The trail's status as a "walking gallery" helps to establish the trail as a local and regional destination. Minneapolis' Midtown Greenway Coalition has a committee dedicated to selecting and installing public art, because they believe art plays an essential role in increasing community awareness of and interaction with the Midtown Greenway. DPR's existing Art on Trails program serves the dual purpose of introducing art to youth and beautifying the county's trails through the installation of several pilot art projects. This program could be expanded to increase both the number of participants and art projects.

Gardens

Gardens along trails can have a large positive effect on activating trails, as they both contribute to the beautification of the area and serve as neighborhood gathering spots where neighbors can enjoy a shared experience. A substantial additional benefit is the opportunity for residents to grow produce, helping to eliminate food deserts in urban areas. In Seattle, a grove of apple trees along the Burke-Gilman Trail provides apple cider for community events, while volunteers are trained on proper tree care. Community gardens along the Richmond Greenway have been established as a destination, substantially increasing use of the trail and they provide summer jobs for youth who learn how to tend the gardens.

Bikeshare

Through a DPR-sponsored program, Bladensburg Waterfront Park offers bike rentals, allowing access to the Anacostia Tributary Trails System for those who do not own bikes. While this program has been successful, the Prince George's County trail system should better integrate with the regional Capital Bikeshare or equivalent system to increase opportunities for those without bikes to access the full trail network and allow for one-way trips. In Indianapolis, all of the Indiana Pacers bike share stations are located on or within easy walking distance of the Indianapolis Cultural Trail. At minimum, major access points and trailheads for the Prince George's County trail network should offer access to Capital Bikeshare.

Amenities

Benches, water fountains (for dogs, too), and other basic amenities can also help to activate a trail by opening it to a larger variety of users and encouraging trail users to spend more time per visit. Exercise stations along the trail, such as those found on Washington, D.C.'s Rock Creek Park Trail, and painted mileage markers can also increase the variety of users on the trail and make the trail a destination for fitness-oriented users.

See *Existing Conditions Report* for full list of current programming and promotional activities in Prince George's County.

RECOMMENDATIONS

- Establish and grow partnerships:
  - health partnerships
  - community and environmental partners
  - trail building/maintenance partners
  - public art partners
  - industry, economic development and tourism partners
- Increase DPR sponsored and community sponsored events and programming
- Increase trailside amenities: gardens and art
- Add Capital Bikeshare stations at key trail access points and trailheads

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Impacts of the Network

CHAPTER 7

Trails—A Good Public Investment

A robust trails network has the potential to generate millions of dollars in county and local economic benefits. The economic impacts of trails are felt through tourism spending, an increase in the number of small businesses that cater to trail users, and attract the skilled workforce that drives innovation and economic growth. Prince George's County can leverage a premier trail system to take advantage of the timely convergence of what communities want and what large employers are now seeking – quality places that are competitive, cool and connected. Homeowners near trail systems benefit from improved real estate values. Improved safety for bicycling and walking will also reduce economic losses and health care costs related to crashes, as well as health care costs resulting from obesity-related diseases. Shifting trips from driving to bicycling and walking reduces environmental impacts and energy-consumption costs.

Studies and stories from around the country demonstrate that good planning and smart investments in trails not only provide citizens increased mobility and travel options and improved personal health and fitness, but deliver quantifiable economic benefits at the personal, local and regional levels. The following examples show that Prince George's County has much to gain from an increased investment in trails.

Economic Benefits for Prince George's Communities

At the local level, the economic benefits for trail-friendly communities are becoming increasingly clear to community leaders—they help attract professional talent, stimulate neighborhood revival and local economies. And, as stated in the introduction of this plan, the residents of Prince George's County want more trails.

Attracting Professional Talent

As indicated in the General Plan, Prince George's 2035 economic prosperity goal is to create a diverse, innovative, and regionally competitive economy that generates a range of well-paying jobs and strategically grows the tax base. A safe and connected trail system can support the county's efforts to become an attractive place for young professionals and the businesses that hire them.

To stay competitive, Prince George's municipalities and urbanizing regions must be able to attract new and expanding businesses and these businesses and institutions are looking to locate in communities where young, family-oriented and highly skilled workers want to live. As a result, local communities must create the bicycle- and pedestrian-friendly communities that these workers desire for themselves and their families. Surrounding counties such as Anne Arundel and Montgomery are making major investments in trail systems, on-road bikeways and sidewalks both to benefit their existing residents and attract knowledge workers. Along with good schools and low crime rates, providing a safe and vibrant community where residents can bicycle and walk to work and errands, run or jog for exercise, and enjoy the outdoors with family and friends is essential to economic sustainability.

Local Trail Systems—Higher Revenue and Property Values

High quality trail systems can draw out-of-town visitors as well as spur positive economic impacts by stimulating local spending and increasing property values. Trail systems serve a wide range of recreational needs because they accommodate bicycling, running, skating and walking, and are accessible to a broad range of skill and endurance levels. Paved trails can be used by individuals, families, seniors, children, and people

with disabilities, creating a broad market from which economic benefits are drawn.

A 2004 study done for the Virginia Department of Conservation on the Washington and Old Dominion Trail in suburban Northern Virginia found that 1.7 million trail users visit the trail annually, which generated $7 million in local spending.[1]

High-quality trails often result in improved property values. Homes located near Indianapolis' Monon Trail were worth more. If there were two identical houses -- the same number of square feet, bathrooms, bedrooms, garages, porches – one within a half mile of the Monon Trail and another further away – the home closer to the Monon Trail would sell for an average of 11 percent more.[2]

Bicycle Tourism

According the Outdoor Industry Association, outdoor activity in Maryland, undertaken by both local residents and tourists, generates $9.5 billion in consumer spending, supports 85,000 Maryland jobs, produces $2.8 billion in wages and salaries and $686 million in state and local tax revenue. At least 43 percent of Maryland residents participate in outdoor recreation each year.[3]

Bicycling and running are the most popular outdoor activities engaged in by tourists and residents alike; they rank among the top three (along with fishing) among both youth and adult populations, with over 50 percent of the total U.S. population participating. Moreover, bicycle tourists tend to spend more than other visitor types. A study of bicycle tourism in Montana showed that bicycling tourists spend about $75 a day per person compared to $58 for visitors who arrived by car. Given Prince George's proximity to Washington, DC and the highly populated metropolitan area, a well-connected

trail network is likely to foster large increases in bicycle tourism.

Recreational bicyclists, both from out of state and in-state, are attracted by hard surface trails, on-road touring routes in scenic and culturally unique areas, and mountain biking opportunities. Thus, attracting bicyclists to Maryland, and encouraging more Marylander's to bicycle, will support the state's economy and the economic sustainability of the county's local communities.

Signature Trails and Trail Systems

Trails play a unique role in stimulating local economies. Regional and long distance trail systems attract the widest range of cyclists interested in touring. Non-local trail visitors spend money on food, gasoline, supplies, gift shopping, overnight accommodations; and may buy or rent equipment as well. The economic benefits to small towns and cities are significant.

- In the Dayton, OH, region, the Miami Valley trail system, a regional recreational draw, has an estimated annual economic impact of between $13.5 and $14.9 million.[4]
- The Great Alleghany Passage is a 132-mile trail

1 The Washington & Old Dominion Trail: An Assessment of User Demographics, Preferences, and Economics Final Report; Prepared for the Virginia Department of Conservation; December 9, 2004;Principal Investigators: J.M. Bowker, USDA Forest Service, Southern Forest Research Station; John C. Bergstrom and Joshua Gill, University of Georgia, Department of Agricultural and Applied Economics; Ursula Lemanski, National Park Service

2 Lindsey, Greg, et al, "Property Values, Recreation Values, and Urban Greenways," Journal of Park and Recreation Administration, Volume 22, Numbe6r 93, pp. 69-90, Fall 2004. http://staff.washington.edu/kwolf/Archive/Classes/ESRM304_SocSci/304%20Soc%20Sci%20Lab%20Articles/Lindsey_2004.pdf

3 The Outdoor Recreation Economy, Maryland, Outdoor Industry Association,

4 City of Dayton 2025 Bicycle Action Plan, 2011, http://www.cityofdayton.org/departments/pcd/Documents/CityofDayton2025BicycleActionPlan.pdf

system from Cumberland, MD, to Pittsburgh, PA. Bicyclists on overnight trips spend an average of $114 per day there. Business owners in the small communities along the trail reported that, on average, 30 percent of the gross revenue was directly attributable to the trail users.[5]

- The 400,000 annual visitors to Missouri's Katy Trail State Park, a 240-mile long park that contains the Katy Trail, have a total annual economic impact of $18.5 million, supporting 367 jobs.[6] One in four trail users were overnight visitors, who spent an average of $700 per trip for motel and B&B guests or $231 per trip for campers.

While area connections to the Anacostia River Trail are almost complete, the county has a number of other feature trails and trail systems emerging, including the WB&A Trail, Rhode Island Ave Trolley Trail, Little Paint Branch Trail, Northwest Branch Trail, Lake Artemisia Trail and more. The popularity of these trails can propel new trail development and help make the case for targeted investment in linking the system together to maximize economic benefit.

Mountain Biking

The Outdoor Industry Association in the U.S. estimates that annually, bicycle-related travel and tourism is a $47 billion industry. Mountain bicycling is estimated to account for 15 percent of this economic activity, and it is growing in popularity, not only in the U.S. but around the world. Mountain bicycling is part of a growing trend in adventure tourism (42 percent of all US and European holiday travel) and is increasingly served by outfitters that offer mountain bike holidays of 3-24 days to the premier destinations. These types of mountain bicycle holidays average $250 a day and generate considerable spending in their destination community.

Prince George's County can capitalize on this growing trend by having focused promotional campaigns and events highlighting existing facilities like Fairland Park and by developing more mountain biking venues throughout the county.

The economic analysis summary in the Measuring Impact section of this chapter lays out a framework for measuring the level of impact trail users have and will have in Prince George's County.

The CDC's Health Impact Assessment Toolkit identifies the major steps in conducting an HIA:

- **SCREENING**—would an HIA be useful? If all the decisions have been made, an HIA probably is not appropriate. If HIA findings most likely would not change any decisions, an HIA would not be useful.
- **SCOPING**—identify which health effects to consider and by what methods.
- **ASSESSING RISKS AND BENEFITS**—identify who might be affected and how they might be affected. Use data and research to determine the likelihood, direction, magnitude, and distribution of potential health effects.
- **DEVELOPING RECOMMENDATIONS**—suggest changes to proposals to promote positive health effects or minimize adverse health effects.
- **REPORTING**—present the results to decision makers and the public.
- **EVALUATING**—determine whether the HIA will affect public health decisions and the actual effects of those decisions.

5 2012 Trail Town Business Survey Report for The Progress Fund, Center for Regional Progress, Frostburg State University, May 2012 http://www.atatrail.org/docs/Trail_Town_Business_Survey_Final_Report.pdf

6 "Katy Trail Economic Impact report," Synergy Group, July 30, 2012

Cost Saving and Public Health

Health Care Costs for Obese and Overweight Populations

For the past decade, Prince George's County has been consistently ranked one of the Maryland counties with the highest rates of overweight and obese populations. Center for Disease Control (CDC) data for 2015 shows that 71.4 percent of adult residents self-report as obese and or overweight.

Bicycling and walking can have an impact on the bottom line by impacting the waistline. A rigorous 2011 study conducted by the University of Northern Iowa's Sustainable Tourism and Environment Program found that the 25,000 regular bicycle commuters and 150,000 recreational bicyclists in Iowa saves the state $87 million in health care costs.[7]

Cost savings can be captured on the business side as well. Between 2007 and 2011, a period in which corporate health care costs increased ~24 percent nationally, the healthcare costs of a Twin Cities, MN, manufacturer, Quality Bicycle Parts (QBP), dropped by 4.4 percent. Their own study showed that the cost savings resulted in large part from employee participation in the, "Health Reward Program," which encouraged employees to bike to work. QBP estimates that its wellness program has reduced productivity loss by 1.3 percent, which saved the company $903,000 over three years.

Health Impact Assessment

According to the CDC research examining the connection between parks, trails, and health has helped identify the specific value that parks and trails provide. Trails promote physical activity and community engagement; and provide both environmental and mental health benefits. Well-designed trails have been shown to reduce stress and encourage community interaction.

Prince George's County recognizes that parks and trails can provide important resources to address health problems, such as obesity and its related diseases. Often communities raise questions about trails policies or projects when determining the costs and benefits of a facility. One way to evaluate how a project may affect public health is to conduct a health impact assessment (HIA) as part of the trail planning process.

To better understand the specific health impacts of developing trails the CDC has developed resources to aid communities in evaluating how a trail or park facility will potentially effect the health of a surrounding population. The CDC defines an HIA as "a combination of procedures, methods, and tools by which a policy, program, or project may be judged as to its potential effects on the health of a population, and the distribution of those effects within the population." Practitioners have found that an HIA has the most impact for projects where health has not been raised as an issue or concern.

HIA Collaboration with the University of Maryland

Prince George's County has a unique opportunity to apply this relatively new tool to select priority trail projects. A partnership is being initiated with the University of Maryland, School of Public Health that would include an evaluation of those projects that are primed for an HIA, outlining a process to conduct the assessments, and providing guidance and oversight through the assessment process for the selected trail or trails. The collaboration is anticipated to begin with a set of priority trail projects as a result of this planning process.

Measuring Impact

To fully understand the magnitude of existing and potential economic impacts, the county can institute a measurement and evaluation program that would yield quantifiable results to inform the planning, design, management and promotion of the trails network. The following summary analysis for measuring economic impact and trail use provide frameworks for instituting such programs.

Benefits of Trail Use

Trails in Prince George's County provide a number of economic benefits related to recreation, health, transportation, property values, economic development, and ecological services. To illustrate the magnitude of these benefits, existing trail use was analyzed and statistical models were applied to estimate current and future use of the trail system. See appendix: *Memorandum: Assessments of Benefits and Costs*, for the full analysis. The assessment indicates that use of

7 Economic and Health Benefits of Bicycling in Iowa, University of Northern Iowa, Fall 2011 http://iowabicyclecoalition.org/wp-content/uploads/2012/04/2012-Economic-Impact-Study.pdf

trails in Prince George's County is significant and is associated with many benefits, specifically:

- Average daily trail traffic across six locations in Prince George's County where counts were taken in 2012 and 2013 ranged from a low of **59 in one location to highs between 1,000 and 1,200 at sites near Lake Artemesia and on the Woodrow Wilson Bridge**. These counts are evidence that hundreds of thousands of people pass these sites annually.
- Statistical models of annual average daily trail traffic based on population density, land use, and other factors confirm the validity of these counts and indicate that traffic on different segments of the 46 mile existing trails network is substantial. The models estimate **that hundreds of thousands of individual users travel nearly four million miles on the trails annually**.
- When used to project future use of planned trails, these models conservatively indicate that trail use **will more than double**. Future use will depend on patterns of development of nearby land.
- From an economic perspective, trail users – bicyclists, walkers, joggers, and families on the trails for recreation – obtain value from each visit; otherwise, they would have foregone the visit. Modest valuation of each visit (e.g., $1 or $2 per visit, or the cost of driving a couple of miles to and from a trail) illustrates that the **trails likely generate millions of dollars of benefits to users annually**.
- These estimated benefits of trail use **do not account for indirect benefits** associated with health or ecological services and are thus incomplete, underestimates of total benefits.

The primary obstacle to refining these estimates of benefits and costs is the lack of comprehensive, detailed information about trail use. With modest investments, Prince George's County can initiate a trail traffic monitoring program to generate the information needed for a more detailed assessment of benefits and costs. Data collected in a trail monitoring program could be used to inform many aspects of trail management, including operations and maintenance.

- Overall, analyses of available data and use of models to estimate trail use indicate **trail use is substantial, will increase significantly, and provides important economic benefits to residents of Prince George's County**.

Trail Counts Program

To gather quantitative data about trail use M-NCPPC staff installed and monitored trail traffic using automated monitors at up to eight locations starting in 2009. In some cases, due to equipment malfunction and inconsistent data gathering comprehensive estimates of trail use on the existing system are not verifiable. However, results from the 2012-2013 monitoring data do provide some insight into the relative order of magnitude of trail use on selected trails in the County. These limited data were used in assessing current and future trail use for purposes of this Plan. To generate the information needed for a comprehensive assessment of benefits and costs and to support other planning and outreach efforts, M-NCPC should invest and install new trail use counting equipment and develop a consistent monitoring program to organize, interpret and disseminate the data. Reliable data about trail use in Prince George's County would enable improved benchmarking, facilitate capital project prioritization and support trail management decisions.

This plan recommends the trail traffic monitoring program be strengthened in the following ways:

- Invest in counting equipment that is less time consuming to manage. Alternate technologies that upload data by satellite modem are available. Equipment that uses satellite modems would allow the trail managers to remotely monitor the stations. This approach may require increased hardware expense, but will reduce the investment of staff time needed to keep the system operating. Fewer permanent monitoring stations with more consistent and reliable data could be augmented with a rotating set of seasonal stations.
- Develop and adhere to data management protocols that ensure the trust and confidence of decision-makers, staff and the public in the data, including the following elements:
  - Validate all counter installations. Conduct manual counts at each monitoring station to annually verify that the equipment is working, and to support the generation of site-specific correction factors, if necessary.

  - Archive data in a standard format and periodically publish qualified data online. A publication schedule can provide incentive for adhering to other scheduled parts of a protocol, such as maintenance and analysis.
- Estimate annual ADT at the established eight locations and use this statistic as a performance measure for trail system maintenance, promotion, and expansion.
- Augment traffic volume data with other forms of data collection, including safety data, manual field observations and surveys. Safety data are of particular interest to the public. Explore partnership with the Maryland-National Capital Park Police, Prince George's County Division to periodically compile incident data for reporting and identification of opportunities to improve trail management. Existing data collection instruments, such as the System for Observing Play and Recreation in Communities (SOPARC)[8] and Rails-to-Trails Conservancy's Trail Monitoring and Assessment Platform[9], can be deployed using trained volunteers at relatively low cost.

The Federal Highway Administration's Traffic Monitoring Guide[10] includes recommendations about selecting sampling locations, equipment, data management, and analysis.

RECOMMENDATIONS

- Invest in and install new trail use counting equipment
- Develop monitoring and data management protocols for trail use counting program
- Conduct an economic impact analysis

8 http://activelivingresearch.org/soparc-system-observing-play-and-recreation-communities

9 http://www.railstotrails.org/our-work/research-and-information/trail-modeling-and-assessment-platform/

10 https://www.fhwa.dot.gov/policyinformation/tmguide/tmg_2013/traffic-monitoring-for-non-motorized.cfm

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Implementation Action Plan

CHAPTER 8

Implementation Action Plan

Throughout the Trail Plan, a brief summary of recommended actions is provided at the end of each chapter. This chapter consolidates these recommendations in a matrix format and provides additional detail about the suggested approach or strategy, which agencies or other parties should take the lead, and whether the recommendation should be undertaken in the short, medium or long term. Short term is 1-2 years after Plan acceptance, medium term is 3-4 years and long term is 5-6 years.

In addition to the elements discussed above, each recommendation is also related to a purpose and need statement and a performance measure, as appropriate. The measures focus on quantifiable results relate to the activity, such as the number of staff trained or the number of projects completed.

Note:
This version of the plan is still in draft form. During the month of May 2016, the public, various stakeholders and M-NCPPC staff will continue to review the draft and suggest changes to ensure that the plan is applicable to the current status of the Trails Network and appropriate for the agencies involved in building and maintaining it. As a countywide planning document, it needs to provide a long term vision that supports the adopted Formula 2040 Parks and Recreation Master Plan; as an update to recent trail plans, it needs to chart the immediate course forward from the time of its acceptance, anticipated in mid-2016.

Trail Plan reviewers are encouraged to comment on the overall Plan and especially on the Implementation Action Plan in this Chapter.

Establishing the Trail Network

RECOMMENDATION	APPROACH	RESPONSIBLE PARTIES	PURPOSE/NEED	TERM	MEASURE
Adopt trail categories: a) Primary, Secondary and Recreational and b) Existing and Planned/ Proposed.	Accomplished when the Trails Plan is adopted by the Commission	M-NCPPC Commission	Establishes a framework within which all trail development can take place and assists in tracking long term progress. Helps distinguish amongst trails M-NCPPC will be responsible for and trails that road agencies should be responsible for.	Short	
Prioritize trail development activities in parts of the County that are currently underserved by trails and achieve conditions where 95% of the 2040 residential population is within 1/2 mile of the Primary/Secondary Trail Network.	Prioritize the Central Avenue trail project in the near term and study stream valleys in the southern part of the County to determine future trail opportunities.	DPR	Create trail access equity throughout the County and improve public health.		Achieve eighty percent (80%) of the County population living within 1/2 mile radius of the Primary/ Secondary Network (or loop trail) by 2030; and ninty-five (95%) percent by 2040.
Adopt priority barriers recommended in the plan to be addressed with one or more new trail projects.	1) Priorities adopted when the Trails Plan is adopted by the Commission. 2) Prioritize locations where barriers can be addressed, conduct feasibility analysis, and design and construct solutions. 3) Convene a barrier summit every three years with representatives of the agencies with jurisdiction over the barriers and appropriate Prince George's County elected officials.	M-NCPPC Commission, DPR	Will help focus all parties in the County and in the state on the importance of addressing major built environment barriers as a component to creating a connected trail network.	Medium	One major project every 4 years that addresses a priority barrier.
Develop a Ten Year Plan of Priority Trail Development Projects and Activities.	Establish and adopt prioritization system for trail planning and development activity.	M-NCPPC Commission and DPR	Creates greater predictability in trail design and construction activity.	Short	Ten year list of projects for a $2 million per year set of investments.
Coordinate with the National Park Service regarding the 2016 Paved Trail Study	Review the NPS Study and conduct meetings to identify and discuss priorities in each plan.	DPR	Effectively utilize NPS lands in the County to support trail development; and eliminate barrier affect of NPS lands/highways.	Short	
Improve trail connectivity to priority M-NCPPC facilities and parks.	Conduct a feasibility study of 45 facilities/parks to determine which facilities have potential for connectivity in the near term; estimate costs of creating connectivity.	DPR	Provides non-motorized transportation to M-NCPPC facilities and build a strong link between the trails program and the park and facilities based programs.	Medium	Improve trail connectivity of one facility per year.
Improve trail connectivity to municipalities within Prince George's County.	Convene a trail summit each year with staff and citizen representatives of the 16 municipalities whose access to trails and linkage with the network was rated as fair or poor by this Plan.	PD, DPR, and Municipalities	Ensures that incorporated communities within the county are served by and connected to the countywide trail network; and build strong partnerships with local governments.	Short	Periodic summit for municipalities.
Coordinate with Exelon to determine which pilot trail projects they may be willing to fund along their power line corridors; and coordinate with WSSC to determine how unpaved trails can be established with sewer line repair and replacement work.	Identify potential powerline pilot projects; follow up with coordination and mapping already conducted with WSSC as a part of this planning process; also reach out to their philanthropic activities that can support trail programming and maintenance.	DPR & Elected Officials	Develop trails with no additional environmental impacts. The new utility company, post merger, has community relations at the top of its priority list, and has expressed openness to use of its ROW for trails.	Short	Five miles of powerline and WSSC trail constructed by 2020.
Complete the GIS trail data inventory	Finish populating data related to: Ownership, Surface Type, Trailheads, Waysides, subset trail types of Secondary Network.	DPR	Ensure effective plan implementation.	Short	
Educate Staff Throughout M-NCPPC about the Trails Plan and its recommendations and implications.	Provide copies of the Trails Plan, a presentation to various staff groupings, and plan components on an internal agency website.	DPR	Ensure effective plan implementation.	Short	
Communicate and coordinate Trail Plan components with respective stakeholders, prospective partners and regional jurisdictions.	Provide copies of the Trails Plan, and a presentation to various staff groupings, and plan components on a website.	DPR	Ensure effective plan implementation and development of supporting partners.	Short	

Building the Trail Network

RECOMMENDATION	APPROACH	RESPONSIBLE PARTIES	PURPOSE/NEED	TERM	MEASURE
In major development centers, engage developers to educate them about the Trail Plan's new approaches to trail classifications, trail connectivity needs, relationship to complete streets policy, and trail design guidelines.	Provide training for developers; include those who expect to be involved in new developments as well as those involved with already approved developments.	DPR & PD	Ensure that future private sector development does not repeats some of the mistakes of the past.	Short	No. of developers attending the trainings.
Continue to develop planned and proposed trails.	Ensure that feasibility studies are conducted on a regular basis.	DPR & PD	Keep the trail development process moving forward.	Ongoing	Initiate one major feasibility study every two years
Coordinate Planned/Proposed trails in the Trails Plan with countywide master plans and local planning activities undertaken by M-NCPPC and municipal jurisdictions.	Ensure that DPR and PD staff "crosswalk" the Trail Plan with other plans, and update the Trails Plan with refinements emerging out of local area and subregion plans.	DPR & PD		Ongoing	
Continue refining the capital budgeting process that supports trail development.	Provide two general trail budget line items: Trail Development Fund and Trail Repaving and Rehabilitation Fund; and continue showing project specific line items for major construction projects.	DPR	More easily show how the budget is addressing needs and priorities.	Short	
Establish secure funding source for trail construction.	Adopt a budget policy that provides a minimum of $1 million per year in the M-NCPPC CIP for trail development.	County Council Sitting as the District Commission	Creates predictability in trail design and construction.	Short	
Seek additional funding for trail development	Develop a corporate partnership program to leverage additional trail funding from the private sector.	DPR & Park and Recreation Foundation	Increase funding levels	Medium	
Engage youth in trail development and maintenance	Reach out to the Student Conservation Association (and other conservation corps) to assess potential for trail building and maintenance support; establish a Youth Corps based in Prince George's County	DPR and PGC Youth Services Department.	Develop youth buy in to the Trails Program; provide employment training; get small projects on the trails system completed.	Medium	
Streamline the permitting process	Develop a Team approach to design and permitting amongst DPIE, DPW&T, M-NCPPC, and SHA District 3.	DPW&T	Eliminate unnecessary delay in trail projects.	Short	
Address environmental regulations that negatively effect trail building.	Work with other counties in the state, and state legislators, to pursue legislation that will direct the Maryland Department of the Environment and Maryland Department of Natural Resources to recognize that paved trails have a less adverse impact that other impervious surfaces such as parking lots, building footprints and roadways.	Elected Officials	Make is less burdensome to develop trails in undisturbed and minimally disturbed lands.	Medium	Changes in law, regulations, or approaches taken by state regulatory agencies.

Designing the Trail Network

RECOMMENDATION	APPROACH	RESPONSIBLE PARTIES	PURPOSE/NEED	TERM	MEASURE
Develop and adopt trail design guidelines and standards	Develop and adopt Trail Design Standards	DPR	Establishes high quality guidelines which will be the basis of all new trail design and renovation.	Short	Trail Design Standards have been completed, adopted and integrated into planning documents.
Implement a staff training program related to best practices in trail design.	Develop a training session using AASHTO trail design guidelines and new M-NCPPC design standards.	DPR	Achieve higher quality trails	Short	Train 20 M-NCPPC and other County staff per year, for three years.
Implement a developer training program related to best practices in trail design.	Develop a training session using AASHTO trail design guidelines and new M-NCPPC design standards.	DPR	Achieve higher quality trails	Short	Train 30 developers and consultants per year, for three years.
Improve wayfinding on the Primary Trail Network	Develop a wayfinding sign protocol and design manual for application countywide.	DPR	Improve public visibility of the trails system and make it more useful for transportation; increase personal security.	Short	Completion of a sign protocol and design manual

Managing and Maintaining the Network

RECOMMENDATION	APPROACH	RESPONSIBLE PARTIES	PURPOSE/NEED	TERM	MEASURE
Establish a trail-focused maintenance program.	Create a Trail Maintenance Leadership Team with key personnel from each of the three regional park maintenance divisions.	DPR	Develop a trail-focused approach to maintenance that includes new standards and guidelines, new procedures, and the most efficient use of staff and equipment resources.	Short	
Establish a trail-focused maintenance program.	Establish protocols and priorities for routine and periodic maintenance activities; including asphalt disruption and repair standards and overhead utility repair and tree work standards.	DPR	Develop a trail-focused approach to maintenance that includes new standards and guidelines, new procedures, and the most efficient use of staff and equipment resources.	Short	
Use the Asset management System (EAM) for data gathering, inspections and reporting.		DPR		Short	
Establish and implement a trail operations and maintenance staff training program.		DPR	Empower staff to provide efficient and high quality trail maintenance work.	Medium	
Coordinate maintenance issues with outside agencies.		DPR	Develop permitting standards, mitigation standards and repair standards for utilities and other entities that use the trails to access their infrastructure.	Short	
Continue and increase activities in the Adopt-a-Trail Program	Consider organizing trail work days, soliciting youth group service projects, creation of neighborhood liaisons, and a junior naturalist/ranger program.	DPR			

Promoting and Programming the Network

RECOMMENDATION	APPROACH	RESPONSIBLE PARTIES	PURPOSE/NEED	TERM	MEASURE
Focus DPR-led events programming on building partnerships with community-based organizations.	1. Seek community input on desired event types. Explore the creation of a full-time or part-time position to manage and create events programming.	DPR		Ongoing	
Add bike share stations at key trail access points and trailheads.	Work with bike share planners and Capital Bikeshare to identify appropriate station locations.	DPR and PD		Short	Trail usage is increased as the number of visitors on Capital Bikeshare increases.
Establish and grow health parnterships.	Work with identified partners to determine how trails might be incorporated into existing and future Health Impact Assessments. Reachout to health care providers to create awareness of park and trail resources and encourage Trail Use Prescriptions, Walk with the Doc and other trail programming.	DPR	Creates opportunity to leverage support and resources from public health and care providers that understand the value of trails to personal and community health	Short	At least 5 health partners identified and engaged through a trail programming committee.
Grow public art partners.	Reach out to the Prince George's County Arts and Humanities Council to identify opportunities to create and install public art along open and planned trails and/or develop a public art plan for the trail system.	DPR	Creates opportunity to leverage support and resources from arts-focused organizations and initiatives to engage artists and the public through trail beautification and community identity projects.	Short	
Establish and grow industry, economic development and tourism partners.	Partner with the PGC Chamber of Commerce, the Prince George's County Economic Development Corporation to develop support for Trail Plan implementation. Reach out to county and state tourism agencies to ensure that trails are promoted as a top attraction in Prince George's County.	DPR	Creates opportunity to leverage support and funding from resource-rich private sector partners that can assist with many aspects of trail development, promotion, programming and sustainability.	Short	
Re-establish the trail counting program.	Purchase and install new equipment; develop equipment management and maintenance protocols; develop data management protocols; archive and publish data annually.	DPR & PD	Newer technologies allow more streamlined and accurate data collection and require less time managing data collection.	Short	

Impacts of the Network

RECOMMENDATION	APPROACH	RESPONSIBLE PARTIES	PURPOSE/NEED	TERM	MEASURE
Compile crime, emergency response and other incident data for reporting and identification of opportunities to improve trail safety, security and overall management.		M-NCPPC Police, DPR			
Conduct periodic economic impact analysis using trail count data as a basis.	1. Develop in-house expertise or develop scope for outside consultant.	DPR & PD	To make the case for public investment in the trail system.	Medium	