

# 2620 - CID515525\_FairfaxCounty\_CFPF-3

## Application Details

Funding Opportunity:	2337-Virginia Community Flood Preparedness Fund - Study Grants - CY24 Round 5
Funding Opportunity Due Date:	Jan 24, 2025 11:59 PM
Program Area:	Virginia Community Flood Preparedness Fund
Status:	Under Review
Stage:	Final Application
Initial Submit Date:	Jan 24, 2025 4:27 PM
Initially Submitted By:	Xiaoyue Zhen
Last Submit Date:	
Last Submitted By:	

## Contact Information

### Primary Contact Information

Active User*:	Yes
Type:	External User
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Address*:	12000 Government Center Parkway

Fairfax Virginia 22035  
City State/Province Postal Code/Zip

Phone\*: 571-668-1497 Ext.

Phone  
###-###-####

Fax: ####-####-####

Comments:

### Organization Information

Status*:	Approved
Name*:	FAIRFAX COUNTY
Organization Type*:	Local Government
Tax ID*:	54-0787833
Unique Entity Identifier (UEI)*:	074837626
Organization Website:	

**Address\*:**

12000 Government Center Parkway

Suite 552

Fairfax Virginia 22035-  
City State/Province Postal Code/Zip**Phone\*:**

(703) 324-2183 Ext.

#/#/#/#/#/#/#/#

**Fax:**

#/#/#/#/#/#/#/#

**Benefactor:****Vendor ID:****Comments:**

## VCFPF Applicant Information

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***Project Description*****Name of Local Government\*:**

Fairfax County

Your locality's CID number can be found at the following link: [Community Status Book Report](#)**NFIP/DCR Community Identification**

515525

**Number (CID)\*:**

If a state or federally recognized Indian tribe,

**Name of Tribe:****Authorized Individual\*:**Bryan Hill  
First Name Last Name**Mailing Address\*:**12000 Government Center Pkwy  
Address Line 1  
  
Suite 552  
Address Line 2  
  
Fairfax Virginia 22035  
City State Zip Code**Telephone Number\*:**

703-324-2531

**Cell Phone Number\*:**

703-324-2531

**Email\*:**[cexbryanhill@fairfaxcounty.gov](mailto:cexbryanhill@fairfaxcounty.gov)

Is the contact person different than the authorized individual?

**Contact Person\*:**

No

Enter a description of the project for which you are applying to this funding opportunity

**Project Description\*:**

Development of detailed hydraulic HEC-RAS hydraulic models and mapping for the approximately 21.8 miles of stream with regulated floodplains in the Little Hunting Creek watershed. This pilot study will detail the workflow and level of effort required to develop detailed hydraulic models and floodplain mapping for other watersheds in the County.

Low-income geographic area means any locality, or community within a locality, that has a median household income that is not greater than 80 percent of the local median household income, or any area in the Commonwealth designated as a qualified opportunity zone by the U.S. Secretary of the Treasury via his delegation of authority to the Internal Revenue Service. A project of any size within a low-income geographic area will be considered.

Is the proposal in this application intended to benefit a low-income geographic area as defined above?

**Benefit a low-income geographic area\*:**

No

Information regarding your census block(s) can be found at [census.gov](#)**Census Block(s) Where Project will Occur\*:**

51-059; 4151-4161; 4213-4217;

**Is Project Located in an NFIP Participating****Community?\*:**

Yes

<b>Is Project Located in a Special Flood Hazard Area?*</b>	Yes
<b>Flood Zone(s) (if applicable):</b>	A, AE, X
<b>Flood Insurance Rate Map Number(s) (if applicable):</b>	51059C0315E, 51059C0320E, 51059C0405E, 51059C0410E

## Eligibility - Round 4

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### **Eligibility**

Is the applicant a local government (including counties, cities, towns, municipal corporations, authorities, districts, commissions, or political subdivisions created by the General Assembly or pursuant to the Constitution or laws of the Commonwealth, or any combination of these)?

#### **Local Government\*:**

- Yes
- Yes - Eligible for consideration
- No - Not eligible for consideration

If the applicant is not a town, city, or county, are letters of support from all affected local governments included in this application?

#### **Letters of Support\*:**

- No
- Yes - Eligible for consideration
- No - Not eligible for consideration

Has this or any portion of this project been included in any application or program previously funded by the Department?

#### **Previously Funded\*:**

- No
- Yes - Not eligible for consideration
- No - Eligible for consideration

Has the applicant provided evidence of an ability to provide the required matching funds?

#### **Evidence of Match Funds\*:**

- Yes
- Yes - Eligible for consideration
- No - Not eligible for consideration
- N/A- Match not required

## Scope of Work - Studies - Round 4

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### **Scope of Work**

#### **Upload your Scope of Work**

Please refer to Part IV, Section B. of the grant manual for guidance on how to create your scope of work

#### **Scope of Work\*:**

[1. Scope of Work\\_wAttachments.pdf](#)

#### **Comments:**

Scope of work with two attachments (RFQ and RFP)

### **Budget Narrative**

#### **Budget Narrative Attachment\*:**

[Appendix B Budget Narrative.docx](#)

#### **Comments:**

## Scoring Criteria for Studies - Round 4

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### **Scoring**

Revising floodplain ordinances to maintain compliance with the NFP or to incorporate higher standards that may reduce the risk of flood damage. This must include establishing processes for implementing the ordinance, including but not limited to, permitting, record retention, violations, and variances. This may include revising a floodplain ordinance when the community is getting new Flood Insurance Rate Maps (FIRMs), updating a floodplain ordinance to include floodplain setbacks or freeboard, or correcting issues identified in a Corrective Action Plan.

#### **Revising Floodplain Ordinances\*:**

- No
- Select

Creating tools or applications to identify, aggregate, or display information on flood risk or creating a crowd-sourced mapping platform that gathers data points about real-time flooding. This could include a locally or regionally based web-based mapping product that allows local residents to better understand their flood

risk.

**Mapping Platform\*:** Yes  
Select  
Conducting hydrologic and hydraulic studies of floodplains. Applicants who create new maps must apply for a Letter of Map Revision or a Physical Map Revision through the Federal Emergency Management Agency (FEMA).

**Hydrologic and Hydraulic Studies\*:** Yes  
Select  
Studies and Data Collection of Statewide and Regional Significance. Funding of studies of statewide and regional significance and proposals will be considered for the following types of studies:  
Updating precipitation data and IDF information (rain intensity, duration, frequency estimates) including such data at a sub-state or regional scale on a periodic basis.

**Updating Precipitation Data and IDF Information\*:** No  
Select  
Regional relative sea level rise projections for use in determining future impacts.

**Projections\*:** No  
Select

Vulnerability analysis either statewide or regionally to state transportation, water supply, water treatment, impounding structures, or other significant and vital infrastructure from flooding.

**Vulnerability Analysis\*:** No  
Select

Flash flood studies and modeling in riverine regions of the state.

**Flash Flood Studies\*:** No  
Select

Statewide or regional stream gauge monitoring to include expansion of existing gauge networks.

**Stream Gauge Monitoring\*:** No  
Select

New or updated delineations of areas of recurrent flooding, stormwater flooding, and storm surge vulnerability in coastal areas that include projections for future conditions based on sea level rise, more intense rainfall events, or other relevant flood risk factors.

**Delineations of Areas of Recurrent Flooding\*:** Yes  
Select

Regional flood studies in riverine communities that may include watershed-scale evaluation, updated estimates of rainfall intensity, or other information.

**Regional Flood Studies\*:** Yes  
Select

Regional Hydrologic and Hydraulic Studies of Floodplains

**Regional Hydrologic and Hydraulic Studies of Floodplains\*:** Yes  
Select

Studies of potential land use strategies that could be implemented by a local government to reduce or mitigate damage from coastal or riverine flooding.

**Potential Land Use Strategies\*:** No  
Select

Pluvial Studies

**Pluvial Studies\*:** Yes  
Select

Other proposals that will significantly improve protection from flooding on a statewide or regional basis.

**Other Proposals\*:** No  
Select

Is the project area socially vulnerable? (based on ADAPT Virginia's Social Vulnerability Index Score)

Social Vulnerability Scoring:

Very High Social Vulnerability (More than 1.5)

High Social Vulnerability (1.0 to 1.5)

Moderate Social Vulnerability (0.0 to 1.0)

Low Social Vulnerability (-1.0 to 0.0)

Very Low Social Vulnerability (Less than -1.0)

**Socially Vulnerable\*:** Moderate Social Vulnerability (0.0 to 1.0)

Is the proposed project part of an effort to join or remedy the community's probation or suspension from the NFIP?

**NFIP\*:** No

Is the proposed project in a low-income geographic area as defined below?

"Low-income geographic area" means any locality, or community within a locality, that has a median household income that is not greater than 80 percent of the local median household income, or any area in the Commonwealth designated as a qualified opportunity zone by the U.S. Secretary of the Treasury via his delegation of authority to the Internal Revenue Service. A project of any size within a low-income geographic area will be considered.

**Low-Income Geographic Area\*:** No

Projects eligible for funding may also reduce nutrient and sediment pollution to local waters and the Chesapeake Bay and assist the Commonwealth in achieving local and/or Chesapeake Bay TMDLs.

Does the proposed project include implementation of one or more best management practices with a nitrogen, phosphorus, or sediment reduction efficiency established by the Virginia Department of Environmental Quality or the Chesapeake Bay Program Partnership in support of the Chesapeake Bay TMDL Phase III Watershed Implementation Plan?

**Reduction of Nutrient and Sediment Pollution\*:** No

**Comments:**

1. H/H Studies: See the "Study Benefits" section in Scope of Work for the reason that the County will not apply for LOMR.
2. Social Vulnerability: the study area has mixed areas of low, moderate, high, and very high social vulnerability areas.

## Scope of Work Supporting Information - Studies

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### **Scope of Work Supporting Information**

Is the proposed study a new study or updates on a prior study?

**New or Updated Study\*:** New Study

Describe the relationship of the study to the local government's needs for flood prevention and protection, equity, community improvement, identification of nature-based solutions or other priorities contained in this manual

### **Relationship of Study to Priorities**

#### **Contained in this Manual\*:**

Facilitate flood risk awareness, development of prevention and protection strategies.

Describe the qualifications of the individuals or organizations charged with conducting the study or the elements of any request for proposal that define those qualifications

### **Qualifications of Individuals Conducting**

#### **Study\*:**

This study will be conducted by AtkinsRealis, a reputable consulting firm in flooding risk analysis, mitigation, and management. See Attachment 1 and Attachment 2 in the scope of work document.

Describe the expected use of the study results in the context of the local resilience plan or, in the case of regional plans, how the study improves any regional approach

#### **Expected use of Study Results\*:**

The study results will facilitate the mapping and quantification of the county wide flooding risk.

If applicable, describe how the study may improve Virginia's flood protection and prevention abilities in a statewide context (type N/A if not applicable)

#### **Statewide Improvements\*:**

This study will illustrate how H/H modeling can contribute to flood risk awareness and development of flood risk reduction strategies.

Provide a list of repetitive and/or severe repetitive loss properties. Do not provide the addresses for the properties, but include an exact number of repetitive and/or severe repetitive loss structures within the project area

**Repetitive Loss and/or Severe Repetitive Loss Properties\*:** [RL\\_LHC.docx](#)

#### **Loss Properties\*:**

Describe the residential and commercial structures impacted by this project, including how they contribute to the community such as historic, economic, or social value. Provide an exact number of these structures in the project area

#### **Residential and/or Commercial Structures\*:**

There are total of 733 residential structures, and 14 commercial structures impacted by this study.

If there are critical facilities/infrastructure within the project area, describe each facility

#### **Critical Facilities/Infrastructure\*:**

N/A

## Budget

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### **Budget Summary**

**Grant Matching Requirement\*:** Flood Prevention and Protection Studies - Fund 50%/Match 50%

Is a match waiver being requested?

**Match Waiver Request**

Note: Only low-income communities are eligible for a match waiver

\*:

**Total Project Amount (Request + Match)\*:** \$180,000.00

\*\*This amount should equal the sum of your request and match figures

**REQUIRED Match Percentage Amount:** \$90,000.00

## BUDGET TOTALS

Before submitting your application be sure that you meet the match requirements for your project type.

**Match Percentage:** 50.00%

Verify that your match percentage matches your required match percentage amount above.

**Total Requested Fund Amount:** \$90,000.00

**Total Match Amount:** \$90,000.00

**TOTAL:** \$180,000.00

### Personnel

Description	Requested Fund Amount	Match Amount	Match Source
No Data for Table			

### Fringe Benefits

Description	Requested Fund Amount	Match Amount	Match Source
No Data for Table			

### Travel

Description	Requested Fund Amount	Match Amount	Match Source
No Data for Table			

### Equipment

Description	Requested Fund Amount	Match Amount	Match Source
No Data for Table			

### Supplies

Description	Requested Fund Amount	Match Amount	Match Source
No Data for Table			

### Construction

Description	Requested Fund Amount	Match Amount	Match Source
No Data for Table			

### Contracts

Description	Requested Fund Amount	Match Amount	Match Source
consulting contract	\$90,000.00	\$90,000.00	County budget
	<b>\$90,000.00</b>	<b>\$90,000.00</b>	

#### Pre-Award and Startup Costs

Description	Requested Fund Amount	Match Amount	Match Source
No Data for Table			

#### Other Direct Costs

Description	Requested Fund Amount	Match Amount	Match Source
No Data for Table			

## Supporting Documentation

#### Supporting Documentation

Named Attachment	Required	Description	File Name	Type	Size	Upload Date
Detailed map of the project area(s) (Projects/Studies)		Study area map	<a href="#">1_StudyAreaDetailedMap.docx</a>	docx	3 MB	01/22/2025 04:59 PM
FIRMette of the project area(s) (Projects/Studies)		FIRM panels	<a href="#">2_FIRMpanels.docx</a>	docx	642 KB	01/22/2025 04:59 PM
Historic flood damage data and/or images (Projects/Studies)		historic flooding images	<a href="#">3_Historic Flood Damage and Images.docx</a>	docx	454 KB	01/22/2025 07:19 PM
Alink to or a copy of the current floodplain ordinance		Fairfax County floodplain ordinance	<a href="#">4_Floodplain Ordinance.docx</a>	docx	612 KB	01/22/2025 05:02 PM
Maintenance and management plan for project						
Alink to or a copy of the current hazard mitigation plan		Hazard mitigation plan	<a href="#">15_Hazard Mitigation Plan_Floodplain Management Plan 2024.pdf</a>	pdf	740 KB	01/22/2025 07:22 PM
Alink to or a copy of the current comprehensive plan		Fairfax County comprehensive plan	<a href="#">6_FairfaxCounty Comprehensive Plan.pdf</a>	pdf	2 MB	01/22/2025 05:02 PM
Social vulnerability index score(s) for the project area		Social vulnerability index	<a href="#">7_Social Vulnerability Index.docx</a>	docx	1 MB	01/22/2025 04:58 PM
Authorization to request funding from the Fund from governing body or chief executive of the local government		Letter from County Executive authorizing the fund request	<a href="#">10_Authorization letter from CEX.pdf</a>	pdf	432 KB	01/22/2025 04:58 PM
Signed pledge agreement from each contributing organization						
Maintenance Plan						
<i>Benefit-cost analysis must be submitted with project applications over \$2,000,000. in lieu of using the FEMA benefit-cost analysis tool, applicants may submit a narrative to describe in detail the cost benefits and value. The narrative must explicitly indicate the risk reduction benefits of a flood mitigation project and compares those benefits to its cost-effectiveness.</i>						
Benefit Cost Analysis						
Other Relevant Attachments		Appendix A, B, C, D	<a href="#">CombinedAppendices.pdf</a>	pdf	1 MB	01/24/2025 10:52 AM

#### Letters of Support

Description	File Name	Type	Size	Upload Date
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No files attached.

# B. Scope of Work

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## Executive Summary

Fairfax County is in the final stage of completing base modeling and mapping of regulated floodplains. The base model involved using current terrain data for the County and developed appropriate hydrologic and hydraulic modeling of all streams with drainage areas of 70 acres or greater.

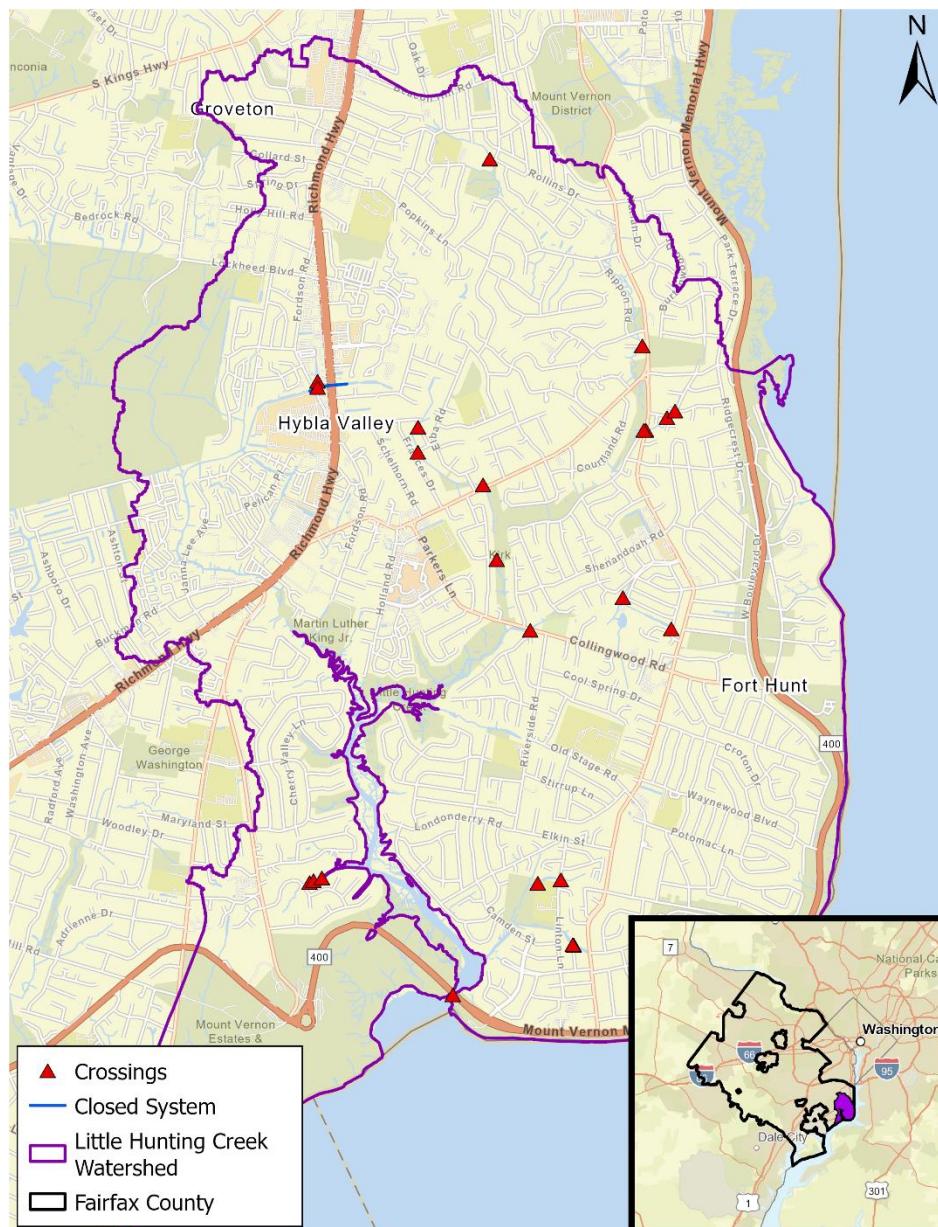
The County is initiating a pilot study to develop detailed floodplain modeling and mapping. The Little Hunting Creek watershed, which has 21.8 miles of streams with regulated floodplains has been selected for the pilot. The pilot, to be completed under contract, will include field surveys to collect data for crossing structures (bridges and culverts) and pipe systems that will be part of the detailed hydraulic model of the LHC watershed. The detailed model will be developed by incorporating the survey data into an existing (base) hydraulic model, and additional model refinements needed to develop detailed floodplain mapping.

The pilot study will detail the workflow and level of effort required to develop detailed hydraulic models and floodplain mapping for other watersheds in the County. To be able to complete the pilot study, the County is requesting 50% of the estimated cost of the project (\$180,000) or \$90,000. If the grant is awarded and the study moves forward, the County can complete the development of detailed hydraulic HEC-RAS hydraulic models and mapping for the approximately 21.8 miles of stream with regulated floodplains in the Little Hunting Creek watershed.

## 1. Need:

### Project Location

The proposed pilot project is in the Little Hunting Creek (LHC) watershed in Fairfax County. The Little Hunting Creek watershed is the first watershed that will establish methodologies and processes to serve as the basis for the development of detailed regulatory floodplain mapping in other watersheds. The watershed has 21.8 stream miles of floodplain.



### Specific Problem

Fairfax County regulates development in areas designated as floodplains in the County's Zoning Ordinance. Minor floodplains are defined as areas adjacent to natural or man-made channels

draining between 70 and 360 acres. Major floodplains are areas adjacent to streams draining more than 360 acres. In these areas, the 100-year Water Surface Elevation is required to demonstrate compliance with the county floodplain regulations, and applicable state and federal regulations.

A significant portion of regulated floodplains outside the FEMA designated Special Flood Hazard Areas (SFHAs) is unmapped or mapped as floodplain without supporting data to establish floodplain elevations. In some areas, floodplain elevations may be available, but they are based on older floodplain studies and may not be valid. Additionally, even within the SFHAs (the majority of which are located on streams draining more than one square mile), the 100-year flows may be based on methods that are not in compliance with the County's floodplain regulations and cannot be used to regulate development.

As the County approaches build-out conditions and large tracts of green space are no longer available for new subdivisions, much of the residential development has shifted to lot-by-lot infill redevelopment. For residential infill development in and adjacent to unmapped regulated floodplain, the County needs reliable floodplain mapping and elevations to review and enforce floodplain regulations, with the greatest need in the minor floodplains.

After completing a number of initial studies, Fairfax County initiated a project in 2022 to complete base modeling and mapping of all regulatory floodplains in the County's designated watersheds. A portion of this work was funded under a previous CFPF study grant. The base modeling involved using current terrain data for the County and developed appropriate hydrologic and hydraulic modeling of all streams with drainage areas of 70 acres or greater. The base modeling scope included obtaining and preparing terrain data for use in the hydrologic and hydraulic (H&H) analyses, identifying crossing *locations*, and establishing 100-year elevations using steady-state one-dimensional modeling. HEC-RAS models were developed for each watershed to establish preliminary floodplain mapping, flood profiles and flow velocities.

The base modeling work is nearing completion, and the County is initiating a pilot study to develop detailed floodplain modeling and mapping. The Little Hunting Creek watershed, which has 21.8 miles of streams with regulated floodplains has been selected for the pilot.

The pilot, to be completed under contract, will include field surveys to collect data for crossing structures (bridges and culverts) and pipe systems that will be part of the detailed hydraulic model of the LHC watershed. The detailed model will be developed by incorporating the survey data into an existing (base) hydraulic model, and additional model refinements needed to develop detailed floodplain mapping. The pilot will detail the workflow and level of effort required to develop detailed hydraulic models and floodplain mapping for other watersheds in the county.

### *Factors contributing to the identified problem*

Lack of reliable floodplain information in many parts of the county, particularly in minor floodplains. Residential development in the County has shifted to lot-by-lot infill redevelopment as the County approaches build-out conditions. For residential infill development in and adjacent to unmapped regulated floodplain, the County needs reliable floodplain mapping and elevations to review and enforce floodplain regulations

## ***Activity Need***

The activity involves completing a pilot study to develop detailed floodplain modeling and mapping in the Little Hunting Creek watershed. This effort will detail the workflow and level of effort required to develop detailed hydraulic models and floodplain mapping for other watersheds in the county.

## ***Flood Risk reduction in public safety and Natural resources conservation***

Having the updated floodplain mapping will allow for increasing public awareness of flooding risk, enhance public safety, and protect the County's natural resources.

## ***Safety threats***

Not having updated floodplain models and mapping will increase the risk of future development in the floodplain.

## ***Direct benefit from this flood risk reduction effort***

- Detailed hydraulic model for Little Hunting Creek with structures and closed pipes simulated.
- Final floodplain mapping.
- Develop workflows and level of effort for completing the detailed hydraulic models and final floodplain mapping for the entire County.

## ***Happen (or not happen) if Funding is not received***

If funding is not received, the detailed hydraulic modeling and final mapping pilot could be delayed.

## ***Alternative Analysis***

There are no alternatives other than detailed modeling and mapping of floodplains where reliable floodplain information is lacking. Without reliable floodplain information, it is not possible to effectively review proposed development in or near regulated floodplains and enforce floodplain regulations.

## 2. Goals and Objectives:

The following are the primary goals and objectives of the project:

### **Pilot the development of detailed hydraulic model and floodplain mapping for Little Hunting Creek**

The first phase of the floodplain modeling and mapping project is to create a base model and floodplain mapping for all 30 watersheds is near completion. The next phase will be the development of detailed models, which will include the structures (crossings and bridges) and closed pipes, and final floodplain mapping.

This project will use the Little Hunting Creek watershed as a pilot for the detailed floodplain modeling and mapping. The LHC watershed has an estimated 21.8 stream miles with associated minor and major floodplains.

This pilot project will establish standard means and methods to develop the detailed hydraulic model and floodplain map updates. The pilot study will include surveys of the structures (crossings and bridges) and closed pipes and compile the data for use in the detailed hydraulic analyses.

This study will be completed under contract by AtkinsRéalis, a water resources consulting firm that provides services to the County under a Basic Ordering Agreement (BOA) for Flood Mitigation and Monitoring and Dam Safety Program Services. Attachment 1 is the Request for Qualification Solicitation under which AtkinsRéalis was awarded the BOA.

### **Study Benefits**

The study allows the County to integrate climate change into the regulated floodplains. The County is embarking on Resilient Fairfax, a formal and holistic effort to address climate adaption and resilience. The Resilient Fairfax plan will develop a climate projections report with future predicted climate conditions (<https://www.fairfaxcounty.gov/environment-energy-coordination/resilient-fairfax>). Data from this report can be integrated into new or updated floodplain models to reflect anticipated future precipitation trends.

The study will also increase community flood risk awareness by mapping previously unmapped floodplain. Following the completion of the detailed model development, it is expected that the County will embark on a significant public outreach program to notify residents that they are in a newly mapped floodplain, advise them on how to prepare for flooding, and share resources related to flood protection and insurance.

With 1,142,000 residents, Fairfax County is more populous than six states (Alaska, Montana, North Dakota, Rhode Island, South Dakota, Vermont, and the District of Columbia) and accounts for about 13% of the total population of Virginia. Providing comprehensive, accurate, and consistent regulated floodplain maps will benefit not only the County, but also more than a tenth of Virginia residents. The maps will help increase flood risk awareness for residents located in and adjacent to previously unmapped floodplains, developers to better incorporate flood prevention and protection techniques into their construction plans, and the County to better review and enforce its robust floodplain management regulations.

It is important to note that although new floodplain maps will be developed, the County will not apply for LOMR. Because the new mapping will be based on ultimate land use conditions, which are not in line with FEMA requirements as FEMA studies are based on existing land use conditions.

### 3. Work Plan:

Attachment 2 is the Request For Proposal for a BOA task order. Once the proposal is approved, AtkinsRealis will develop a detailed hydraulic model of the LHC watershed by completing the following subtasks:

- 1) Coordinate field surveys to collect data on structures (bridges and culverts) and closed pipe systems identified in a previous task order.
- 2) Update the approved LHC base hydraulic model by incorporating crossing and closed pipe system data into the model. Ensure all cross-sections are extended sufficiently to capture the 500-year floodplain limits.
- 3) Apply ineffective flow areas at cross-sections upstream and downstream of structures using RAS model guidance and engineering judgement, update the contraction and expansion coefficients for upstream and downstream cross sections, and utilize the appropriate bridge/culvert modeling approach.
- 4) Review all geometric data entered for crossing structures, run model and examine RAS profile plot upstream and downstream of structure for unusual results.
- 5) Develop detailed flood inundation mapping for the 100-year and 500-year profiles, review and correct for anomalies. Produce GIS layers of final detailed 100-year and 500-year floodplain limits and final
- 6) RAS cross-sections attributed with water-surface elevations used in mapping both floodplains. Cross-sections on tributaries near confluences that do not control the final 100-year, or 500-year elevations should be removed.

### 4. Evaluation:

#### *Indicators of success*

The primary indicator of success will be the development of detailed 1-D steady state hydraulic model (HEC-RAS) which uses flows for estimated ultimate development conditions, and the best available topographic data and structure (closed pipes, crossings, bridges) information. Final floodplain mapping for the 100-yr and 500-yr using Little Hunting Creek as a pilot. This effort will also provide a framework and establish workflows for developing detailed hydraulic models and floodplain mapping for all county watersheds. The pilot will also provide an estimate of the level of effort needed to develop detailed floodplain models and mapping countywide.

#### *Data collection and success measures*

The data collection for this project involves surveying the crossings, bridges, and closed pipes that will be modeled in the Little Hunting Creek watershed. This data collection effort will ensure the hydraulic model represents the watershed with the most up-to-date data. Also, the final mapping will be validated to the extent possible by an evaluation of stormwater service requests related to flooding that are on record.

## *Cost effectiveness and expected outcomes*

By leveraging the base countywide hydraulic models, extensive GIS data, including available data on crossings and the drainage pipe network, this project will be highly cost-effective in completing the detailed floodplain modeling and mapping countywide. The expected outcome from this initial pilot project for Little Hunting Creek is the development of a framework and workflows for the creation of detailed floodplain models and mapping countywide.

## *Services, meetings, outreach efforts conducted and success measures*

Not applicable for this study.

## *Project progress monitoring plan*

The County staff will work closely with AtkinsRéalis to strictly adhere to a quality control and assurance process (QCAP) plan. AtkinsRéalis deliverables are required to undergo a quality control review to confirm the product was prepared in accordance with contract requirements and with accepted standards of professional practice.

As part of their response to the request for task order proposal, AtkinsRéalis is required to submit a detailed schedule showing when milestones will be achieved, and project deliverables will be submitted. Once the task order is approved, the County will assign a staff member to act as Project Manager for the pilot study. The project manager will ensure all work is completed in a timely manner and will conduct detailed review of deliverables before they are accepted by the County.

**Attachment 1. Flood mitigation and monitoring and dam safety program services request for qualifications**

**COUNTY OF FAIRFAX  
DEPARTMENT OF PUBLIC WORKS & ENVIRONMENTAL SERVICES  
FLOOD MITIGATION AND MONITORING & DAM SAFETY PROGRAM SERVICES**

**REQUEST FOR QUALIFICATIONS (RFQ)**

**SCOPE OF WORK**

The County of Fairfax, Virginia, Department of Public Works and Environmental Services (DPWES) is soliciting statements of qualifications from engineering firms to provide services on a Basic Ordering Agreement (BOA) to support Fairfax County's participation in the National Federal Insurance Program (NFIP), flood mitigation and monitoring, dam safety, and other ancillary engineering services that may be needed. These services will be required on a task order basis. The initial agreement will be established to run for a 12-month term with the option of four additional 12-month terms (up to 48 months). Pursuant to Virginia State Code, BOAs have a maximum of \$5 million per year, with no individual task order exceeding \$2.5 million. However, this contract is not anticipated to exceed a total value of \$1.0 million per year. DPWES anticipates the award of one or more BOAs to support the programs described above.

Typical tasks under this COA may include but are limited to the following services:

**NFIP and Floodplain Management Services**

- Perform detailed Hydrologic and Hydraulic (H&H) modeling to support floodplain delineation and analysis.
- Provide engineering and ancillary services to support the county's participation in the NFIP, Cooperating Technical Partners, and Community Rating System programs.
- Assist with various tasks related to floodplain analysis, such as Letter of Map Revision (LOMRs), Conditional LOMRs (CLOMRs), coordination with FEMA, and other FEMA and floodplain management related tasks.

**Dam Safety Program Services**

- Geotechnical services including provisions for an on-call geotechnical engineer with expertise in dam designs and operations.
- Detailed (H&H) analyses required for Virginia State Dam Certification submissions. Such analyses include the determination of dam breach inundation zones, and incremental damage assessment.
- Develop and conduct dam safety drills and table-top exercises.
- Perform dam inspections and monitoring.
- Perform dam piezometer monitoring and analysis.
- Perform dam emergency spillway capacity and stability and integrity analyses.
- Development of Emergency Action Plans (EAP) and the preparation of Operation and Maintenance (O&M) certificates applications for dams regulated by the state.
- Development and maintenance of response plans for areas prone to flooding such as New Alexandria.

Fairfax County, Department of Public Works & Environmental Services

Flood Mitigation & Monitoring, Dam Safety Program Services

March 6, 2020

**Project implementation Support and General Engineering Services**

- Performance of detailed land surveys, bathymetric surveys, and the preparation of elevation certificates and plats.
- Delineation of wetlands.
- Support for the acquisition of hydrologic data, geotechnical investigations, or other purposes.
- AutoCAD drafting and plan preparation services.
- Modeling green infrastructure and Stormwater management facility rehabilitation and retrofit designs.
- Acquire federal, state, and local permits required for construction.
- Preparing and conducting presentations at public meetings during non-business hours
- Other related ancillary services.

Consultants who wish to be considered for this work must submit eight (8) hard copies copies, as well as a PDF copy on a CD of their statements of qualifications to Roz Knox, Contract Specialist, Stormwater Planning Division, Department of Public Works and Environmental Services, 12000 Government Center Parkway, Suite 449, Fairfax, Virginia 22035-0052.

The submittal must include:

- Statements of Interest;
- GSA Standard Form 330 Part I and Part II for the primary firm and all major sub-consultants; and
- List of references with current addresses and telephone numbers for recently completed projects of a similar nature.

All submissions must be complete and clearly demonstrate the capability to provide the required services. The following weighted criteria and evaluation factors will be utilized by a Selection Advisory Committee to evaluate the statement of qualifications:

Criteria No.	Criteria Description	Weight
1.	The ability and experience of firm/team to deliver work as described	25%
2.	Project teams' personnel qualifications and experience	20%
3.	Past performance history	15%
4.	Ability to meet time and budget requirements	15%
5.	Location of key project staff	10%
6.	Volume of work previously awarded by the County within the last 3	5%
7.	Recent, current, and projected workload	5%
8.	Public presentations and community coordination	5%

Fairfax County, Department of Public Works & Environmental Services  
Flood Mitigation & Monitoring, Dam Safety Program Services  
March 6, 2020

**All statements of qualifications shall be delivered no later than 4:00 p.m., local prevailing time on Wednesday April 8, 2020.** Statements of qualifications received after the submission deadline will not be considered. The statement of qualifications, including GSA 330 forms, shall not exceed the equivalent of thirty-five (35) pages of content (printed double-sided copies). The cover letter and binding are not included in the 35 pages.

Fairfax County is committed to paying a living wage to all qualified County employees and encourages contractors and sub-contractors involved in all County programs, services, and activities to pay a living wage to their employees.

All questions related to this solicitation should be directed to Roz Knox, Contract Specialist , of Stormwater Planning Division at [rosalind.knox@fairfaxcounty.gov](mailto:rosalind.knox@fairfaxcounty.gov) or 703-324-5500, TTY 711.



To request this information in an alternate format, please call Roz Knox, Contract Specialist, Stormwater Planning Division, Department of Public Works and Environmental Services at 703-324-5500, TTY 711.

Attachment 2.

**Fairfax County**  
**Atkins Flood Mitigation and Monitoring & Dam Safety**  
**Basic Ordering Agreement (BOA)**  
**Request for Proposal (RFP)**  
**Task Order #Y4-04**  
**October 1, 2024**

**Task Order #Y4-04: Little Hunting Creek Watershed Field Survey and Detailed Hydraulic Model**

Under this task order, Atkins will complete field surveys to collect data for crossing structures (bridges and culverts) and pipe systems that will be included in a detailed hydraulic model of the Little Hunting Creek (LHC) watershed. The detailed model will be developed by incorporating the survey data into an existing (base) hydraulic model, and additional model refinements needed to develop detailed floodplain mapping, which will also be completed as part of this task order.

**Background**

Flow computations and a base HEC-RAS model for LHC watershed were developed under previous task orders. Data sources for crossing structures, and survey needs for the LHC watershed were also compiled under a previous task order.

This fixed price task order will serve as a pilot to detail the workflow and level of effort required to develop detailed hydraulic models and floodplain mapping

**Subtasks**

Atkins will develop a detailed hydraulic model of the LHC watershed by completing the following subtasks:

1. Coordinate field surveys to collect data on structures (bridges and culverts) and closed pipe systems identified previously in TO Y3-04.
2. Update the approved LHC base hydraulic model by incorporating crossing and closed pipe system data into the model.
3. Ensure all cross-sections are extended sufficiently to capture the 500-year floodplain limits.
4. Apply ineffective flow areas at cross-sections upstream and downstream of structures using RAS model guidance and engineering judgement, update the

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contraction and expansion coefficients for upstream and downstream cross sections, and utilize the appropriate bridge/culvert modeling approach.

5. Review all geometric data entered for crossing structures, run model and examine RAS profile plot upstream and downstream of structure for unusual results.
6. Develop detailed flood inundation mapping for the 100-year and 500-year profiles, review and correct for anomalies.
7. Produce GIS layers of final detailed 100-year and 500-year floodplain limits and final RAS cross-sections attributed with water-surface elevations used in mapping both floodplains. Cross-sections on tributaries near confluences that do not control the final 100-year, or 500-year elevations should be removed.

## Schedule

Atkins will provide a schedule showing when will this work be initiated and completed. The schedule should include activities by week after receiving Notice to Proceed (NTP).

## Coordinate system and datum.

Please ensure that all GIS layers used by Atkins or delivered to the County use the following coordinate system and datums:

### Horizontal

<b>Projected Coordinate System</b>	NAD 1983 (2011) State Plane Virginia North FIPS 4501 (US Feet)
<b>Projection</b>	Lambert Conformal Conic

### Vertical

North American Vertical Datum of 1988 (NAVD88) (GEOID128)

## Deliverables

The deliverables from this task will include:

1. Structures (bridges and culverts) and closed pipe survey data.
2. Detailed HEC-RAS 1D hydraulic model with all the structure crossing and closed pipe data for LHC incorporated, without profile anomalies.
3. GIS layers of detailed 100-year and 500-year floodplain delineations and associated cross-sections attributed with water surface elevations used in the delineations.
4. Report to document the data preparation, methodology, and assumptions in the detailed hydraulic model and floodplain mapping.

**Applicants must have prior approval from the Department to submit applications, forms, and supporting documents by mail in lieu of the WebGrants portal.**

## **Appendix A: Application Form for Grant and Loan Requests for All Categories**

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Virginia Department of Conservation and Recreation  
Virginia Community Flood Preparedness Fund Grant Program

**Name of Local Government:**

**Category Being Applied for (check one):**

Capacity Building/Planning

Project

Study

NFIP/DCR Community Identification Number (CID) 515525

Name of Authorized Official and Title: Bryan J. Hill, County Executive

Documented by:

Signature of Authorized Official: Bryan Hill 10/22/2024  
SCFC69274C2440E...

Mailing Address (1): 12000 Government Center Parkway, Suite 552

Mailing Address (2): \_\_\_\_\_

City: Fairfax State: VA Zip: 22035

Telephone Number: (703) 324-2531 Cell Phone Number: (  ) NA

Email Address: cexbryanhill@fairfaxcounty.gov

Contact and Title (If different from authorized official): Joni Calmbacher

Mailing Address (1): 12000 Government Center Parkway, Suite 449

Mailing Address (2): \_\_\_\_\_

City: Fairfax State: VA Zip: 22035

Telephone Number: (703) 324-5500 Cell Phone Number: (  ) NA

Email Address: Joni.Calmbacher@fairfaxcounty.gov

Is the proposal in this application intended to benefit a low-income geographic area as defined in the Part 1 Definitions? Yes    No X

**Categories (select applicable activities that will be included in the project and used for scoring criterion):**

**Capacity Building and Planning Grants**

- Floodplain Staff Capacity.
- Resilience Plan Development
  - Revisions to existing resilience plans and modifications to existing comprehensive and hazard mitigation plans.
  - Resource assessments, planning, strategies, and development.
    - Policy management and/or development.
    - Stakeholder engagement and strategies.
- Other: \_\_\_\_\_

**Study Grants (Check All that Apply)**

- Studies to aid in updating floodplain ordinances to maintain compliance with the NFIP, or to incorporate higher standards that may reduce the risk of flood damage. This must include establishing processes for implementing the ordinance, including but not limited to, permitting, record retention, violations, and variances. This may include revising a floodplain ordinance when the community is getting new Flood Insurance Rate Maps (FIRMs), updating a floodplain ordinance to include floodplain setbacks, freeboard, or other

higher standards, RiskMAP public noticing requirements, or correcting issues identified in a Corrective Action Plan.

- Revising other land use ordinances to incorporate flood protection and mitigation goals, standards, and practices.
- Conducting hydrologic and hydraulic (H&H) studies of floodplains. *Changes to the base flood, as demonstrated by the H&H must be submitted to FEMA within 6 months of the data becoming available.*
- Studies and Data Collection of Statewide and Regional Significance.
- Revisions to existing resilience plans and modifications to existing comprehensive and hazard.
- Other relevant flood prevention and protection project or study.

**Project Grants and Loans (Check All that Apply – Hybrid Solutions will include items from both the “Nature-Based” and “Other” categories)**

**Nature-based solutions**

- Acquisition of property (or interests therein) and/or structures for purposes of allowing floodwater inundation, strategic retreat of existing land uses from areas vulnerable to flooding; the conservation or enhancement of natural flood resilience resources; or acquisition of structures, provided the acquired property will be protected in perpetuity from further development, and where the flood mitigation benefits will be achieved as a part of the same project as the property acquisition.
- Wetland restoration.
- Floodplain restoration.
- Construction of swales and settling ponds.
- Living shorelines and vegetated buffers.
- Permanent conservation of undeveloped lands identified as having flood resilience value by *ConserveVirginia* Floodplain and Flooding Resilience layer or a similar data driven analytic tool, or the acquisition of developed land for future conservation.
- Dam removal.
- Stream bank restoration or stabilization.
- Restoration of floodplains to natural and beneficial function.

**Other Projects**

- Structural floodwalls, levees, berms, flood gates, structural conveyances.
- Storm water system upgrades.
- Medium and large-scale Low Impact Development (LID) in urban areas.

- Developing flood warning and response systems, which may include gauge installation, to notify residents of potential emergency flooding events.
- Dam restoration.
- Beneficial reuse of dredge materials for flood mitigation purposes
- Removal or relocation of structures from flood-prone areas where the land will not be returned to open space.
- Acquisition of property (or interests therein) and/or structures for purposes of allowing floodwater inundation, strategic retreat of existing land uses from areas vulnerable to flooding; the conservation or enhancement of natural flood resilience resources; or acquisition of structures, provided the acquired property will be protected in perpetuity from further development, and where the flood mitigation benefits will not be achieved as a part of the same project as the property acquisition.
- Other project identified in a DCR-approved Resilience Plan.

**Location of Project or Activity (Include Maps):** Little Hunting Creek Watershed

**NFIP Community Identification Number (CID#):** 515525

**Is Project Located in an NFIP Participating Community?**  Yes  No

**Is Project Located in a Special Flood Hazard Area?**  Yes  No

**Flood Zone(s) (If Applicable):** SFHA Zone AE

**Flood Insurance Rate Map Number(s) (If Applicable):** 51059C0315E, 51059C0320E, 51059C0405E,  
51059C0410E.

**Total Cost of Project:** \$180,000

**Total Amount Requested** \$90,000

**Amount Requested as Grant** \$90,000

**Amount Requested as Project Loan (not including short-term loans for up-front costs)**

N/A

**Amount Requested as Short-Term loan for Up-Front Costs (not to exceed 20% of amount requested as Grant) \_\_\_\_\_** **N/A**

**For projects, planning, capacity building, and studies in low-income geographic areas: Are you requesting that match be waived?  Yes  No**

**Additional Information for Loan Requests**

**Requested Loan Security: \_\_\_\_\_** **N/A**

(General Obligation, Lease, Revenue, Special Fund Revenue, and/or Moral obligation from other government entity)

**Desired loan term: \_\_\_\_\_** **N/A**

**Since the date of your latest financial statements, did the applicant issue any new debt? \_\_\_\_\_** **N/A**  
(If yes, provide details)

**Is there any pending or potential litigation by or against the applicant? \_\_\_\_\_** **N/A**

**Attach five years of current audited financial statements (FY18-22) or refer to website if posted**  
(Not necessary for existing VRA borrowers)

**Attach FY2024 adopted budget or refer to website**

**Attach current Capital Improvement Plan**

**Attach adopted Financial Policies**

**Attach a list of the ten largest employers in the Applicant's jurisdiction.**

**Attach a list of the ten largest taxpayers in the Applicant's jurisdiction**

# B. Budget Narrative

Applicant Name: Fairfax County - Little Hunting Creek Floodplain Mapping (Study)									
Community Flood Preparedness Fund & Resilient Virginia Revolving Loan Fund									
Detailed Budget Narrative									
Period of Performance: Spring 2025 through Spring 2026									
Submission Date: November 2024									
Grand Total State Funding Request								\$90,000	
Grant Total Local Share of Project								\$90,000	
Federal Funding (if applicable)								n/a	
Project Grand Total								\$180,000	
Locality Cost Match								50%	
Breakout by Cost Type	Personnel	Fringe	Travel	Equipment	Supplies	Contracts	Indirect Costs	Other Costs	Total
Federal Share (if applicable)	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	\$0
Local Share	\$0	\$0	\$0	\$0	\$0	\$90,000	\$0	\$0	\$90,000
State Share	\$0	\$0	\$0	\$0	\$0	\$90,000	\$0	\$0	\$90,000
Pre-Award/Startup	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	\$0
Maintenance	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	\$0
Total	\$0	\$0	\$0	\$0	\$0	\$180,000	\$0	\$0	\$180,000

## *Estimated total project cost:*

The total project cost for the study is \$180,000.

## *Funds requested from the Fund:*

The County requests \$90,000 from the Fund (50% of the project cost).

## *Available Funds:*

Funds for the cost-share are available in *Stream and Water Quality Improvements* under Fund 40100 Stormwater Services in the advertised Fairfax County Fiscal Year 2025 budget (Attachment 11).

## *Authorization to request for funding:*

See Attachment 10 for the Letter from the County Executive, Bryan Hill, confirming the necessary match for this application and the other two applications submitted by the County for the 2024 application cycle.

## Appendix C: Checklist All Categories

(*Benefit-cost analysis must be included if the proposed Project is over \$2 million.*)

Virginia Department of Conservation and Recreation

Community Flood Preparedness Fund Grant Program

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Detailed map of the project area(s) (Projects/Studies)

FIRMette of the project area(s) (Projects/Studies)

Historic flood damage data and/or images (Projects/Studies)

A link to or a copy of the current floodplain ordinance

Non-Fund financed maintenance and management plan for project extending a minimum of 10 years from project close

A link to or a copy of the current comprehensive plan

Social vulnerability index score(s) for the project area from VFRIS SVI Layer

If applicant is not a town, city, or county, letters of support from affected localities

Letter of support from impacted stakeholders

Do we need any letter from  
the home owner?

Budget Narrative

Supporting Documentation, including the Benefit-Cost Analysis tool/narrative (for projects over \$2 million)

Authorization to request funding from the Fund from governing body or chief executive of the local government

I don't think we need this.

Signed pledge agreement from each contributing organization

Detailed budget and narrative for all costs

## **Appendix D: Scoring Criteria**

Virginia Department of Conservation and Recreation Virginia Community Flood Preparedness Fund Grant Program

### **SCORING CRITERIA PER CATEGORY**

#### **Studies**

Revising floodplain ordinances to maintain compliance with the NFIP or to incorporate higher standards that may reduce the risk of flood damage, *30 points*.

Creating tools or applications to identify, aggregate, or display information on flood risk or creating a crowd-sourced mapping platform that gathers data points about real-time flooding. This could include a locally or regionally based web-based mapping product that allows local residents to better understand their flood risk, *25 points*.

Conducting hydrologic and hydraulic studies of floodplains. Applicants who create new maps must apply for a Letter of Map Change through the Federal Emergency Management Agency (FEMA), *15 points*.

Studies and Data Collection of Statewide and Regional Significance. Funding of studies of statewide and regional significance and proposals will be considered for the studies listed below, *Up to 45 points*.

- Updating precipitation data and IDF information (rain intensity, duration, frequency estimates) including such data at a sub-state or regional scale on a periodic basis.  
*(45)*
- Regional relative sea level rise projections for use in determining future impacts.  
*(45)*
- Vulnerability analysis either statewide or regionally to state transportation, water supply, water treatment, impounding structures, or other significant and vital infrastructure from flooding. *(45)*
- Flash flood studies and modeling in riverine regions of the state. *(45)*
- Statewide or regional stream gauge monitoring to include expansion of existing gauge networks. *(45)*
- New or updated delineations of areas of recurrent flooding, stormwater flooding, and storm surge vulnerability in coastal areas that include projections for future

conditions based on sea level rise, more intense rainfall events, or other relevant flood risk factors. (45)

- Regional flood studies in riverine communities that may include watershed scale evaluation, updated estimates of rainfall intensity, or other information. (45)

- Regional hydrologic and hydraulic studies of floodplains. (45)

- Studies of potential land use strategies that could be implemented by a local government to reduce or mitigate damage from coastal or riverine flooding. (40)

- Other proposals that will significantly improve protection from flooding on a statewide or regional basis (35)

Social Vulnerability Index Score, up to 10 points.

- Very High Social Vulnerability (More than 1.5) (10)

- High Social Vulnerability (1.0 to 1.5) (8)

- Moderate Social Vulnerability (0.0 to 1.0) (5)

- Low Social Vulnerability (-1.0 to 0.0) (0)

- Very Low Social Vulnerability (Less than -1.0) (0)

Remedy for NFIP probation or suspension (yes 5, no 0)

Proposed project part of a low-income geographic area (yes 10, no 0) Proposed project implements a Chesapeake Bay TMDL BMP (yes 5, no 0)

## **AREA PLAN OVERVIEW**

### **INTRODUCTION**

The Fairfax County Comprehensive Plan consists of the Policy Plan, the four Area Plans, and the Comprehensive Plan and Transportation Plan maps. The Policy Plan, adopted by the Board of Supervisors on August 6, 1990, replaced the Introduction/Countywide volume of the Plan. The objectives, policies, and guidelines contained in the Policy Plan guide planning and development review considerations toward implementing county goals. The goals address the future development pattern of Fairfax County, and protection of natural and cultural resources for present and future generations.

The Area Plans are key elements for implementing the Policy Plan's goals and objectives at the more detailed Planning District and Community Planning Sector levels (see Figure 1). The Comprehensive Plan Map illustrates planned land uses, transportation improvements and public facilities. Used together, these elements comprise a dynamic document which is used by the Board of Supervisors, the Planning Commission, county staff and the public to guide land use, transportation and public facility decision making.

### **DEVELOPMENT OF THE AREA PLANS**

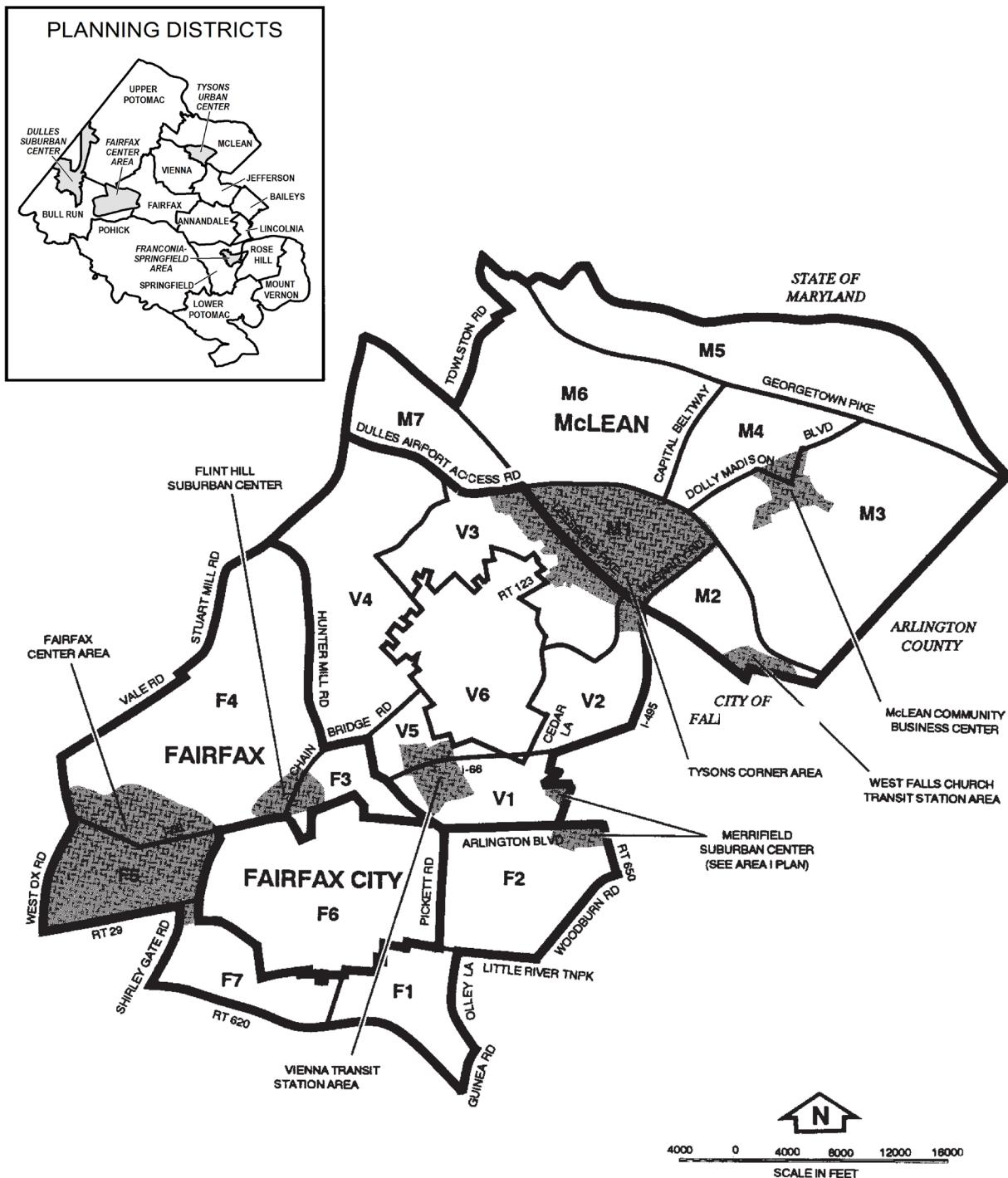
The Fairfax County Board of Supervisors designated 1988 as a Policy Review Year to review the adopted goals for the county formerly contained in the 1975 Comprehensive Plan. Based on the recommendations of the Goals Advisory Commission, the Board adopted new and revised goals for the county on October 24, 1988. The goals encompass a variety of issues, including housing, land use, transportation, public facilities and other areas and represent the broad ideals that the county should strive to achieve.

To ensure that the Comprehensive Plan includes policies, strategies and site-specific recommendations necessary to implement the revised goals, the Board directed the Planning Commission to initiate a major review of the Comprehensive Plan. The Fairfax Planning Horizons process was established as a two-phased effort aimed at achieving the following:

- Phase I: A Policy Plan for the county; and
- Phase II: Revised Area Plans that reflect the objectives of the new Policy Plan.

On August 6, 1990, the Board of Supervisors adopted the countywide objectives and policies contained in Part I of the Policy Plan for Fairfax County. This is the first volume of the five-volume Comprehensive Plan.

Phase II focused on the four Area Plan volumes of the Comprehensive Plan. The individual Planning District and Community Sector Plans which make up the Area Plans contain site-specific guidance that implement the policies adopted in Phase I. The Area Plans also seek to implement the Concept for Future Development for Fairfax County, which is described below.



**AREA II**  
**PLANNING DISTRICTS AND SECTORS**

**FIGURE 1**

## CONCEPT FOR FUTURE DEVELOPMENT

On August 6, 1990, the Board of Supervisors adopted the countywide objectives and policies of the Policy Plan for Fairfax County to replace the Introduction/Countywide volume of the Comprehensive Plan. At the same time, the Board adopted the Concept for Future Development and the Land Classification System, to be used as guidance during the review of the Area Plans. In 2012, the Board of Supervisors adopted updates to the Concept for Future Development so that it could continue to guide review of the Comprehensive Plan in the future.

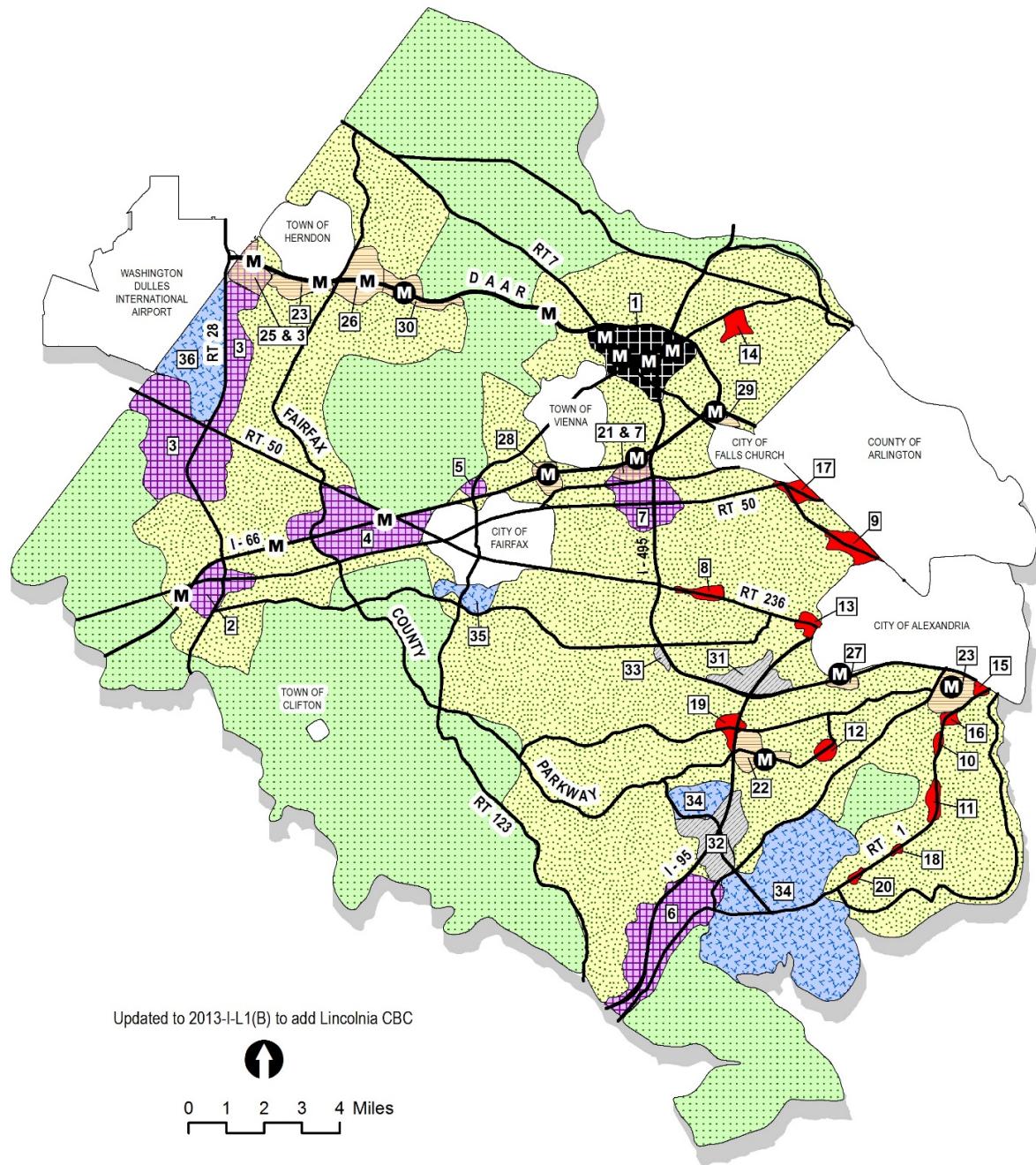
The Concept for Future Development consists of two elements: the Concept Map which shows the general location and character of future land uses and the Land Classification System which describes the desired future character for each area of the county in terms of eight broad categories as shown on the Concept Map.

The Concept for Future Development's policy direction is that almost all employment growth should occur within designated Mixed-Use Centers and Industrial Areas. When combined, these centers and areas encompass about 10 percent of the county's land area. With the exception of the Industrial Areas, some degree of mixed-use development is encouraged for each of these employment areas. This emphasis on mixed-use development is designed to introduce a substantial residential component into these employment areas. Mixed-use development is generally defined as three or more different types of uses designed to be functionally, economically and aesthetically integrated. The boundaries shown for these non-residential/ mixed-use areas coincide with the current boundaries of commercial, industrial, and mixed-use areas as generally defined by existing non-residential zoning and/or the non-residential/mixed-use boundaries traditionally identified in the Area Plans.

Within some of these employment and mixed-use oriented centers and areas, limited portions have been planned as "core" or "transit development" areas. Medium to high density development intensities within these core and transit development areas may be planned to take advantage of transportation and other functional opportunities. Lower intensities are encouraged outside the core and transit development areas in the remaining portions of these employment and mixed-use centers. Transitions are planned between core and non-core areas. These transitions are created through the tapering down of development intensity and building heights, changes in use, and through landscaping, screening and buffering treatments.

The remainder of the county is composed of Suburban Neighborhoods and Low Density Residential Areas. In general, non-residential development is not encouraged within the Low Density Residential Areas; when appropriate, neighborhood-serving commercial services and institutional uses are encouraged within the Suburban Neighborhoods if compatibly scaled with the surrounding neighborhood. The Concept Map is included on Figure 2.

In summary, the Concept for Future Development sets forth a vision and direction for guiding Fairfax County's future growth and development. This Concept for Future Development generally describes the types of land uses that are appropriate throughout the county. It has been used in conjunction with the countywide objectives and policies contained in the adopted Policy Plan to provide a foundation and framework for the Area Planning process.



CONCEPT FOR FUTURE DEVELOPMENT MAP

FIGURE 2

## CONCEPT FOR FUTURE DEVELOPMENT MAP

### LOCATIONS OF MIXED-USE CENTERS

Urban Center  
1. Tysons

Suburban Centers  
2. Centreville  
3. Dulles (Route 28 Corridor)  
4. Fairfax Center  
5. Flint Hill  
6. Lorton-South Route 1  
7. Merrifield

Community Business Centers  
8. Annandale  
9. Baileys Crossroads  
10. Beacon/Groveton  
11. Hybla Valley/Gum Springs  
12. Kingstowne  
13. Lincolnia  
14. McLean  
15. North Gateway  
16. Penn Daw  
17. Seven Corners  
18. South County Center  
19. Springfield  
20. Woodlawn

Transit Station Areas  
21. Dunn Loring (inside Merrifield Suburban Center)  
22. Franconia-Springfield  
23. Herndon  
24. Huntington  
25. Innovation Center (inside Dulles Suburban Center)  
26. Reston Town Center  
27. Van Dorn  
28. Vienna  
29. West Falls Church  
30. Wiehle-Reston East

### LOCATIONS OF LARGE INSTITUTIONAL AND INDUSTRIAL AREAS

Industrial Areas  
31. Beltway South  
32. I-95 Corridor  
33. Ravensworth

Large Institutional Land Areas  
34. Fort Belvoir (Main Post and North Area)  
35. George Mason University  
36. Washington Dulles International Airport

### LEGEND

 Tysons Urban Center

 Suburban Center

 Community Business Center

 Transit Station Area

 Industrial Area

 Large Institutional Land Area

 Suburban Neighborhood

 Low Density Residential Area

 Major Road - Existing (1-1-2018)

 Metro Station - Existing (1-1-2018)

 Metro Station - Proposed

Updated to 2013-I-L1(B) to add Lincolnia CBC

### **SUMMARY: LAND CLASSIFICATION SYSTEM**

Refer to the Areawide and District Recommendations for guidance on specific areas.

#### **Tysons Urban Center:**

*Tysons is a significant economic engine to the region. The vision for Tysons includes a dynamic urban center marked by the socioeconomic diversity of residents and workers; a wide range of opportunities and activities; the quality of buildings, aesthetics, and open spaces; and connections and accessibility for all. Tysons includes four transit-oriented development (TOD) areas surrounding four Metrorail stations.*

- Elements of the framework for the future development of Tysons include: encouraging transit-oriented development, improving the jobs/housing balance, providing diverse and affordable housing, incorporating community benefits, and creating excellence in the public realm.
- A strong implementation strategy should provide the flexibility, accountability, and resources necessary to achieve the vision for Tysons.

#### **Suburban Centers:**

*Suburban centers are employment centers located along major arterials. These areas are evolving to include mixed-use cores such as transit station areas and town centers that are more urban in character. The core areas are generally surrounded by transitional areas of lesser intensity.*

- Encourage a complementary mix of office, retail and residential uses in a cohesive moderate to high-intensity setting.
- A grid of streets and well-designed pedestrian connectivity should be established in core areas. The transitional areas outside of the core should have connectivity to core area amenities. Similarly, connectivity should be provided between transitional area amenities and core areas.
- A balance of transportation and land use in core areas is important as suburban centers evolve to be less dependent on the personal vehicle as a result of transit accessibility.

#### **Community Business Centers:**

*Historically older community-serving commercial areas that emerged along major roadways, Community Business Centers (CBCs) are areas where redevelopment should encourage a mix of uses focused around a core area of higher intensity, such as a town center or main street in a pedestrian-oriented setting. Transitions in intensity and compatible land uses should protect surrounding stable residential neighborhoods.*

- Appropriate revitalization and selected redevelopment advance the goal of sustaining the economic vitality in older commercial centers and adjacent neighborhoods. Revitalization efforts should also seek reinvestment in these communities and aim to foster a sense of place. There may be a particular need to address aging infrastructure.
- CBC's should emphasize design that advances pedestrian amenities and circulation.
- The generally older road networks should be optimized through a balance of retail, residential, and office uses supported by transit to provide access to CBCs. Where appropriate, a mix of uses is encouraged to create a more vibrant environment throughout the day.

#### **Transit Station Areas:**

*These areas encompass Metrorail Stations (where applicable, a Transit Station Area might also be adjacent to a Metrorail station in a neighboring locality) and are directly influenced by the presence of access points to the Metrorail system. Transit station areas promote a land use pattern that supports Metrorail by encouraging a mix of uses in a compact, pedestrian-friendly urban form within walking distance of the rail station. Within the region, Metrorail provide a vital public transportation choice that enhances accessibility and reduces the reliance upon single occupancy vehicle use. Transit Station Area boundaries are strongly shaped by the area's access characteristics and the relationship of the station to surrounding stable neighborhoods.*

- Refer to Appendix 11 in the Land Use section of the Policy Plan for the sixteen principles for transit-oriented development in Fairfax County.
- Generally, Transit Station Areas constitute those lands within a primary and a secondary development area. The primary development area is approximately a 5 minute walk from the station platform. The secondary development area is approximately a 10 minute walk from the station platform.
- A balance of uses and implementation of design guidelines should be achieved to create desirable neighborhoods.

**Industrial Areas:**

*The types of uses intended for industrial areas are generally regulated more strictly due to their anticipated impacts to adjacent areas. This category is not appropriate for residential uses and limits future office uses to those which are ancillary to industrial use.*

- Industrial Areas should be located near major transportation corridors such as interstate highways, railways and airports which are capable of transporting a high volume of goods and contribute to overall regional accessibility. The direct accessibility to major transportation corridors will help ensure that industrial traffic will not be routed through neighborhoods.
- Development of non-industrial uses should be discouraged. Office use generally should be limited to those parcels which are specifically designated for office use in the Area Plans.
- Development near the edges of industrial areas should include effective buffering from surrounding uses. Substantial setbacks and/or berms may be necessary in addition to vegetative screening, particularly where these areas abut residential uses. Uses that generate a minimum level of noise, glare, odors or truck traffic are preferable in transition areas and edges.

**Suburban Neighborhoods:**

*These areas contain a broad mix of allowable residential densities, styles, parks and open space and contain the county's established residential neighborhoods. Suburban neighborhoods are considered to be stable areas of little or no change. Where appropriate, supporting neighborhood-serving commercial services, public facilities, and institutional uses are encouraged provided that the proposed intensities and character are compatible with the surrounding area.*

- Parks and recreation facilities should be distributed throughout suburban neighborhoods as needed to serve residents.
- Access and internal circulation for non-residential and higher density residential uses should be designed to prevent adverse traffic impacts on nearby lower-density residential uses. Reliance on the automobile should be diminished by encouraging the provision of pedestrian accessible community-serving retail and support uses.
- For development within or adjacent to suburban neighborhoods that propose either a significantly higher intensity or a change in land use, primary access should be from major or secondary roadways which do not traverse adjacent stable residential areas. Transit service, generally bus service, should be provided to those portions of the suburban neighborhoods that are most likely to generate substantial ridership.

**Low Density Residential Areas**

*The primary purpose of Low Density Residential Areas is to ensure the preservation of environmental resources by limiting development primarily to low density, large lot residential and open space uses. The loss of natural habitat coupled with the vital role that portions of these areas serve in protecting water quality dictates that development in these areas be minimized. These are stable areas of little or no change.*

- Low Density Residential Areas typically contain large lot single family detached housing and open space. They are generally located along the Potomac River and the Difficult Run and Occoquan watersheds. Policies emphasize the preservation of significant and sensitive natural resources, especially protection of the county's water resources.

- Institutional or other neighborhood serving uses should be of a compatible scale and intensity.
- Public facilities infrastructure is to be provided at an acceptable level of service without substantial negative impacts to the natural environment. Public facilities in low density residential neighborhoods should be limited to those which are required to be located in these areas. Public water and sanitary sewer service are generally not to be provided in these areas.

**Large Institutional Land Areas:**

*Includes publicly-owned state or federal land holdings that are not subject to the normal county development review processes. The county should encourage state and federal agencies and regional authorities to develop or redevelop their holdings only when plans are coordinated with the county. The cumulative effect of institutional uses should be considered before additional institutional and governmental uses or expansion of existing uses is developed.*

**PURPOSE OF THE AREA PLANS**

The four Area Plans contain detailed recommendations for land use, transportation, housing, the environment, heritage resources, public facilities and parks and recreation. These recommendations refine the guidance provided in the Policy Plan and were developed within the framework of the Concept for Future Development.

Each Area Plan is subdivided into Planning Districts, which, in turn, are subdivided into Community Planning Sectors, the smallest geographical components of the Plan. The Community Planning Sector text provides details on existing development and planned land use. For purposes of development review and other land use related decisions it is emphasized that the planning guidance for each Planning District is contained in the Area Plan text; on the Area Plan map; in the Policy Plan; and in the land use guidelines contained in the Concept for Future Development and Land Classification System.

The primary planning objectives in all Area Plans are to:

- Realize the objectives and policies of the Policy Plan in planning and development decisions;
- Utilize the Concept for Future Development as a guide to land use planning decisions when Plan amendments are considered and;
- Employ site-specific guidance to review and formulate recommendations for development requests in furtherance of the public health, safety and welfare as provided in the Code of Virginia.

**GENERAL PLANNING AREA RECOMMENDATIONS**

**Land Use**

The Policy Plan contains countywide objectives for land use. These are organized under four broad categories: land use pattern; land use intensity; pace of development; and land use compatibility. The Policy Plan also contains detailed appendices which include locational guidelines for multifamily residential development, shopping centers, child care facilities and guidelines for other land use related issues such as neighborhood redevelopment. These objectives, policies and guidelines are to be used in conjunction with all of the land use recommendations contained in the Area Plans and, therefore, generally are not repeated in the Area Plans.

The Area Plans and the Plan map in concert with the Policy Plan provide site-specific land use recommendations. The Area Plan text provides detailed recommendations for areas within Planning Districts and Community Planning Sectors. Sector locator maps, included in the Area Plans, show the general locations referred to in the detailed recommendations. When the Area Plan text does not reference a specific location, the Plan map shows the recommended land use. The Plan text and map complement one another; however, in the event of a discrepancy between the specific recommendation of the text and the map, the text takes precedence.

For some parcels of land, the Area Plan recommendation provides a baseline level of density or intensity and an option for more intense development or alternative use if certain conditions are met. Where such an option is provided, all of the specific conditions must be met before the option's baseline level of development may be considered. It is not the intent of the Plan to allow an intermediate level of development based upon fulfillment of some of the specified conditions unless an intermediate level of development is specifically provided for. Further, fulfillment of the Plan conditions related to the option does not supercede requirements of the Criteria for Assignment of Appropriate Residential Development Density or the Criteria for Assignment of Appropriate Non-residential Development Intensity outlined in the Policy Plan.

### Transportation

The Policy Plan contains countywide objectives for transportation, a Transportation Plan map, and appendices outlining functional classification systems for transit systems and roadways, as well as roadway right-of-way requirements.

#### **Highways and Highway Improvements Affecting Each Planning District**

The arterial and major collector roads affecting each of the Planning Districts are shown on the respective district-wide maps. When examining these maps, the following points should be recognized:

- Most Plan elements represent expressions of need and county policy with regard to these needs. Specific and explicit guidance is incorporated in the adopted Policy Plan requiring additional analyses of individual recommendations as a prerequisite for construction (see Transportation Objective 1 Policy b).
- With few exceptions, detailed engineering design has not been accomplished, and final alignments and design features have not been established. Specific design features, such as the location of medians and turning lanes, and specific interchange configurations are determined in the design and design public hearing processes, and are not addressed in the Area Plans.
- As with design issues, many operational issues such as signalization and signage, parking, and cut-through traffic are addressed through other existing processes, and as such are not addressed in the Area Plans.

The corridor-level studies should emphasize consideration of environmental limitations, community stability and the cumulative effect of other transportation network improvements in the area. In allocating and accommodating existing and forecast travel demand generated within the area served by the transportation corridor under study, they may identify alternate and preferred routes and/or modes of travel within the area generally served by the transportation corridor under study and recommend improvements to the transportation

network over and above or that differ from those identified on the adopted countywide Transportation Plan map.

Arterial roads, even if not specifically designated for widening on the adopted countywide Transportation Plan map, should be subject to corridor studies when and if severe transportation deficiencies are identified within the area served by these roads. If widening of any such roads beyond the lanes indicated on the Plan map is recommended as a result of such studies, a Plan amendment would be required.

### **Right-of-Way Requirements**

In an effort to preserve land for roadway improvements, to decrease delays in land acquisition, and to obtain land before land values are associated with developed properties, requirements are set forth regarding right-of-way limits for roadways as shown on Table 1. This table represents a modification of the right-of-way limits shown in Appendix 2 of the Transportation element of the Policy Plan.

The rights-of-way specified therein should be obtained through the development approval process (e.g. rezoning, special exception, site plan, etc.) as applications are submitted to the county. The provision of these rights-of-way will allow for future road improvements to be constructed with adequate ancillary features such as turning lanes, trails, and buffering, while minimizing impacts on properties which are subsequently developed. It should be stressed, however, that the ultimate roadway designs will recognize available right-of-way to the extent possible; the intent of these requirements is not to impose a rigid right-of-way swath through areas or mature neighborhoods, but rather to secure additional right-of-way needed for road improvements as development or redevelopment occurs.

#### **Freeways**

Right-of-way needs along freeway facilities can be variable and extensive. The right-of-way may need to accommodate HOV treatments and rail transit as well as roadway configurations which are difficult to standardize such as collector-distributer systems. The right-of-way requirements for freeway facilities should be based upon the associated studies for each improvement. These studies could include the detailed corridor analyses, which are referred to in Transportation Objective 1, for the Shirley Highway, I-66 and Dulles Airport Access Road Corridors as well as other environmental impact studies, feasibility studies and design efforts.

#### **Arterials**

The right-of-way requirements for arterial roadways based upon the number of lanes and the type of edge treatment provided are detailed in Transportation Appendix 2 of the Policy Plan. The number of lanes refers to the designation on the Transportation Plan. Edge treatment is also more fully discussed in the Policy Plan Transportation Appendix. It is anticipated that curb-and-gutter sections will be provided throughout the county, except in some Low Density Residential Areas and in Suburban Neighborhoods, where shoulder sections may be considered as an option on an individual roadway basis.

**TABLE 1**

**Right-of-Way Requirements (in Feet) for Roads  
Shown on Transportation Plan Where No Plans Exist<sup>1,6</sup>**

<u>Lanes</u>	<u>Curb-and-Gutter</u>	<u>Edge Treatment</u> <u>Shoulder</u>
2 lane	--	90
4 lane	112	158
6 lane	136	182
8 lane	160	206

Add XX feet of right-of-way for each of the following special circumstances:

	<u>XX</u>
Tandem Left Turn Lanes at Major <sup>2</sup> Intersections on All Legs	12
Right Turn Lanes at Major <sup>2</sup> Intersections on All Approaches	12
Enhanced Median Treatments <sup>3</sup>	4
Service Drives <sup>4</sup>	92
Parking Lanes <sup>5</sup>	9

Add 15 feet in ancillary easements.

Add supplemental right-of-way with transitions to avoid special features (e.g., historic properties, parks, cemeteries, wetlands, landfills, sewage and water treatment facilities, existing buildings, etc.) and/or to improve horizontal alignment. Add 40 feet radius at intersections dedicated to the chord of the radius curve.

<sup>1</sup> Where design plans consistent with the Comprehensive Plan and providing all anticipated future turn lane requirements are developed to a sufficient level of detail and approval, right-of-way and easement dedication requirements should be based upon them.

<sup>2</sup> Within 500 feet of intersections of arterial roads with collectors or with other arterials unless specifically determined by a traffic study to not be needed.

<sup>3</sup> Commercial revitalization areas or other special areas where landscaping or special design features are desired.

<sup>4</sup> Primary Highways, except where waived.

<sup>5</sup> On side(s) of road where residences front on the road or service drive. Does not apply to shoulder sections.

<sup>6</sup> Where a substitute trail is to be provided in easements within the development site, the right-of-way requirements can be reduced in an amount to be determined by VDOT and DEM; however, adequate right-of-way must be retained to meet VDOT clear zone requirements.

### **Collectors and Locals**

The rights-of-way for collector and local streets should be determined by the application of the Public Facilities Manual or other appropriate ordinances, unless proffers or other specific development conditions have been established for the affected road.

### **Interchanges**

Interchange locations have been identified on the Transportation Plan map and are also shown as Plan elements on the district-wide map. The provision of an interchange has both land use and transportation planning implications. In terms of land use, caution must be exercised in reviewing development proposals in the immediate interchange area due to right-of-way implications. In terms of transportation planning, care must be taken to accommodate revised access patterns in the immediate area, since the interchange ramps cause grade changes and weaving/merging traffic conflicts. Because of these interchange features, access to properties in close proximity to the intersection is often affected by interchange construction.

The amount of land needed for interchanges, and the extent to which access must be re-oriented, varies with the actual design of the interchange. Many planned interchanges have not been designed and their specific configurations are unknown. In these instances, every effort should be made to accommodate the potential access modifications associated with a future design. Toward this end, typical dimensions of potential ramps and acceleration/deceleration lanes have been established based on typical interchange design.

The interchanges shown on the sector maps identify the roadway segments of the intersecting streets where access must be restricted to accommodate these potential designs based on the typical dimensions. The restriction of access as used herein is intended to guide the manner in which access is provided to parcels in close proximity to the interchange. Any development or redevelopment of property affected by such access restrictions should recognize the need to re-orient access in anticipation of the future interchange. The design of such sites should be consistent with and oriented to the provision of alternate access. Such access may take the form of an alternative street or street system (e.g., reverse frontage), the provision of service drives or similar parallel frontage roads, or some combination thereof. In those instances where interchange designs have been approved or are in active stages of development, the maps contained in this section do not show these restricted access segments. Where an interchange project is in an active design stage, or where such designs have been approved, access in the intersection area should be planned to be consistent with such designs.

### **Transit and High Occupancy Vehicle (HOV) Facilities**

Several major public transportation features are incorporated into the countywide Transportation Plan. In general, these features may be grouped either as corridor recommendations, or as specific supporting facility recommendations. They are shown on the district-wide and sector maps. These recommendations are briefly summarized below.

### **Corridor Recommendations**

The countywide Transportation element of the Plan recognizes the need for significant public transportation improvements in many specific corridors. The Plan also recognizes, however, that the final determination of the most appropriate mode of public transportation

should be based on a detailed corridor-level analysis of the various possible alternatives. Thus, the Transportation Plan identifies several "Enhanced Public Transportation Corridors" on the map, and incorporates a policy requiring the detailed analysis of alternative transportation modes within those specific corridors (see Transportation Objective 2, Policy b).

Similarly, the countywide Plan identifies several potential High Occupancy Vehicle (HOV) facilities, and indicates that the ultimate determination of HOV feasibility and performance should occur after more detailed corridor-level studies are completed.

### **Supporting Facility Recommendations**

Regardless of the mode of public transportation chosen in a specific corridor, supporting facilities such as commuter park-and-ride lots must be identified and located. Such sites could serve as parking areas for HOV or express bus collection, or as rail stations, or perhaps for both functions as public transportation ridership increases over time. The Plan locates these sites in order that actions can be taken to preserve their availability, since the supply of potential sites is rapidly decreasing as the county continues to develop.

The countywide Transportation Plan identifies approximate locations for these facilities. The District Plans provide an opportunity to apply this countywide guidance to specific areas, so that properties affected by such recommendations can be appropriately developed, preserved, or protected in the development approval process. In some cases, the District Plans might contain alternative sites for these facilities in order to preserve flexibility until a final determination of site location is made.

The countywide Transportation Plan map contains several different symbols representing different types of supporting facilities. These are briefly discussed below:

- T = *Transit Transfer Center (no parking)*. These facilities consist primarily of bus loading areas and passenger waiting areas at locations where multiple transit routes and/or modes may be reasonably expected. They have good access both to nearby arterials and freeways in order to minimize transit travel times. They could be free-standing, individual facilities or could easily be integrated with the design of a building. No automobile parking lots would be provided at these locations, consistent with their intended function as transfer centers.
- R = *Rail Station*. A rail station as defined on the countywide Plan map represents a location where a rail rapid transit station could be located, assuming the selection of rail as the preferred mode in the corridor (see previous discussion). For similar reasons, it should not be assumed that such stations would be extensions of the WMATA Metro system, as other rail modes may also be considered. Rail stations may or may not be accompanied by automobile parking areas, depending on the nature of the area. The rail station symbol is accompanied by the Commuter Parking (P) symbol for those sites where such parking appears to be possible.
- P = *Commuter Parking Lot*. Commuter parking lots are shown on the countywide Plan Map along major highway corridors where sufficient land area having access to the highway may be available. These lots could function either as traditional commuter park-and-ride lots associated with HOV and/or express bus service, or as parking for a rail station as appropriate. The size of such lots may vary; however, these lots should generally be no smaller than 500 spaces in order to maximize their efficiency as transit collection and staging areas. These facilities must have

good access to nearby arterials and freeways in order to be effective.

VRE = *Virginia Railway Express*. Virginia Railway Express Stations are identified along the Norfolk Southern and CSX rail lines where commuter rail service is provided. VRE station parking areas are generally surface lots accommodating between 200 and 800 vehicles.

## **Service Drives**

Service drives are required by the county's Zoning Ordinance along Primary Highways. The requirement supports the county's transportation objective to maximize the efficiency of roadway facilities. Primary Highways are arterials which primarily accommodate through travel movements. However, direct access to and from these highways occurs frequently. In general, the provision of many access points reduces the efficiency and capacity of an arterial road. This reduction is caused by the interruptions in smooth traffic flow due to turning movements into and out of the driveway entrances. Service drives provide for the separation of the access and travel functions along roadways. When correctly planned and built, their use allows the adjacent parallel roadway to operate more efficiently, with increased capacity and improved safety. At the same time, access to adjacent properties is provided and oriented to controlled access points. Service drives also allow for purely local interparcel trips to be made without disrupting the through traffic on the adjacent arterial. On the sector maps, which describe the transportation recommendations, the required application of service drives along Primary Highways is noted.

It is recognized that service drives are not without disadvantages. Operational problems are created where the service drive intersects side streets because of inadequate intersection separation. Moreover, service drives are often incomplete along a given road segment, and numerous entrances often exist between the service drive and the arterial. Both of these situations reduce the effectiveness of the service drives.

For these reasons, service drives should be minimized and alternatives to service drives should be provided whenever possible. The Zoning Ordinance allows for service drives to be waived if alternative interparcel access is available, or if other compelling circumstances are present, and such waivers are often granted. However, service drives are utilized extensively in many of the older commercial highway corridors in the county, such as Route 7 between Seven Corners and Baileys Crossroads, Route 236 through Annandale, and Route 1 between Alexandria and Fort Belvoir. The system of service drives in these commercial areas is characterized by incomplete connections which return the local traffic to the arterial mainline. The segments which are built are not necessarily in the state highway system and therefore do not meet the state's standards for construction and maintenance. Large potholes, parked vehicles, and barricades exist on many of these privately maintained service drives. It is important to complete the service drives along the Primary Highways and upgrade the substandard segments so they can be incorporated into the state's maintenance program.

Cases occur where the widening of the primary highway eliminates the service drives which preceded the widening. The Plan should anticipate these situations by providing for alternatives to the service drive, such as consolidation of entrances and provision of interparcel access through travelways, or by other means. This feature is addressed by Objective 9b of the Transportation element of the Policy Plan. Where other alternative measures may be available, they are identified in the Area Plans.

## **Site Access**

In many instances, the Area Plans identify the primary orientation of access to a specific site or group of sites. Such recommendations are shown by arrow symbols on the sector and/or sub-sector maps. The purpose of these recommendations is to identify the primary access orientation of the area(s) in question. The symbols indicate the direction and approximate location of the primary access point(s) to the site. Where such access is identified in the Area Plans, the specific details of providing this access may be resolved at the rezoning or site plan stage of development review. Where such access orientation recommendations exist, the absence of an arrow symbol in a specific direction or to a specific road should be construed as a recommendation that access not be provided in that direction, or that any such access be secondary in nature.

## **Level of Service**

Application of transportation levels of service is intended to be a mechanism for timing development in this Plan. For areas where the appropriate level of service (LOS) is not specified in the Area Plan, it is anticipated that a minimum LOS will be determined through future analyses. These analyses should be performed in a subsequent phase of the Planning Horizons process. The Planning Commission in conjunction with the staff should determine the best way to proceed with an appropriate process for analysis and recommended amendments to the Plan. Lower levels of service may be assigned to development centers and cores, where the Plan proposes that growth will be concentrated. Higher levels of service may be recommended in outlying areas, where the spread of development is inimical to an efficient transportation system. Applicants for new development should be required to demonstrate that their proposals will meet the level of service designated for their area. Upon adoption by the Board, these sector-specific levels of service for transportation should be inserted into the Area Plans.

In the interim, development applications will be reviewed based on the "non-degradation" and "offsetting impact" policies discussed below:

"Non-degradation" Policy: The "non-degradation" policy requires applicants to ensure that the transportation system affected by the application performs no worse after the project is developed than it would otherwise. This approach is primarily a performance based approach which requires applicants to provide improvements or other guarantees to maintain certain performance levels. These levels would be measured by levels of service or critical movement volumes or other measures as deemed appropriate by the Department of Transportation.

"Offsetting Impact" Policy: The "offsetting impact" policy requires applicants to contribute to transportation improvements. The contributions would be proportional to the traffic generated by the project and the amount of transportation capacity required to accommodate that traffic, presumably based on lane-miles. However, this policy would not ensure that the localized performance of the transportation system would be maintained. Instead, it recognizes that in some instances, it may be impossible for performance to be maintained or for one individual applicant to provide the transportation improvements which may be needed.

In general, the "non-degradation" policy would be pursued in reviewing development applications, with the "offsetting impact" policy employed in those instances where the "non-degradation" policy is not appropriate.

## Housing

The Housing element of the Policy Plan contains objectives for promoting affordable housing, conserving stable neighborhoods, encouraging rehabilitation and increasing the supply of housing available to special populations.

Each Planning District within the Area Plans includes a chart which designates existing and proposed sites for assisted housing. Each district plan also includes recommendations for the preservation and conservation of stable residential areas and identifies areas where new housing development, including multi-family housing, may be appropriate. In general, higher density housing is planned to be located within or in proximity to mixed-use centers as envisioned in the Concept for Future Development.

## Environment

The Environmental element of the Policy Plan provides guidance for achieving a balance between the need to protect the environment and planning for the orderly development and redevelopment of the county. This element contains objectives for preserving and improving air and water quality; minimizing noise and light pollution; minimizing exposure to environmental hazards including unstable soils, flood impact areas and pipeline and electrical transmission lines; preserving environmental resources; and protecting and enhancing the Environmental Quality Corridor (EQC) System.

Environmental objectives and policies of the Policy Plan apply throughout Fairfax County, in conjunction with the environmental policies contained in the Area Plans. Therefore, the Area Plans contain only limited additional guidance.

Text addressing areas with specialized environmental concerns, including the Difficult Run Watershed, the Occoquan Basin and the Dulles Airport Noise Impact Area is presented below. Text concerning the Difficult Run watershed is also presented in the Area II Plan.

### **Difficult Run Watershed**

The Difficult Run Environmental Quality Corridor has been classified as a critical environmental area by the State of Virginia. Floodplains and shallow bedrock depth on valley slopes constrain development. The area contains soils with relatively good bearing capacity but the potential for severe erodibility.

Part of the Difficult Run watershed was the subject of an environmental and land use study, the Difficult Run Headwaters Land Use Study, April 1978, prepared by the Office of Comprehensive Planning, currently known as the Department of Planning and Zoning. The study area was analyzed for its ability to accept various residential densities and simultaneously maintain high-quality environmental standards. The primary environmental objectives for this area are designed to protect this fragile environment from the impacts of urbanization such as increased stormwater runoff, increased nonpoint source pollution loadings, stream channel enlargement, loss of high-quality wildlife habitats, increased number of septic fields and possible soil and groundwater contamination from septic effluent.

A detailed environmental inventory identified geologic, topographic, hydrologic, vegetative, soil, wildlife, air quality, noise and open space factors. This information was used to prepare a land use design that would minimize the impacts of development in a region that

is not planned for sanitary sewer service and serves as a green space between Fairfax, Vienna, Chantilly and Reston.

An Environmental Quality Corridor (EQC) was outlined using a U.S. Forest Services water quality filter strip equation, areas of steep slopes, U.S. Geological Survey designated 100-year floodplain and existing parkland. The result is an environmentally sensitive plan with land use boundaries determined by the environmental carrying capacity of the land. The environmental factors, together with other factors such as existing and committed development in the area and site and road design controls, are reflected on the Plan map for this area.

Areas with long narrow ridge lines, thin overburden, highly erodible soils, steep topography, high quality vegetation and poor access are planned for very low density (less than one unit per five acres) uses. One unit per two to five acres is proposed for areas adjacent to streams where topography is relatively steep, overburden moderately thick (10-50 feet) and soils moderately erodible. Areas on plateaus or ridge lines where thick overburden (50 feet or more), gently sloping topography, good septic suitability soils, mixed vegetation and varied access points are capable of accommodating somewhat higher density development are planned for .5-1 dwelling unit per acre.

Factors other than environmental considerations were also evaluated before arriving at the land use recommendations shown on the Plan map. Since adoption of the Plan recommendations, there has been some development which limits the options for planning this sensitive headwaters areas only for very low densities. Existing and committed development is used in Plan recommendations in many areas of the Difficult Run headwaters to obtain compatible densities. New development should also be compatible with the established development pattern in its vicinity with similar lot sizes, provided these lot sizes would not be detrimental to environmental amenities.

Owners of large tracts are encouraged to plan and develop these tracts as an entity. Also, owners of small parcels adjacent to large parcels should consolidate them with the larger tracts in order to create a more integrated development. Such development could produce more imaginative designs, preserve a variety of habitats, and provide recreational facilities and a variety of architectural styles.

### Heritage Resources

The Heritage Resources element of the Policy Plan provides guidance in achieving a balance between physical and economic growth and preservation of the county's prehistoric and historic heritage resources. Objectives and policies focus on three general issues: identification of the resource base; protection and preservation of significant heritage resources; and promotion of community awareness and involvement.

The Area Plans identify specific heritage resources including historic, architectural and archaeological resources. Each District Plan contains a chart and map of the resources derived from the county's Inventory of Historic Sites. In some sectors, historic overlay districts are identified and special land use guidelines related to these districts are cited under the Recommendations section.

### Public Facilities

The Public Facilities element of the Policy Plan provides guidance for an effective and efficient public facilities system. Public facilities are defined as those facilities required to support governmental services and functions or public utility companies. The Policy Plan contains

countywide objectives for establishing a facility network which is responsive to the county's ability to pay, community expectations, the public health, safety and general welfare and neighborhood and land use impacts. Additional objectives relate to education, libraries, public safety and utilities and services.

In the Area Plans, existing public facilities are identified on a chart for each Planning District. Where a need for additional public facilities has been identified, these facilities are also included within the District Plan overview. Site-specific recommendations are included within the Community Planning Sector recommendations.

#### Parks and Recreation

The Parks and Recreation element of the Policy Plan contains countywide objectives for the provision of a high quality, diverse park and recreation system. As defined by service areas, the county should plan, develop and maintain four primary types of parks: Neighborhood, Community, District and Countywide. These are augmented by regional, state and federal parks. The parks classification system and standards for establishment of parks and recreation facilities is contained in the Parks and Recreation Appendices of the Policy Plan.

The Area Plans identify existing and proposed parks within the Parks Classification System. A summary chart of existing public parks is included in the overview for each Planning District. Specific recommendations related to existing and proposed parks are contained in each Community Planning Sector.

#### Trails

Fairfax County has a comprehensive countywide trails system which supports pedestrian, bicycle and equestrian usage and provides both transportation and recreational benefits. The overall trails system is planned to ultimately connect major activity centers and key destination points to establish desirable recreational corridors. The countywide trails plan map is published at the scale of 1 inch to 4,000 feet (1":4000') and is depicted on Figure 2 in the Transportation component of the Policy Plan.

The trails system is being constructed primarily through site plan requirements associated with development activity, as part of new road improvement projects, or with county funds. This process dictates that the ultimate network be constructed segment-by-segment and that the public be aware of trail requirements and planned routes. The 1":4000' Trails Plan Map is available from the Department of Planning and Zoning and should be consulted for specific recommendations on trail location and type.

## **HOW TO USE THE PLAN**

### **FINDING A SPECIFIC PROPERTY IN THE PLAN TEXT**

The Comprehensive Plan for Fairfax County is divided into four planning areas. See Figure 5 for the countywide map showing these four planning areas. Each planning area is divided into Planning Districts and each Planning District is subdivided into Community Planning Sectors. A map depicting each district and its sectors is found at the beginning of each Area Plan overview. In addition, sector level locator maps which correspond to land use recommendations in the text are located within the Community Planning Sectors.

In order to locate that portion of the Comprehensive Plan which pertains to a specific property, it is necessary to:

1. Determine the planning area in which the property is located.
  - a. This may be accomplished by looking at Figure 3. The four planning areas are cited in Roman numerals. The heavy dotted line forms the planning district boundaries, with the planning districts indicated by name.
  - b. Identify the planning area or areas in which the property is located.

Note: Due to the nature of the planning area boundaries, it may be necessary to refer to more than one area map to determine in which planning area the property is located.

2. Find the planning district in which the property is located.
3. Determine in which community planning sector the specific property is located by referring to the district map. Once the appropriate sector is known, turn to that sector in the text.
4. If the property is located within that portion of the sector map that is shaded, this indicates that it is part of a special area to which you are referred.
5. The information in the community planning sector is organized into two sections:
  - a. Character: a brief description of existing land use; and
  - b. Recommendations: guidance for the future development of the sector. Specific uses, ranges of residential density or land use intensity, as well as possible alternative or optional uses, are presented for certain tracts of land within the sector.
6. If no recommendation is stated in either the sector or the appropriate special area of the text for the property in question, then consult the Plan map.

#### FINDING A SPECIFIC PROPERTY ON THE PLAN MAP

The Comprehensive Plan includes color-coded maps for each of the four planning areas. The colors correspond to particular land use categories as noted in the legend on the Plan map. Properties can be easily located on this map by using street references or the tax map grid square system. The tax map grids are shown as an overlay on the Plan map and relate to the countywide grid location system. Grids are denoted by a hyphenated number, such as 42-4.

#### PLAN MAP AND TEXT RELATIONSHIP

The Plan text and Comprehensive Plan map complement one another. Often the Plan text gives detailed recommendations which are illustrated generally on the Plan map. In the event of a discrepancy between the specific recommendations of the text and the Plan map, the text takes precedence.

