

# WELCOME TO GIS DAY 2010

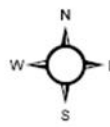


Fairfax County, Virginia

# The Environmental Review Process

## Department of Housing and Community Development

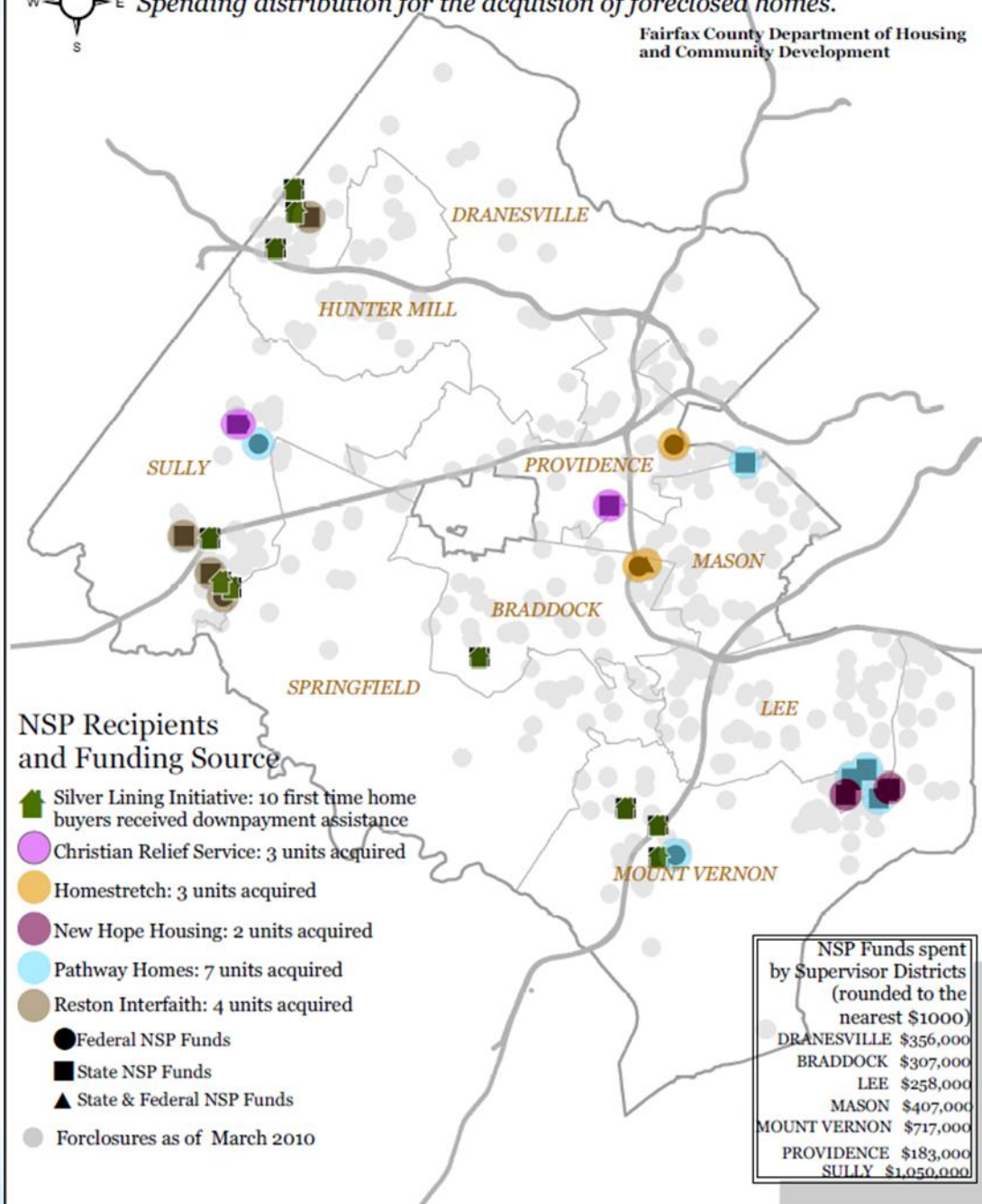




# Neighborhood Stabilization Program (NSP)

Spending distribution for the acquisition of foreclosed homes.

Fairfax County Department of Housing and Community Development

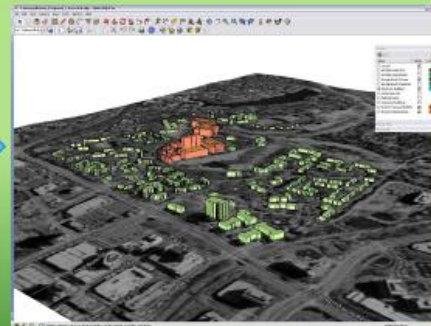
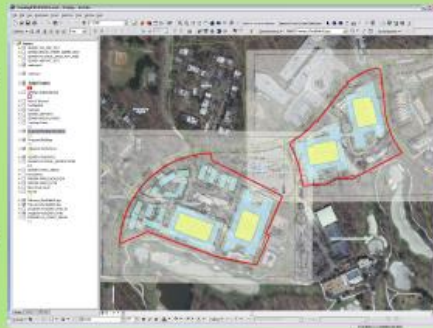


# FAIRWAYS OF RESTON DEVELOPMENT APPLICATION

## PRC A-502-02

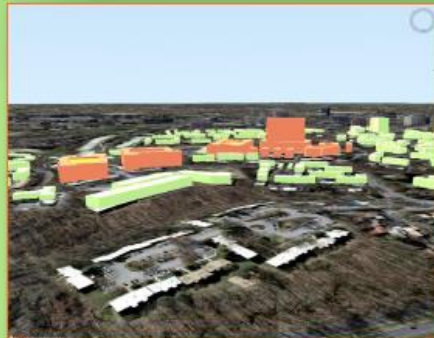


In an initiative to create more effective presentations with our 3-D models we have utilized the Virtual Fairfax Platform. After years of using 3-D models in the planning & zoning process we now have a universal platform to showcase and share our models.



OVERVIEW MAP

The department now has a systematic method to utilize 3-D in the planning & zoning process, as well as, a standard platform for presentation.



COMPARING SIDE VIEWS



COMPARING OBLIQUE VIEWS

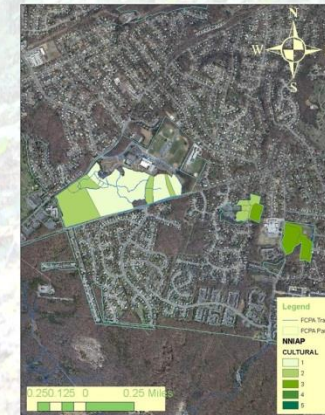
# GIS and Field Assessments Help Prioritize Natural Resource Management



## Low Score

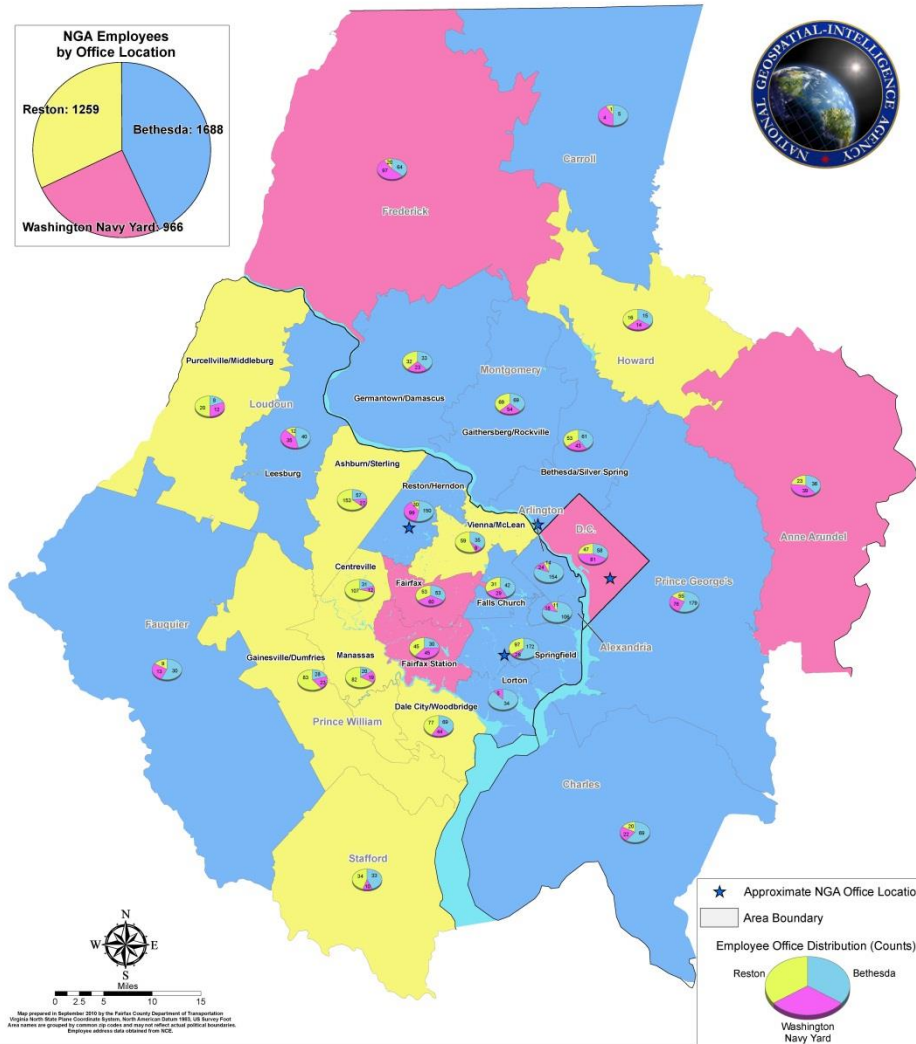


## High Score

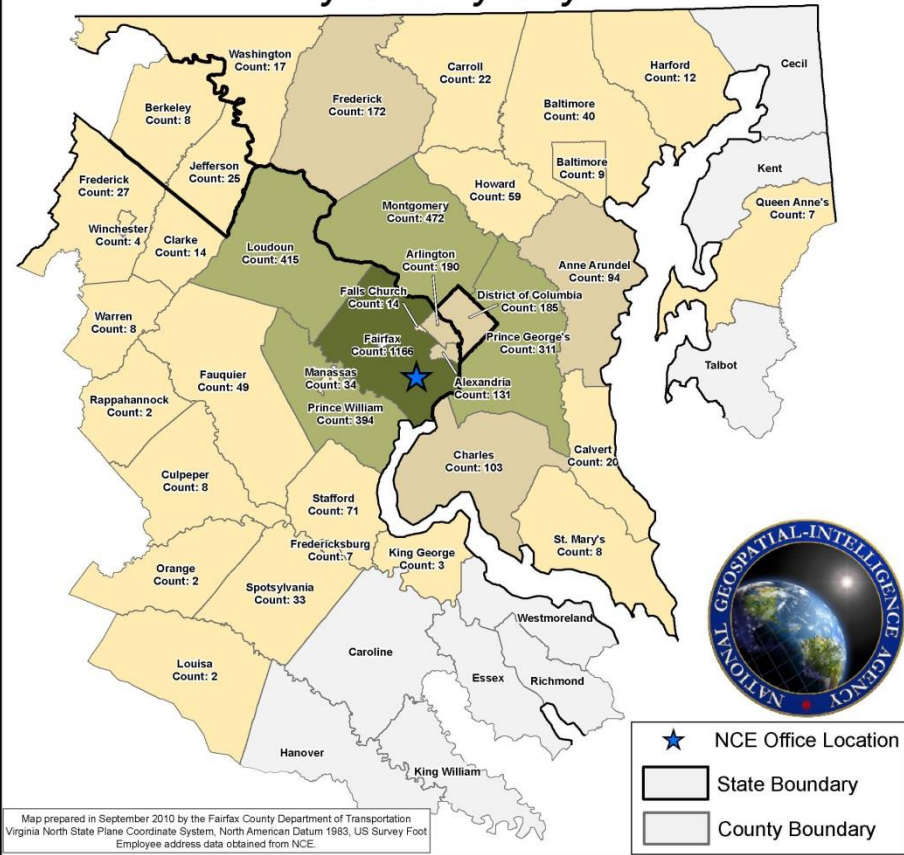


## NGA

### Geographic Distribution of Employees

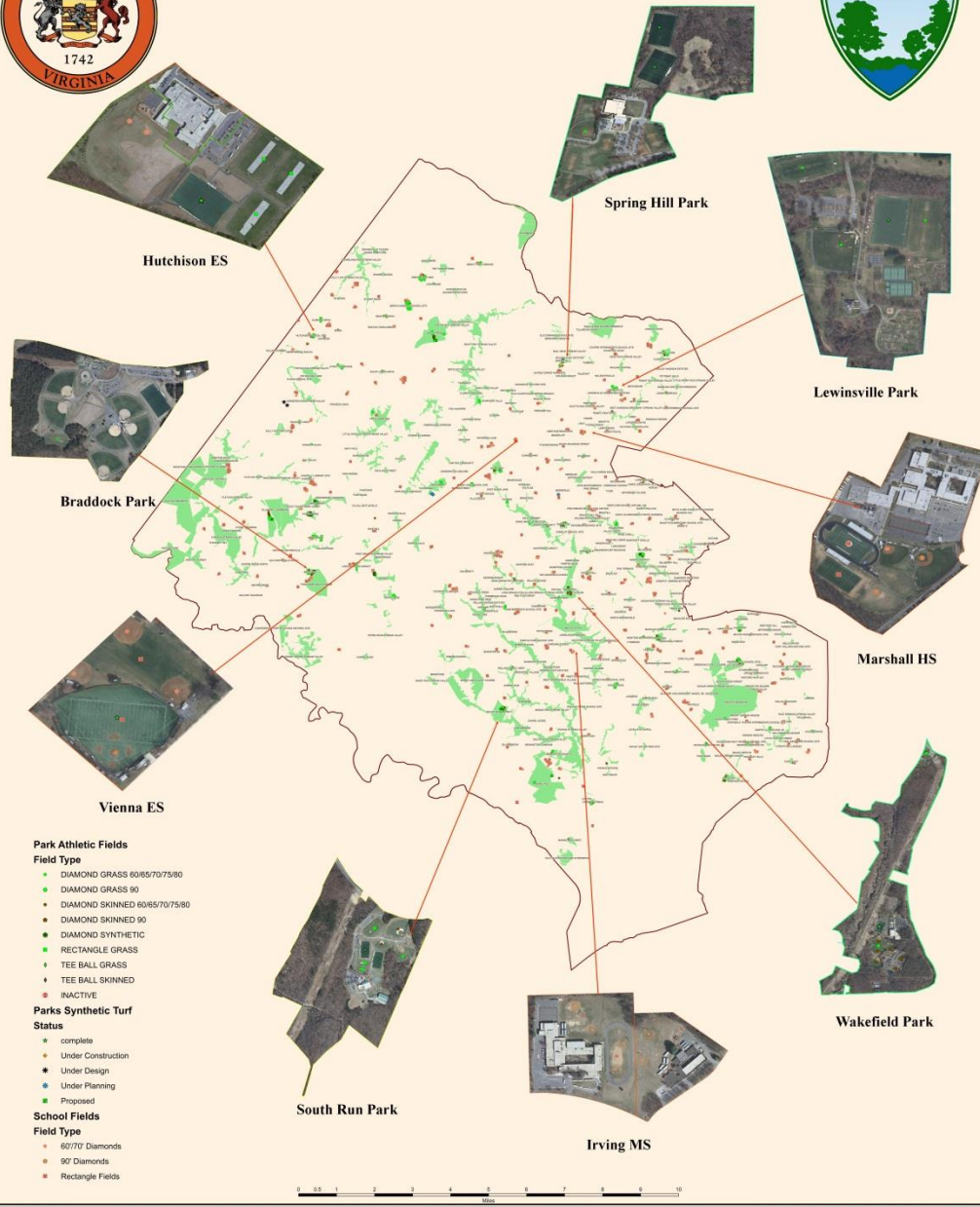


## NGA Employee Distribution by County/City





# Fairfax County Park Authority



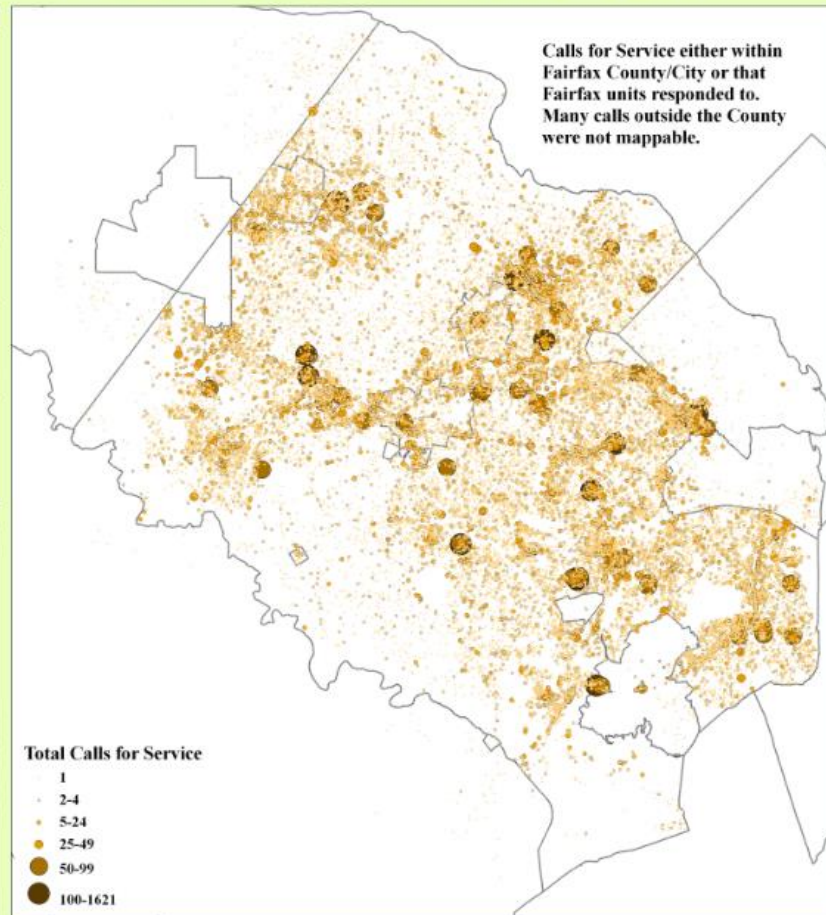
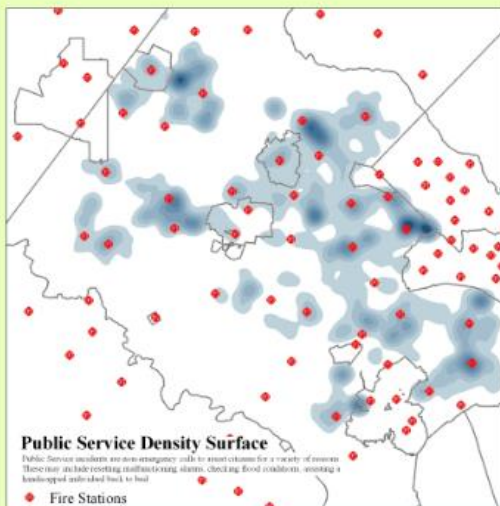
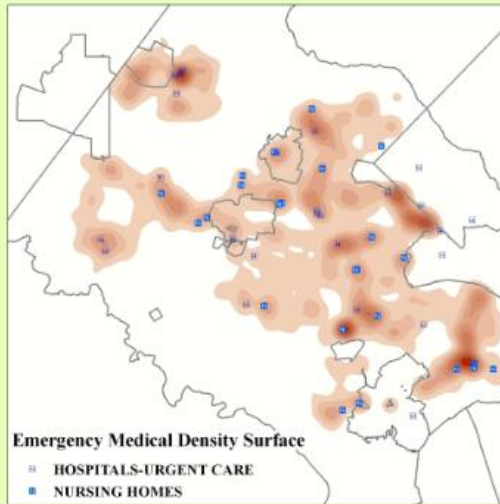
12050 Government  
 Center Parkway, Suite 406  
 Fairfax, VA 22035-1118  
 Phone: 703-324-8700  
[www.fairfaxcounty.gov/parks](http://www.fairfaxcounty.gov/parks)

## FAIRFAX COUNTY PARKS & SCHOOLS BALLFIELD INVENTORY 2010

DRAFT  
 28 October 2010  
 FCRA - P00  
 Sheet: 1 of 1



# Fire and Rescue Incidents: FY2010

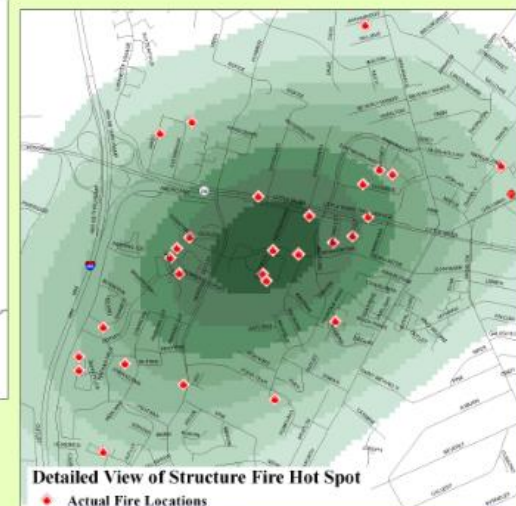
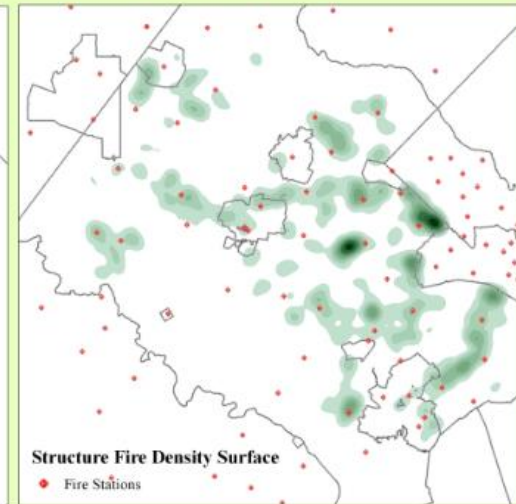


The Fire and Rescue Department maps the incidents each year as a basis for reporting and long-range planning. This year was particularly challenging because of the County's October 2009 switchover of computer-aided dispatch (CAD/911) systems from Altiris CAD to Intergraph CAD.

The analysis supports improvements in locating apparatus and stations and targeting areas for additional education in a relatively simple way. If there are many calls for service in a particular area, then some proactive measures may be needed by citizens and the Department. Hot spot areas also point out the need for further investigation when the incidents are somewhat dispersed and a pattern isn't immediately apparent when reviewing tabular data.

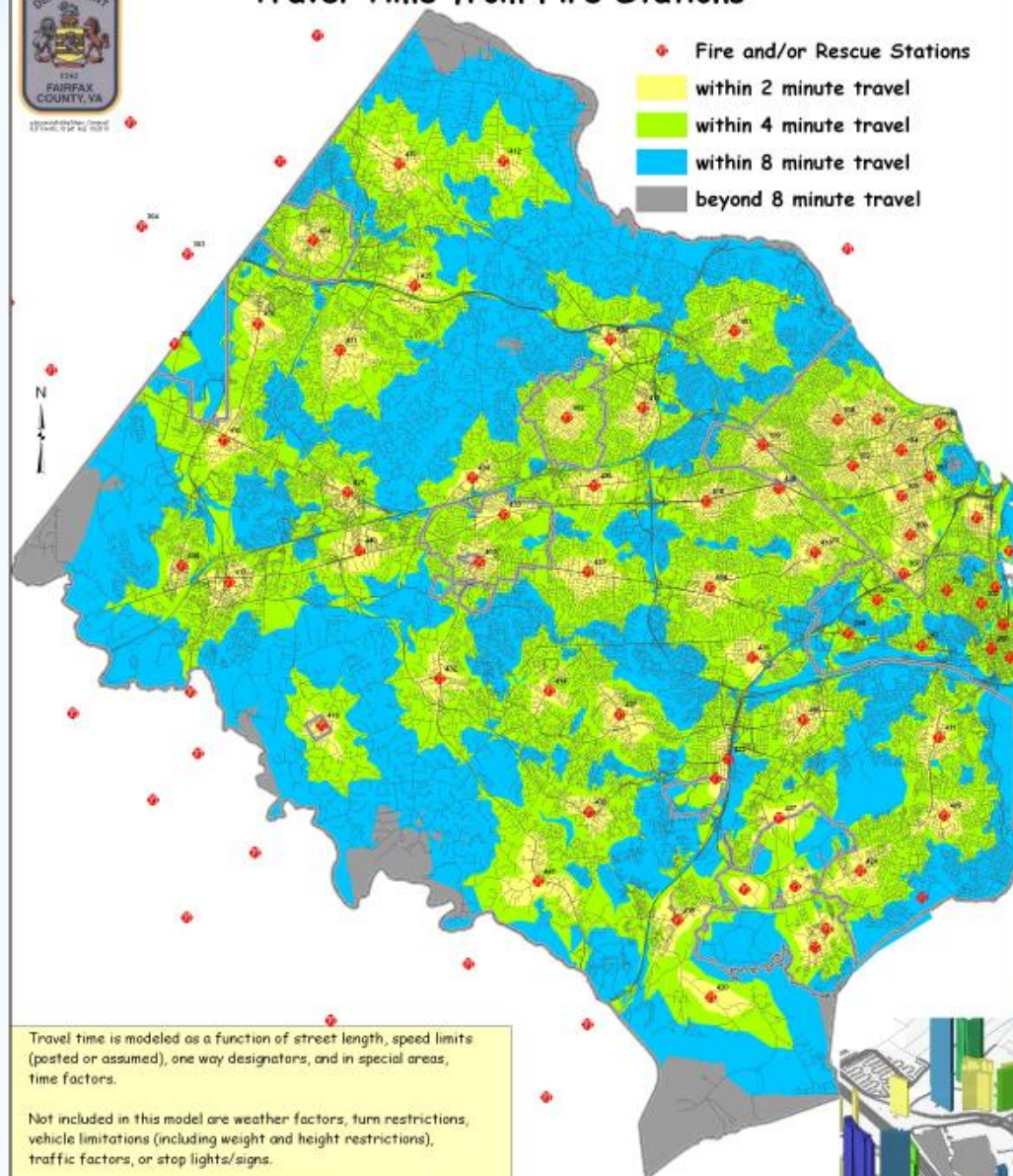
As expected, most of the emergency medical (EMS) hotspots are near assisted-living facilities and other medical facilities. Public Service hotspots concentrate along commercial corridors. Structure fire hot spots appear to be not as concentrated. Further examination is being devoted to an unexpected "hot spot" in the Annandale area.

Calls for Service either within Fairfax County/City or that Fairfax units responded to. Many calls outside the County were not mappable.





# Travel Time from Fire Stations



- Fire and/or Rescue Stations
- within 2 minute travel
- within 4 minute travel
- within 8 minute travel
- beyond 8 minute travel

A major component of measurable statistics for the Fire and Rescue Department is response time. One component of response time is travel time. Travel time is the time from acknowledging an emergency call at the unit level to arriving onscene.

National standards produced by the National Fire Protection Association (NFPA) designate specific resources (certified people and apparatus) to meet travel times on specified incident types. Frequent measures of travel time are 4 minutes and 8 minutes.

This map models 2, 4, and 8 minute travel times along streets using the best available data.

The 2 minute travel time is in planning stages as a benchmark for vertical communities. In high rises, measuring time only when arriving onscene does not give a true picture of when a fire floor or patient's side is reached. A 2 minute travel time is under review with the proposed development in Tysons Corner.

Travel time is modeled as a function of street length, speed limits (posted or assumed), one way designators, and in special areas, time factors.

Not included in this model are weather factors, turn restrictions, vehicle limitations (including weight and height restrictions), traffic factors, or stop lights/signs.

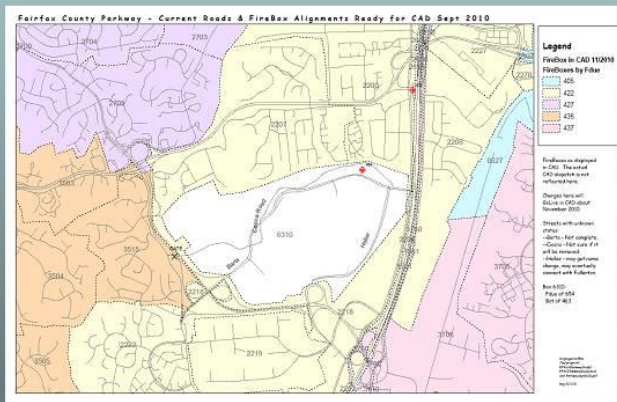
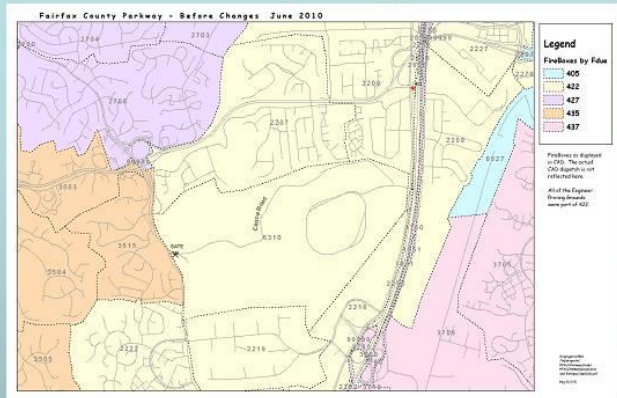
Mutual aid fire station's travel times are included when their travel time overlaps into Fairfax County. The complete travel time polygons are not shown because the model did not include all roads outside Fairfax, Arlington, and Alexandria.

Map reflects data for Computer Aided Dispatch effective November 2010 (centerlines as of September 2010).

## Building Heights



## Fire Box & First Due Changes for New Section of Fairfax County Parkway



**Revised Engine First Due with 464 (All Roads Open)**

Map showing the River Sever area, including the proposed Sever Crossing and surrounding land parcels. The map is color-coded by planning application status:

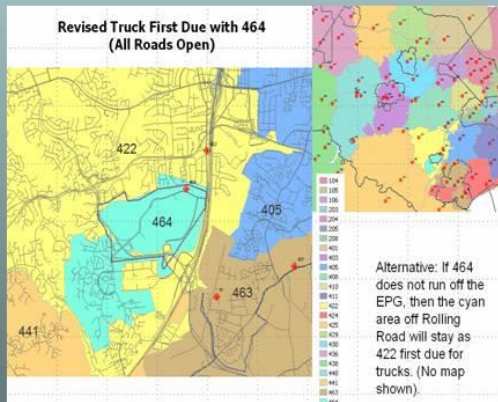
- Blue: Applications
- Yellow: Applications withdrawn
- Green: Applications refused
- Red: Applications approved

Legend:

- Blue: Applications
- Yellow: Applications withdrawn
- Green: Applications refused
- Red: Applications approved

Notes:

- Based on OS data (line stations and roads) as of July 2010
- Conservative assumed speeds are used on new roads. Speed limit signs are not shown.



**Revised Engine 2<sup>nd</sup> due over 422 area (based all new roads [Barta & Fairfax County Pky])**

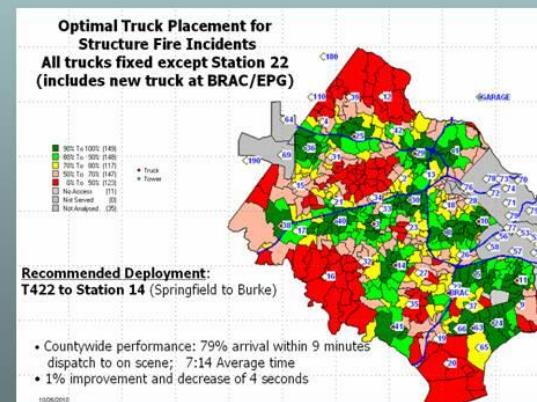
2nd Due over 422 area

Area
420
425
427
428
427
427
424

Notes:

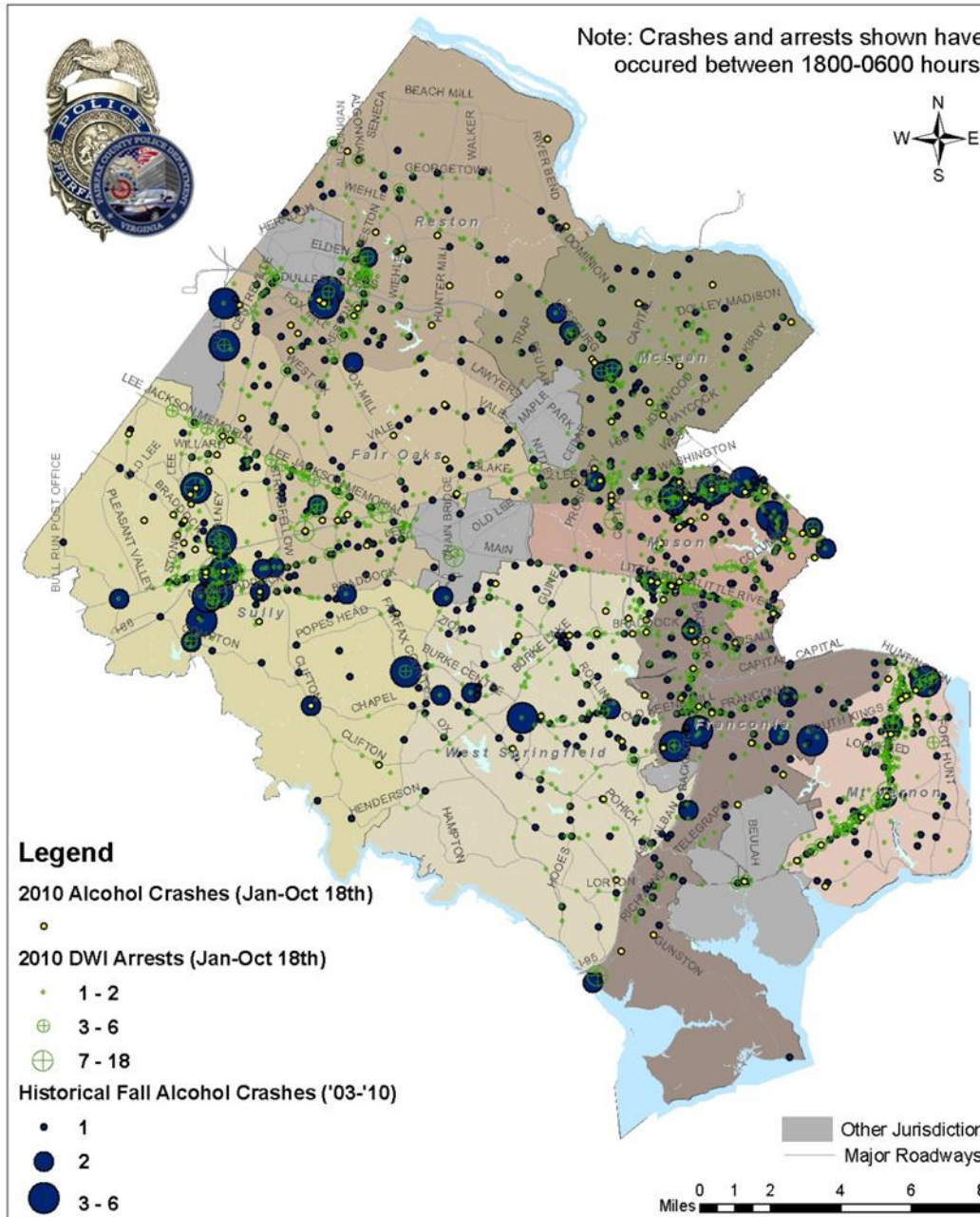
- Based on GIS data (fire stations and roads) as of late Sept 2010.
- Conservative assumed speeds are used on new roads. Speed limit signs have not been included.
- Does not include automatic Aid stations (ALX & ADX).

100602012

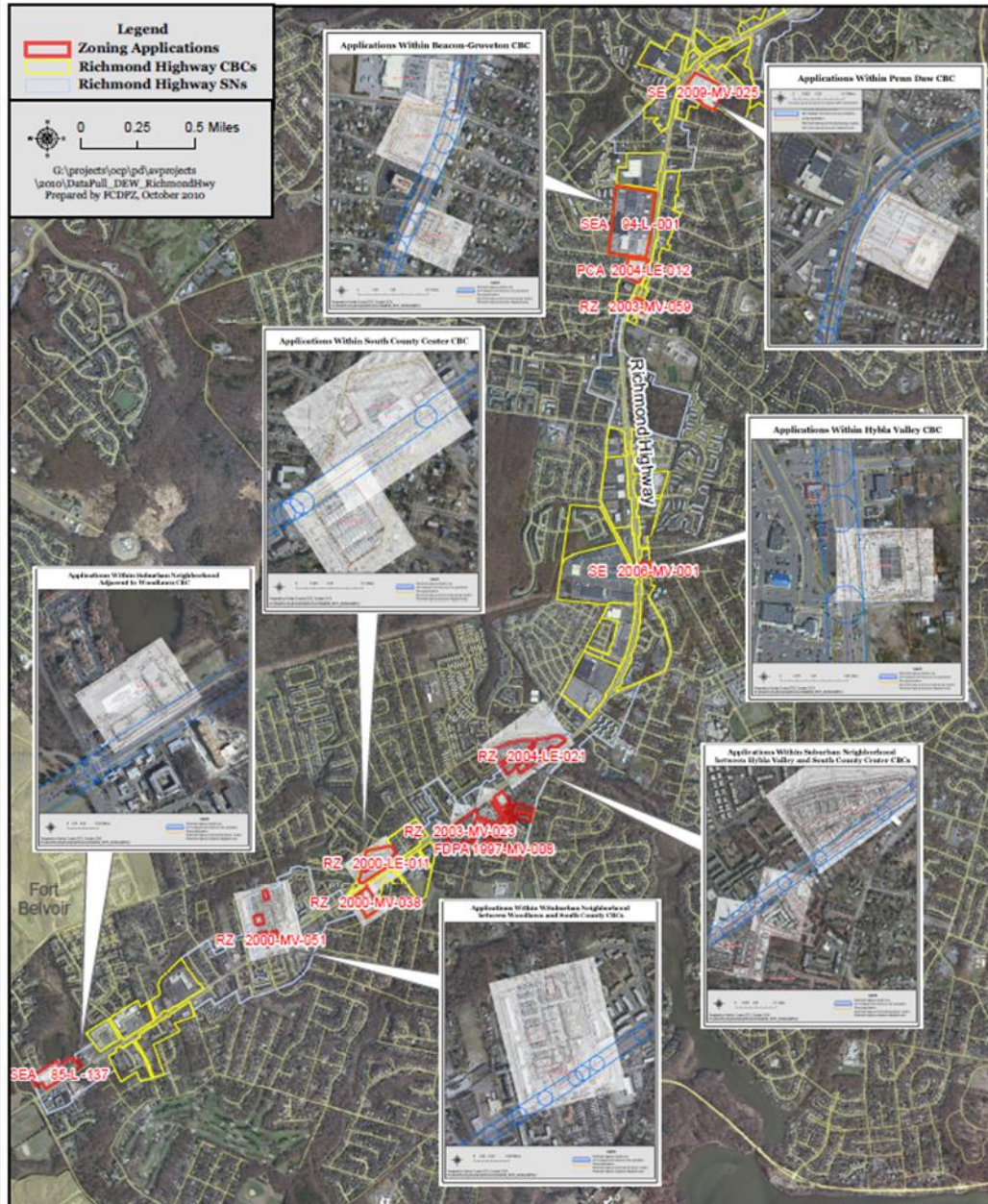


**The latest section of Fairfax County Parkway connected I95, Franconia- Springfield Parkway, and Rolling Road in September 2010. This new road effects fire and rescue response in the area. Later in Fall 2010 a new fire station, 464, will open housing a truck, engine, and battalion chief. Together, these changes precipitated studies to review the placement of nearby fire and emergency medical units.**

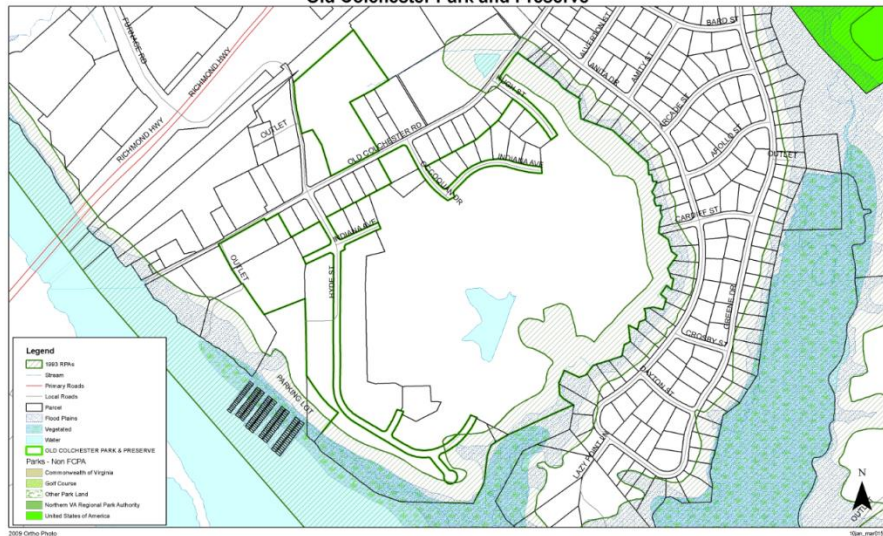
# Halloween Weekend DUI/DWI Directed Patrol



# Setback Analysis of Zoning Applications Along Richmond Highway Corridor 2000-2010



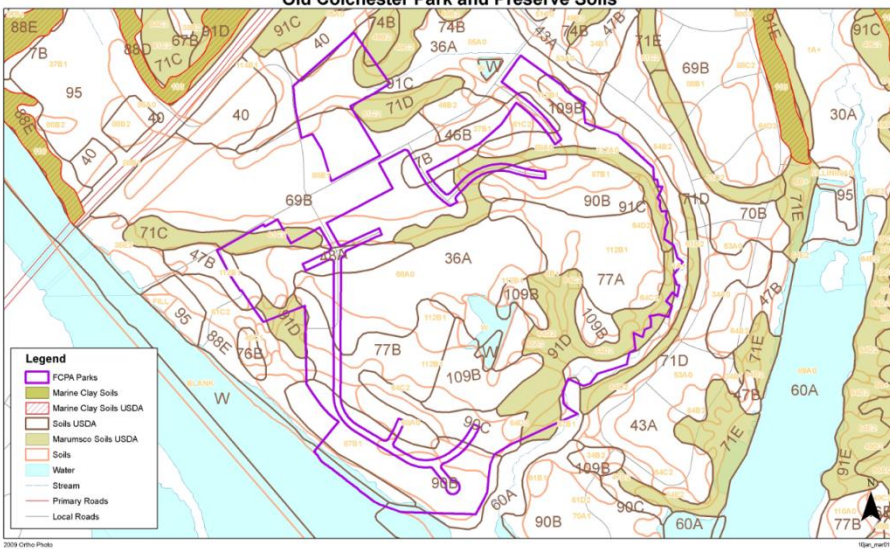
Old Colchester Park and Preserve



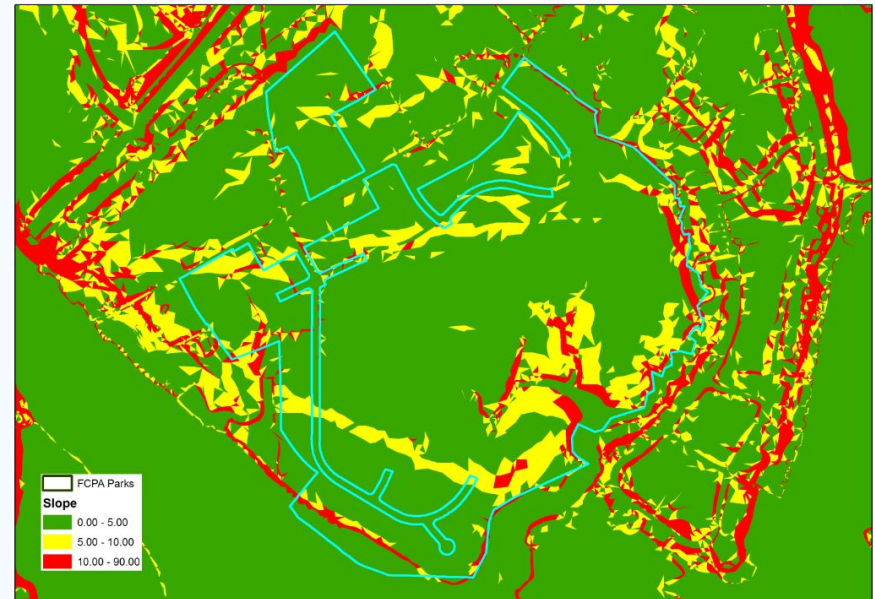
Old Colchester Park and Preserve



Old Colchester Park and Preserve Soils



Old Colchester Park and Preserve Slope



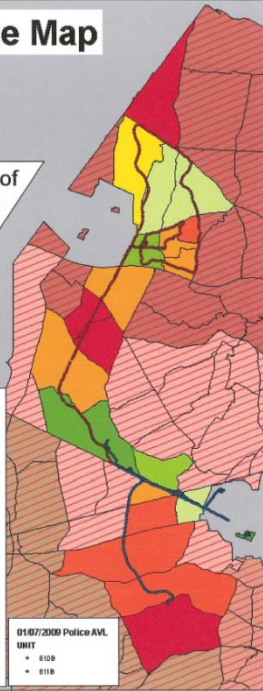
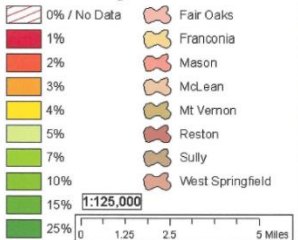
## Percent Coverage Map



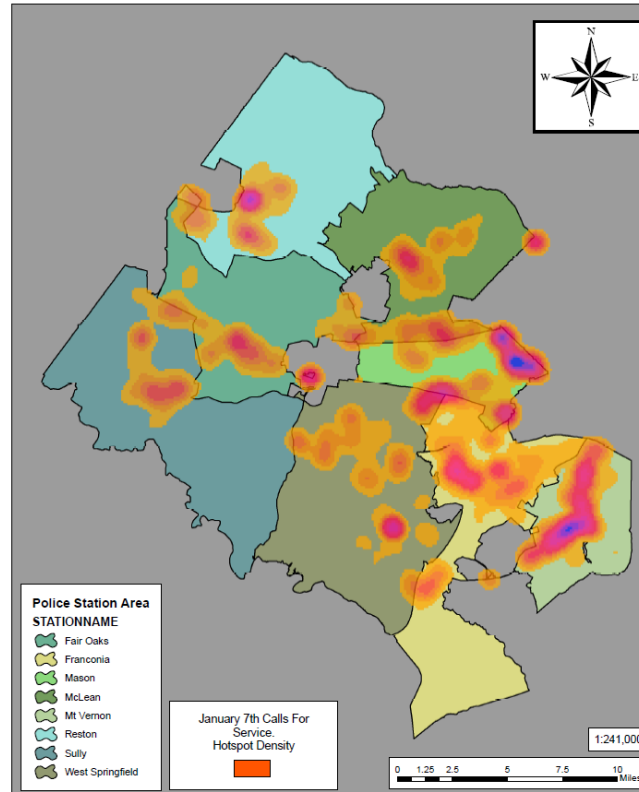
The map shows the percent of time that 810B and 811B spent in each ESZ. Percents were calculated by taking the total count of AVL points that fell inside each ESZ and divided by the total AVL points.

Police ESZs Police\_Station\_Area

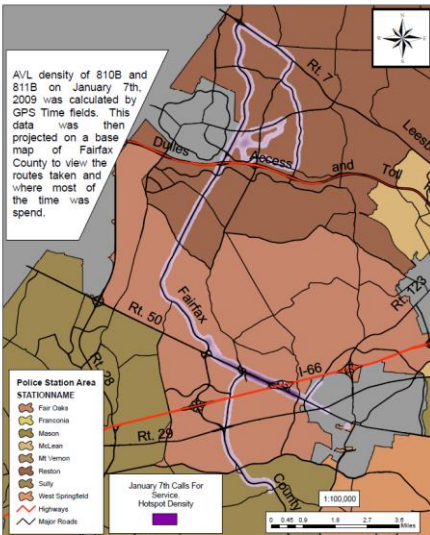
Percent Coverage Station Names



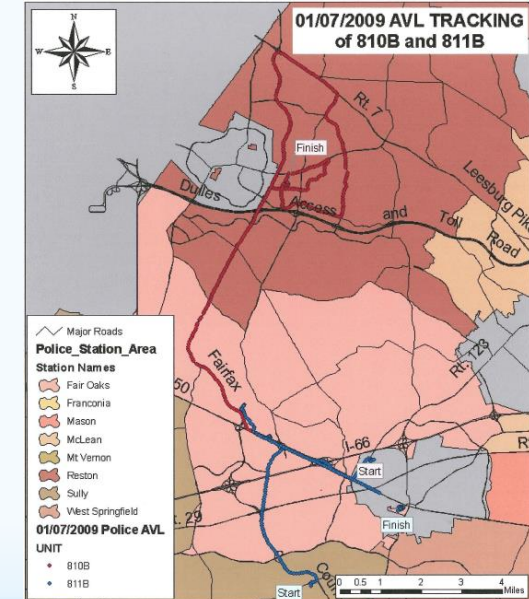
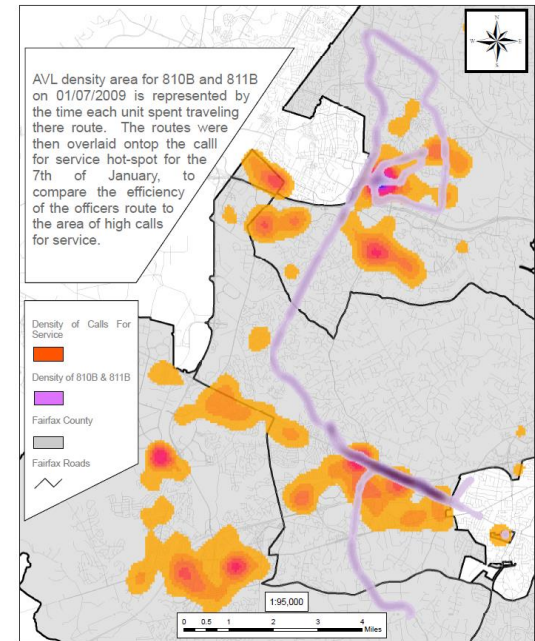
## Fairfax County Calls For Service Hot Spot Map For January 7th, 2009.



## Density Map From the 01/07/2009 AVL Tracking of 810B and 811B



## January 7th 2009 Map of Calls For Service Density In Relationship With 810B and 811B AVL Density within Fairfax County



# The Phase I Dulles Rail Transportation Improvement District

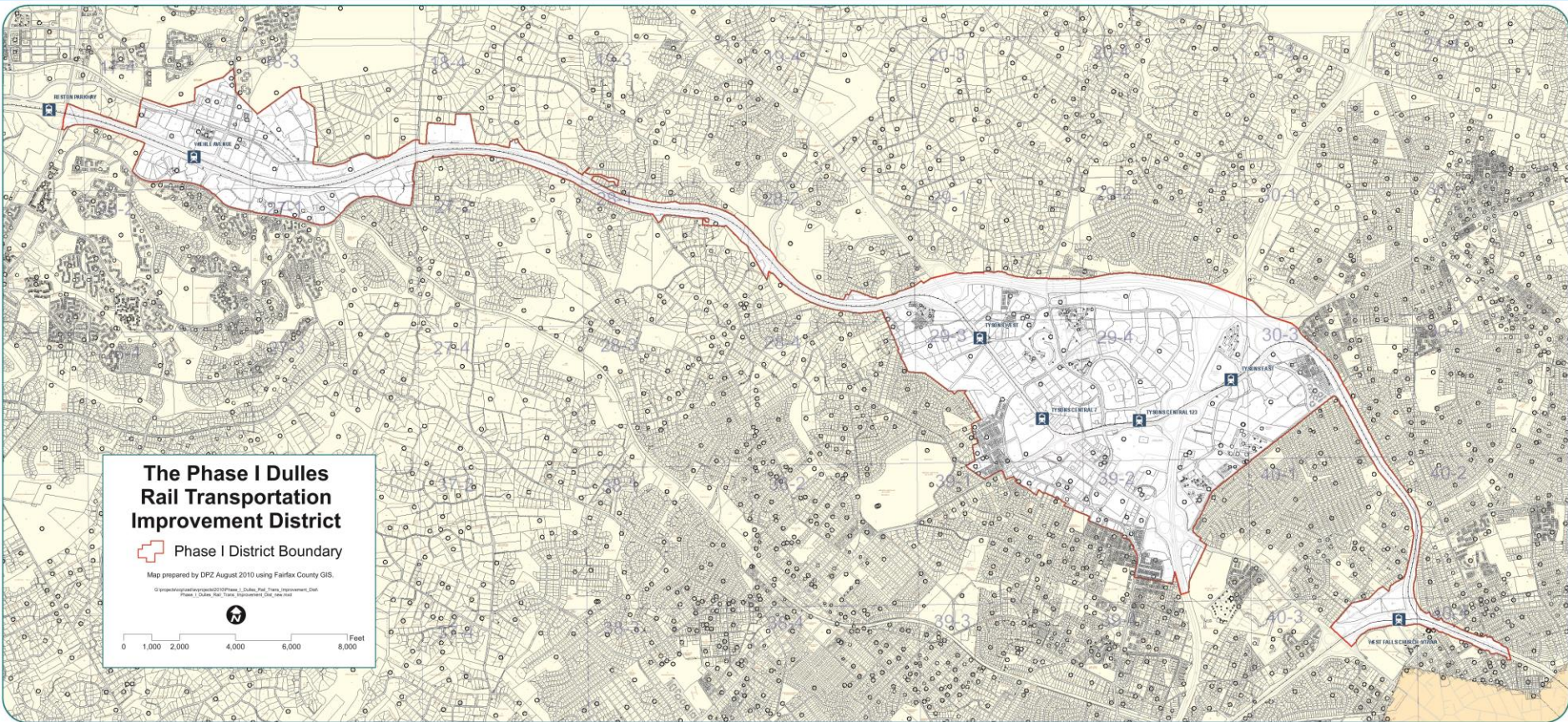
 Phase I District Boundary

Map prepared by DPZ August 2010 using Fairfax County GIS.

G:\projects\gis\work\2010\Phase I Dulles Rail Transportation Improvement District  
Phase I Dulles Rail Transportation Improvement District.mxd



0 1,000 2,000 4,000 6,000 8,000 Feet



# Environmental Mapping

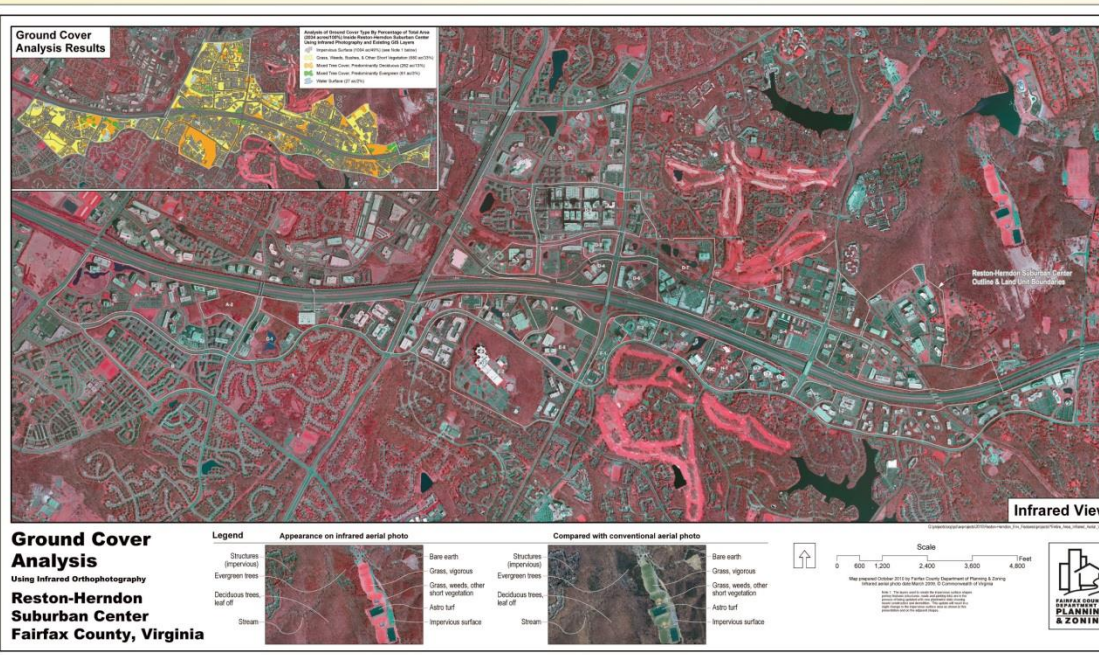
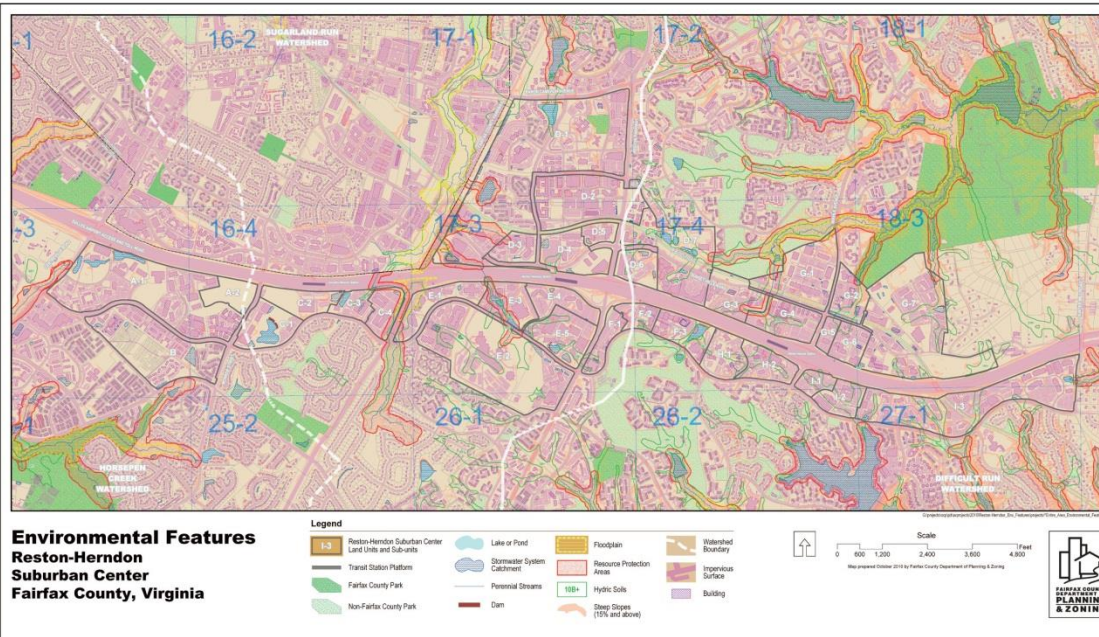
## Reston Master Plan Special Study

The purpose of this GIS map project is to provide to the Reston Master Plan Special Study Task Force the best available GIS information on existing environmental conditions inside the Reston-Herndon Suburban Center. The task force is comprised of Reston area residents and landowners, and will provide citizen guidance to the Department of Planning and Zoning and the Board of Supervisors on future development in the Reston area.

Two maps were prepared. The first map, **Environmental Features**, presents fifteen separate thematic elements. These elements were created using Arc Toolbox tools either by developing new shapes or by definition queries of existing GIS data. These thematic layers are portrayed in combination with several additional base map layers. Much care was taken to ensure a legible final map. The greatest difficulty was finding appropriate patterns and colors to allow an easy read of the thematic information.

The second map is **Ground Cover Analysis**. The land area was assigned to a five-category scheme suggested by the land use planners. The polygons were created by photo interpretation of the infrared aerial, introducing an analytic component to the project. Arc Toolbox tools were used extensively to achieve good fit on the coverages.

The final maps will be published both on-line and at a scale of 1 inch = 600 feet as paper plots. ■



Fairfax County Health Department

# H1N1 Vaccination Coverage



**Data Sources:** Florida County Health Dept  
Florida County GIS Dept  
2000 US Census Data  
2005 DPH Population Data  
2007 FPEC Census Data

Map Created: 8/6/2010 - Author: Amy S. Pothier MS



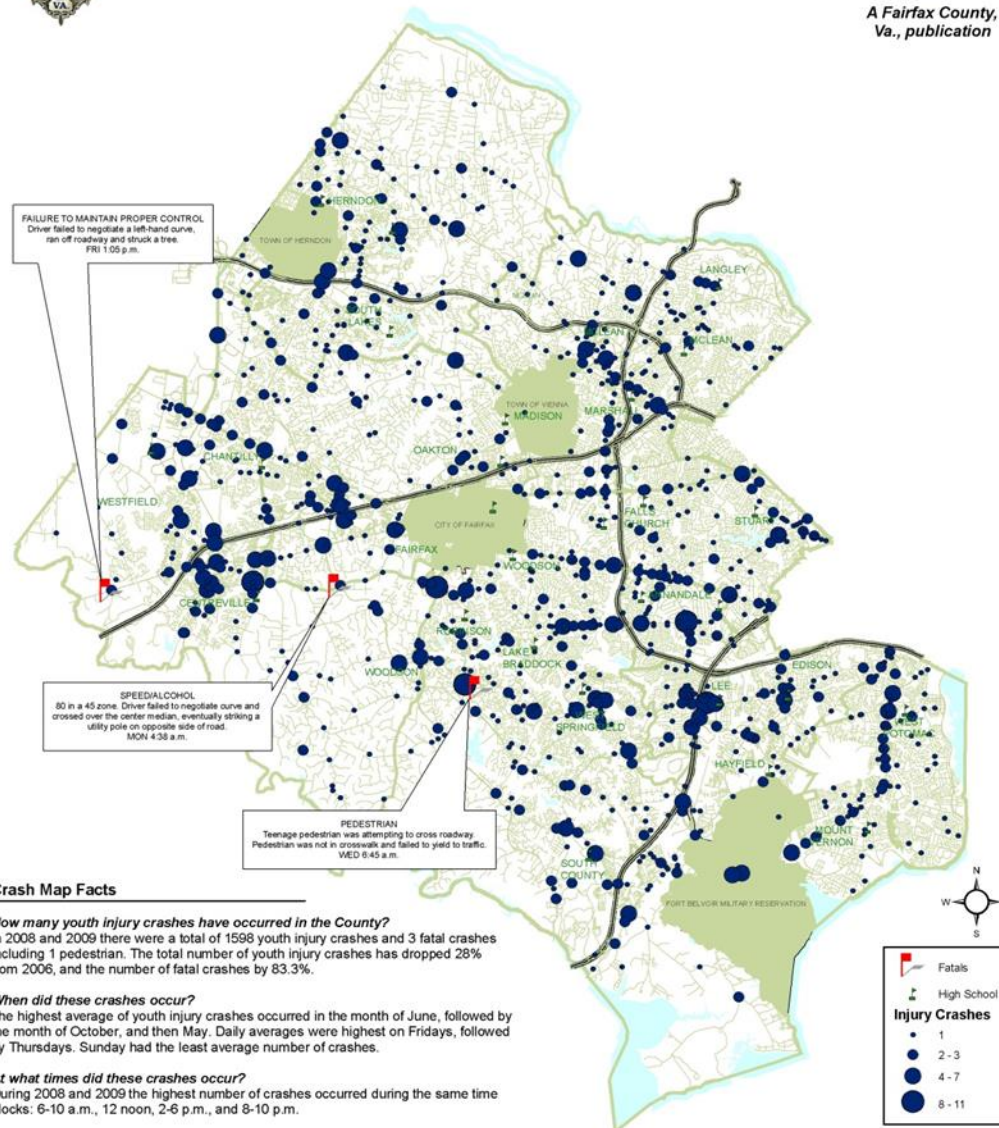
# Youth Crash Map

## Injury and Fatal Crashes Involving Drivers 15-20 Years of Age

Includes Crashes Occurring Within Fairfax County from 1/1/2008 to 12/31/2009



A Fairfax County,  
Va., publication



### Crash Map Facts

#### How many youth injury crashes have occurred in the County?

In 2008 and 2009 there were a total of 1598 youth injury crashes and 3 fatal crashes including 1 pedestrian. The total number of youth injury crashes has dropped 28% from 2006, and the number of fatal crashes by 83.3%.

#### When did these crashes occur?

The highest average of youth injury crashes occurred in the month of June, followed by the month of October, and then May. Daily averages were highest on Fridays, followed by Thursdays. Sunday had the least average number of crashes.

#### At what times did these crashes occur?

During 2008 and 2009 the highest number of crashes occurred during the same time blocks: 6-10 a.m., 12 noon, 2-6 p.m., and 8-10 p.m.

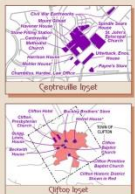
To request this information in an alternative format,  
call Fairfax County Police: Traffic Division 703-280-0500 or  
TTY 703-204-2264

<http://www.fairfaxcounty.gov/police>

This map is for reference purposes only.  
Fairfax County assumes no liability for either  
any errors, omissions, or inaccuracies in the  
information provided regardless of their cause,  
or for any decision made, action taken, or  
action not taken by the user in reliance upon  
any maps or information provided.

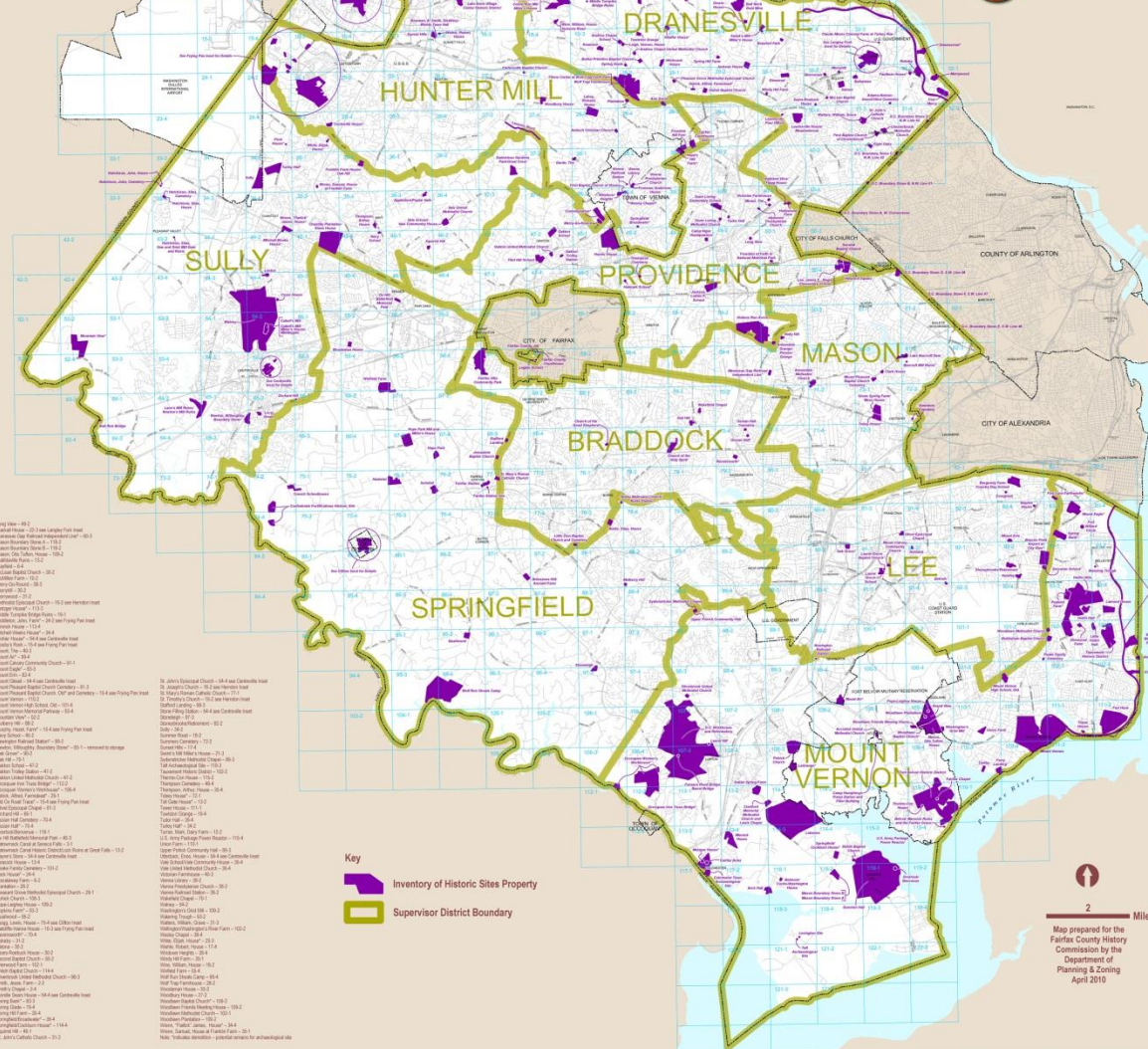
# Index

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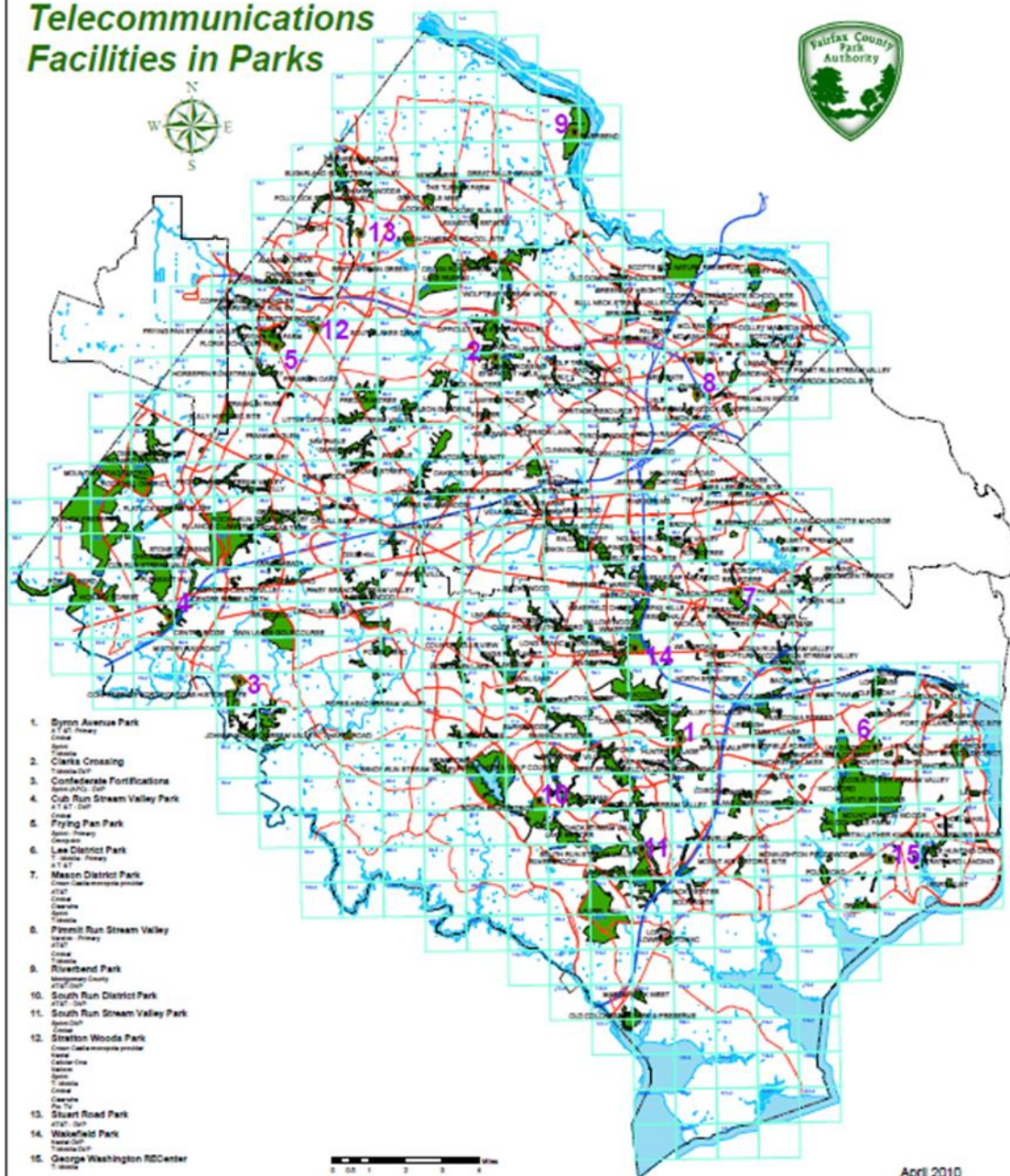
# Inventory of Historic Sites

Fairfax County  
History Commission



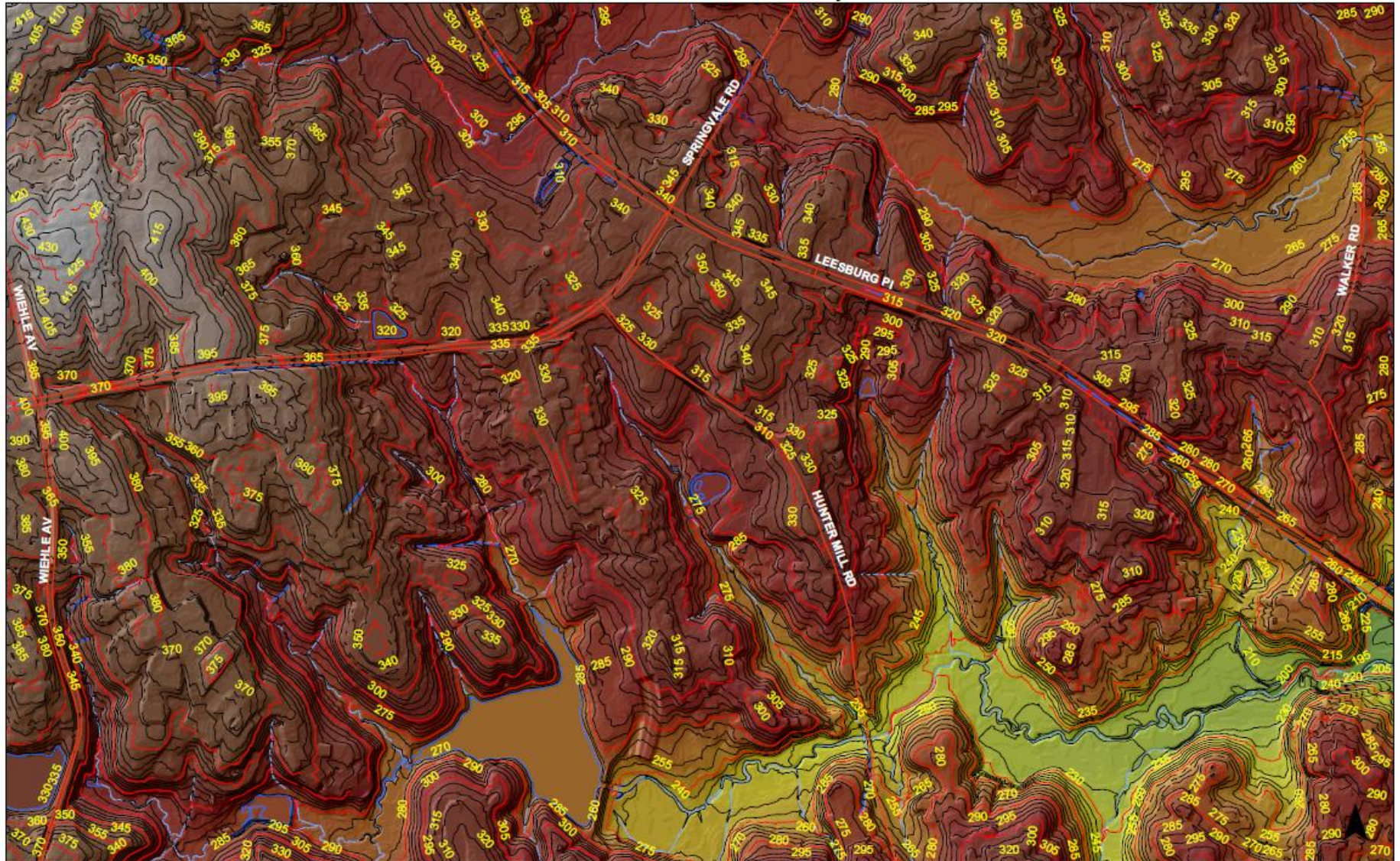
- Inventory of Historic Sites Property
- Supervisor District Boundary

2 Miles  
Map prepared for the  
Fairfax County History  
Commission by the  
Department of  
Planning & Zoning  
April 2010

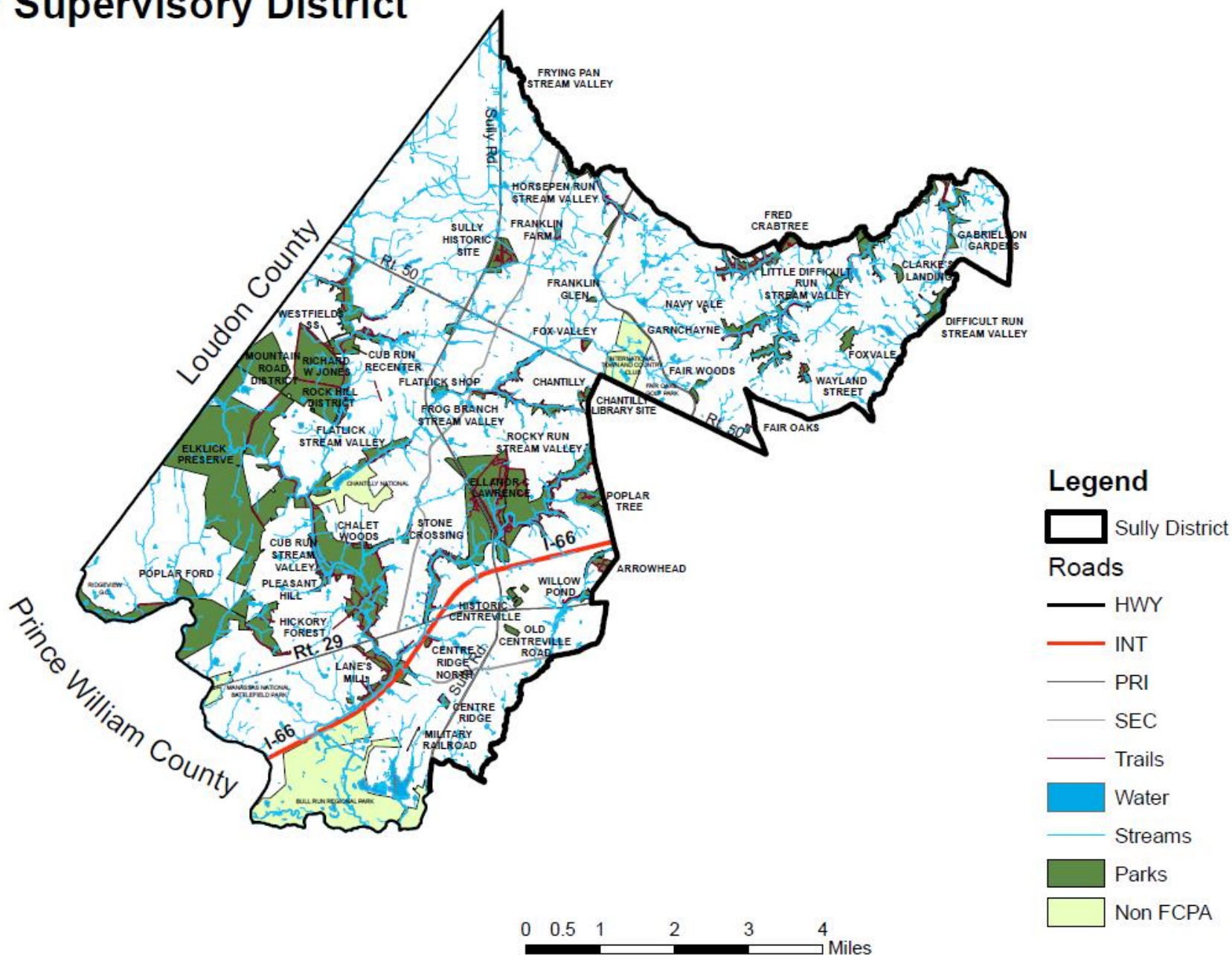


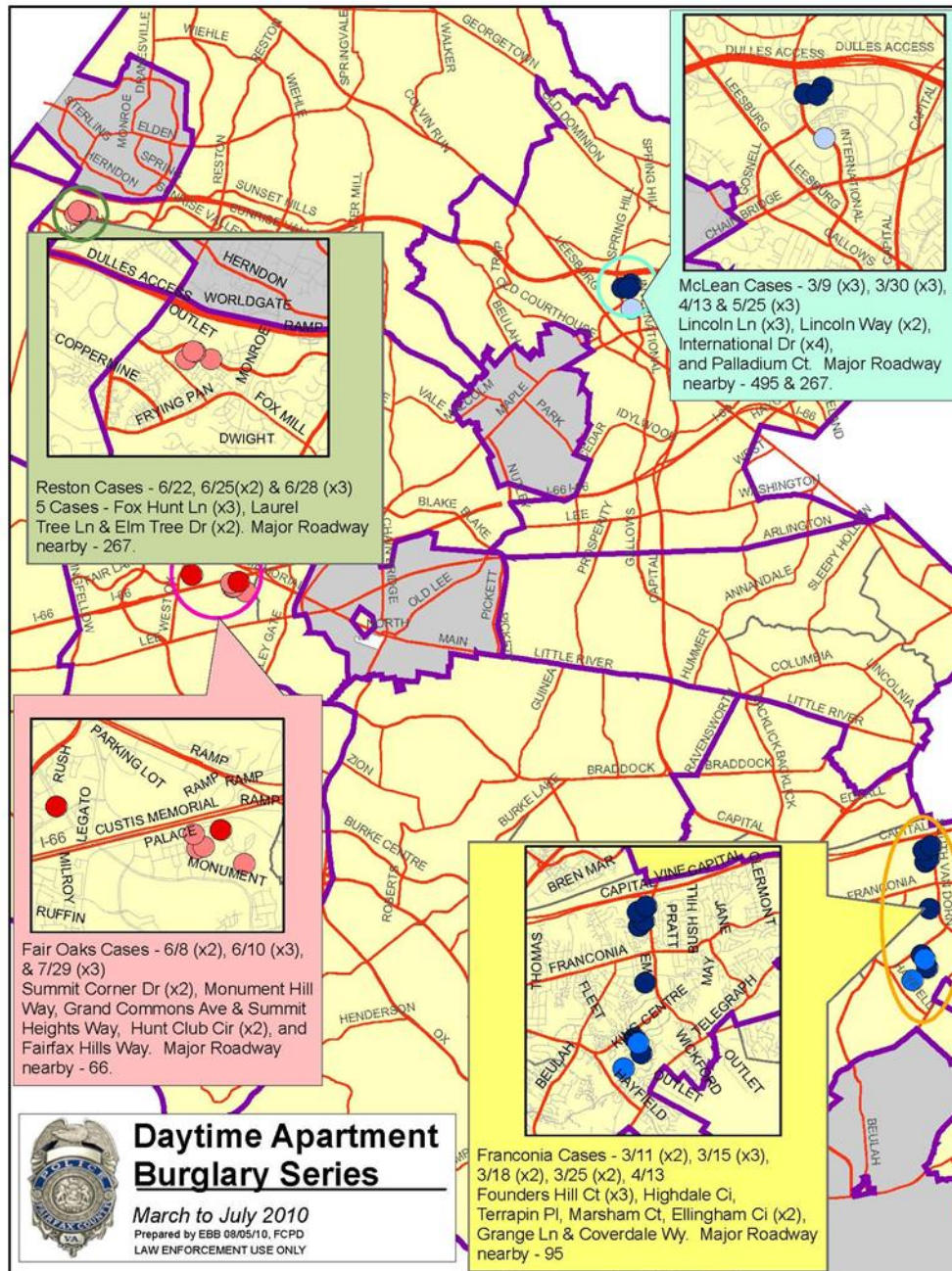
April 2010

## Lake Fairfax Dam Study



# Sully Supervisory District





## Daytime Apartment Burglary Series

March to July 2010

Prepared by EBB 08/05/10, FCPD  
 LAW ENFORCEMENT USE ONLY

# Residential Storm Drainage and Infiltration



Structures, channels and underground pipes carry stormwater to ponds, lakes, streams and rivers.

The stormwater management system is designed to control the quantity, quality, timing, and distribution of storm runoff.



All stormwater in the county eventually flows to the Occoquan and Potomac rivers and the Chesapeake Bay.

# Park and Ride Demand Estimation

Caijun Lou, Senior Transportation Planner, Fairfax County Department of Transportation  
Michael Demmon, GIS Coordinator, Fairfax County Department of Transportation

## Abstract

The Fairfax County Park and Ride Study was a comprehensive analysis of existing park and ride customer origins and market dynamics leading to the development of a GIS-based demand estimation tool to analyze the demand for potential future lots in Fairfax County. Plate numbers were collected from all vehicles at 36 lots in and around Fairfax County and the associated addresses were geocoded to analyze customer origins. Coefficients were developed based on the population, households and work trips originating in market areas around each lot. These values formed the basis for a dynamic GIS based tool that will assist the County in predicting usage at potential future park-and-ride lots.

## Key Points

- Park and Ride demand varies greatly based on transit service provided.
- Spatial analysis of park and ride demand indicates that about 50% of demand at most lots comes from within 3-5 miles (driving distance)
- Median density market areas tend to be oval shaped about the axis of radial or circumferential roadways.
- Population, household and trip characteristics of surrounding areas can provide general basis for estimating demand at future park and ride lot.
- Use of Network Analyst to construct driving distance buffers is useful as it accounts for travel barriers (water crossings, freeways).

## Acknowledgements

VDOT's Multimodal Planning Office provided the funding for this study.

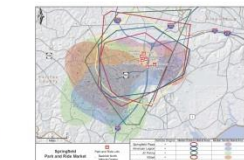
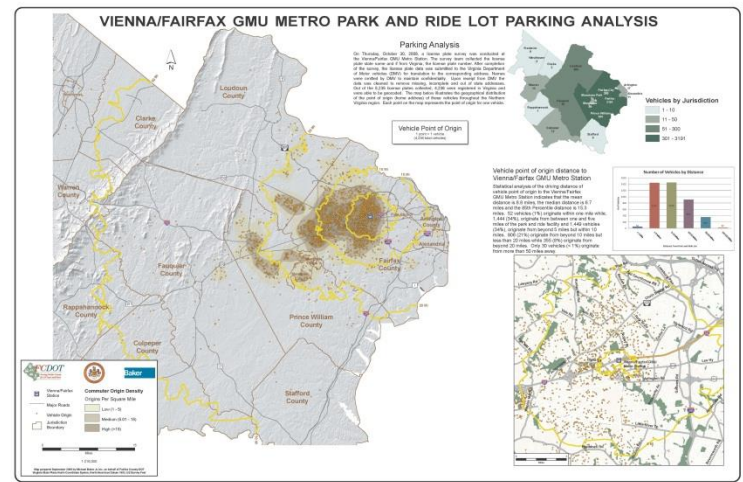
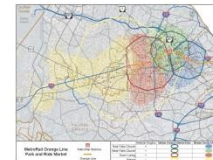
Fairfax County Department of Transportation requested the funding grant and guided the study team.

Michael Baker Jr., Inc., along with Pegey Malone and Associates, completed the data collection, analysis and application development on behalf of the VDOT and Fairfax County.



Park and Ride Tool Demand Estimate Output				
Name	Estimated Demand	Population within Market Area	Households within Market Area	AM Work Trips within Market Area
Harrison-McIntosh Park and Ride	135	51,156	19,666	28,077
Manassas Park Church Station	5,502	24,181	9,075	17,261
VRE Burke Centre Station	746	43,248	14,179	26,598
Centerville Park and Ride	89	55,220	12,451	18,656

Based on the analysis of existing park and ride demand, the application develops estimates of potential demand. The tool considers overlapping markets from nearby lots and the population, household and trip characteristics of each market area in developing the estimated demand. Above is the estimated demand and critical demographic and trip characteristics derived from TAZ data for some existing lots.



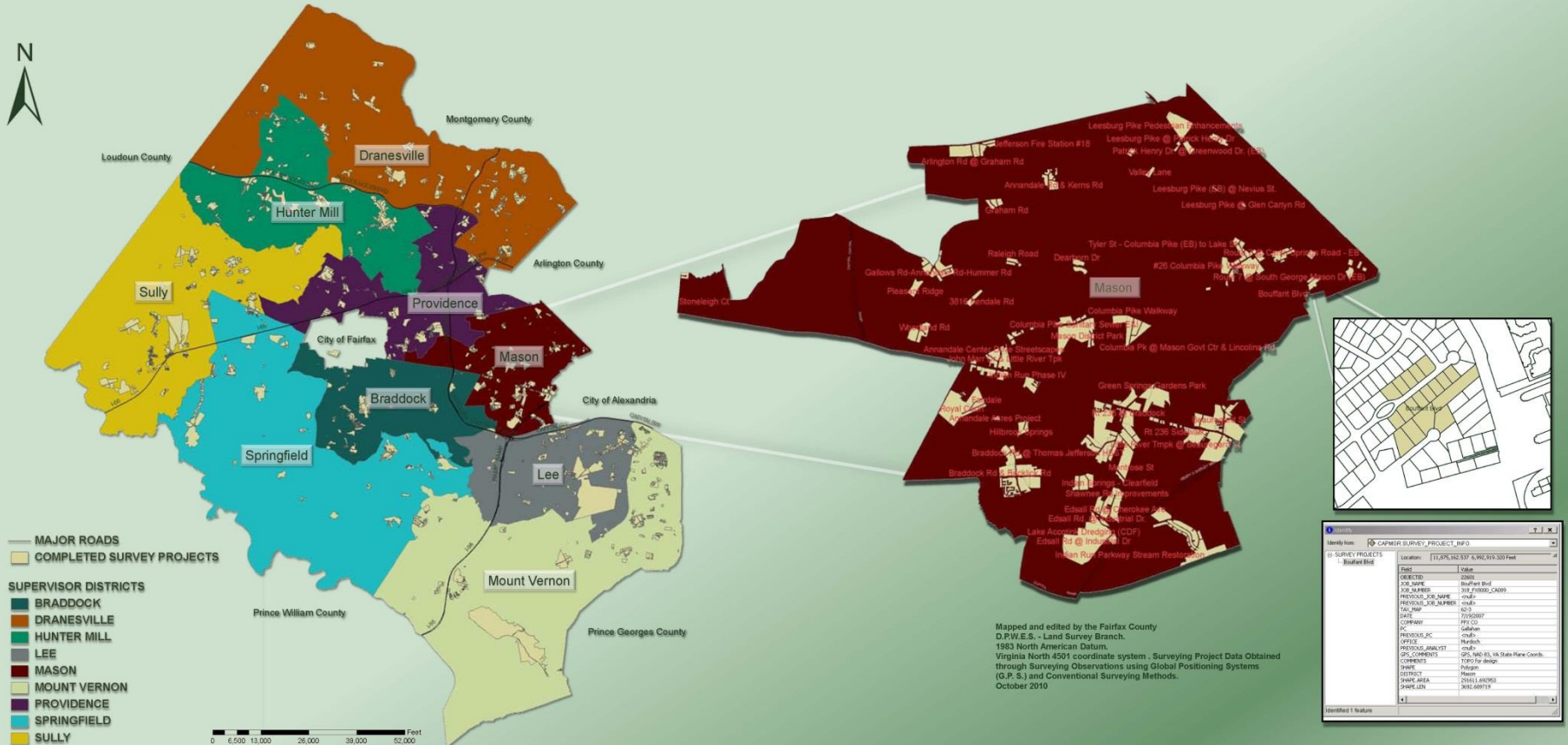
Market patterns are much more circular in shape for VRE lots and the median market areas much smaller than most other lots.

Similar to the patterns for major stations along the Orange Line, Park and Ride markets along the Dulles Toll Road exhibit an elliptical pattern on a north-south axis, perpendicular to the expressway.

Market patterns for smaller lots served by buses or carpools only are hard to distinguish. In the Springfield area, multiple lots in close proximity serve an large geographic area that also overlaps with the Franconia-Springfield Metrolink market.



# Fairfax County D.P.W.E.S. Land Survey Branch



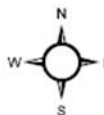
A GIS application was developed to catalog all completed Land Survey Branch projects graphically on a dedicated GIS Survey layer.

When the GIS Survey layer is accessed in the future, all completed projects are easily identified.

This historical knowledge of work done in the vicinity of a current project, and the ability to easily access all the information pertaining to the prior projects, allows an analyst to make informed decisions.

By avoiding repeat work, the Land Survey Branch saves the county both time and money.

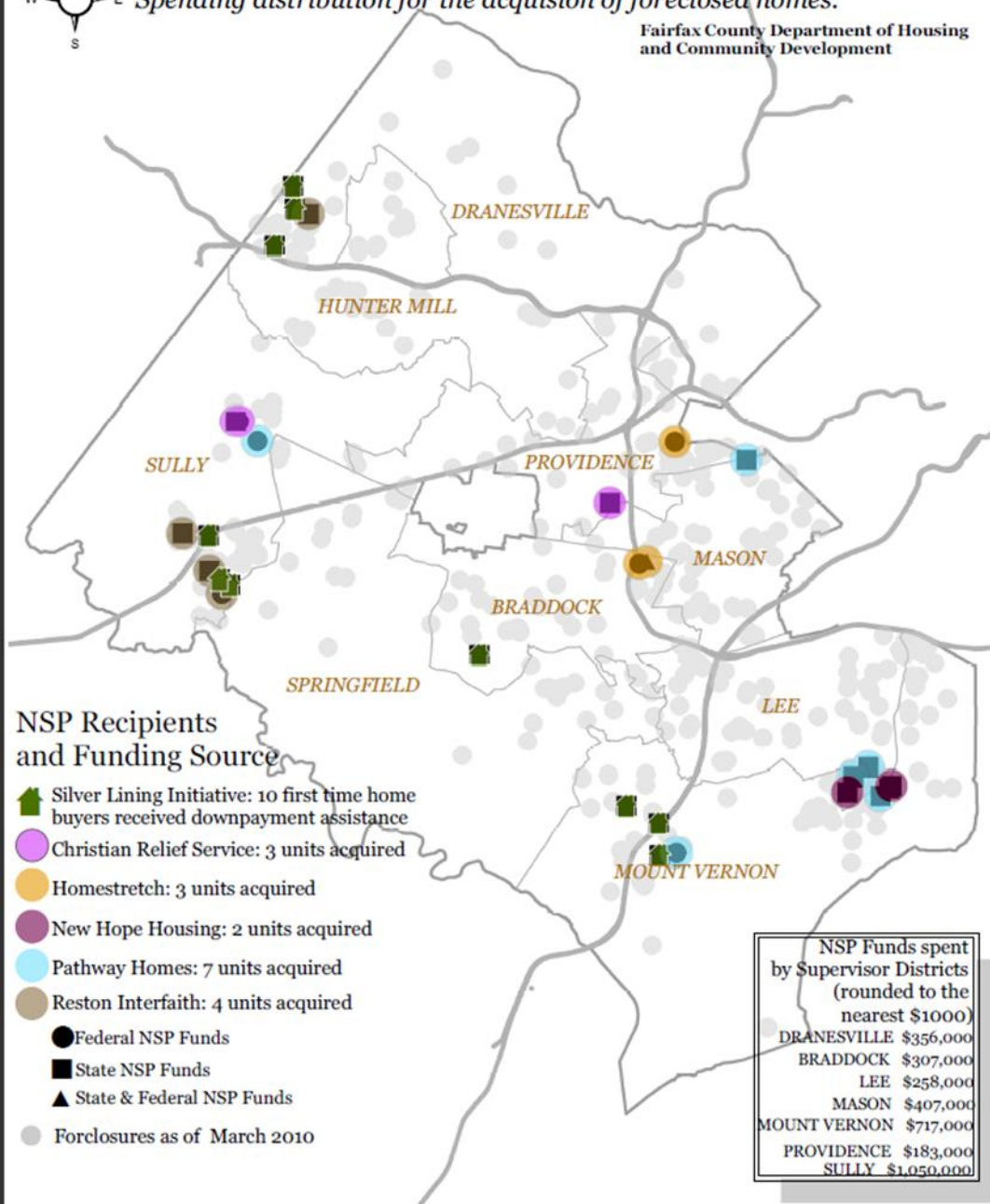




# Neighborhood Stabilization Program (NSP)

*Spending distribution for the acquisition of foreclosed homes.*

Fairfax County Department of Housing  
and Community Development



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## 2009-10 South County APR Nominations



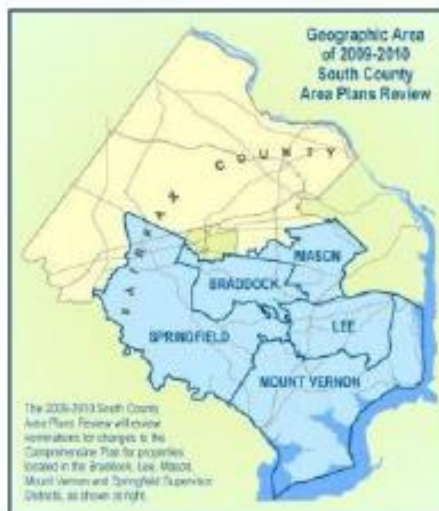
The map on the right provides links to summary information for all individual nominations to amend The Comprehensive Plan received as a part of the 2009-2010 South County Area Plans Review by Supervisors' District and forwarded for further consideration by the Planning Commission as part of their screening process.

2009-2010 South County APR Task Force Meetings Schedule

Staff Read Book for Non-VDOT Review Items (June 16, 2010 Planning Commission Public Hearing)

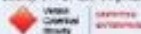
Staff Report Book for Non-VDOT Review Items (July 14, 2010 Planning Commission Public Hearing)

For more information, please see the 2009-2010 South County Area Plans Review (APR) Guide or call the Department of Planning and Zoning at (703) 324-1350.



Contact Via: General (Office of Public Affairs) / Technical (Web Administrator) / Directed Inquiries (County Assistance)  
Phone: County Main Number - 703-FARFAX (703-324-7329), TTY 711 / County Phone Listing

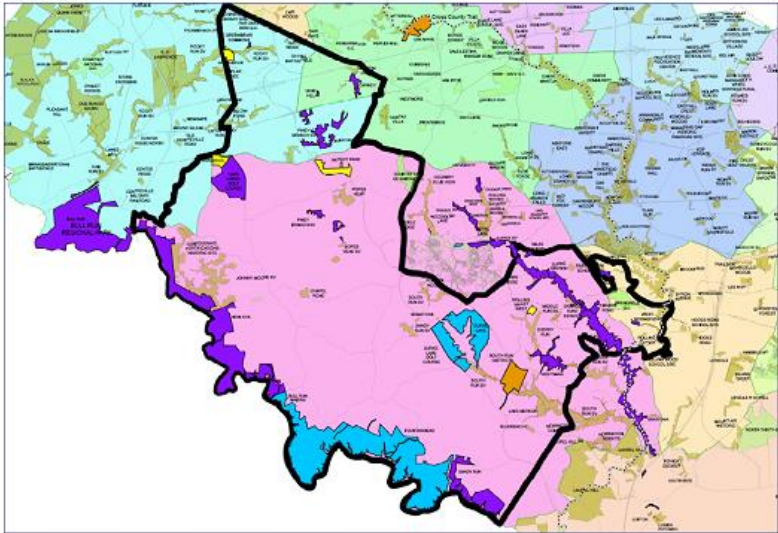
Amada / EGA / Mobile / User Site / Web Developer / Privacy Policy / Website Accessibility / Get Adobe Reader  
Official site of the County of Fairfax, Virginia. © Copyright 2010



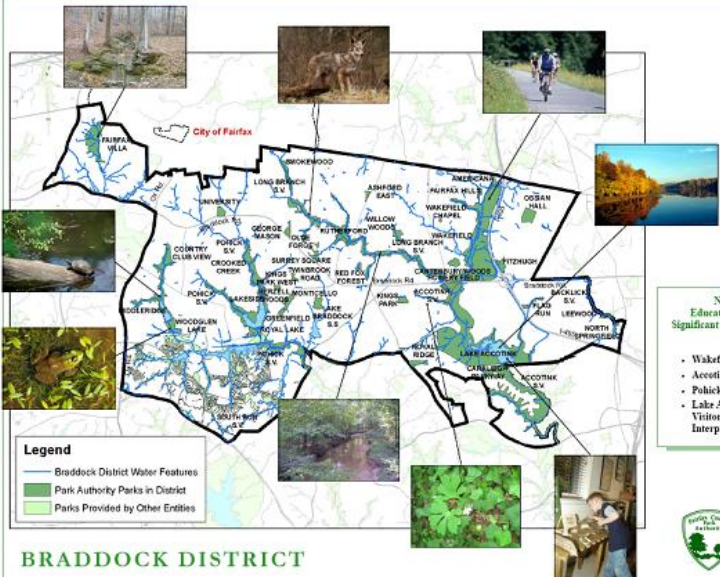
# Recreation Opportunities at Springfield Supervisory District Parks

Check out these parks for...

- RECenter & Indoor Activities**
  - Oak Hill RECenter
  - South Run RECenter
- Special Events**
  - Burke VRE Farmer's Markets
  - Burke Lake Park
  - South Run District
  - Fountainhead Regional Park
- Athletic Fields**
  - Braddock
  - Greenbriar
  - Rolling Valley West
  - South Run District
- Outdoor Recreation Facilities**
  - Braddock
  - Burke
  - Bull Run Regional
  - Burke Lake
  - Burke Station
  - Cooper MS
  - Cardinal Forest
  - Carney Park
  - Dixie Hill
  - Greenbriar
  - Greenbriar Commons
  - Fountainhead Regional
  - Hidden Pond
  - Hemlock Overlook
  - Humanan
  - Orange Hunt Estates
  - Pottsville
  - Potomac Branch SV
  - Pohick SV
  - Rolling Valley West
  - Sandy Run
  - Silas Burke
  - South Run District
  - Twin Lakes
  - West Springfield



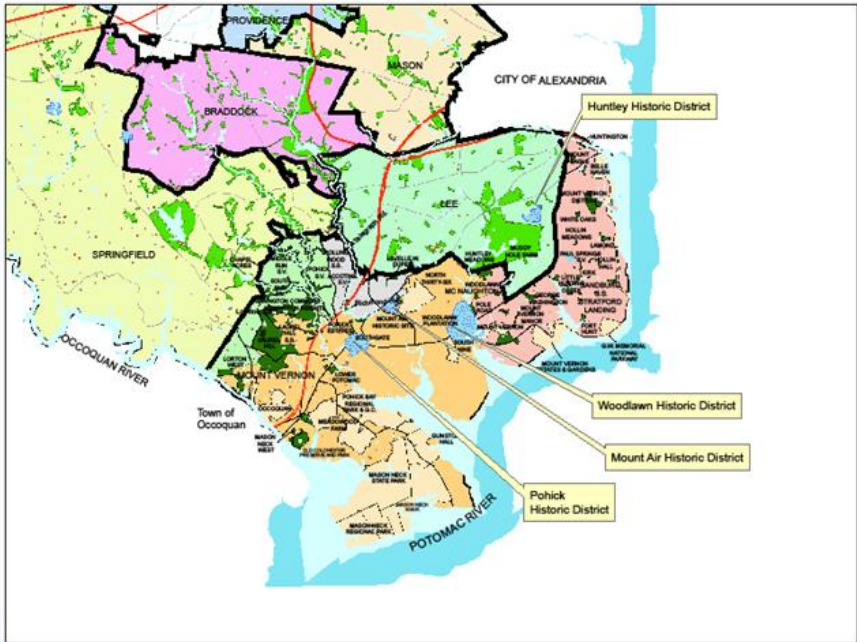
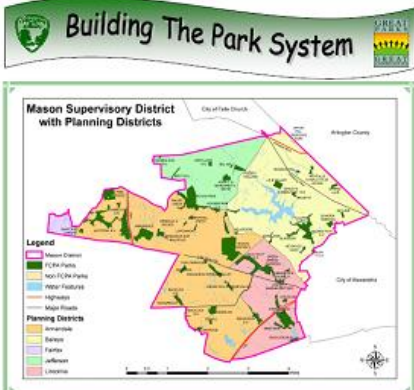
# NATURAL TREASURES WITHIN YOUR REACH



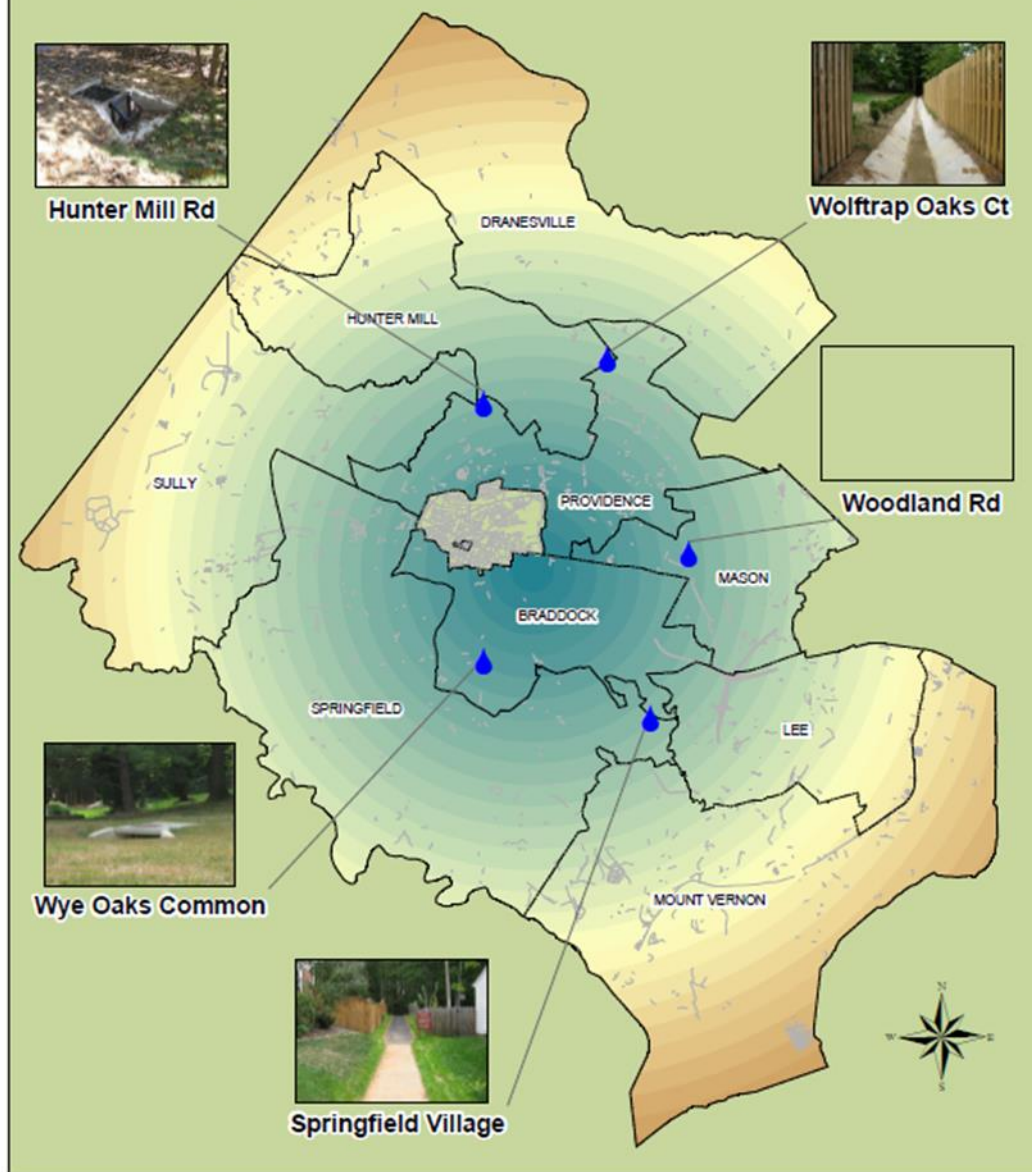
- Nature Centers, Educational Programs and Significant Natural Resource Parks Near You
- Wakefield Park
  - Accotink Stream Valley Park
  - Pohick Stream Valley Park
  - Lake Accotink Park
  - Visitor Center (Natural History Interpretation)



## BRADDOCK DISTRICT



## Completed Storm Drainage Maintenance Projects



Fairfax County  
Department of Public Works and Environmental Services  
Maintenance and Stormwater Management Division



0 10,000 20,000 Feet



# COMPREHENSIVE PLAN AMENDMENT DATABASE UPDATE - NORTH COUNTY

## Questions to be answered

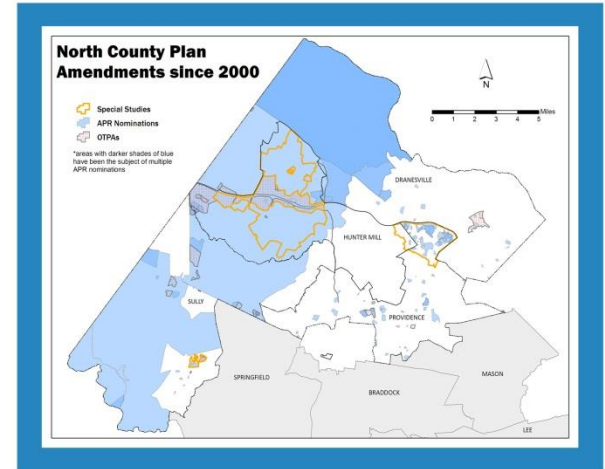
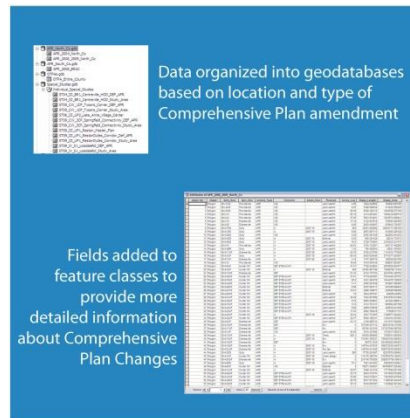
- Where in the county have Comprehensive Plan amendments been proposed?
- What types of changes have been proposed?
- Were the proposed changes adopted?
- Have the same properties been nominated for changes multiple times?

## Problems

- Current shapefiles are saved in different places and are inconsistent
  - \* Minimal attribute information
  - \* Not all changes are mapped
- Cannot accurately map and research past proposed Comprehensive Plan changes
- Inconsistent quality of data does not enable DPZ to provide this data to other agencies for research purposes

## Solution

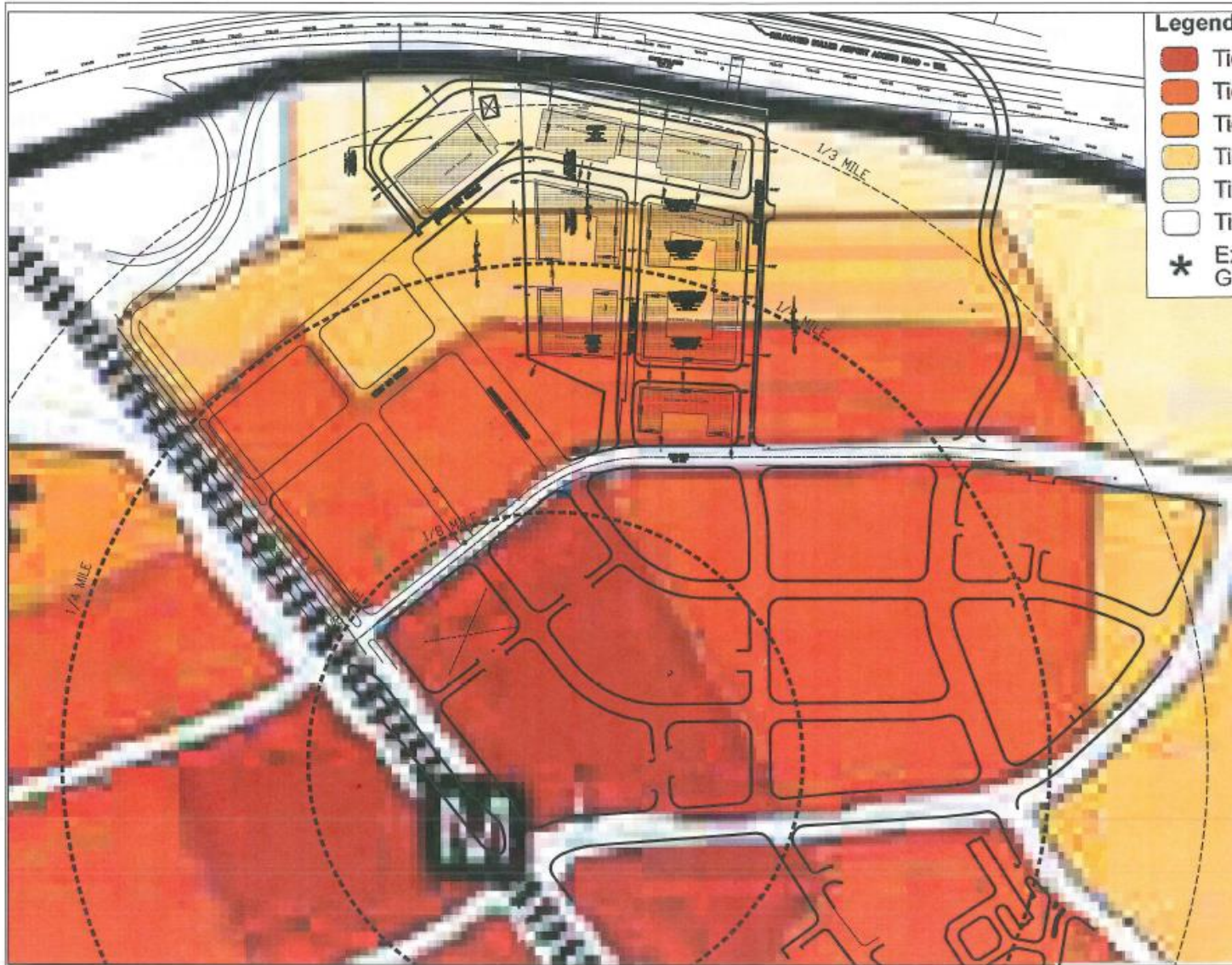
- Create new geodatabases, providing a central location for proposed Comprehensive Plan amendments
  - \* Verify Comprehensive Plan amendments currently existing in shapefiles
  - \* Create shapes for Comprehensive Plan amendments that could not be found in existing shapefiles
- Add attribute information to shapes, tracking amendment number, type of Comprehensive Plan amendment, outcome of proposed change, and nature of change
- Create database tables for Comprehensive Plan changes that are not able to be mapped (i.e. countywide policy changes)



## Outcome and Applications

- Ability to accurately map and assess past Comprehensive Plan amendments
  - \* Improved data reliability
  - \* Can obtain statistics about Comprehensive Plan amendments (i.e. percentage of amendments that are adopted, number and location of parcels that have had multiple amendments proposed, distribution of proposed amendments across supervisor districts)
- Better platform for county staff to do research on properties and past Comprehensive Plan amendments
- Organized geodatabase is established that can be easily updated with future Comprehensive Plan amendments
- Process will be repeated for Comprehensive Plan amendments in South County

[illegible]



### Legend

- Tier 1: 225' - 400'
- Tier 2: 175' - 225'
- Tier 3: 130' - 175'
- Tier 4: 75' - 130'
- Tier 5: 50' - 75'
- Tier 6: 35' - 50'
- Existing/Approved Gateway Building



**VKA**  
CONSULTING ENGINEERS & ARCHITECTS

1000 BROADWAY, SUITE 200  
FALLS CHURCH, VA 22044  
TEL: 703/441-1100  
WWW.VKACONSULTING.COM

**TYSON'S WEST NORTH**  
PROVIDENCE DISTRICT  
FAIRFAX COUNTY, VA

## HEIGHT OVERLAY

VKA REVISIONS

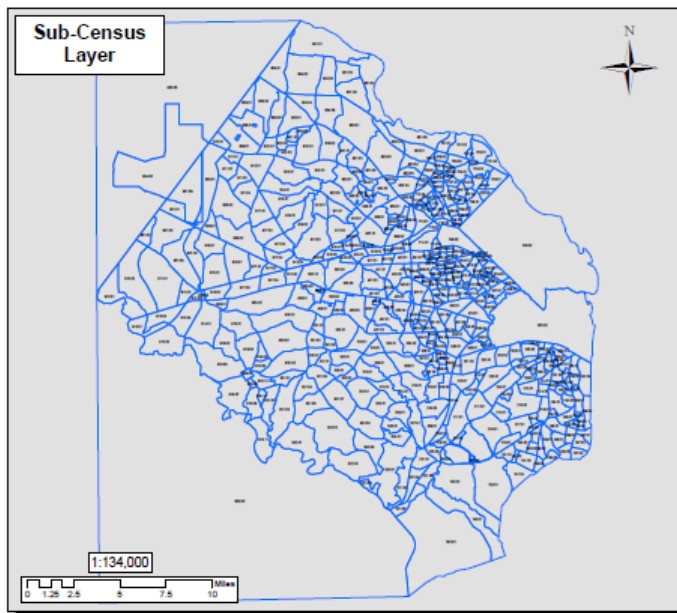

DATE: OCT 15, 2010

DES: SEC: DWA: SEC:

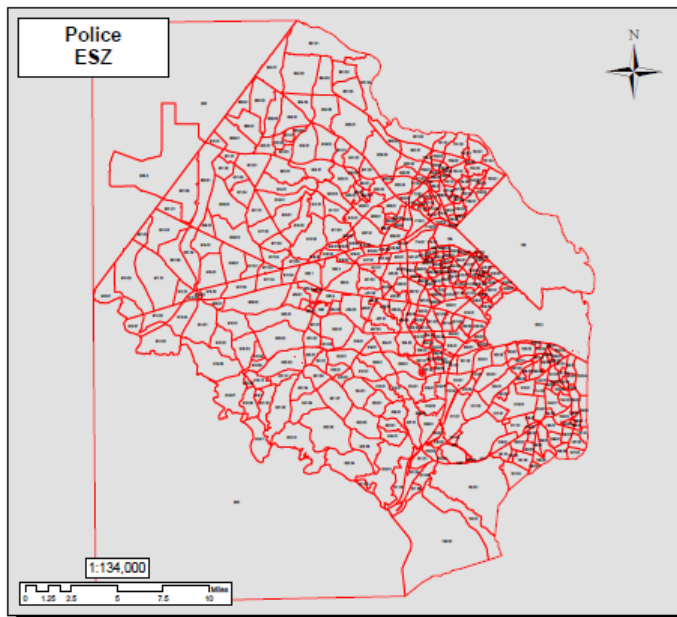
SCALE: 1"=100'

PROJECT/FILE NO: 7190

SHEET NO: 2 OF 2



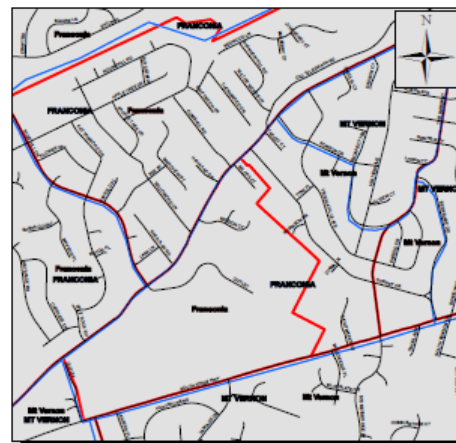
Old Police Sub-Census Layer that was designed based on the Sub-Census. The boundaries of these polygons roughly follow roads, rivers and parcels but are not represented topologically in this layer.



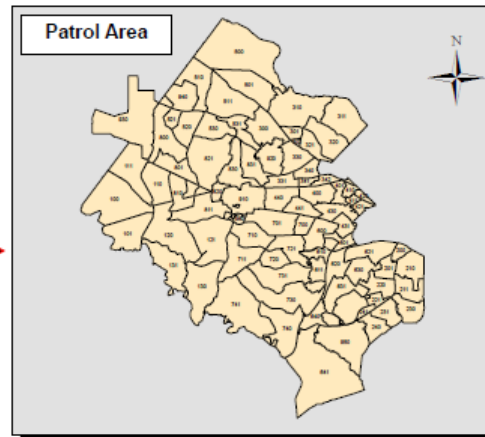
New Police ESZ boundary Map took over 6 months to complete and was made to display true topology to road centerline and parcel boundaries. This layer was made to be used within the new CAD system to allow accurate routing recommendations from DPSC dispatchers to officers out in the field.

## Fairfax County Police Departments ESZ (Emergency Response Zones) Redraw For The New CAD System.

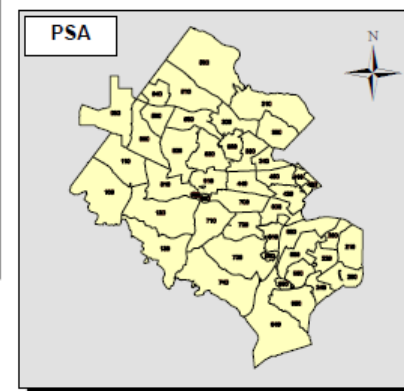
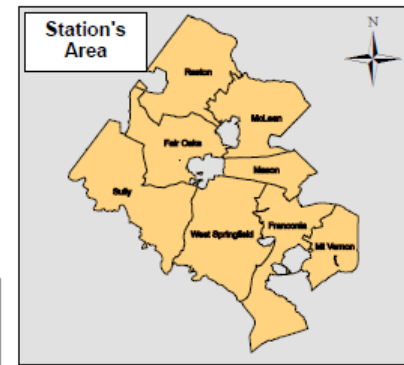
ESZ Layer Was Based On The Old Sub-Census Layer



Map above shows a close up of the differences between the boundaries of the old sub-census layer (Blue) and the new police ESZ layer (Red). The police ESZ can be seen sharing the topology with the roadway centerline. Where there wasn't a roadway to follow, the ESZ layers used the county's parcel layer. The police took this opportunity to fix a citizen concern, by moving part of a neighborhood back into Mt. Vernon's police station area. This was done by moving the boundaries around molding the ESZs into the shape requested by the Station Commanders. New boundaries were placed North of Wilcox Ct, which followed Veterans Park's parcel boundary and terminated at South Kings Hwy. The data in the attribute table was altered to reflect the change placing the new ESZ to the right of the border into Mt. Vernon Station's Area.



Police patrol area layer was made by merging the values in the patrol area attribute field. The patrol area map was then used to construct the PSA layer with similar methods. The method was repeated again using the PSA layer this time to make the police station's area. This method was used to ensure that each boundary would be identical with its corresponding police ESZ boundary.



## Map Key

- Sub-Census
- Road Centerline
- Police
- ESZ
- Patrol Area
- PSA
- Station's Area

# 2010 Watershed Boundaries

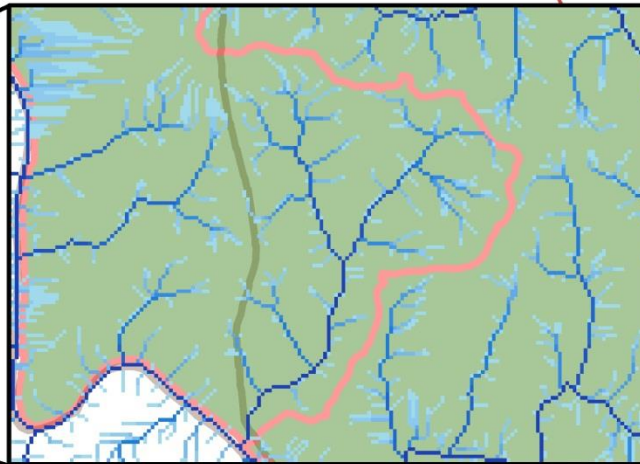
Little Rocky Run

Johnny  
Moore  
Creek

Popes Head Creek



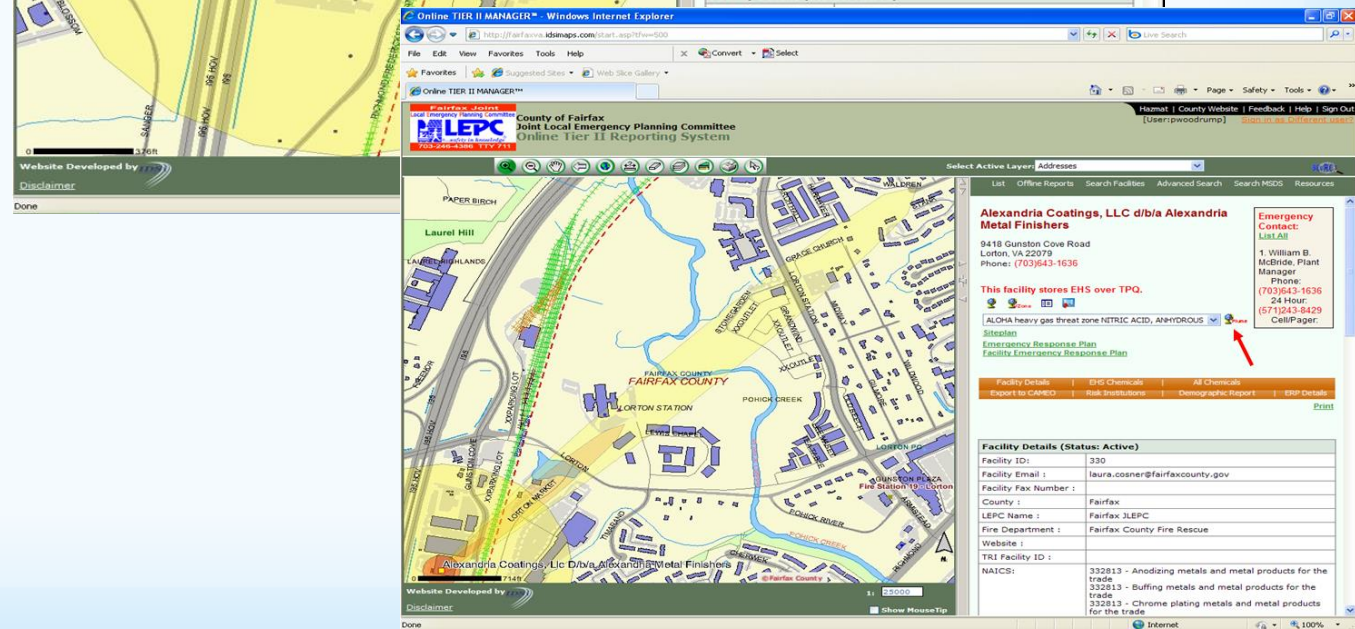
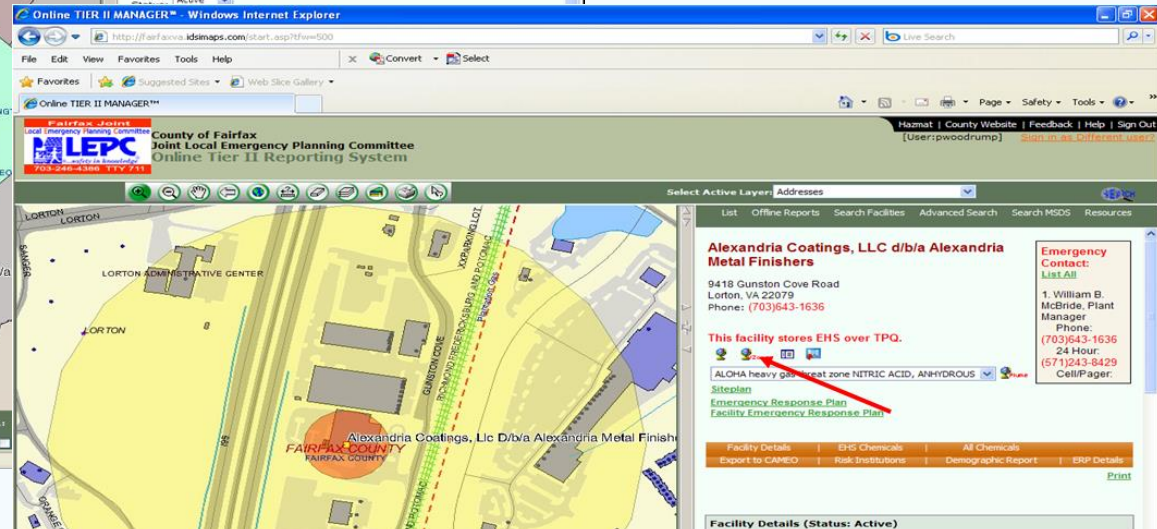
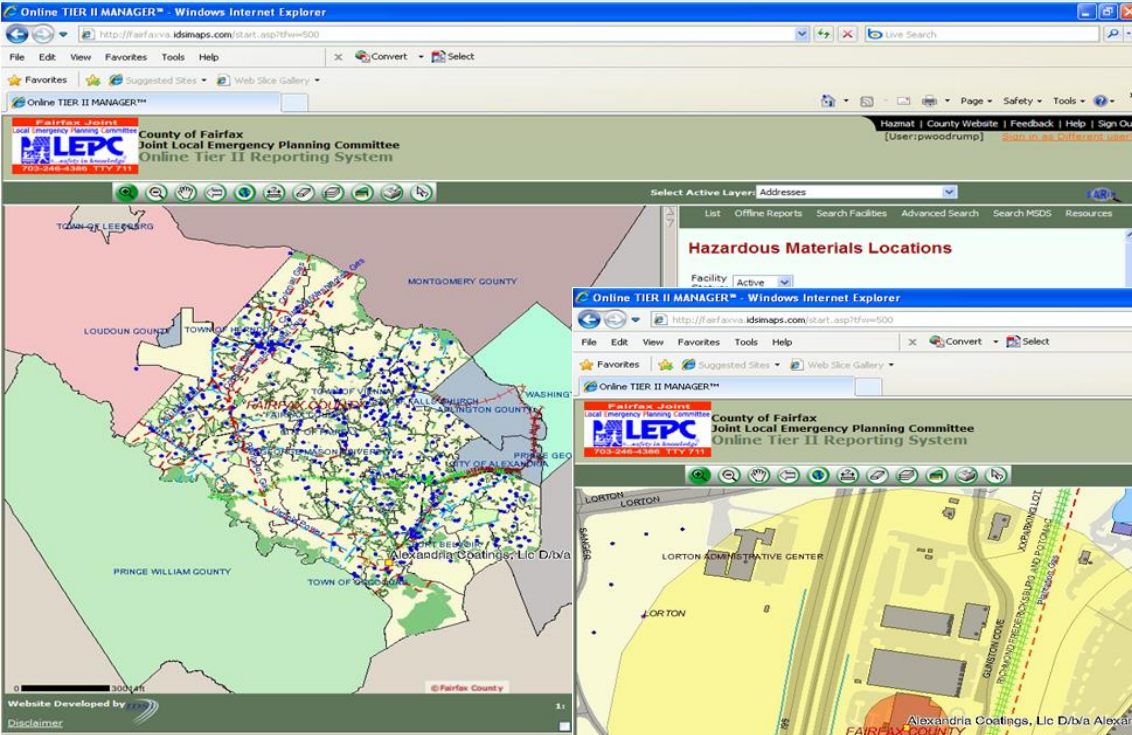
Pohick Creek

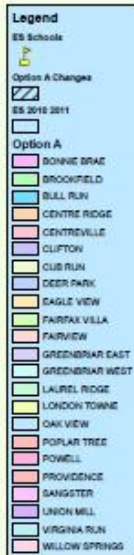


## Legend

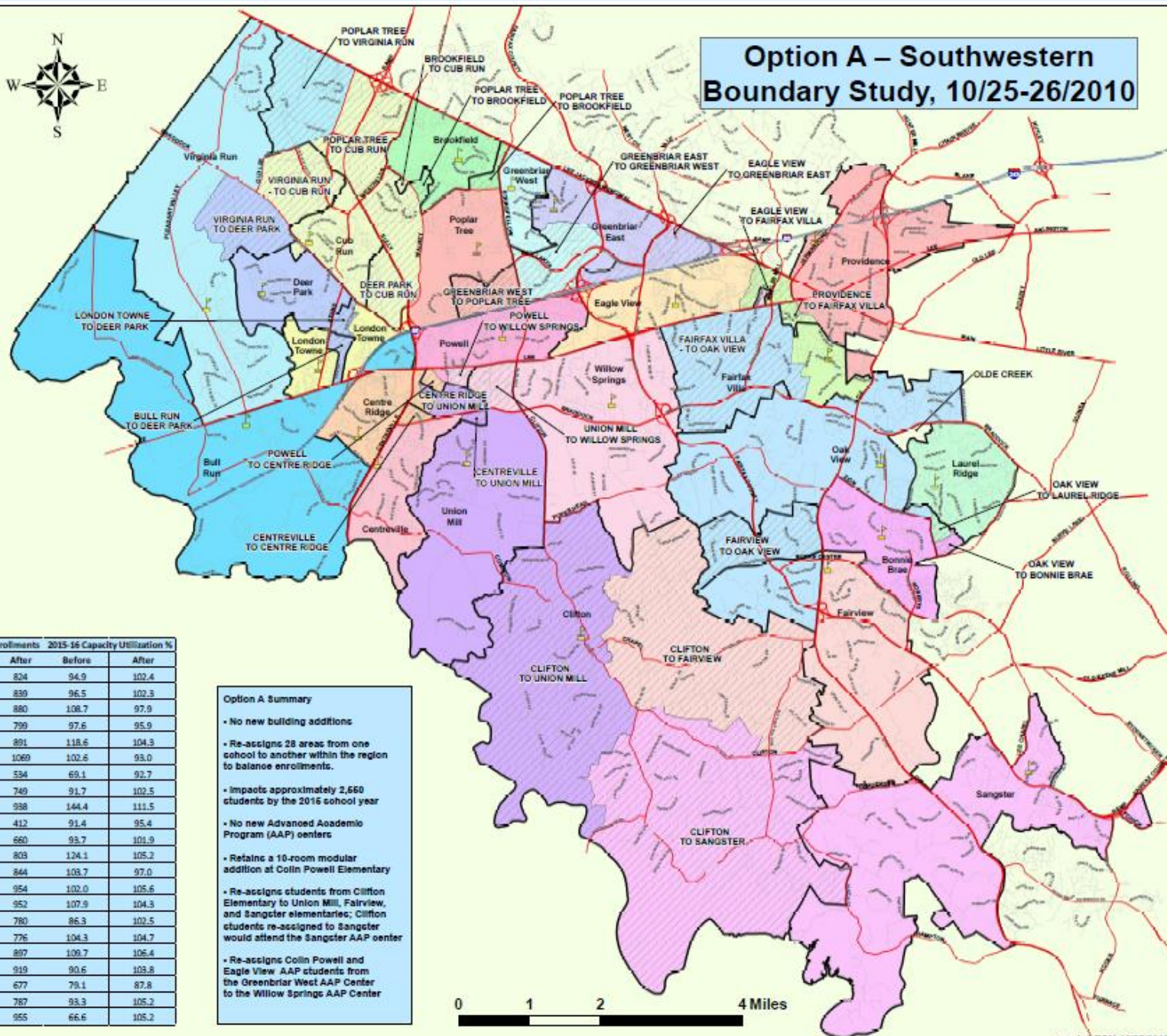
- Fairfax Watersheds 2009
- Fairfax Watersheds 2010

- This is a comparison between the 2009 and 2010 watersheds layer.
- The new 2010 watersheds layer is based off the new 2 ft. contours layer.
- As you can see, the 2010 watershed boundaries are more precise and accurate.





## Option A – Southwestern Boundary Study, 10/25-26/2010



School	Capacity	2015-16 Enrollments		2015-16 Capacity Utilization %	
		Before	After	Before	After
Bonnie Brae	805	764	824	94.9	102.4
Brookfield	820	791	830	96.5	102.3
Bull Run	899	977	880	108.7	97.9
Centre Ridge	835	813	799	97.6	95.9
Centreville	854	1013	891	118.6	104.3
Colin Powell	1150	1180	1069	102.6	93.0
Cub Run	576	398	534	69.1	92.7
Deer Park	731	670	749	91.7	102.5
Eagle View	841	1214	938	144.4	111.5
Fairfax Villa	432	395	412	91.4	95.4
Fairview	648	607	660	93.7	101.9
Greenbriar East	763	947	803	124.1	105.2
Greenbriar West	870	902	844	103.7	97.0
Laurel Ridge	905	921	954	102.0	105.6
London Towne	913	985	952	107.9	104.3
Oak View	761	657	780	86.3	102.5
Poplar Tree	741	773	776	104.3	104.7
Providence	843	925	897	109.7	106.4
Sangster	885	802	919	90.6	103.8
Union Mill	771	630	677	79.1	87.8
Virginia Run	748	698	787	93.3	105.2
Willow Springs	908	605	955	66.6	105.2

### Option A Summary

- No new building additions
- Re-assigns 28 areas from one school to another within the region to balance enrollments.
- Impacts approximately 2,660 students by the 2016 school year
- No new Advanced Academic Program (AAP) centers
- Retains a 10-room modular addition at Colin Powell Elementary
- Re-assigns students from Clifton Elementary to Union Mill, Fairview, and Sangster elementary; Clifton students re-assigned to Sangster would attend the Sangster AAP center
- Re-assigns Colin Powell and Eagle View AAP students from the Greenbriar West AAP Center to the Willow Springs AAP Center

0 1 2 4 Miles