

Laurel Hill Park

General Management Plan and Conceptual Development Plan



Prepared for:
Fairfax County Park Authority
July 2004

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Fairfax County Park Authority Laurel Hill Park Master Plan

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TABLE of CONTENTS

1.0.Introduction.....1

 1.1 Purpose of the Report.....1

2.0.Site and Regional Context3

 2.1 Regional Context.....3

 2.2 Site Context.....3

 2.3 Overview of the Site6

 2.4 History and Background of the 3,200 Acre Property7

 2.5 Existing Policy and Land Use Framework11

3.0 Site Description and Inventory16

 3.1 Analysis of Existing Natural Resources16

 3.1.1 Geology, Soils and Topography16

 3.1.2 Water Resources18

 3.1.3 Vegetation and Wildlife23

 3.1.4 Threatened, Endangered and Sensitive Species29

 3.2 Analysis of Existing Built Resources30

 3.2.1 Utilities and Infrastructure30

 3.2.2 Water Systems.....30

 3.2.3 Sanitary Sewer Systems32

 3.2.4 Solid Waste32

 3.2.5 Electricity.....33

 3.2.6 Natural Gas33

 3.2.7 Telecommunications33

 3.2.8 Transportation Systems.....33

 3.2.9 Existing Structures40

 3.2.10 Site Archaeology.....43

 3.3 Summary of Opportunities and Constraints.....44

4.0 Park Purpose and Guiding Principles.....47

 4.1 Park Purpose47

 4.2 Guiding Principles.....47

 4.3 Comprehensive Plan Guidance49

 4.4 Needs Assessment.....51

5.0 General Management Plan.....53

 5.1 Resource Protection Zones.....53

 5.2 Recreation Zones.....53

 5.3 Greenway Zone(s).....54

 5.4 Entrance Zone54

6.0 Conceptual Development Plan.....56

 6.1 Description of the Overall Plan.....58

 6.2 Interpretation of the History of the Site58

 6.3 Transportation.....59

 6.4 Description of Plan Elements / Areas59

 6.4.1 Conservation Area.....59

 6.4.2 Greenway Trail System.....60

 6.4.3 Nike Recreation Area.....60

 6.4.4 Crosspointe Area.....60

 6.4.5 Heritage Area61

 6.4.6 Heritage Recreation Area.....61

 6.4.7 Central Green.....61

 6.4.8 Giles Run Meadow.....61

 6.4.9 Community Park61

 6.4.10 Workhouse Hills Park62

 6.4.11 Equestrian Center62

 6.4.12 Apple Orchard Recreation Area.....62

 6.4.13 Park Entrances.....63

 6.5 Adjacent Areas63

 6.6 Park Management64

List of Figures

Figure 1: Aerial View2
Figure 2: Regional Context4
Figure 3: Site Context5
Figure 4: Existing Land Use8
Figure 5: Comprehensive Plan.....12
Figure 6: Comprehensive Plan – Land Units13
Figure 7: Slope Analysis17
Figure 8: Soils19
Figure 9: Hydrologic Features21
Figure 10: Existing Utilities Network31
Figure 11: Road Improvements36
Figure 12: Trails Network.....39
Figure 13: Contributing Structures42
Figure 14: Summary of Opportunities and Constraints46
Figure 15: General Management Plan55
Figure 16: Conceptual Development Plan.....57

List of Tables

Table 1: Soils Ratings18
Table 2: Summary of Species Observed in Laurel Hill Natural Resources Survey, 199929
Table 3: Fairfax County Park Authority Facility Standards and Contribution Levels52

1.0 Introduction

1.1 Purpose of the Report

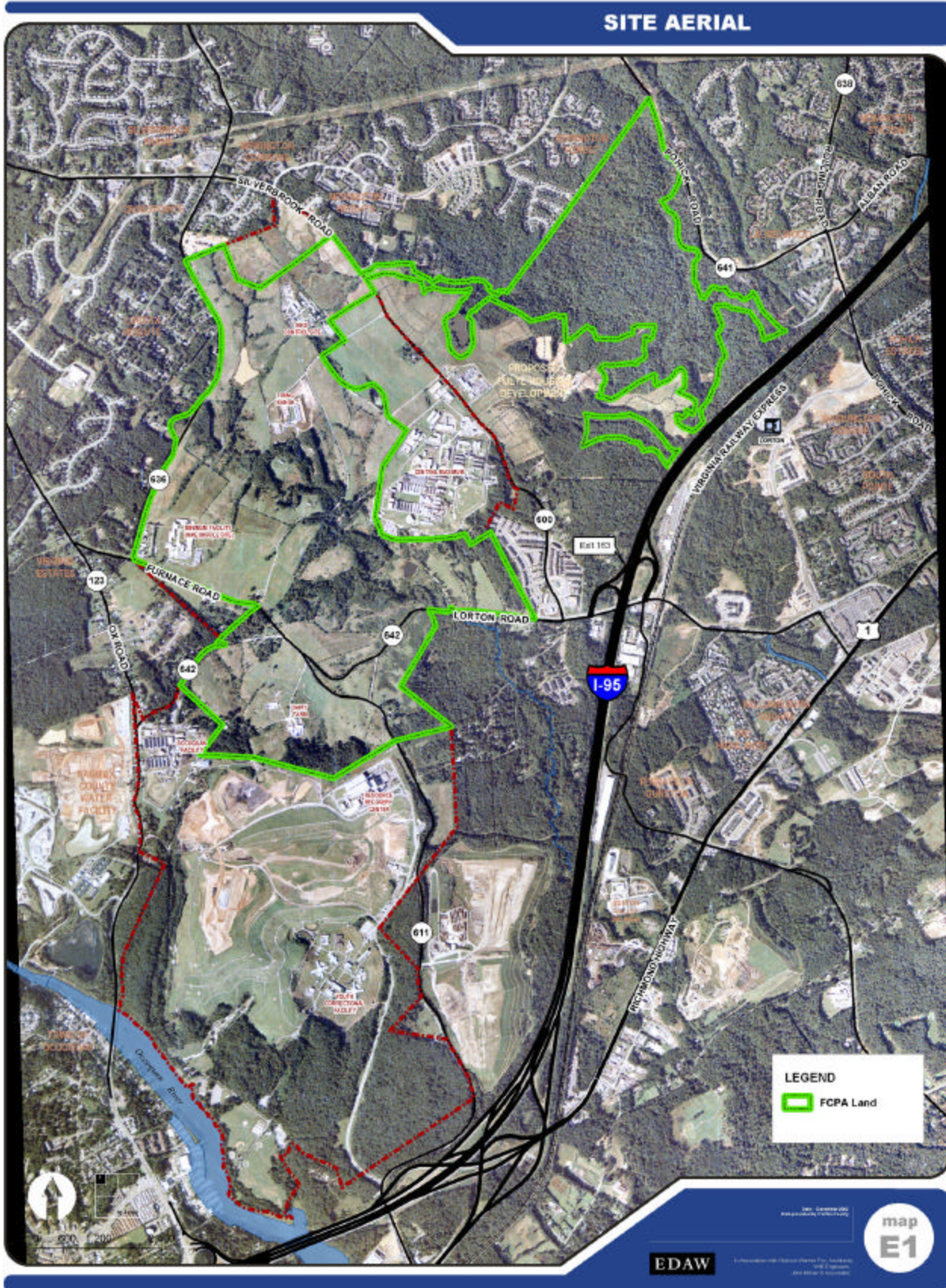
On July 15, 2002 Fairfax County received title to portions of the former D.C. Correctional Facility at Lorton. This transfer was made possible through the Lorton Technical Corrections Act which was passed by Congress in October 1998, which required the county to develop a Reuse Plan that would “maximize use of land for open space, park land, or recreation”. Although referred to as "Lorton," the "Lorton Prison" or the "Lorton Reformatory" for most of the 1900s, this site is now referred to as "Laurel Hill" in commemoration of the 18th century structure, which served both as home of William Lindsay, a revolutionary war patriot, and the residence of the Superintendent of the Reformatory, which was built adjacent to the house in 1916.

Laurel Hill Park refers to a portion of the Laurel Hill site, and comprises approximately 1,200, of the nearly 3,200 acres of Laurel Hill. In addition to Laurel Hill Park, the 3,200 acre property also includes three school sites, a redevelopment area (the Spring Hill community), two re-use areas (the Occoquan Workhouse, Reformatory and Penitentiary of the former prison), the I-95 Resource Recovery Facility and landfill, the Vulcan Quarry and the Occoquan Regional Park.

This project is one of the most ambitious planning efforts to date for the Fairfax County Park Authority. The planning process required the coordination and execution of several concurrent activities including land acquisition, master planning, golf course design and construction of interim-use recreation fields within a very restricted schedule as directed by the Fairfax County Board of Supervisors. The Park Authority is also involved in coordination efforts with other County agencies on multiple planning and maintenance activities in the non-park areas of the site. The Park Authority partnered with Virginia Polytechnic Institute and State University (Virginia Tech) for collaborative design ideas and mentoring of students as interns. A unique aspect of the planning effort is the use of the County and Park Authority web sites to keep the public informed of current planning activities and upcoming events. The on-line discussion Park Authority forum allowed citizens to read and react to each other's comments, ask questions, and obtain information from the park planning team. Designed uniquely for this planning process, these coordinated activities and tools provide County citizens new ways to be involved in park planning as we transform this former prison site to a world class park setting.

This Conceptual Development Plan (CDP) describes Laurel Hill Park's existing natural and cultural resources, and outlines a conceptual plan for the reuse of portions of the prison property as parkland. The objective is to provide a framework for the park's future use and to provide a reference for use in the future planning and development of Laurel Hill Park. Figure 1 is an aerial view of the Laurel Hill site showing existing Fairfax County Park Authority land.

Figure 1: Aerial View



2.0 Site and Regional Context

2.1 Regional Context

Laurel Hill Park is strategically positioned to become Fairfax County's largest southern gateway. This is due to its location near the southern-most point of the county and its easy access to Interstate 95 (I-95), the primary north-south transportation corridor connecting the entire eastern coast of the United States. Laurel Hill Park's size and accessibility have substantial implications for Fairfax County and the D.C. Metropolitan Area (Figure 2).

Laurel Hill Park is an important parcel of land within Fairfax County. Its location near several other major open spaces including Fountainhead Regional Park, Sandy Run Regional Park, Occoquan Regional Park, Pohick Regional Park and Mason Neck State Park provide a significant opportunity to create a linked system of trails and open space adjacent to the Occoquan River. By protecting a large portion of this site for parks and open space, the County has provided a major amenity for the growing local and regional population of Fairfax County and surrounding jurisdictions. The site also contains several Environmental Quality corridors (EQC). Laurel Hill Park will ensure these EQCs are protected for future generations to enjoy.

2.2 Site Context

Laurel Hill Park is located in the southeastern portion of Fairfax County, Virginia, and is easily accessed by I- 95, Route 1/ Richmond Highway and Route 123. The site is located less than 15 miles from downtown Washington, D.C. and abuts the D.C. metropolitan area.

The Park is surrounded by several residential neighborhoods to the west, northwest, north and northeast. Industrial and commercial uses can be found throughout the surrounding area. The existing road network accessing Laurel Hill Park consists of a hierarchy of regional routes and local access roads. However, the former use of the site as a penal complex resulted in minimal access points between the property and the adjacent neighborhoods.

Several major roadways surround the park property. Primary access from I-95 is at Lorton Road. Other major roadways near or abutting Laurel Hill Park include Route 1/ Richmond Highway to the east and Route 123 to the west. Laurel Hill Park has direct access to Silverbrook, Hooes, Lorton and Furnace Roads.

The areas directly adjacent to Laurel Hill Park have experienced an increased rate of new development since the closing of the prison. Areas abutting the property can be characterized as low- to medium-density residential, with the area north of the site developed with 2-3 dwelling units per acre. The immediate neighborhoods around Laurel Hill include: Newington Commons, Newington Heights, Newington Forest, Silverbrook Farms, Silverbrook Estates, Lorfax Heights, Crosspointe, and Southpointe Estates. The Lorton "Town Center" is a planned development located to the east of the property at Lorton Road and Route 1. This town center contains the Lorton Station of the Virginia Railway Express (VRE), and is planned to include a mixture of commercial uses, and single- and multi-family residences.

Figure 2: Regional Context

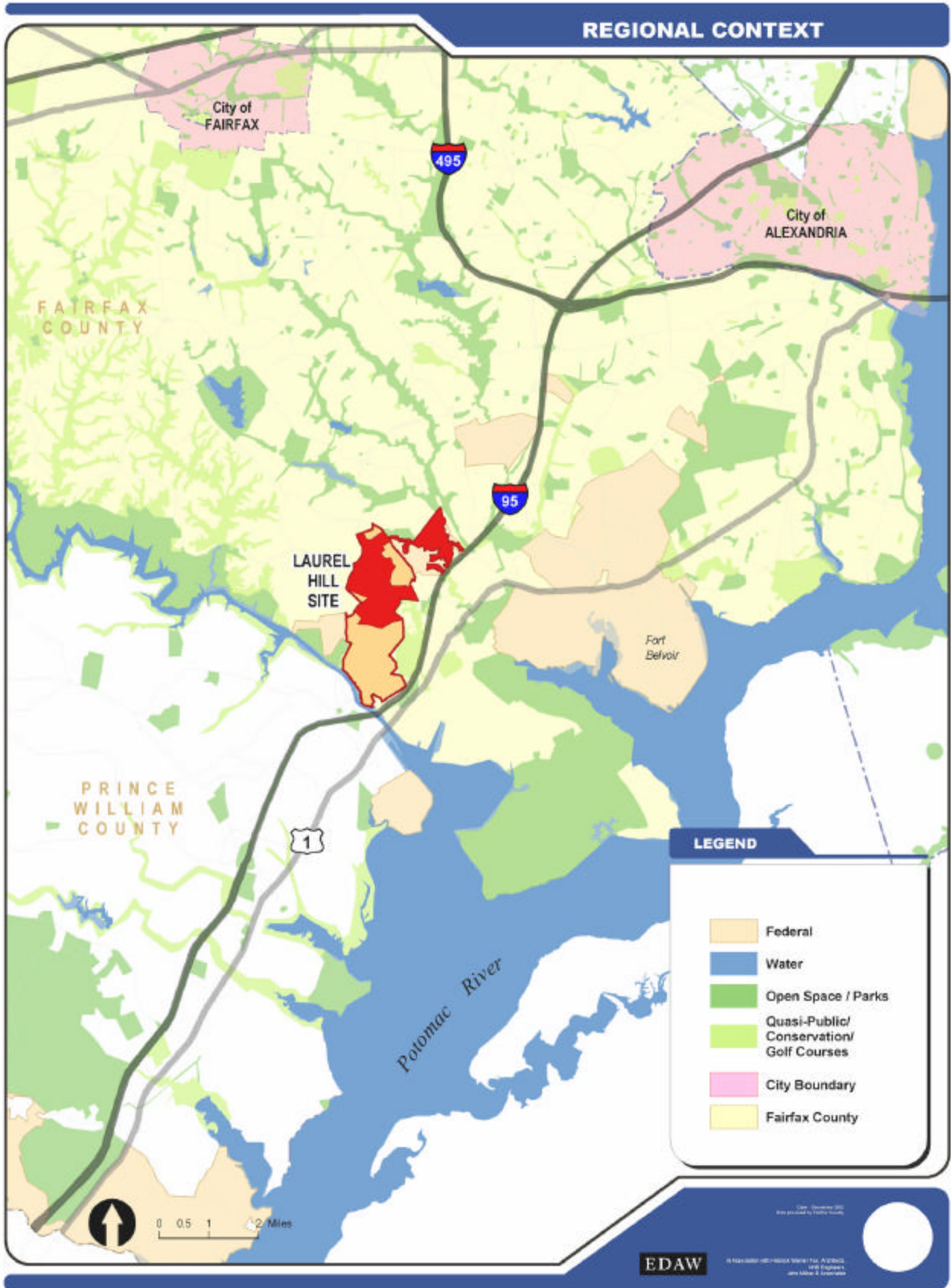
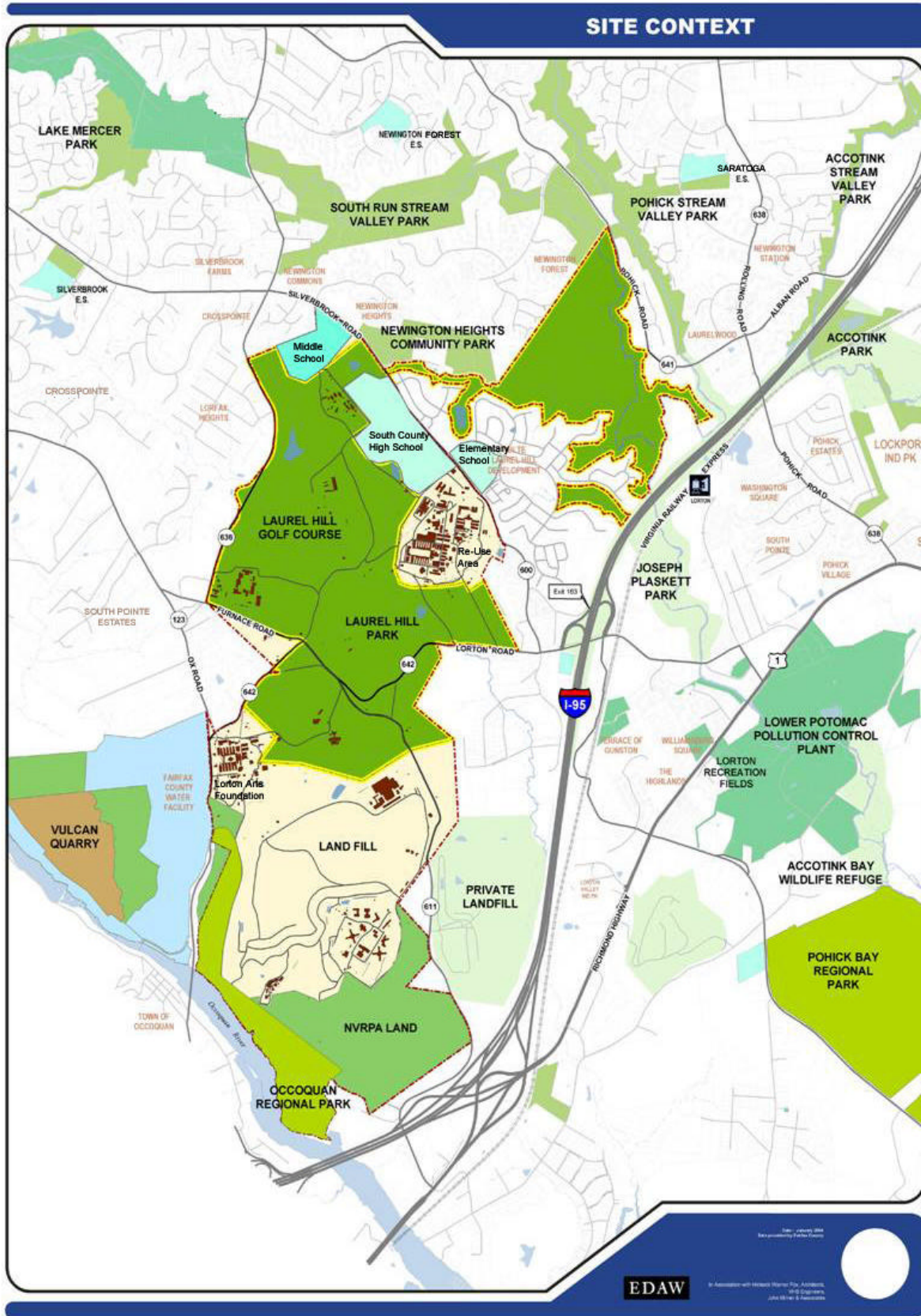


Figure 3: Site Context



contains the Lorton Station of the Virginia Railway Express (VRE), and is planned to include a mixture of commercial uses, and single- and multi-family residences.

The Vulcan Quarry is located to the west of the site, and is referenced in the Comprehensive Plan as part of the larger Laurel Hill site. Once extraction activity ceases at the quarry, it is slated for use by the Fairfax County Park Authority. The Fairfax County Water Authority's Occoquan Water Treatment Facility is also located to the west of Laurel Hill Park.

There are several existing residential amenities and services in the surrounding area. These include the Newington Heights Community Park that abuts the Pulte development on Silverbrook Road. A private recreation center located at the intersection of South Run and Pohick Road provides a community swimming pool and tennis facilities. Service and convenience retail can be found on the eastern side of the site near the intersection of Lorton and Silverbrook Roads, including a convenience store/ gas station, fast food, deli, Comfort Inn Hotel and other services. At the intersection of Silverbrook and Hooes Roads is a "Village Shops" complex, which also provides retail and services. Additional commercial services, such as fast food, big box retail, and professional services are located in Prince William County south of the site.

Other features near Laurel Hill Park include the Town of Occoquan, Occoquan Regional Park, the Occoquan Water Treatment Facility, the Vulcan Quarry, the Resource Recovery Facility, proposed Re-Use Areas, South Run Stream Valley Park and the VRE commuter rail line.

2.3 Overview of the Site

The 3,200 acre property is referred to in the Fairfax County Comprehensive Plan as LP1- Laurel Hill Community Planning Sector 1. Public lands within this planning sector were divided into several distinct portions for oversight and planning purposes; the Fairfax County Park Authority portion; the Fairfax County area (including the redevelopment and re-use area), and the Northern Virginia Regional Park Authority. Laurel Hill Park consists of approximately 1,200 acres.

Laurel Hill Park is situated north of the Occoquan River, west of I- 95, and east of Route 123 (Ox Road). Lorton Road (Route 642), Furnace Road, (Route 611), Silverbrook Road (Route 600), Hooes Road (Route 636), and Pohick Road (Route 641) make up the network of roads accessing the site. Private access roads associated with the former prison provide additional access within the site (see Figure 3).

The majority of the park is characterized by undeveloped open space. The northern section of park land is a heavily wooded natural resource area. The southern section of the park is primarily comprised of recently abandoned agricultural land with a series of wooded creeks and valleys (see Figure 4). Additional features within the parkland include the former Nike Missile Control and Launch Sites.

Laurel Hill Park is bordered by a series of structures and features, most of which are associated with the former prison complex. These include the Central/Max facility (former Penitentiary, Reformatory and ancillary facilities), the redevelopment area (proposed Spring Hill Senior Center) and the Occoquan Workhouse (proposed Lorton Arts Foundation). These facilities were constructed

over different periods as the prison evolved and required expansion. In addition to these facilities, there are three other sites; the Occoquan Regional Park, the I-95 Energy Resource Recovery Facility and adjacent landfill operated by Fairfax County Department of Public Works and Environmental Resources; located south of the park.

A 280 acre public golf course is being developed within the park area as part of the South County High School development agreement. Existing residential neighborhoods and the South County High School border the site and make up part of the surrounding community. A new middle school is also planned adjacent to the park.

2.4 History and Background of the 3,200 Acre Property

Laurel Hill House

Laurel Hill was the name of the circa 1766 home and plantation of William Lindsay, a Revolutionary War patriot. The structure was subsequently used as the home of the Superintendent of the Reformatory upon its creation adjacent to the Laurel Hill House in 1916. Despite the poor condition of the house, it remains intact as a contributing structure to the Lorton Prison Historic District. The house is not currently located on park property,

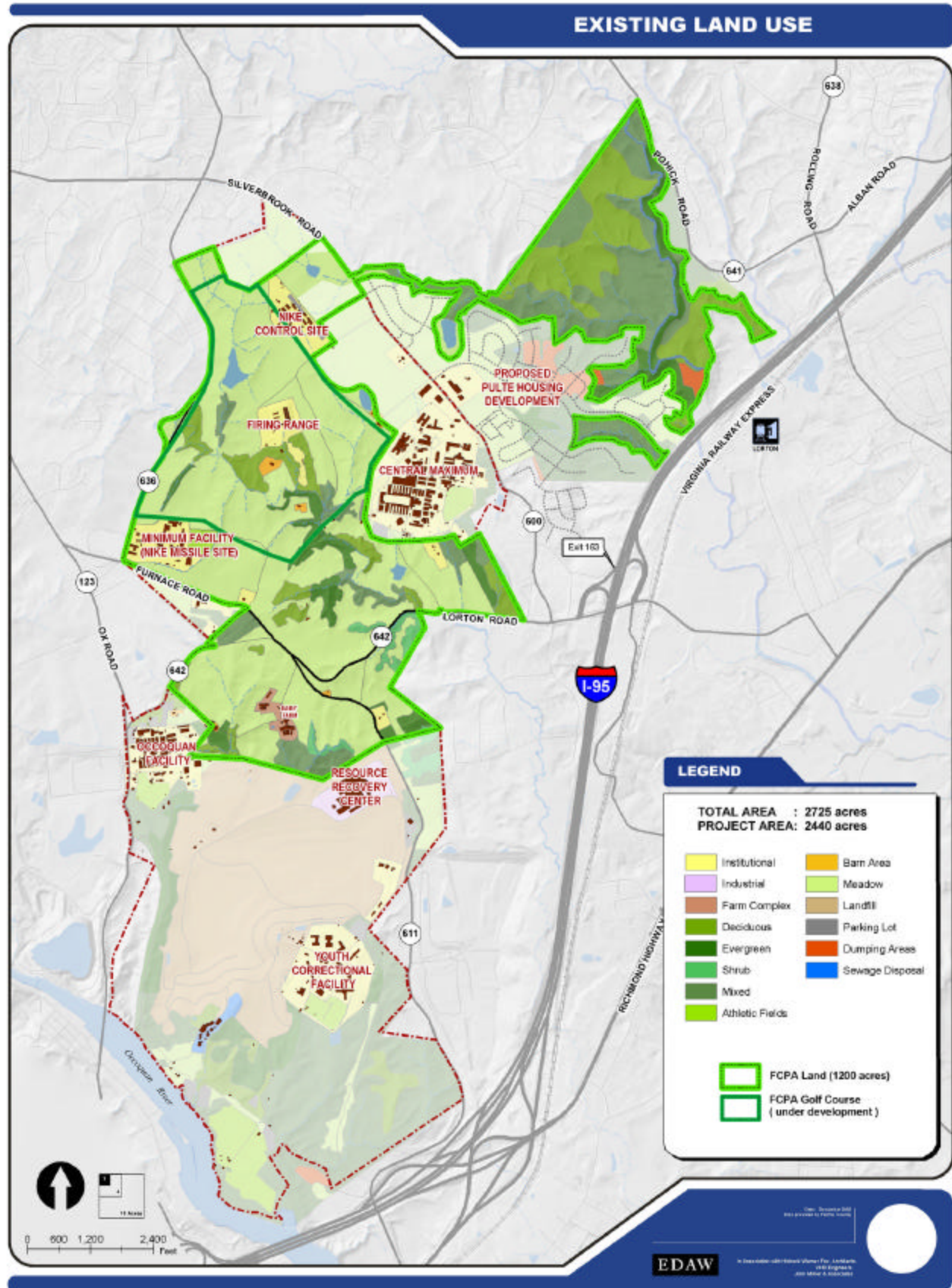
Progressive Era

The early 20th century brought new approaches to detention facilities throughout the country. Theodore Roosevelt's involvement in a new approach to rehabilitating bootleggers and horse thieves led to a movement that influenced correctional practices and penal design nationwide. Lorton Prison was commissioned by Theodore Roosevelt in response to the deplorable penal conditions in the District of Columbia. The philosophy behind the new prison was based in treating inmates as legitimate members of society: rehabilitation through the dignity of a hard day's work as well as education and sports. Part of the vision was that the Lorton model acted as a self-sustaining village in its activities. Evidence of these activities still mark the land today, and the former farmlands, dairy, slaughterhouse, blacksmith shop, sawmill, and barns remain vacant where sustenance once thrived. Prisoners worked to harvest the land; farming their own foods, and raising their own animals. Prisoners slept in dormitories rather than cell-blocks and were not confined by walls and guard towers. The prison' physical layout resembled a campus village rather than a prison, with colonial red-brick buildings and arched doorways oriented around grassy courtyards. The classically-inspired, symmetrical dormitory complexes at the center of the Workhouse and Reformatory make allusions through their architecture to order and tradition. The focus on labor and education, along with a campus-style layout that provided fresh air and natural light, hallmarked a progressive approach that made the Lorton system revolutionary among prisons in the nation.

The Beehive Kiln is a lasting reminder of the industrious practices of the prison. Early on, inmates fired bricks from clay extracted from the prison land. Bricks and stones fired in the kiln were used in additions to colonial style buildings and for the construction of on-site roads.

As the District of Columbia grew, and the demands of the correctional complex increased, the prison expanded and required heightened levels of security. Though the Progressive Era principles and

Figure 4: Existing Land Use



minimized security practices were displaced by the evolving inmate population, the physical patterns of the progressive era continued to influence additions to the facility and exist on the site today

Prison Agriculture and Industry

Progressive Era principles also encouraged sustainability and self-sufficiency of the prison. The prison engaged in industry (e.g., blacksmithing and brick firing), and agriculture and husbandry through the prison farm, dairy and slaughterhouse. The Workhouse (Occoquan Facility) was an agricultural work camp, and its many farming structures served as the setting for prison labor and production. During the early years, inmates worked the land and produced bricks in the prison kilns for on-site buildings and stone for onsite roads. Other industries were also attempted, such as re-treading tires, making manhole covers, and knitting sweaters. The prison was intended to be self-sufficient, and while this may never have been fully achieved, the extensive agricultural operations, including cultivated fields; pasture land; a poultry farm; hog ranch; slaughterhouse; dairy; blacksmith shop; sawmill; and feed, hay, and storage barns hint at the extent to which the prison was capable of maintaining itself. Much of the current park area is comprised of land that was formerly used for agriculture and husbandry, contributing to the park's historic significance.

Lorton Prison and the Women's Suffrage Movement

Lorton Prison became known as the prison that housed Suffragettes arrested during protests for women's voting rights in the early 20th century. The protests occurred in 1917 during World War I when the Suffragettes marched to the White House in peaceful demonstration in an attempt to persuade Congress to give women the right to vote. They carried banners that read "How Long Must American Women Wait for Their Liberty?" and "Mr. President, What Will You Do For Woman Suffrage?" Seen as slanderously unpatriotic during wartime, groups of women protesters, many from the National Woman's Party, were incarcerated in Lorton's "Women's Workhouse" (Occoquan Workhouse) located along Route 123. Additional arrests were made during subsequent protests and sentences lasted up to sixty days.

Although the women's workhouse no longer exists and was not located on what is now the parkland, the movement represents a significant historic event that should be venerated as part of the prison's history.

Nike Missile Site

During World War II, the U.S. military began to experiment with missiles and rockets in response to the German rocket program. The NIKE Missile sites were part of the first nationwide U.S. air defense system designed to protect against a Soviet nuclear attack. In the 1950s, they were highly visible, powerful symbols of U.S. military power and reminders of the Soviet threat. The Nike sites were the outgrowth of an increasing concern over the Soviet ability to equip jet aircraft with nuclear bombs, and continued to develop into an early defense against Inter-Continental Ballistic Missiles (ICBMs).

Due to the increasing tensions between the U.S. and the Soviet Union, and as a result of the Korean War, the Army endorsed a nationwide surface to air missile (SAM) defense system in 1951.

Tensions became heightened in response to successful hydrogen bomb tests by both the Soviet Union and the United States in 1953. In that year, the Army created selection boards responsible for land acquisition and construction oversight (Bright 1997:323; USACE 1997:5-6). By the summer of 1953, Douglas and Bell were producing missiles and equipment, as well as training soldiers to operate the new missile system that was christened NIKE after the Greek goddess of victory. Later, it was given the name NIKE-Ajax. Land acquisition became an onerous procedure of conflict and condemnation proceedings in some areas but land acquisition at the sites in Fairfax County was not difficult. The Army was required to use government-owned land whenever possible. This probably made the decision to locate at least part of the site at the D.C. Department of Corrections in Lorton a simple one. In October 1953, the Army obtained the use of two sections totaling 30 acres of the Lorton Prison complex. Due to the size of the tract acquired by the Army, the Lorton site was made a "double site" that had six magazines, rather than the standard three, and twice the normal staff (Bright 1997:329). Work at the Lorton site began in March 1954, and was complete enough to become the national showpiece for the Army's public unveiling of the nationwide NIKE program in 1955. Due to its proximity and size, it was labeled the "National NIKE Site" by the Secretary of the Army, and was host to visits by numerous foreign dignitaries as well as national and local politicians, and even local residents (Bright 1997:329-331).

Beginning in 1958, the Virginia National Guard began training to take over the Fairfax site and the Ajax portion of the Lorton site. The Virginia National Guard consistently set records for performance in training exercises. By 1960, the Army closed the Ajax sites due to their prohibitive operating costs. On August 30, 1963, the National Guard took control of Lorton, and only a small contingent of Army personnel continued to work at the site (Bright 1997:344; USACE 1997:7). During the 1960s, the political and defense climate changed, necessitating a change in strategic defense operations. The Soviet Union began to increase their supply of ICBMs and decrease their dependence on long range bombers. Accordingly, the United States decided to focus on the construction of strategic nuclear weapons. Therefore, the NIKE Missile site at Lorton was closed in 1974. The former NIKE Launch site is located at the northeast corner of the intersection of Hooes and Furnace Roads. The former NIKE Control site is located near the western edge of the Park just south of Silverbrook Road.

Federal Disposal of the Lorton Reservation

The disposal of the property was initiated by two congressional acts in an effort to minimize federal expenditure. The first act was the *National Capitalization Revitalization and Self-Government Improvement Act of 1997*, which directed the initial disposal of segments of the prison facilities. Subsequently, the *District of Columbia Management Reform Act of 1997* mandated the termination of penal activities and the closing of the complex. The title was transferred after the closing of the former District of Columbia Correctional Complex ("Complex"), which ceased operations in 2001.

Over the past 30 years, portions of the Complex had been conveyed to different public agencies and entities for different uses:

- In 1973, over 800 acres were apportioned among Fairfax County, the District of Columbia, and the Metropolitan Washington Waste Management Agency for the I-95 Energy/ Resource Recovery Facility and solid waste landfill;

- In 1998, the Federal government conveyed 147 acres to the Fairfax County Water Authority; and
- In 1998, pursuant to the *1998 Lorton Technical Corrections Act*, the General Services Administration acquired the Lorton Reservation from the District of Columbia and following a Memorandum of Agreement, 2,324 acres of the property were transferred to Fairfax County.

Since the 1998 Federal decision to close the prison, Fairfax County has completed several significant steps. In 1999, a local citizens committee prepared a re-use plan. In July of that year, the Fairfax County Board of Supervisors adopted their plan as the official Re-use Plan and Comprehensive Plan Amendment. Subsequently, the remaining 2,324 acres were transferred to Fairfax County on July 15, 2002 at a cost of \$4.2 million. The former Lorton Reservation was renamed “Laurel Hill” by Fairfax County in commemoration of the historic home of the revolutionary war patriot, William Lindsay.

2.5 Existing Policy and Land Use Framework

The Comprehensive Plan for LP1 – Laurel Hill Community Planning Sector describes a planning framework for the re-use areas, the park land, and their abutting properties, such as the Vulcan Quarry, comprising a total of nearly 3,200 acres. Existing land uses within the original site boundary include the former Lorton Prison facilities, publicly owned open space, and a system of local access roads (see Figure 4). The southern section of the property includes the existing I-95 Land Fill and the I-95 Energy Resource Recovery Facility. The former Nike Missile Launch and Control sites are also located on the property and have been identified for potential re-use.

Comprehensive Plan

The Laurel Hill property was transferred to Fairfax County upon adoption of a revised Comprehensive Plan to include the development of the site (see Figures 5 and 6). The Comprehensive Plan identifies 3,200 acres at Laurel Hill to be included in a re-use plan. The disposal of the property was subject to regulations under Section 106 of the National Historic Preservation Act of 1966 (NHPA) and the National Environmental Policy Act of 1969 (NEPA) due to its history, environmental qualities, and prior federal ownership. According to the revised plan, only a portion of the land located south Silverbrook Road, was identified for redevelopment for private, commercial use. This area is currently being developed as an age –restricted residential neighborhood with housing for seniors. The majority of the remaining parcels land units are designated for adaptive re-use of historic and non-historic buildings (approximately 140 acres), parkland and open space (approximately 1,600 acres), high school and middle school sites (approximately 120 acres), and existing uses such as the continued operation of the Resource Recovery Facility and adaptive re-use of a former landfill (approximately 500 acres).

The revised Comprehensive Plan includes guidelines for the redevelopment and re-use activities at Laurel Hill. The Plan strives to optimize natural resource areas to preserve open space and promote redevelopment and re-use that will be compatible with community needs and surrounding areas.

Figure 5: Comprehensive Plan – Land Use

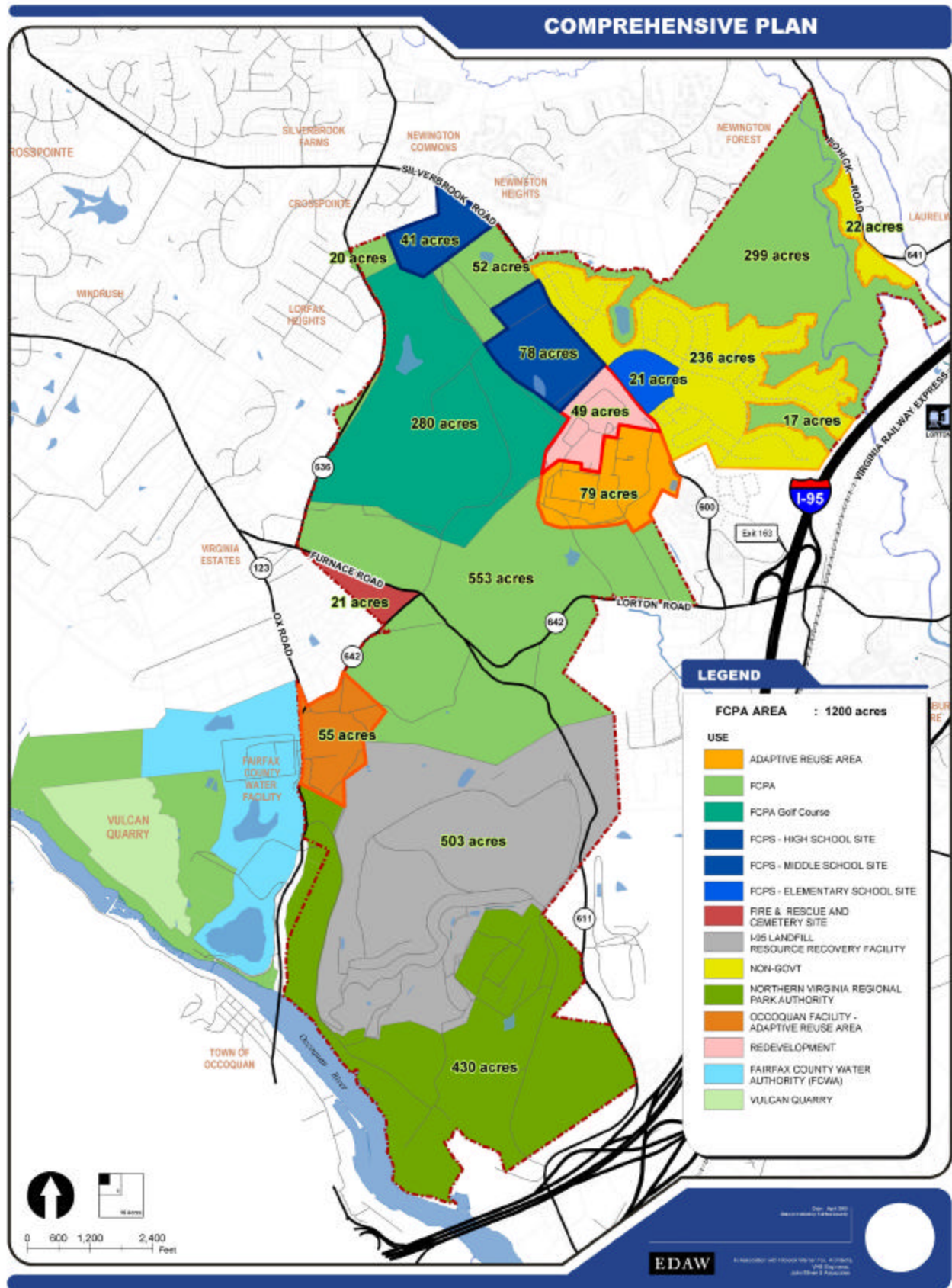
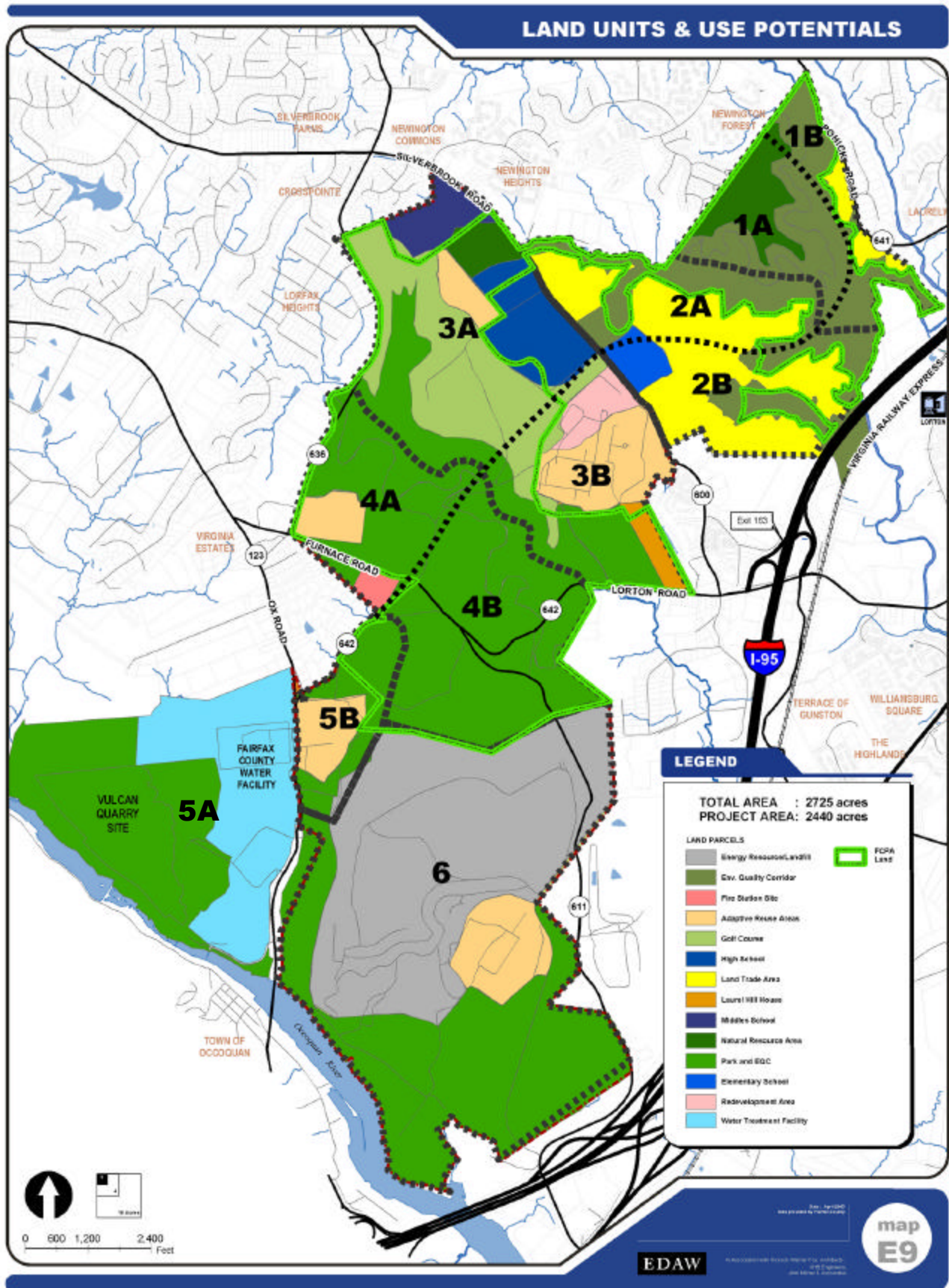


Figure 6: Comprehensive Plan- Land Units



Potential Uses

The Comprehensive Plan categorizes the Laurel Hill property as a series of Land Units and Sub-units. The recommended land uses are identified for each of these Land Units and are listed as follows (see Figure 6):

LAND UNIT 1: (235 acres)

Sub-Unit 1A

- **Countywide Natural Resources**
 - Parks
 - Trails
 - Wildlife observation areas
 - Interpretive center

Sub-unit 1B

- **Countywide Natural Resources**
 - Parks
 - Trails
 - Wildlife observation areas
 - Interpretive center
- Laurel Hill Greenway
- Single family detached residential use at a density of 1-2 dwelling units per acre

LAND UNIT 2: (370 acres)

Sub-unit 2A

- Single family detached residential use at a density of 2-3 dwelling units per acre
- Re-use of transportation facility as an elementary school site
- Laurel Hill Greenway

Sub-unit 2B

- Residential use at densities of 2-3, 4-5 and 8-12 dwelling units per acre
- Amtrak Station and open space east of I-95
- Laurel Hill Greenway

LAND UNIT 3: (610 acres)

Sub-unit 3A

- Community and County-wide park
- Public golf-course (minimum 165 acres)
- Middle school
- High school
- Recreational facilities & open space
- Natural Resource Areas
- Nike and Administration Building Heritage Resource Site

Sub-unit 3B

- Redevelopment area
 - Graduate care facility for the elderly (with supportive commercial/ retail)
- Adaptive re-use areas
 - Governmental and non-hospital institutions
 - Laurel Hill House Heritage Resource Area within Countywide Park
- Laurel Hill Greenway

LAND UNIT 4: (470 acres)

Sub-unit 4A

- District Park with Nike Launch Site Heritage Resources site and active recreation facilities
- Public facilities
 - Fire station
 - Cemetery
- Laurel Hill Greenway
- Recreational/Community Center as interim use at Minimum Security Facility

Sub-unit 4B

- District park with special purpose areas:
 - Horticulture center
 - Athletic fields
 - Equestrian center
 - Laurel Hill Greenway

LAND UNIT 5: (590 acres)

Sub-unit 5A

- Vulcan Quarry
- Fairfax County Water Authority
- Early 20th Century Cemetery

Sub-unit 5B

- Occoquan facility:
 - Governmental, cultural, arts and public institutional uses.
 - Former livestock barn to be used for community activities
- Laurel Hill Greenway

LAND UNIT 6: (900 acres)

- I-95 Resource Recovery Facility and Landfill
- Occoquan Regional Park

3.0 Site Description and Inventory

The following sections summarize the findings from data analysis. The data is based on site visits and information extracted from existing resources and previous reports, and is described in an overview of the current site conditions.

3.1 Analysis of Existing Natural Resources

The environmental assessment completed by the GSA included information on the existing natural resources on the former Lorton Reservation, now referred to as Laurel Hill. This information was supplemented by field reconnaissance in December 2002, and in January 2003 to verify general physical, environmental and topographic features.

3.1.1 Geology, Soils and Topography

The landform at Laurel Hill consists of generally flat upland ridges that slowly decline about three hundred vertical feet toward the south and east to the Occoquan and the Potomac Rivers. Numerous small to mid-sized streams bisect these upland ridges and widen into flat-bottomed alluvial valleys at the lower ends of the local watersheds. The site lies partially within the Atlantic Coastal Plain and partially within the Piedmont Upland Province. Most of the upland terraces at the northern end of the complex are remnants of older fluvial gravel deposits. The elevation at the north end of the site is at about 300 feet above mean sea level (MSL), while the south portion of the site near the Occoquan River is at 10 feet MSL. The slopes in the upland portion at Laurel Hill vary from zero to 15 percent, while slopes leading directly into the many stream valleys often exceed 25 percent. The topography near Route 123 and the Occoquan River is particularly rugged (see Figure 7).

Soils, Slopes and Erodibility

The combination of soils types and topography can impact the level of soil erosion, the ability of soils to support building foundations, and the amount of water held in the soil. These soil characteristics can restrict the types of suitable land development. Field symbols are used to identify soil types on Figure 8. The symbols identify the type of soil, slope class, and long-term surface erosion. For example, Soil Map Symbol 55B2 indicates Soil Number = 55, a Slope Class of B, and an Erosion Class of 2.

Figure 7: Slope Analysis

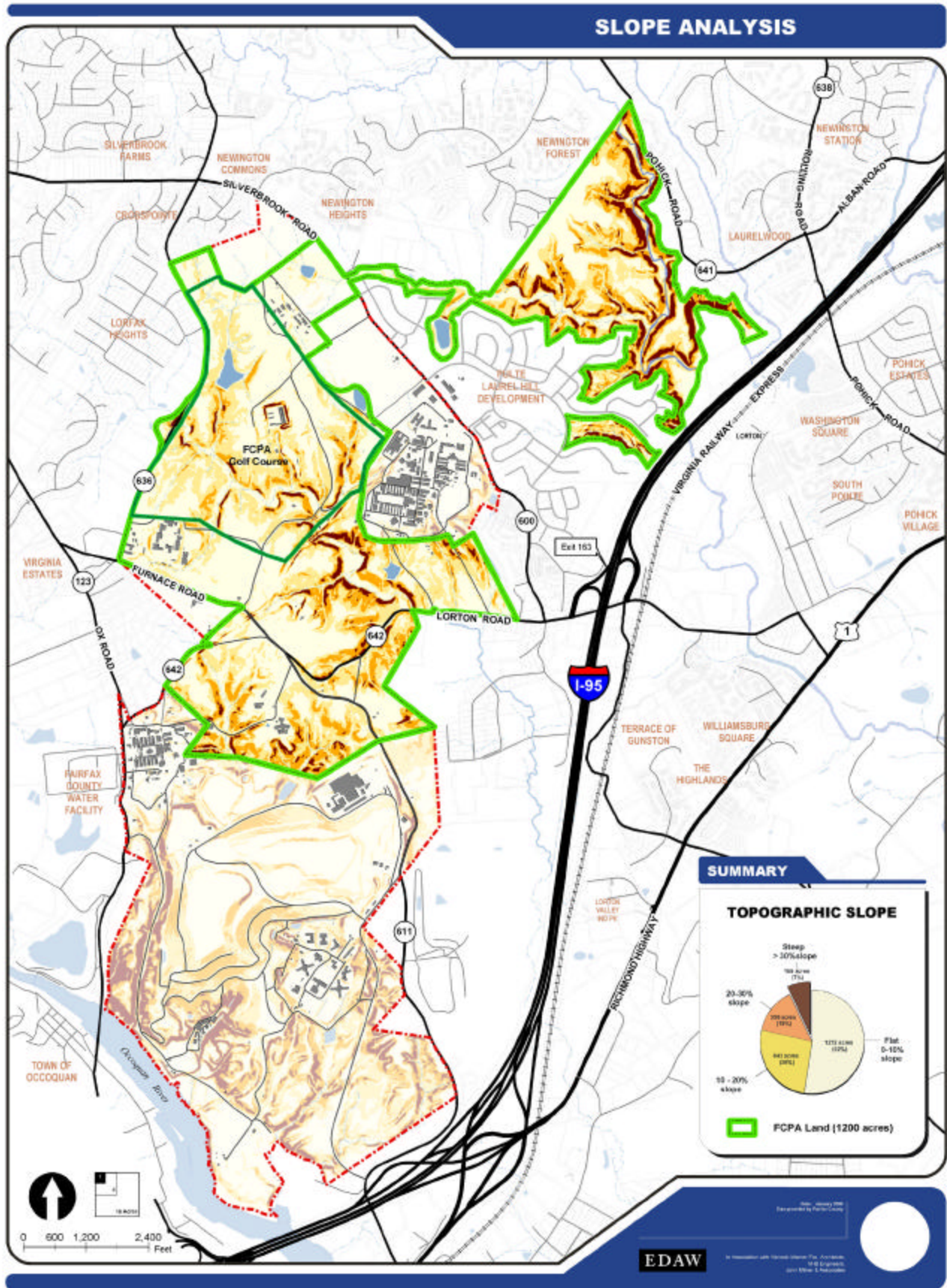


Table 1: Soils Ratings (as shown on Figure 8)

Slope Classes	Potential Erosion Symbols
A 0-2 percent	+ - Soil Accumulation (Low)
B 2-7 percent	0 - No Erosion (Low)
C 7-14 percent	1 - Slight Erosion (Low)
D 14-25 percent	2 - Moderate Erosion (Mod)
E 25+ percent	3 - Severe Erosion (High)

A combination of high slope and severe potential erosion indicates a poor location for development. Soil associations with low slope and low erosion are preferred locations for development. In addition, certain soils are considered problem soils for development. Class A soils (not to be confused with slope class) are problem soils due to unstable slopes and land slippage, high shrink-swell clays, or high water table conditions. These are often referred to as “marine clay” type soils. For development purposes an adequate engineering evaluation must be completed prior to design, and must be completed according to the geotechnical guidelines in the Fairfax County Public Facilities Manual and the Building Codes (BOCA, CABO, VUSBC). In addition, Class 'B' soils are problem soils that primarily have wetness and drainage problems that can be addressed with appropriate geotechnical recommendations, such as foundation drains for basements and crawl spaces.

In summary, soils constraints at Laurel Hill can be characterized as follows:

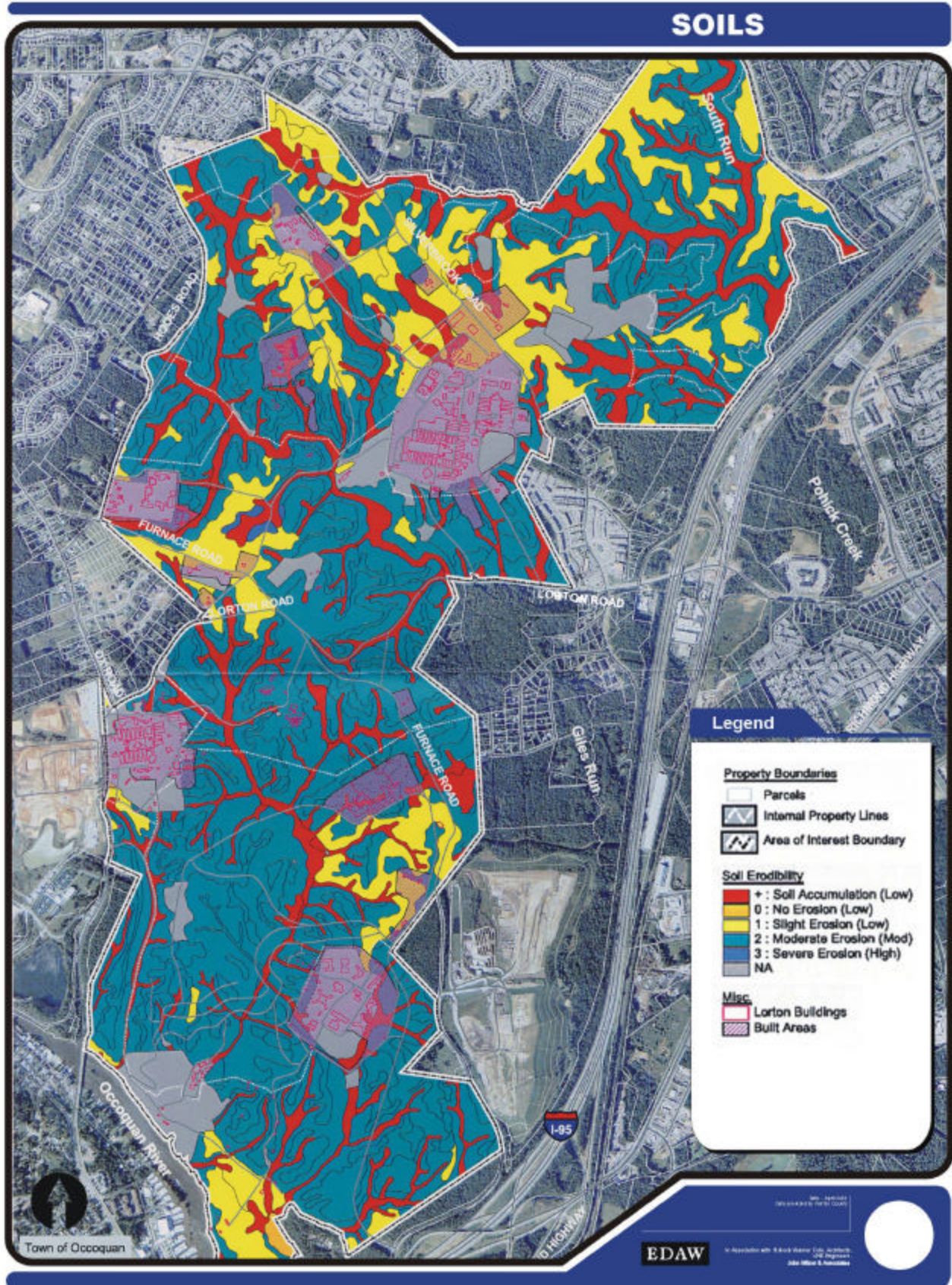
- Development should occur on soil classes with lower slope classes and lower potential for erosion;
- Soils with high slope classes and the potential for severe erosion are less suitable for development and should be retained in a natural state where possible. Additional landscaping may be required to reduce erosion;
- Problem soils A and B are not preferred for development, unless detailed geotechnical engineering analyses are completed that show suitable remedies for their inherent problems.

3.1.2 Water Resources

Groundwater

Laurel Hill Park is located within an outcrop of the lower Potomac Formation. The confined aquifer recharges from the east and the groundwater generally flows according to the topography and discharges into local streams toward the south. Fairfax County relies heavily on the Occoquan reservoir for drinking water. Watersheds in Laurel Hill do not flow into this reservoir (Laurel Hill Park drains into the free flowing Occoquan River and Belmont Bay). In 1997 Fairfax County conducted a Groundwater Risk Assessment that analyzed impacts by the landfill on groundwater and surface water resources. It found that the estimated risk to human health and the environment was well within accepted limits. Future developments within the site should take necessary steps to protect the quality of the local groundwater.

Figure 8: Soils



Surface Waters and Floodplains

All surface waters at Laurel Hill Park flow to the south and east into tributaries of the Occoquan and Potomac Rivers, and subsequently to the Chesapeake Bay. Figure 9 shows the location of local streams and the distribution of 100-year floodplains. The stream channels within the Lorton Property typically have steep banks and are gravel lined. In the upland ridges to the north, stream valleys are narrow and their channels have eroded banks. To the south and southeast broader floodplains bracket the streams. Laurel Hill lies within the Potomac-Shenandoah River Basin (Virginia State River Basin I). All the streams within Laurel Hill are classified as DEQ Class III streams, which are “Non-tidal Waters in the Coastal Plain and Piedmont Province” (the classification determines permit requirements by the Commonwealth of Virginia). No federal scenic rivers exist within Laurel Hill. There are several 100-year floodplains within the site. The site contains portions of three separate drainage basins that supply Pohick Creek (north), Giles Run (center), and Mills Creek (south). There are over 170 acres of on-site, 100-year floodplains within this basin..

Stream Protection Strategy

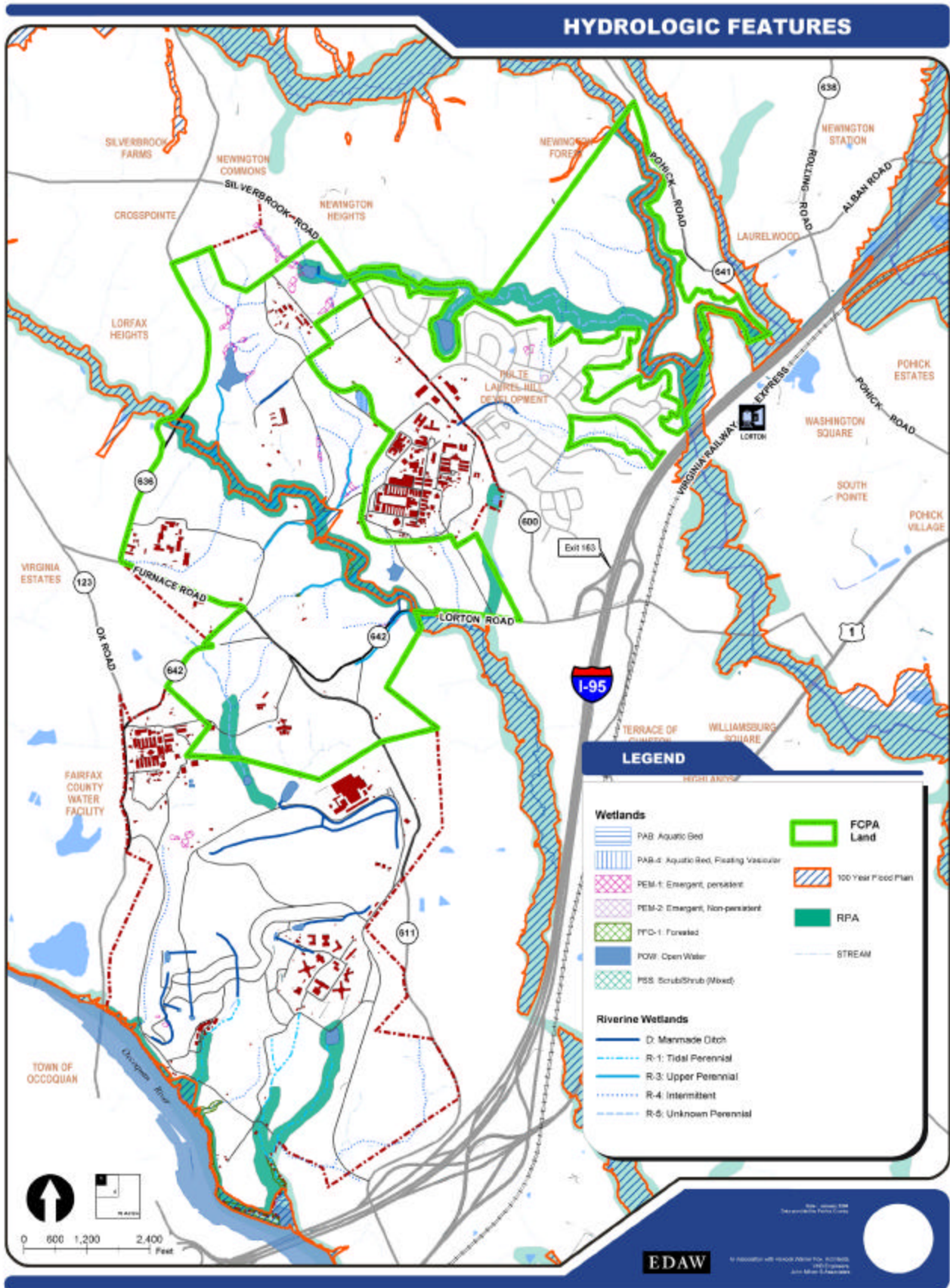
Fairfax County has completed a Stream Protection Strategy (SPS) Plan that focuses on preventing stream degradation and stream-bank erosion. The SPS program started in 1997 when the County implemented a comprehensive assessment of County streams. The results of the SPS baseline study (January 2001) are being used assign priorities for watershed management. A major goal of the SPS program has been and will continue to be increasing community involvement and awareness in water resources issues. Future development within Laurel Hill must comply with best management practices and regulations for stream protection. Existing wooded areas adjacent to streams should be preserved as buffers, and in cases where stream erosion is severe, should be expanded. Future objectives for the SPS program include implementing a long-term monitoring program that will assess water quality trends and the effectiveness of management strategies (see Fairfax County Stream Protection Strategy Baseline Study 2001).

Stormwater Management

Significant stormwater management regulations and design criteria regarding storm drainage, water quantity, and water quality have evolved at the local and state levels over the last decade. Redevelopment at Laurel Hill will require storm drainage and stormwater management facilities that are regulated by the Chesapeake Bay Preservation Act

Figure 9, Hydrologic Features, displays the stream network and RPA boundaries across the site.

Figure 9: Hydrologic Features



The Chesapeake Bay Act and the Chesapeake Bay Preservation Area Designation and Management Regulations, March 2002

Laurel Hill Park lies within one of the six watersheds protected under the Chesapeake Bay Preservation Act (CBPA). The CBPA regulations state that for redevelopment of existing areas, post-development pollutant runoff load may be 90% or less of pre-development (existing) pollutant loads (referred to as the 10% reduction standard). This criterion may be accomplished by the overall reduction in total impervious cover of the site by 10% or more, as well as the installation of on-site best management practices.

The Fairfax County Board of Supervisors adopted the amendments to the Chesapeake Bay Preservation Ordinance in July 2003. The amendments became effective on November 18, 2003 upon completion of the revised Resource Protection Area maps, which resulted from the perennial stream mapping project.

The Bay Act Regulations establish the Resource Protection Area (RPA) as the “shoreward” component of the Chesapeake Bay Preservation Area. RPA’s are composed of tidal wetlands, non-tidal wetlands connected by surface flow and contiguous to tidal wetlands or water bodies with perennial flow, tidal shores, such other lands considered necessary to protect the quality of state waters and a 100 ft. buffer adjacent to and landward of these features.

Virginia Stormwater Management Regulations, Amended 1998 and Virginia Erosion and Sediment Control Regulations, Amended 1995

These regulations were promulgated to protect the State’s natural resources and downstream properties. These regulations require that post development storm runoff cannot exceed pre-development (existing) levels for the 2-year and 10-year frequency storm events. The regulations require protection for downstream properties from damage caused by localized flooding due to increases in volume, velocity and peak flow rate of stormwater runoff. This can be accomplished by the inclusion of detention and retention facilities integrated into the overall storm drainage systems. Siting of these facilities would generally be in the lower (downstream) areas, which would accept the storm drainage outfalls and attenuate the discharges into receiving adequate channel/storm drainage systems. These stormwater facilities may also be modified and used as temporary sediment basins/traps during construction to provide compliance with erosion and sediment control requirements. The Virginia Erosion and Sediment Regulations also require that concentrated stormwater runoff leaving a development site shall be discharged directly into an adequate natural or man-made receiving channel, pipe or storm sewer system. For those sites where runoff is discharged into a pipe or pipe system, downstream stability analyses at the outfall of the pipe or pipe system shall be performed.

General Virginia Pollutant Discharge Elimination System Permit Regulations For Discharge Of Storm Water From Construction Activities, June 1994

New development at Laurel Hill will require a Virginia Pollutant Discharge Elimination System Permit (VPDES) from the Virginia Department of Environmental Quality. This state issued permit

is required for any construction activity resulting in the disturbance of one acre or more of land area. This permit requires preparation of a Storm Water Pollution Prevention Plan to address appropriate controls and measures that will be implemented to control pollutants in storm water discharges during the construction of the project. An overall plan can be developed which can be amended to include phased construction as that phase is initiated.

The design of future stormwater infrastructure must comply with the Virginia Department of Transportation Drainage Manual, Revised April 2002 and the Fairfax County Public Facilities Manual, 2001. Fairfax County is interested in using Laurel Hill as a site to demonstrate the advantages of low impact development and new technology to reduce stormwater peak flows off developed sites. Potential candidates for this demonstration would be the redevelopment of the Central Maximum Security facility and Occoquan Workhouse Arts Center, the Laurel Hill Golf Course and other FCPA recreation facilities.

In summary, the existing storm drain systems on the developed portions of the property are likely past their useful life. Any future development or redevelopment on the site will require new stormwater management infrastructure and/or low impact development and new technology. The design and construction of storm drainage, storm water management, and erosion control systems should be in conformance with Fairfax County and state regulations and criteria. As a planning guideline 10-15% of land bays should be set aside for this new infrastructure.

3.1.3 Vegetation and Wildlife

The following section summarizes findings from the Forest Stand Delineation (FSD) that was prepared by Fairfax County in order to identify the types and conditions of existing forest at Laurel Hill. The purpose of the FSD is to provide a tool to be used during the site planning and review processes to determine the most suitable and practical areas for forest conservation and/or land development and its associated infrastructure.

Using a combination of resource mapping and field methods of ecology, an FSD inventories and describes existing forest and locates priority areas for retention, reforestation, restoration, and land development. The FSD becomes the methodology for evaluating the existing natural features and vegetation on a site proposed for development, taking into account the environmental elements that shape or influence the structure or makeup of a plant community. The FSD helps to locate stands of higher quality vegetation and retention value (i.e., old growth forests, unique forest stands, contiguous forest, etc.).

The sampling exercise at Laurel Hill provided information on:

- natural community types
- approximate age and size classes of a stand of dominant canopy trees
- number of live and dead standing trees per acre
- approximate cover by downed woody debris, invasive species, canopy, and herbaceous plants
- basal area of the stand
- species of herbs, shrubs, seedlings, and trees per acre

Natural Resources Inventory

A Natural Resources Inventory (NRI) for Laurel Hill was completed as the first step of the forest stand delineation. Using topographical maps, aerial photographs, and a soil survey, the following items were identified:

- soils
- forest cover
- tree cover
- steep slopes
- streams and wetlands

Methodology

The forest stands were delineated using standards as documented in the *State Forest Conservation Technical Manual*, Third Edition, 1997, Maryland Department of Natural Resources. Minor modifications were made to field protocols subsequent to discussions with the Natural Resources Protection Group of the Fairfax County Park Authority.

The study protocol involved the delineation of all forest stands and their acreage within the property boundaries. The forest stands are based on species composition, density, size, condition, and age of the stand. The dominant, co-dominant, and sub-canopy tree species for each stand are identified and tabulated to indicate their relative frequencies and average tree diameter class along with descriptions of each tree stand including the identification of the shrub and herbaceous species. The International Society of Arboriculture's *Valuation of Landscape Trees, Shrubs, and Other Plants*, Seventh Edition, 1988 was employed to help determine the age of each forest stand. In areas that were not forested, the vegetation and potential age of each natural community were characterized with fixed 0.1 acre plots and general observations.

Aerial photography of the tract was also analyzed to determine ground forest conditions and to make a preliminary determination of vegetation types occurring on the site. These vegetation types were then "ground-truthed" to verify composition, extent, and ecological importance.

Sample point locations were selected to represent the topographical and vegetative diversity at the site. At each sample point location, 37.2' radius circle (0.1 acre plot) was delineated, and the center of the circle was flagged and labeled. The sample points are located on the FSD map. Trees that fell within the 0.1 acre area were identified and collected. These data were used to estimate the number of trees per acre, per each two-inch diameter class. Information in the sample point data collection included:

- Percent canopy closure and tree species observed including relative dominance
- Percent and species of shrubs
- Percent and species of forest floor covered by herbaceous plants
- Percent of forest floor covered by downed woody debris
- The presence or absence of exotic or invasive species

The study also included a search on Virginia Natural Heritage Program's website for rare, threatened, and endangered vascular plants which are known to occur in the Pohick Creek watershed, Occoquan River –Reservoir watershed, and Lower Occoquan River. A formal rare plant survey was not conducted during the forest stand fieldwork.

Results

Rare, Threatened, or Endangered Vascular Plant Species

The small whorled pogonia (*Isotria medeoloides*) may occur at Laurel Hill, though was not informally observed on-site. This plant is listed as threatened on the federal list and endangered on the state list. It has a G2 global rank, a N2 national rank, and a S2 state rank. G2 means the species is very rare throughout the world. S2 means the species is very rare within the state, with only 47 known occurrences statewide. It is susceptible to becoming extirpated. There are no known occurrences in Fairfax County, though it does exist in the Occoquan Watershed. According to NatureServe, the "primary threat [to small whorled pogonia] is habitat destruction for residential or commercial development or forestry. Other threats such as herbivory, recreational use of habitat, and inadvertent damage from researcher activities have also been identified. At the present time 'natural' factors such as slug damage, mammal grazing, or forest succession do not appear to be significant threats to the larger populations."

Natural Communities

There are six natural communities on-site: bottomland forest, mixed oak forest, mesic mixed hardwood forest, pine-dominated forest, disturbed forest/scrub-shrub, field and hedgerows. These particular natural communities appear where they do, primarily because of past land use, topography, and hydrology. However, soils appear to have little influence on the locations of natural communities, except that rock outcrops and shallow soils are seen most often in the mixed oak forest and hydric soils usually appear within the bottomland forest community.

Community 1: Bottomland Forest

Floodplain and bottomland forest occupy approximately 95 acres of the study tract. Soils with poor to marginal drainage underlie this community. The bottomland forest is either dominated by tulip poplar (*Liriodendron tulipifera*) or silver maple (*Acer saccharinum*). Associate species are white oak (*Quercus alba*) and red maple (*Acer rubrum*). The forest age is variable, with some stands mature and greater than 80 years, and other disturbed stands less than 20 years old. The canopy trees in this forest were, on average, 16-inches diameter at breast height, though some stands have trees with greater than 24-inches diameter. Common trees include green ash (*Fraxinus pennsylvanica*), sycamore (*Platanus occidentalis*), American beech (*Fagus grandifolia*), oaks (*Quercus* spp.), blackgum (*Nyssa sylvatica*), mulberry (*Morus* sp.), hop hornbeam (*Ostrya virginiana*) and hickories (*Carya* spp.). Canopy closure ranges from about 40-65% and there are approximately 261 trees per acre with an average basal area of 88 ft². Common shrubs in this stand include spicebush (*Lindera benzoin*), pawpaw (*Asimina triloba*), brambles (*Rubus* sp.), highbush blueberry (*Vaccinium corymbosum*), greenbriar (*Smilax rotundifolia*), and common elderberry (*Sambucus canadensis*). These forests tend to have typical floodplain/bottomland understory plants including Jack-in-the-pulpit (*Arisaema triphyllum*), sensitive fern (*Onoclea sensibilis*), deertongue (*Panicum clandestinum*), bladder sedge (*Carex intumesens*), false nettle (*Boehmeria cylindrica*), poison ivy

(*Toxicodendron radicans*), Indian cucumber (*Mediola virginiana*), Japanese honeysuckle (*Lonicera japonica*), royal fern (*Osmunda regalis*), wild yam (*Dioscorea villosa*), grape fern (*Botrychium dissectum*), wild strawberry (*Fragaria virginiana*), Virginia white grass (*Leersia virginica*), Arthraxon (*Arthraxon hispidus*), and blue violet (*Viola* sp.). Herbaceous cover is much higher in this forest than the other communities on-site, ranging from 10-90%. Several of these stands are disturbed and have invasive vegetation, especially Japanese honeysuckle, cleavers (*Gallium* sp.), Asiatic bittersweet (*Celastrus orbiculatus*), tall fescue (*Festuca arundinacea*), and multiflora rose (*Rosa multiflora*). Woody debris covers approximately two to seven percent of the ground. Dwarf ginseng (*Panax trifolium*), an uncommon plant in Virginia, was found in several stands of bottomland forest.

Community 2: Mixed Oak Forest

Mixed Oak Forest occupies approximately 355 acres. It generally occurs on steep slopes with shallow soils and rock outcrops. This forest stand includes the Acidic Oak-Hickory, Mixed Oak/Heath, and Chestnut Oak/Heath natural communities as designated by the Virginia Natural Heritage Program. Heaths refer to the Heath family (Ericaceae), which includes blueberries, azaleas, and mountain laurel, among other species. The Chestnut Oak/Heath communities are on the steepest slopes in the southern section of the site and have very little to no herbaceous plants. Dominant canopy species in the mixed oak forest community are white oak and chestnut oak (*Quercus prinus*). Dominant trees generally range from 18-22" dbh. This stand is the oldest natural community on-site and is approximately 90-110 years old. Because this stand tends to grow on steep slopes, it often was not targeted for logging. Other common canopy species include hickory, American beech, and tulip poplar. The canopy was approximately 60-65% closed and there are approximately 274 trees per acre with an average basal area of 111 ft². In particular, the stand in the northern forest block was dominated by mountain laurel. Other common shrubs include lowbush blueberry (*Vaccinium angustifolium*), witch hazel (*Hamamelis virginiana*), American holly (*Ilex opaca*), flowering dogwood (*Cornus florida*), maple-leaf viburnum (*Viburnum acerifolium*), and arrowwood viburnum (*Viburnum dentatum*). Generally, the herbaceous layer was very sparse with the most common plants being spotted wintergreen (*Chimaphila maculata*), greenbriar, wild yam, wood aster (*Aster divaricatus*), Solomon's seal (*Polygonatum biflorum*), and tick trefoil (*Desmodium* sp.). Exotic species were not common and invasive occupied about 0-1% of the shrub and herb layers. Coarse woody debris covered approximately 5% of the ground in this forest stand.

Community 3: Mesic Mixed Hardwood Forest

The mesic mixed hardwood stand occupies approximately 219 acres. This stand occupies shallower slopes than the mixed oak forest and along streams where the soil is well drained. It is dominated by tulip poplar, beech, and oaks. The average canopy tree is approximately 17" dbh and is approximately 60-70 years old. Subcanopy trees include red maple, hickories, American holly, Virginia pine (*Pinus virginiana*), black cherry (*Prunus serotina*), flowering dogwood, black gum, ironwood (*Carpinus carolinana*), and fringe tree (*Chionanthus virginicus*). On average, there are approximately 330 trees per acre with a basal area of 99.2 ft². Common shrubs and vines include mountain laurel (*Kalmia latifolia*), greenbriar, American holly, viburnums, shadbush (*Amelanchier canadensis*), pink azalea (*Rhododendron periclymenoides*), highbush and lowbush blueberries, and brambles. The herbaceous community is more diverse and abundant than in the mixed oak forest, but less than the bottomland forest. Herbs covered approximately 2-50% of the ground. Common herbs

include Solomon's seal, wood reedgrass, spotted wintergreen, dissected grape fern, New York fern, wild yam, deertongue grass, wild strawberry, tick-trefoil, bloodroot, wood sorrel (*Oxalis* sp.), Jack-in-the-pulpit, and Christmas fern (*Polystichum acrosticoides*).

Community 4: Pine-Dominated Forest

Pine-dominated forests occupy approximately 142 acres. Virginia pine and loblolly pine (*Pinus taeda*) dominate the canopy of this stand. However, no pine seedlings were found in the plots, which indicates that the community will not stay pine-dominated. Instead, it is in transition to mesic mixed hardwood or mixed oak forests, depending on the gradient, aspect, and soils. It has approximately 368 trees per acre with an average basal area of 119 ft². Most of this stand appears to be approximately 50-60 years old. However, within this community is a monoculture white pine (*Pinus strobus*) plot (Plot E24) and a plot dominated by white and yellow pines (*Pinus echinata*) (Plot E31). Common hardwood species found in the canopy include black locust (*Robinia pseudo-acacia*), tulip poplar, white oak, chestnut oak, red maple, and eastern red cedar (*Juniperus virginiana*). Seedlings include red maple, sassafras, white oak, black cherry, American beech, sweetgum (*Liquidambar styraciflua*), southern red oak (*Quercus falcata*), pignut hickory (*Carya glabra*), black locust, chestnut oak, willow oak (*Quercus phellos*), eastern red cedar, northern red oak, and tree of heaven (*Ailanthus altissima*). Invasive species are common and occupy approximately 20% of the herbaceous and shrub layers, though some plots had no invasives and one had 100% invasive coverage. Invasives included tree of heaven, Japanese honeysuckle, Asiatic bittersweet, multiflora rose, autumn olive (*Elaeagnus umbellata*), henbit (*Lamium amplexicaule*), and Japanese knotweed (*Polygonum cuspidatum*). Besides the ones listed above, common vines and shrubs included greenbriar, poison ivy, American holly, brambles, Virginia creeper, persimmon, wineberry (*Rubus phoenicolasius*), maple-leaf and arrowwood viburnum, and lowbush blueberry. Downed woody debris occupied approximately 5% of the ground.

Community 5: Disturbed Forest and Scrub-Shrub

Disturbed forest and scrub-shrub communities generally are adjacent to fields, barns, or development. They occupy approximately 59 acres at Laurel Hill. Disturbed forests have a large edge effect shown by the domination of invasive vines, such as Japanese honeysuckle, poison ivy, and Virginia creeper. Common canopy species include black cherry, tree-of-heaven, red maple, and white oak. This forest on average has 282 trees per acre with an average basal area of 46 ft². The average canopy tree is 8-inches dbh and 28 years old. These plots generally had a lot of herbaceous cover and little downed woody debris. The scrub-shrub community is dominated by shrubs and young trees and has been fallow for approximately a decade. These areas are dominated by multiflora rose, Japanese honeysuckle, brambles, eastern red cedar, and tree of heaven.

Community 6: Meadow and Hedgerows

This stand was released from agriculture within the last several years and has almost no canopy cover. There are approximately 793 acres of meadow and 70 acres of athletic fields. The athletic fields are maintained in fescue. No data sheet was generated for Plot I09 because it was an athletic field. Generally, the meadows are dominated by common field species such as tall fescue, shasta daisy (*Leucanthemum vulgare*), redtop grass (*Agrostis gigantea*), timothy (*Phleum pratense*),

bluegrass (*Poa pratensis*), deertongue, thistle (*Cirsium* sp.), yellow mustard (*Alliaria petiolata*), annual ragweed (*Ambrosia artemisiifolia*), and goldenrods (*Solidago* sp.). Hedgerows on site separate fields or line streams. The hedgerows are dominated by red maple, black willow, black cherry, staghorn sumac (*Rhus hirta*), sassafras, grape (*Vitis* sp.), multiflora rose, brambles, poison ivy, and greenbriar.

Management Recommendations

Laurel Hill Park is planned to include some preserved areas, as well as developed athletic fields, trails, and other recreational and cultural activities. There are several ecological and conservation factors that should be weighed when deciding which areas to preserve and where to possibly develop.

Large blocks of undeveloped forest, like the one north of Silverbrook Road in the Laurel Hill area, are rare throughout Northern Virginia and along the east coast due to population growth and expansion of suburbs. Large blocks of forest function as intact ecosystems and provide habitat for wildlife that are not adapted to urban environments. Often this wildlife, such as ovenbirds, wood thrush, and red-eyed vireo, need interior forests. The definition of interior forest depends on the individual species needs, but a working definition is greater than 60 acres of forest more than 300' from a forest edge. Interior forests typically have less light, less invasive species, and "tighter" nutrient cycling than edge forests. The unfragmented blocks of forest in the northern section of Laurel Hill are connected to the South Run Stream Valley Park. This connectivity allows for animals and certain plant species to disperse; thereby maintaining the resiliency of the ecosystem to disturbances and contributing to regional biological community stability.

The forest in the southern section of Laurel Hill adjacent to Occoquan Regional Park has hemlock (*Tsuga canadensis*) in the stream valleys and is dominated by chestnut oak on the dry slopes and plateaus. We recommend conserving much of this forest for headwater protection and its uncommon forest community of hemlock. Additionally, much of this area has steep slopes, which may pose a challenge to development.

Cutworm is devastating the forests at Laurel Hill, particularly in the southern section. The worm chewed through 30% or more of the green leaves on oaks and other hardwoods during our time of observation. We did see spraying for cutworm while we were evaluating the forests. Population densities should be monitored and control methods of this invasive species should continue in any retained forest to ensure the health of the forest.

The patches of forest in the center of the site, between Silverbrook Road and the landfill, have a high edge to core ratio and are over-run with invasive species. In this area, we recommend retaining forested stream buffers and expanding the buffer along parts of Giles Run (see data station E26), and retaining large specimen trees. The remainder of the disturbed forest is not nearly as valuable as other forests on-site because they are young and dominated by invasive species.

Meadows on the property are generally dominated by common native, as well as exotic species. *Krigia dandelion*, an uncommon plant, and aggregations of other native species were seen near a pond in the area of the old rifle range. These meadows and old fields provide habitat for grassland

birds. This habitat is declining in the area due to intensified development. Of particular importance on-site are large blocks of fallow fields near open water, such as the farm ponds on site. Silos and barns provide nesting sites for raptors, such as the barn owl seen nesting in one of the silos. If fallow fields are retained, proper management of these fields to increase ecological and structural complexity, will result in higher biodiversity. For instance, different fields could be managed in a one, three, or five-year rotational practices to control woody plant, maintain their openness, and provide varying levels of structural diversity.

3.1.4 Threatened, Endangered and Sensitive Species

The *Laurel Hill Natural Resources Survey* from March 1999 conducted by volunteers from regional naturalist organizations lists species observed on-site. Notable species seen include large-whorled pogonia, which shares similar habitat as the endangered small-whorled pogonia, fragrant goldenrod, white-crowned sparrow, fox sparrow, Henslow’s sparrow, grasshopper sparrow, bobolink (all grassland birds), least and semipalmated sandpipers, and American pipet. The group has since observed northern saw-whet owl, an animal of special State concern.

Table 2: Summary of Species Observed in Laurel Hill Natural Resources Survey, 1999

<i>Location</i>	<i>Selected Species Observed</i>
Occoquan Regional Park	Wading birds; waterfowl; bald eagles; ospreys; gulls and terns; warblers and other neotropical species
Former Dairy Farm	Roosting vultures (turkey and black); blackbirds; several bird edge species; toothwort; hepatica; and trailing arbutus
Former field with pond between Silverbrook Road and NIKE Site	Several bird edge species and grassland species (e.g. meadowlarks, finches and sparrows); white-crowned sparrow; fox sparrow; Henslow’s sparrow and bobolinks Numerous open-air butterflies (e.g., swallowtails, sulphurs, blues and skippers)
Former field with pond northwest of Central Maximum Facility	Wood ducks; green herons; several edge bird species and migrating warblers; barn owls; bob-white quail; and bobolinks
Former field / wooded area west of Central Facility between Furnace and Silverbrook Roads	Various warblers; black vultures; and grasshopper sparrow
Old field and upland forest northeast of Silverbrook Road	Numerous uncommon bird species including wintering American pipits; northern harriers; accipiters (sharp-shinned and Copper’s hawks); creepers; kinglets; and numerous woodpecker species Oak barren niche with fragrant goldenrod; spring ephemerals; ferns; and orchids including large whorled pogonia

3.2 Analysis of Existing Built Resources

3.2.1 Utilities and Infrastructure

The utilities and infrastructure at Laurel Hill Park were set in place in support of Lorton prison, where the majority of structures were focused into two primary areas: the Occoquan Workhouse and Central / Maximum Facility. Currently, the relationship of utilities from these facilities to Laurel Hill Park remains limited to what was set in place for use by the prison.

The age of the former Lorton Prison Complex and its unique ownership and relation to the local utility providers implies that much of the existing utility infrastructure is beyond its useful life. The following section evaluates each of the utilities: water, sewer, solid waste, electricity and gas. Figure 10, Utilities and Infrastructure, displays their status on the Laurel Hill site. The sanitary sewer system is the most critical in terms of constraints to development and is shown on a separate Figure 11, Sanitary Sewer System.

The utility lines and infrastructure that lie within Laurel Hill were constructed and maintained by the Federal government and the D.C. Department of Corrections, and not the local service providers. As such they lay outside the “*approved service areas*” for many of the utility providers in Fairfax County. For example, the water and sewer systems that serve Fairfax County have boundaries that define where they will provide new sewer connections or provide new water service. The sewer service area was expanded to include all portions of Laurel Hill east of Route 123 and south of Silverbrook Road to the Occoquan River. For water and sewer service to any future new development within Laurel Hill, it will be necessary to provide new connections to the appropriate newer infrastructure. These utility constraints to future development are discussed in the following sections.

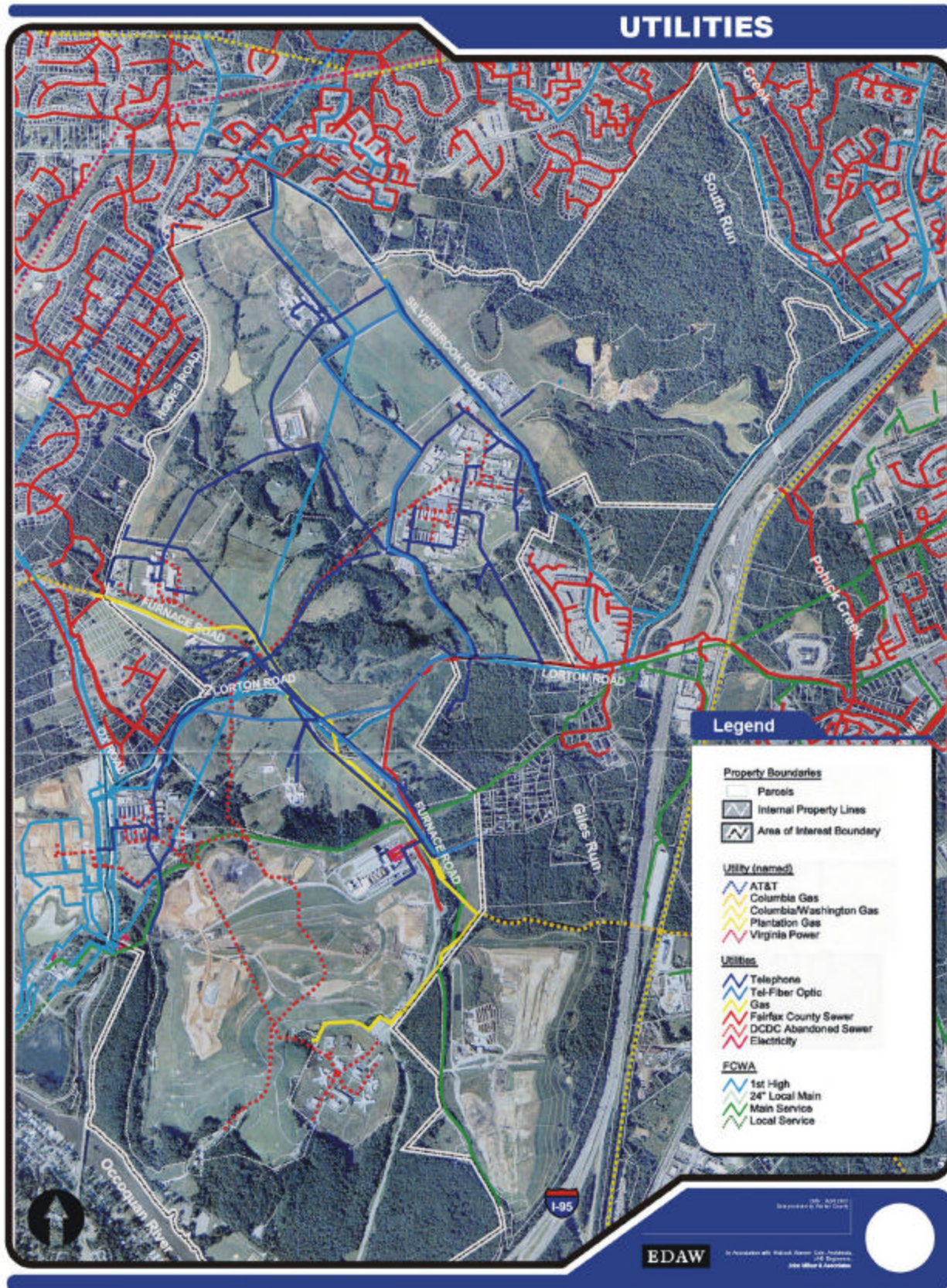
3.2.2 Water Systems

Existing Systems

The Fairfax County Water Authority (FCWA) owns no distribution facilities within the former prison property. Moreover, the FCWA will not take into their system any water infrastructure or facilities formerly owned by the federal government. There are no records of their condition, and evaluating their condition could be more costly than building new systems. The age of these systems implies they are beyond their expected service life. Without further analysis of the water infrastructure it is assumed that these systems are of little value to future development.

The FCWA operates two “First High Mains” at a 420-foot to 440-foot design grade line across the property (see Figure 10). A newly installed 42-inch transmission main traverses the property from the new water treatment plant at Route 123, to the northern edge of the Laurel Hill near the proposed middle school site on Silverbrook Road. A 30-inch First High Main follows Lorton Road from the new water treatment plant to the Lorton Road / I-95 intersection. Also operating on the First High grade line are several 24-inch and 12-inch service mains along Silverbrook Road, and 12-inch and 30-inch lines along Route 123. A 30-inch “Second High Main” with a design grade line of 330 feet to 335 feet traverses the property from the new treatment plant eastward cross-country to the Lorton Road / I-95 intersection. Intersecting this line is a 16-inch distribution line following Furnace Road.

Figure 10: Existing Utilities Network



Development Constraints

The older existing water distribution lines cannot be used for future water service. These older water lines should be abandoned in place or removed during redevelopment. Any new development will require tapping into the newly built first or second high main water distribution systems. The FCWA prefers tapping existing distribution mains, and not directly into the high mains. Main taps in this area could require pressure-reducing vaults. These new water lines should provide an abundant water supply with numerous access possibilities for the entire site.

3.2.3 Sanitary Sewer Systems

Existing Systems

The Fairfax County Department of Public Works and Environmental Services (DPWES) Wastewater Planning and Monitoring Division (WPMD) control very few sewer facilities on the Laurel Hill site. The majority of the site is not served by public sewer service. An old sanitary sewer treatment facility that served the site was closed when the prison closed. As is the case with the Fairfax County Water Authority, the WPMD will not accept into their system any sanitary lines formerly owned by the federal government or the D.C. Department of Corrections. The age of these sewer systems is likely beyond their expected service life. Thus, the existing network of sewer lines within the former prison facility is of little value to redevelopment.

3.2.4 Solid Waste

Fairfax County Division of Solid Waste Disposal & Resource Recovery (DPWES) manages the disposal of solid waste in the County. The I-95 Energy Resource Recovery Facility is about 378 acres in size including all facilities and buffer areas. The privately operated waste-to-energy plant is one of the largest in the nation. Four furnaces can incinerate up to 3,000 tons per day of solid waste while producing up to 83 Megawatts of electricity. Ash byproducts are disposed in the adjacent Ash Landfill. The location of the landfill's methane gas collection system and groundwater monitoring wells are indicated in Figure 10. The landfill gas collection piping system lies within the landfill's boundary. Groundwater monitoring wells are scattered around the landfill, with some off of the landfill property. The Division of Solid Waste Disposal & Resource Recovery indicated that no other landfills exist on Laurel Hill; however the Final Environmental Assessment indicated that an abandoned landfill was located on the prison site. It is unlikely this landfill had an infrastructure for collecting landfill gas or monitoring wells.

Redevelopment of the I-95 Landfill

The I-95 Landfill has been used solely for the disposal of incinerator ash byproducts from the Energy Resource Recovery Facility since 1990. The landfill is slated for closure by 2025, and is approaching capacity. The Energy Resource Recovery Facility will likely remain in operation, but ash byproducts would be disposed off-site. The DPWES has completed a Closure/Post Closure Plan for the landfill (revised February 2003). This plan was prepared for the Virginia Department of Environmental Quality (DEQ) and meets the State's requirements under their solid waste management regulations.

The landfill closure plan describes the sequence of closure and maps the final contours for the site. Once the landfill is closed the facility could be used for passive recreation, allowing for ongoing post-closure activities. The DPWES will require full access to the site to conduct post-closure monitoring and maintenance of the gas collection system, the groundwater monitoring wells and the landfill slopes and cover. As the landfill subsides the topography and slopes will have to be maintained to ensure adequate stormwater runoff, which prevents erosion of the landfill cover..

3.2.5 Electricity

Dominion Virginia Power indicated all of the electric facilities within the former Lorton Reservation property are privately owned, and their age exceeds the expected life span of such systems. As such, Dominion Virginia Power will not take them over. Therefore, new development on the property will require the installation of new electric distribution systems. Dominion Virginia Power will perform this construction upon coordination with the particular development site based on its needs. Existing system access points, adjacent system voltages, and other such system data were not provided. Dominion Virginia Power will evaluate each development proposal and design the access solution for each. Electrical infrastructure and supply will not be a constraint to future development.

3.2.6 Natural Gas

Washington Gas and Columbia Gas currently have distribution systems traversing the site, and formerly provided gas service to the prison. The Energy Resource Recovery plant also uses gas at peak periods. Gas transmission lines traverse the Laurel Hill property from west-to-east, generally following Furnace Road, crossing I-95 just north of the Construction Debris Landfill. Gas service is available to the entire Laurel Hill property, and Washington Gas will design the access solution for each development area. Gas infrastructure and supply will not be a constraint to future development.

3.2.7 Telecommunications

Numerous telecommunications facilities lace the former DCDC property. Verizon operates copper and fiber optic systems on the property. Overhead or buried copper accesses nearly all the existing building areas. Buried fiber optic runs adjacent to Furnace Road, Lorton Road, Silverbrook Road, and borders the western edge of the Central Facility, connecting to Silverbrook Road. Verizon will evaluate the adequacy of existing telephone systems for any particular development on an individual case basis; however, significant telephone capacity exists on the property. Telecommunications infrastructure and supply will not be a constraint to future development. Leases to support telecommunication infrastructure should be considered.

3.2.8 Transportation Systems

Laurel Hill, located in southeastern Fairfax County, is very accessible from the regional highway system with direct access from Interstate 95 (I-95) via Lorton Road -Route 642 (Exit 163) to the east and Route 123 (Exit 160) in Prince William County to the south. Interstate highway I-95 is located to the east of the site, Hooes Road (Route 636) to the west of the site, Route 123 (Ox Road) to the south of the site, and Silverbrook (Route 600) to the northeast of the site.

Local/Regional Transportation Routes

To the east of Laurel Hill, I-95 is an eight-lane, north-south freeway, operating with three general-purpose travel lanes in each direction, with a reversible two-lane high occupancy vehicle (HOV) roadway located in the median. The HOV lanes are currently accessible at the Route 123 interchange, but not at the Lorton interchange.

- Route 123 (Ox Road) is a major principal arterial, providing links between I-95, the Town of Occoquan, Burke, and Fairfax. Ox Road connects to the Fairfax County Parkway approximately seven miles to the west of the Lorton/Laurel Hill site.
- Lorton Road (Route 642) starts to the west of the site at its intersection with Ox Road, meanders through the Lorton/Laurel Hill site, passes underneath I-95 (at its interchange Exit 163), and then terminates at U.S. Route 1. Lorton Road is currently a two-lane arterial roadway, except in the vicinity of I-95 and Silverbrook Road where it widens to a four-lane roadway section.
- Hooes Road (Route 636) is primarily a two-lane, two-way arterial roadway that connects to the Fairfax County Parkway approximately a mile and half north of its intersection with Silverbrook Road. A small section of Hooes Road, between Ox Road and Furnace Road, is currently a one-way, one-lane northbound roadway.
- Furnace Road (Route 611) is a two-lane arterial roadway, providing a connection between Ox Road in the west, connecting and running coincident with Lorton Road for a short distance in the center of the Lorton/Laurel Hill site, before heading south between the old and new landfills, crossing under I-95 and connecting into U.S. Route 1.
- Silverbrook Road (Route 600) is primarily a two-lane arterial roadway providing a connection between Ox Road to the west and Lorton Road to the east.

Within the vicinity of the site, traffic signals are located on Ox Road at its intersection with Lorton Road, at the intersection of Silverbrook Road and Hooes Road, and on Lorton Road at its intersections with Silverbrook Road and Gunston Cove Road/northbound I-95 ramps.

Proposed Transportation Improvements

Significant roadway improvements are planned in the vicinity of Laurel Hill over the next two decades, as documented in the Fairfax County Comprehensive Plan, see Figure 11.

The following roadway improvements are proposed with the Comprehensive Plan:

- Route 123 (Ox Road) is currently being widened from its existing two-lane cross section to a four-lane, divided roadway facility to the west of Silverbrook Road, and construction is expected on the section between Silverbrook Road and the Occoquan River bridge in 2004. The roadway has been designed for ultimate expansion to a six-lane roadway.

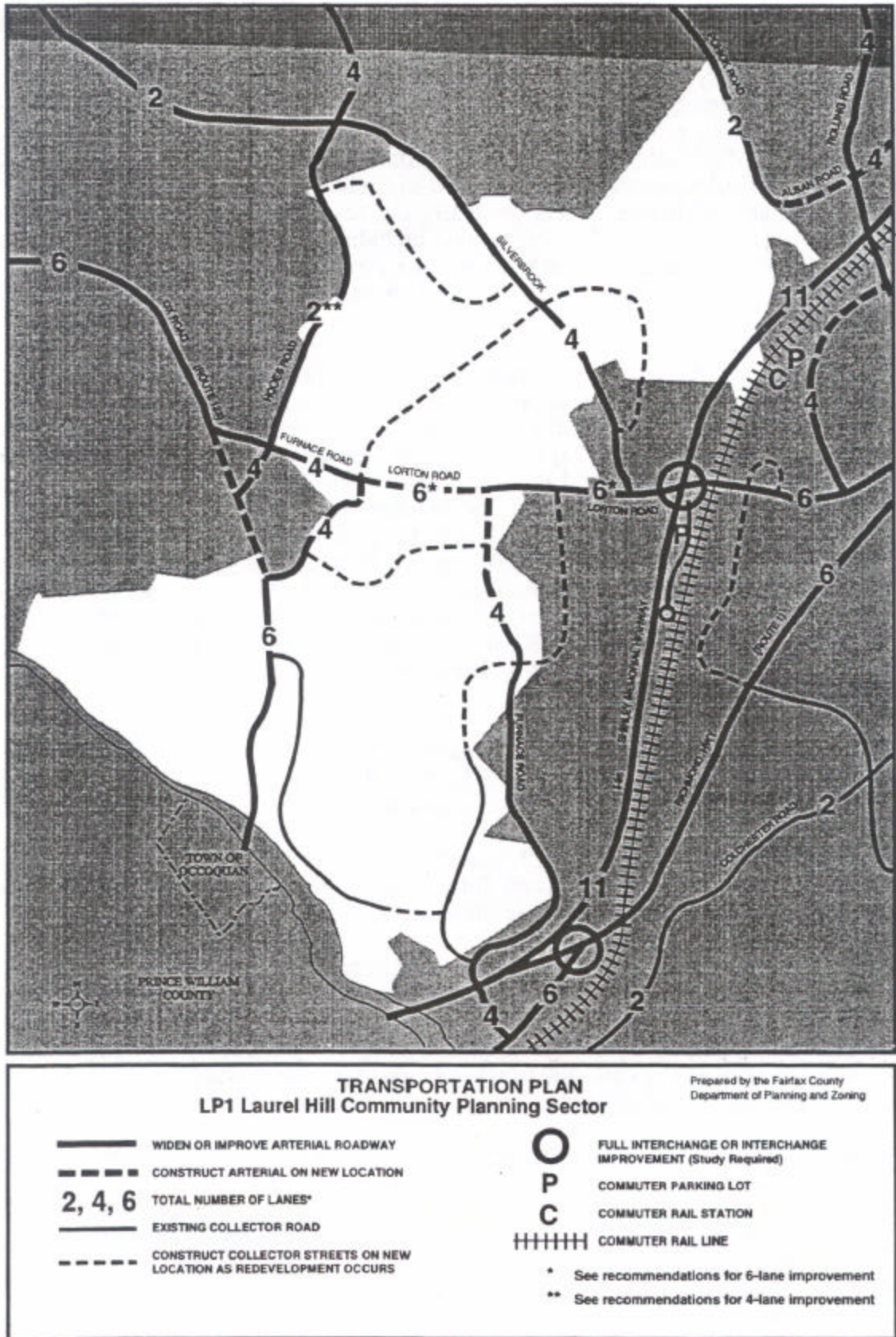
- I-95 has been identified in the Comprehensive Plan as an ultimate 11-lane facility. This would add one travel lane in each direction plus a third HOV lane; however, this improvement is not currently within the Virginia Transportation Development Program (the Virginia Department of Transportation's six-year design and construction program).

Many other improvements of study area roads were identified during the Environmental Assessment of Laurel Hill. They include:

- Realignment and widening of Lorton Road: Lorton Road between its western intersection with Furnace Road and Richmond Highway (Route 1) is identified on the comprehensive plan as an ultimate six-lane roadway. The western end of Lorton Road, between Furnace Road and Ox Road, is proposed as a four-lane roadway cross section.
- Eastern section of Furnace Road: As shown on the Comprehensive Plan, a section of Furnace Road would be realigned and reconstructed as a four-lane roadway to connect into the new Lorton Road at a right angle "T" intersection. To the south, the existing roadway would be widened to a four-lane road along its entire length to its southern termination at U.S. Route 1. This would require bridge improvements at the Furnace Road underpass of I-95.
- Western section of Furnace Road: This road would be widened to four lanes between its intersection with Lorton Road and Ox Road.
 - Silverbrook Road between Lorton Road and Hooes Road: Widen to a four-lane roadway.
 - Hooes Road will be improved in three phases:
 1. Widen Hooes Road between Ox Road and Furnace Road to a four-lane roadway.
 2. Widen Hooes Road between Silverbrook Road and the Fairfax County Parkway to a four-lane roadway.
 3. Obtain additional right-of-way and reserved for a future four-lane improvement on Hooes Road between Furnace Road and Silverbrook Road.

Prior to redevelopment Hooes Road should be improved to VDOT standards. Improvement to four lanes for this section of Hooes Road should only be considered after the completion of other planned major arterial improvements in the area, and if recommended in a transportation study for the purpose of providing capacity for through traffic.

Figure 11: Road Improvements per Fairfax County Comprehensive Plan



Bicycle/Pedestrian Access

Laurel Hill is not currently well served by bicycle or pedestrian facilities designed either for exclusive use or shared use. A graphic depicting the proposed county trail system as delineated in the Countywide Trail Plan is shown in Figure 12. The eastern portion of Lorton Road, the southern portion of Ox Road and the southern portion of Furnace Road are all currently designated as part of the signed bicycle route number 1. These roads, however, do not have paved shoulders. Furnace Road also experiences a high volume of heavy vehicles (trash trucks, tractor-trailers, etc.) destined to and from the landfill and the resource recovery facility.

Existing hard and soft surface trails currently located outside Laurel Hill do not form a comprehensive, connected system. The proposed primary and secondary trail network, as envisioned in the Fairfax County Comprehensive Plan, was designed to improve existing bicycle/pedestrian access deficiencies by making connections both within Laurel Hill as well as through it.

Public Transportation

Laurel Hill is well served by public transportation facilities on its north and east sides, however, there are no public transportation facilities located in the southern and western side of the site. Public transportation is currently provided by three different transit agencies:

Virginia Railway Express: Commuter rail service is provided from the Lorton rail station, located on Lorton Station Boulevard (east of I-95). This line operates between Fredericksburg, VA, and Union Station (Washington, D.C.) with stops (north of the site) at the Franconia-Springfield Metrorail station, King Street-Alexandria, Crystal City and L'Enfant Plaza. Service is provided during the weekday morning and evening rush hours, and is heavier in the peak direction (northbound in the morning, southbound in the evening). This rail line is also used for Amtrak service, however, stop service is not provided at this station. Northbound trains include 300, 302, 304, 306, 308 and 310. Southbound trains are 301, 303, 305, 309, 311, and 313.

Fairfax Connector operates four bus lines in the vicinity of the Laurel Hill:

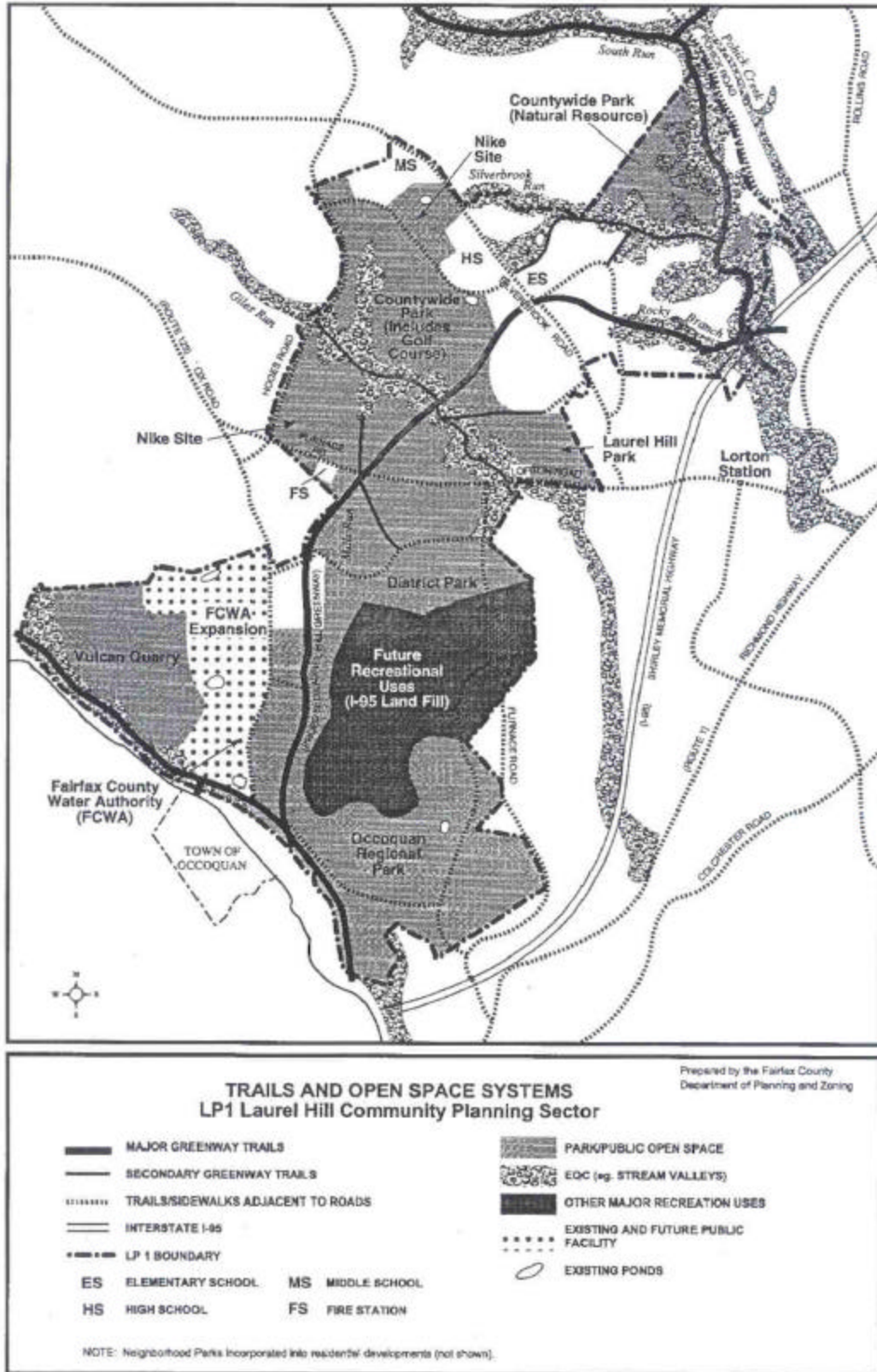
- Route 303: Starting near the intersection of Lorton Road with Silverbrook Road, this bus line runs on Lorton Road, Richmond Highway and Telegraph Road, terminating at the Springfield/Franconia Metro Station
- Route 305: Running on Hoes Road north of the site, this line connects to the Franconia-Springfield Parkway and terminates at the Springfield/Franconia Metro Station.
- Route 383: Starting near the intersection of Lorton Road with Silverbrook Road, this bus line runs express on I-95, terminating at the Pentagon Metrorail station

Route 385: Starting near the intersection of Lorton Road with Silverbrook Road, this bus line runs on Silverbrook Road through Laurel Hill, connecting to the Franconia-Springfield Parkway, and then terminating at the Pentagon Metrorail Station.

Metrobus (owned and operated by the Washington Metropolitan Area Transit Authority) operates the Richmond Highway bus line (Route 9A). This bus line starts at the Lorton VRE rail station on Lorton Station Boulevard (east of I-95) and terminates at the Pentagon Metrorail Station.

In addition, the Virginia Department of Transportation (VDOT) has a park and ride facility immediately adjacent to the intersection of Gunston Cove Road with Lorton Road. This parking lot was recently improved. From this parking lot, access to Fairfax Connector buses 303 and 383 is possible.

Figure 12: Trails Network per Fairfax County Comprehensive Plan



3.2.9 Existing Structures

The transfer of the Laurel Hill property required compliance with the National Environmental Policy Act (NEPA) and Section 106 of the National Historic Preservation Act. During the Environmental Assessment process, approximately 552 acres and 136 buildings were identified as contributing to a National Register Eligible historic district. Of these 136 structures 14 are within Laurel Hill Park. The NEPA and Section 106 compliance activities were initiated in March of 1999 and were completed in 2000. Figure 13 highlights the historically contributing structures on the property.

During December of 2002 and January of 2003, a research team commissioned by Fairfax County undertook a survey of all buildings located on the former Lorton Prison property. Most of the contributing structures are located within the Reuse and Redevelopment Areas of the site, the following section describes the structures that are within the park property.

Nike Control Site

Buildings in this complex range in age from 1954 to 1982, with the majority of the buildings being built in 1954. Most of the buildings are constructed having a one way pitched roof supported by concrete masonry load bearing exterior walls. Most of these buildings are narrow being one to two rooms deep. The majority of the buildings are in fair to good condition. Currently, the Facilities Maintenance Division of Fairfax County Government is occupying several buildings in this complex. These buildings were designed for utilitarian administrative uses with some open dormitories. They could serve similar purposes in the future.

Nike Missile Launch Site/ DC Corrections Minimum Facility

Buildings in this complex range in age from 1954 to 1995, with the majority of the buildings being built in late 1980s to early 1990s. Most of the buildings are constructed of metal siding on a steel structure commonly known as “Butler Buildings”. These facilities are capped and sealed in concrete. The only appearance of these facilities is large concrete pads with 4-inch raised lids and welded metal plates to cover the vertical entrances. The buildings are arranged around a central quadrangle yet they are not well integrated to the site or with each other. The majority of the buildings are in fair to poor condition with several roof leaks, some of a substantial nature. The facilities appear to have been built quickly out of necessity with little to no aesthetic value. There is a gymnasium within the complex that seems to be in good condition but there is currently no natural light and it is not a welcoming place. To the west of the complex are two administrative buildings for the Nike Missile Launch Site built in 1954.

Dairy Farm

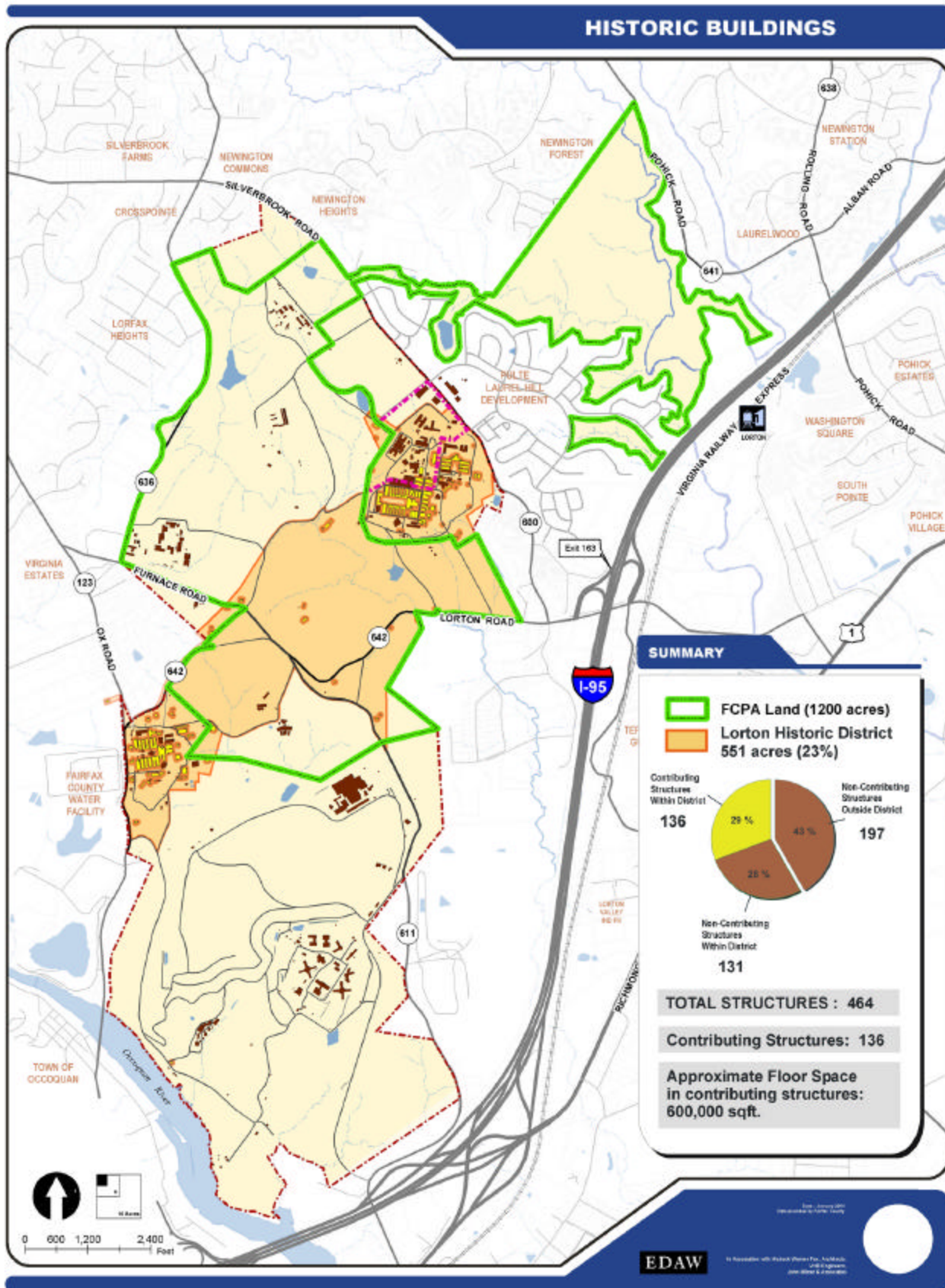
Buildings in this complex were built in the early 1960’s. This was a fully functioning dairy farm with a mechanical milking system. The barns on this site range in size and shape depending on their use. Most of the barns are built of metal roof on wood truss structure and are open on several sides. The larger barns are metal roof on metal structure. The majority of the barns are in fair to good condition. There are two concrete grain silos in the complex that appear to be in good condition.

The milking facility however is in very poor condition and will require a major investment to reuse. These buildings are of such a specific use there is not much that these buildings could be used for other than for agricultural purposes.

Laurel Hill House

The Comprehensive Plan language states that “The Laurel Hill House and its gardens should be designated as a heritage resource area within the Countywide Park with a minimum of 20 acres to ensure that these resources are adequately conserved and protected.”

Figure 13: Contributing Structures



3.2.10 Site Archaeology

An archaeological sensitivity assessment report was prepared as a part of the Environmental Assessment of the transfer of the property. This assessment addresses the potential for significant archaeological resources in the Lorton Property. An archaeological sensitivity model was developed to identify areas that have been disturbed. The study also considered information from previous studies in the vicinity; field visits; and GIS data on topography, known disturbance and current land use. Based on this information, maps were developed showing areas of archaeological sensitivity in areas designated for development that warranted archaeological testing. Four factors were considered in developing the predictive model: degree of disturbance /development, distance to water, locations of previously recorded archaeological sites, and locations of historic structures. Following the model, areas were designated as low, moderate, or high sensitivity.

Areas were identified that are likely to experience high levels of disturbance through construction or redevelopment. Areas designated for parks or passive recreation were considered medium disturbance. Low disturbance areas are designated for preservation; historic sites designated for adaptive reuse and currently developed areas that are not likely to be subject to further development.

Moderate and high sensitivity areas were recommended for Phase I archaeological survey, following the guidelines of the Virginia Department of Historic Resources (shovel tests at 15-m intervals for high sensitivity; 30-m intervals for moderate sensitivity areas) Areas of archaeological sensitivity were overlaid on areas of proposed land disturbance and development. Areas with moderate and high sensitivity and medium or high future land disturbance were recommended for survey; areas with low sensitivity were not recommended for survey (G&O 2000:18).

Phase Ib archaeological survey was conducted of 418 acres of the 2,709-acre Lorton Property. These areas were designated moderate or high archaeological sensitivity and medium or high potential for future ground-disturbing or development activity. The field team excavated 2,528 shovel tests, recovering 2,030 artifacts (438 prehistoric and 1,592 historic). No prehistoric or historic cultural features were identified. Thirty-six archaeological sites were identified, five prehistoric, five historic, and 26 multicomponent prehistoric and historic sites. Two of the multicomponent sites were previously recorded. Fifty-two isolated finds were identified (Furgerson et al. 2002:i).

Analysis of the recovered artifacts concluded that none of the 36 archaeological sites is likely to contribute important information on the historic or prehistoric past, and therefore no sites were deemed eligible for the National Register of Historic Places and no additional work was recommended (Furgerson et al.2002:i). The Virginia Department of Historic Resources concurred with the conclusions and recommendations of the assessment.

The Lorton Exchange Tract, a 235-acre tract north of Silverbrook Road, was surveyed for the Bureau of Land Management. The archaeological survey included the excavation of 2,221 shovel tests and pedestrian survey yielding 2,593 artifacts. One cultural feature, an unfinished twentieth-century brick structure, was identified. Sixteen sites were identified, two of which were previously recorded. Two are historic sites; the rest are prehistoric sites. Presence of cultural features, integrity, artifact density, and rarity of resource were considered in evaluating the significance of the

sites. Only two sites (44FX2485 and 44FX2487) were evaluated as potentially eligible for the National Register. Phase II evaluation was recommended (Hill et al. 2000:iv). Archaeological assessment of the Meadowood Farm study area resulted in the recommendation for intensive Phase I archaeological survey (Hill et al. 2000:v).

When the master plan team began work on Laurel Hill, it was understood that areas of moderate and high archaeological sensitivity and medium or high future disturbance had been surveyed and had not yielded significant archaeological resources. A Park Authority Archaeologist identified an area at the northwest side of the Central Facility Redevelopment area that appeared not to be disturbed but within the area to be developed. Further review by Park Authority Archaeologists raised other questions about tested areas and identified resources. While acknowledging that the federal and state standards had been met, Park Authority archaeologists recommended additional survey to add to their knowledge of the extent and nature of the identified sites.

Both the untested area at the northwest of the Central Facility and the proposed high school property were plowed and subjected to controlled surface collection. One previously identified site (44FX2570) was determined to extend into the untested area. Several other sites were located in the high school property. Site 44FX2570 may warrant additional investigation. The information gathered on the sites in the high school property is thought to be adequate to understand their extent and nature. County archaeologists recommend plowing and controlled surface collecting of the intermediate school property.

The area within the National Register Historic District was not subject to archaeological survey. Prior to any ground-disturbing activity in the Historic District, archaeological studies must be conducted. Provisions for archaeological survey, testing and data recovery excavations are stipulated in the Memorandum of Agreement that has been drawn up for the property.

3.3 Summary of Opportunities, Constraints and Issues

A summary of opportunities and constraints for the park land was developed at the beginning of the planning process (see Figure 14). This summary is based on the preliminary site analysis, and the established land use designations identified in the comprehensive plan.

Considerations for site suitability included unsuitable slopes; as well as parcel size, shape and configuration. The intent of identifying these constraints is to preserve mature or sensitive wooded areas by promoting passive activities in sensitive or unsuitable areas with minimal disturbance. This serves to keep vegetative coverage intact for preservation as a limited site resource. The purpose of this analysis is to summarize the sections of land which are most suitable for active recreation and higher intensity use at Laurel Hill Park.

As described in this document, the total area for Laurel Hill is 3,200 acres. This includes a number of areas that have been designated for specific uses including:

- Two School Sites (117 acres)
- Landfill (503 acres)
- Cemetery / Fire and Rescue Site (21 acres)

- Graduated Care Development (49 acres)
- Reuse Areas (138 acres)

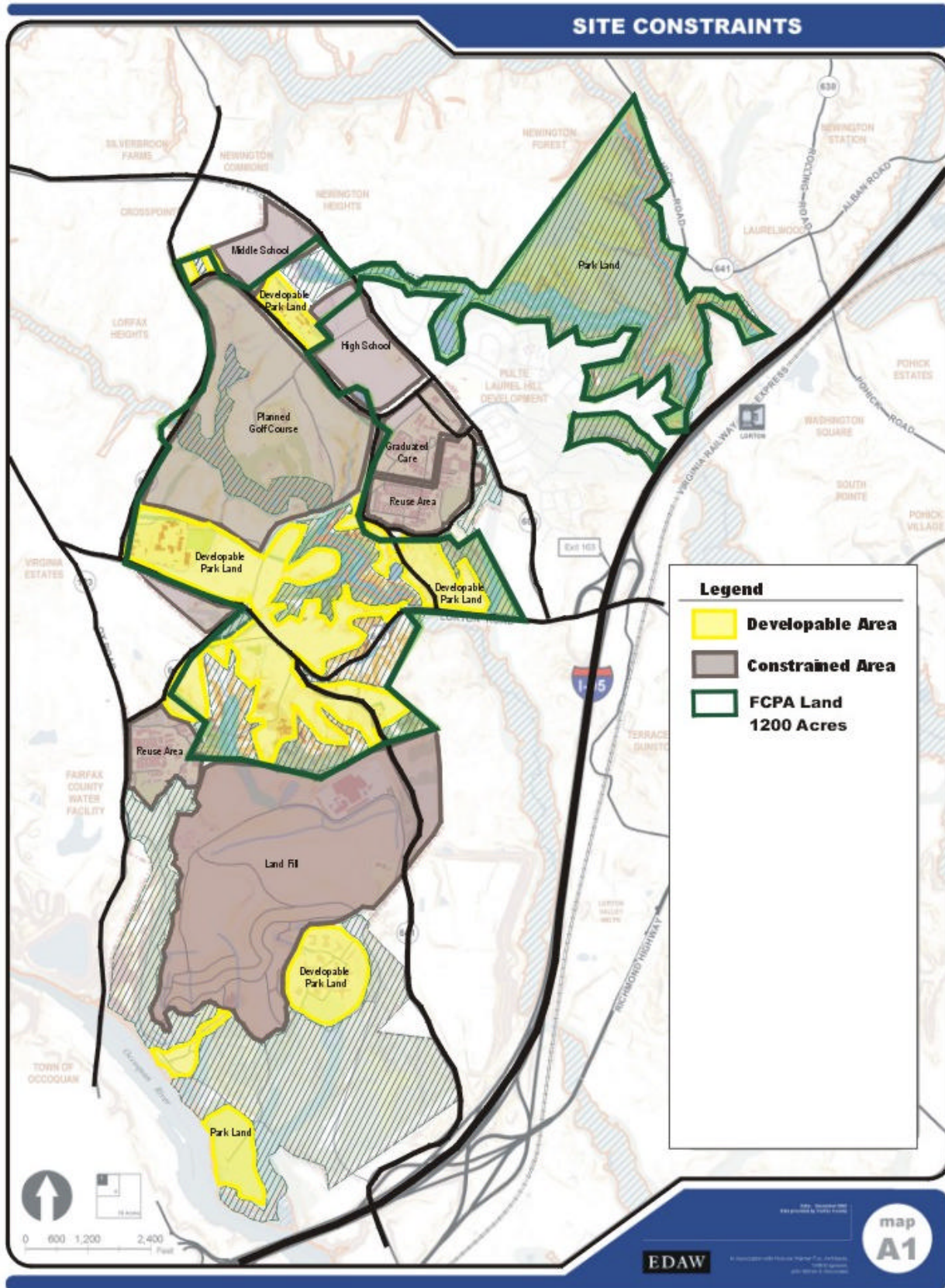
Based on these uses and acreage allocation, there are approximately 1,632 acres identified for park uses. The additional 12 acres in this calculation are comprised by the two ball fields located within the reuse areas (Central Max and the Occoquan Workhouse Facility).

Within the park land, two areas are already in use for recreation or under construction. These include the public golf course (280 acres) and the existing NVRPA active recreation areas (42 acres). The remaining 1,310 acres of land include a number of development constraints. These constraints limit the type of active recreation development that can occur although it is feasible to located passive recreation uses such as trails within these constrained areas. The constraints include:

- 100 year flood plain
- Wetlands
- Resource Protection Areas
- Wooded Areas
- Steep Slopes

When these areas are combined they account for approximately 880 acres of the remaining 1,310 acres which leaves approximately 430 acres of land that can be developed for active recreation uses. **See Figure 14.**

Figure 14: Summary of Opportunities and Constraints



4.0 Park Purpose and Guiding Principles

4.1 Park Purpose

Fairfax County Park Authority is committed to protecting Laurel Hill Park as an asset for the county, and a unique place to be enjoyed by the public both as an open space and recreation amenity. Laurel Hill Park is strategically positioned in a regional context as a key parcel for shaping the County's open space network and guiding the preservation of natural and cultural resources. The Park will also provide recreation facilities to help meet the needs of County residents. The land at Laurel Hill Park is part of a series of histories of local and national importance. Fairfax County Park Authority is committed to honoring the history and celebrating the prospects for the future of the site.

4.2 Guiding Principles

A set of guiding principles have been developed to serve as a framework for the Laurel Hill Park Conceptual Development Plan (CDP) that reflect the property's unique elements. The objective of the Fairfax County Park Authority is to optimize the value of Laurel Hill Park as a natural resource, a cultural resource, and a County focal point for leisure activities. The following principles have been formulated in keeping with the ideals of sustainability and sense of community that were rooted in the Progressive Era. Using these as a guide, the objective is to celebrate the various legacies born from the former prison property through education and stewardship. These principles provide structure to the Conceptual Development Plan and a set of criteria by which to evaluate future development opportunities.

Promote Sustainability

The Conceptual Development Plan promotes principles of sustainability. Sustainability is reflected in the balance between protecting sensitive natural areas and meeting the recreation needs of Fairfax County citizens. These should be incorporated in a manner that promotes a sense of community through access to informal gathering spaces and a variety of activities that would attract a diverse range of visitors.

Fairfax County has identified several key Sustainability Principles:

- Maintain safe and caring communities
- Practice environmental stewardship
- Build livable spaces
- Maintain healthy economies
- Connect people and places
- Create a culture of engagement

Environmental sustainability in the construction and maintenance of structures, trails, landscaped areas and open space should be encouraged to minimize negative impacts on the local ecology. Standards that promote sustainability have been developed by organizations such as the U.S. Green Building Council (USGBC). The USGBC's Leadership in Energy and Environmental Design

(LEED) program promotes sustainable design and construction, including solar energy, recycled materials, site design, drainage, and accessibility.

Public spaces should be inclusive to all visitors. The park should offer activities and facilities that promote education of the Park's history as well as its natural resources through an arrangement of active and passive features. The goal is to develop Laurel Hill with a holistic view of the park and its relationship to its surroundings and visitors.

Interpret the History

The identity of the land can be redefined by interpreting its historic and cultural legacies. This can be done through a unique mix of museums, cultural uses, active agriculture, and interpretation of architecture and former land uses. The cultural identity of the site can be integrated through themed recreation and environmental activities that reflect events and characters from Laurel Hill's social, cultural, political, penal and military past.

Create a Unique Character

Laurel Hill has been inaccessible to the community for decades. Today, Fairfax County has the opportunity to redefine the character of Laurel Hill as a special amenity. The open space is made up of various characteristics which are distinctive within the county, such as the gently undulating topography, woodland patterns and agrarian landscape. The design and preservation of these features can be integrated with the park's history for themed recreational and educational uses. This can be enhanced through the integration of cultural and environmental resources in a physical and programmatic model. The distinct character will help to create a long-term amenity.

Protect Natural Resources

Laurel Hill is one of the largest undeveloped parcels in the region and is replete with delicate wildlife and natural systems. A priority for Laurel Hill is to preserve open space, woodlands, distinctive agrarian lands, and protect wildlife and natural habitats. This is to be accomplished in part by adhering to environmental quality through sustainable park and facilities design. A plan that promotes nature-based recreation such as wildlife observation, hiking, and agriculture can work to protect natural areas. Educational programs that promote awareness and stewardship can enhance the environmental quality for future generations.

Serve the Needs of Fairfax County

As the population of Fairfax County continues to grow, residents have an increasing demand for recreational space (see Section 4.4 for more details on the Needs Assessment). These could include athletic fields, picnic areas, and supporting public facilities for a range of activities. Such elements contribute to the quality of life of existing and future residents, and can contribute to the long-term health of the community. Using the results from county-wide analyses and needs assessments, the Park Authority aims to balance the historic, environmental and regional significance of Laurel Hill with the objectives for active recreational facilities.

Provide Access and Transportation

In the near future, the Laurel Hill property will be accessible to the public for the first time in almost a century. While an existing network of roads provides access to the property, some existing roadways do not meet current standards and are not constructed to accommodate current or future transportation needs of the region. The Park Authority Board has expressed interest in reviewing the transportation needs of the Laurel Hill property, inclusive of all proposed transportation impacts, to determine the scope and timing of roadway improvements. As part of that review, impacts to park resources and proposed uses should also be considered in determining roadway alignments, intensity and design.

Develop a Greenway and Trail Network

Trail systems and greenway corridors provide aesthetic, environmental, health and recreational benefits. Laurel Hill Greenway is a key component of the Cross County Trail that will ultimately extend from the Occoquan River in the south to the Potomac River in Great Falls National Park in the north (see Figure 13). In linking a system of trails throughout the county, the Laurel Hill Greenway will help provide a well-developed and interconnected network of pedestrian, hiking, bicycle and equestrian trails that will enhance access to and around the site while providing a much-desired form of recreation. Trails should be designed in a sustainable manner with minimal impact on the land using ecologically-sensible materials to the extent practicable.

4.3 Comprehensive Plan Guidance

Comprehensive Plan

The Comprehensive Plan includes guidelines for the redevelopment and allowable future land uses within the Laurel Hill Community Planning Sector (LP1). The Laurel Hill Park Master Plan strives to optimize natural resource areas to preserve open space and set forth adaptive reuses which will be compatible with community needs and surrounding areas. The Conceptual Development Plan for Laurel Hill was oriented around components of the Comprehensive Plan as a framework. The following guidelines are provided in the Comprehensive Plan.

Environmental Quality Corridor System (EQC)

The site includes a series of Environmental Quality Corridors including the Rocky Branch EQC and the Giles Run EQC. These corridors contain significant heritage resources and biologically sensitive areas, particularly in the northern portion of the park, and are envisioned to be protected as major resources by being incorporated into the County parks for preservation.

The EQC areas and associated stream valleys should be preserved as open space with clearing and grading on abutting areas done in a manner to minimize the negative impacts of erosion and siltation on adjacent EQCs and the associated streams.

The Laurel Hill Greenway Trail

This major greenway trail is planned to use much of the old rail bed that crosses the park from the northeastern corner and continues into the Occoquan Regional Park. This trail, as discussed above, will be a major link in the countywide trail system and provide the southern component of the Cross County Trail.

Open Space and Pedestrian System

A pedestrian and bicycle circulation system (i.e., trails and sidewalks) should be provided adjacent to all arterial and collector roads within the property (i.e., Silverbrook Road, Hooes Road, Lorton Road, Ox Road and Furnace Road). This system of trails and sidewalks will provide links between residential areas, the stream valley parks, other recreation areas, and the Laurel Hill Greenway. The following is a set of guidelines and recommendations to be used in conjunction with the Countywide Trails Plan to develop the open space and non-motorized transportation system:

- The abandoned railroad bed running through LP1 should be developed as a major linear open space.
- The Laurel Hill Greenway, which is planned to be the major linear open space feature within the LP1, should be developed in phases as the redevelopment of the former D.C. Department of Corrections property occurs.
- The EQC areas and associated stream valleys such as Pohick Creek, South Run, Rocky Branch, Silverbrook Run, Giles Run and Mills Branch should be preserved as open space with public access.
- An 18 hole public golf course and related facilities should be provided.
- Pedestrian and bicycle circulation systems (trails and sidewalks) should be provided adjacent to all arterial and collector roads within the property, thus becoming an integral element of the overall transportation network.
- The pedestrian and bicycle circulation systems should be constructed with private and public resources.
- Grade-separated trail crossings should be provided for some major roads, such as Lorton Road.
- Along the major commuter routes, separate bicycle lanes or trails should be encouraged to accommodate bicycle commuters and high speed recreation cycling.
- Schools should be encouraged to co-locate with park uses to further integrate recreational amenities and the utilization of open space.
- Within the proposed residential neighborhoods, recreational facilities should be provided that are sufficient to serve the neighborhood recreational needs of the residents.
- The two Nike sites should be incorporated into Community or Countywide Parks as heritage resource sites to ensure that these heritage resources are adequately conserved and protected.
- The former Dairy Farm facility site should become a County Park with special purpose areas; for example, a farm park, horticultural center, athletic field complex, or other recreation facilities, or equestrian center.
- An equestrian trail link from the proposed equestrian trail in Occoquan Regional Park to the former Dairy Farm facility site should be considered compatible with other recreation uses in this area.

4.4 Needs Assessment

The 2003 Fairfax County Park Authority Needs Assessment was developed to address park, recreation and open space needs in Fairfax County, and to define the Fairfax County Park Authority's role in future land acquisition and capital improvements designed to meet those needs.

The Process

Extensive data collection and analysis resulted in the adoption of needs-based facility standards by the Park Authority Board. The standards provided a basis to compare citizens' demand with facility supply to determine facility service level deficiencies. Following this step, the Park Authority Board determined its share of service delivery responsibility vis-à-vis other area service providers and endorsed contribution level goals for the next decade. Finally, using the standards, contribution levels and existing facility assessments, a needs-based 10-year phased Capital Improvement Plan (CIP) and funding strategies were developed as the capstone to the process.

Findings

The needs assessment identifies a total of \$377 million in recreation need, \$226 million of which is identified as current need for new facilities. Park Authority Board adopted contribution levels for various facility types are shown in Table 3 on the following page. This data highlights two important outgrowths of the needs study that are relevant to the Laurel Hill planning process.

1. Extensive need for certain high demand facility types. In many instances the level of need for new facilities is daunting. The Park Authority Board has committed to contributing large numbers of rectangular athletic fields, reservable picnic areas, trail mileage, nature centers and indoor gymnasium square footage, and an equestrian facility, for example, to meet the current need for new recreation facilities.
2. Need for new types of countywide facilities. The study also revealed needs for new types of larger scale recreation facilities that did not exist at the time of the Park Authority's last needs assessment in the early 1990s. This new breed of facilities includes the need for several countywide playgrounds and skateparks, and a countywide dog park. These facilities represent larger versions of more familiar recreational amenities that provide the expanded entertainment value that much of today's recreating public has come to expect. Because of their scale, these facilities are best suited for larger sites.

Laurel Hill, by virtue of its size, character, site characteristics and location in the community, represents a unique opportunity to meet some of both types of need. As one of the few remaining large tracts of land to be master planned in the near future, Laurel Hill must play a role in satisfying its share of community need for facility types where that need is extensive. Similarly, Laurel Hill represents one of the few opportunities the Park Authority will have in the near term to absorb the current need for new types of countywide facilities that emerged from the needs assessment process.

Table 3: Fairfax County Park Authority Facility Standards and Contribution levels

Facility Type	Current Public Facility Service Level (# of Public facilities/2000 population)	Adopted Countywide Service Level Facility Standard	FCPA Contribution Level Number of Facilities to be Contributed through 2013
Playgrounds	1 site/3,400	1 site/2,800	2 Countywide Playgrounds
Multi-use Courts	1 court/2,500	1 court/2,100	12
Reservable Picnic Areas	1 site/16,800	1 site/12,000	55
Neighborhood Dog Parks	1 site/165,000	1 site/86,000	6
Countywide Dog Parks	N/A	1 site/400,000	1
Neighborhood Skate Parks	1 site/991,000	1 site/106,000	9
Countywide Skate Parks	N/A	1 site/210,000	2
Golf (Holes)	1 hole/4,600	1 hole/3,200	0
Trails (in miles)	1.17 miles/1,000	Consistent with Adopted Trails Plan	75
Nature Centers (in Sq Ft)	0.015 sf/person	0.04 sf/person	13,070 s.f.
RECenters (in Sq. Ft.)	0.8 sf/person	1.1 sf/person	152,118 s.f.
Indoor Gyms (in Sq Ft)	2.6 sf/person	2.8 sf/person	101,741 s.f.
Neighborhood and Community Parks (in acres)	4.2 Acres/1,000	5 Acres/1,000	40 acres
District and Countywide Parks (in acres)	11 acres/1,000	13 acres/1,000	236 acres
Outdoor Family Aquatics	1 site/991,000	1 site/570,000	Expand Existing Water Mine
Horticulture Parks	1 site/496,000	1 site/350,000	Maintain existing Countywide horticulture park and develop horticultural themed community parks
Equestrian Facilities	1 site/991,000	1 site/595,000	1
Waterfront Parks	1 site/99,000	1 site/90,000	2
Rectangle Fields	1 field/4,100	1 field/2,500	95
Diamonds with Skinned Infields (Type 300S)	1 field/30,000	1 field/22,000	4
Diamonds with Skinned Infields (Type 200S)	1 field/9,300	1 field/8,800	0
Diamonds with Grassed Infields (Type 200G)	1 field/6,300	1 field/6,500	0
Diamonds with Grassed Infields (Type 350G)	1 field/43,000	1 field/28,000	9

5.0 General Management Plan

Management Framework

The management framework integrates the research, site analysis and data presented in this document. Management zones have been defined to provide a framework for decision-making (see Figure 15). Existing conditions and recommendations from the community were considered in the development of the management zones. The framework provides broad flexibility within a range of potential uses for each management zone. The potential uses stated for each zone describes what uses are acceptable for that zone. The potential uses are intentionally general to allow flexibility when making future decisions.

5.1 Resource Management Zones

The Resource Management zones include the northern portion of the site, the area adjacent to the pond along Silverbrook Road west of the High School and several areas associated with Giles Run Environmental Quality Corridor. This north area includes steep slopes, several streams and significant wooded areas. These wooded areas include a good biological diversity with excellent wildlife habitat. The area adjacent to the pond includes rolling topography, meadows, wooded areas that support a good biological diversity with excellent wildlife habitat. Human impact in this zone will be kept to a minimum. The areas adjacent to Giles Run are wooded and include some steeper slopes. Management of the natural resources will be allowed, however environmental degradation within this zone shall be prohibited.

Potential Uses

- Limited trail and trail support facilities
- Wildlife and habitat management
- Research, interpretation and education of natural and cultural resources

5.2 Recreation Zones

There are several recreation zones within the Laurel Hill Park. These include the recreation adjacent to the high school site near Silverbrook Road, the recreation zones east of the Nike Launch site along Lorton/Furnace Road and an area just north of the Resource Recovery facility including the Diary Farm.

These areas are characterized by flatter terrain and minimal existing wooded areas. These areas can support development of recreation areas and are intended to provide a variety recreation experiences. Natural resources within the recreation zone should be managed and new development should be carefully planned to minimize grading and other major changes to the areas.

Potential Uses

- Trails and trail support facilities
- Meadows and wildlife and habitat management
- Cultural and natural resource interpretation
- Picnic areas

- Rectangular fields
- Diamond fields
- Restrooms
- Equestrian facilities and trails
- Access road
- Parking lot(s)

5.3 Greenway Zone

The Laurel Hill Greenway is a zone that ranges from approximately 50 feet wide within the Redevelopment and Reuse Area to approximately 350 feet wide within the park areas. The Greenway traverses a number of different landscape environments from the urbanized zone around the Reuse and Redevelopment area to rolling meadow areas to wooded areas to stream corridors. This variety of landscape environment will make the greenway a unique experience for the trail users. In addition, the trail provides connections between the various zones along the greenway.

Potential Uses

- Multi-purpose trails (hiking, jogging, biking, equestrian)
- Interpretive and directional signs
- Small seating areas
- Other trail support facilities.

5.4 Entrance Zone

Entrance zones occur along Lorton Road, Furnace Road and the Reuse Area Access Road. These roads provide the initial impressions when entering Laurel Hill Park. The entrance zones should be designed to highlight the unique qualities of this important area by providing views of the rolling landscapes and park facilities. Gateways into the park should be designed to meet the park needs and reflect the unique character of the site.

Potential Uses

- Roads and road improvements
- Parking
- Park buildings
- Directional signage
- Entry signage
- Utilities
- Multi-purpose trails
- Specialize landscape treatment

Figure 15: General Management Plan



Site Management Recommendations :

Until the development of more detailed implementation plans, the following recommendations will be used to provide guidance for land management matters.

Natural Resources:

- Conserve and where consistent with the park planning, enhance designated natural areas.
- Foster attitudes and practices that support conservation of the natural resources and responsible environmental stewardship

Cultural Resources

- Where appropriate, renovate the houses within the park land for tenant / caretaker apartments.
- Ensure that adaptive reuse of the structures is consistent with preservation standards and park purpose and with the Secretary of Interiors Standards Guidelines for adaptive reuse of contributing resources.
- Preserve and protect the park's historic and archaeological resources
- Foster attitudes and practices that support conservation of historic resources
- Interpret the cultural resources and history of the property.

Horticultural Management

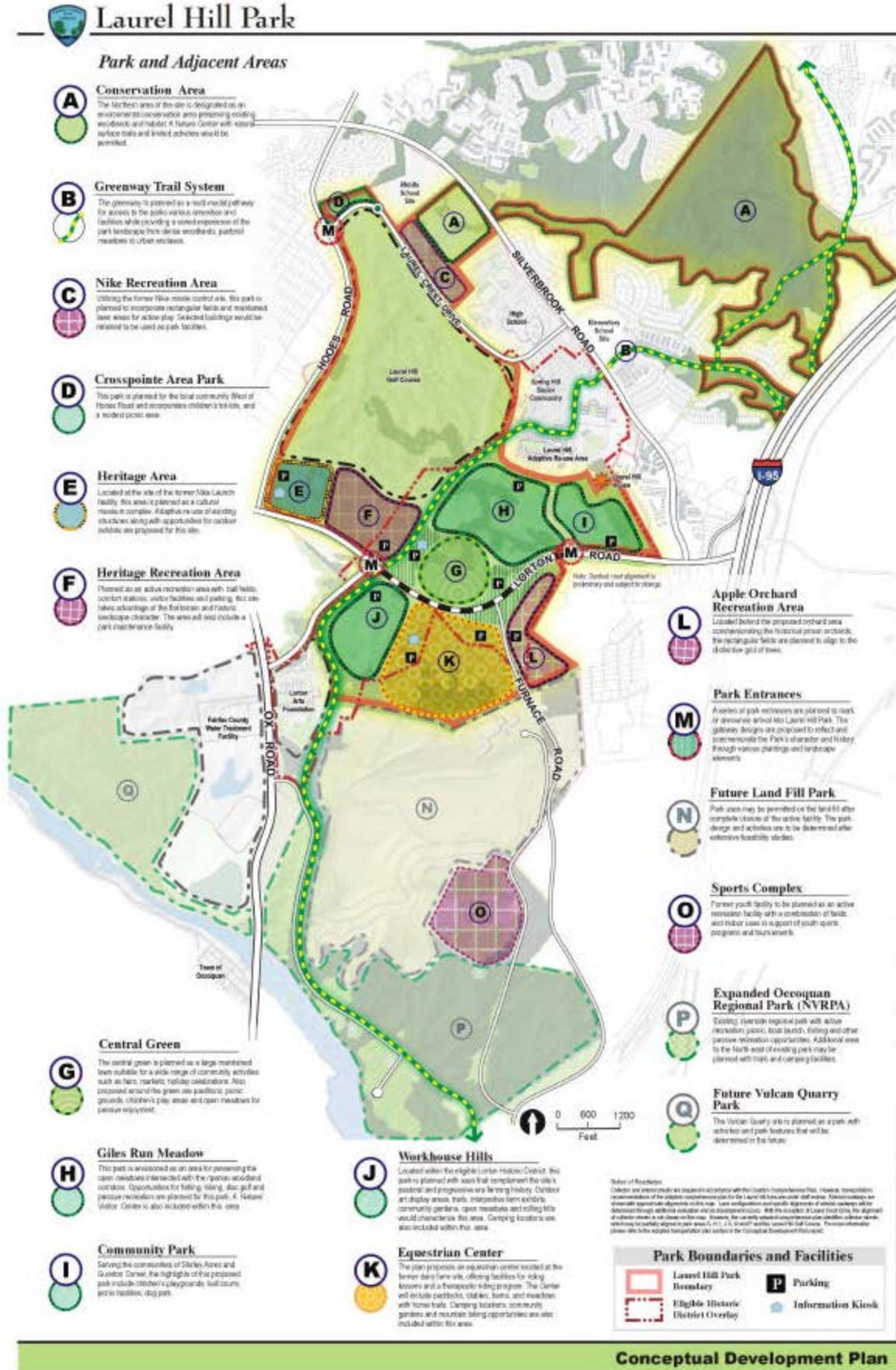
- Manage meadow areas to ensure they do not revert to wooded areas.

Educational and Interpretation

- Provide a small education and interpretive program / exhibit to improve the knowledge and appreciation of the county's natural and historic heritage.

6.0 Conceptual Development Plan

The Conceptual Development Plan for Laurel Hill was produced during the planning process in which a series of public meetings and workshops were held with community members, special interest groups, and public agency officials. Three alternative concept plans emerged from the ideas that developed during the planning process. The alternative concept plans emphasized three themes: culture and history; environment; and recreation. Using stakeholder input, the preferred elements from the alternative concept plans were combined into a refined Conceptual Development Plan (see Figure 16). The following sections describe the Conceptual Development Plan and its sub-components in detail.



6.1 Description of Overall Park Plan

The Conceptual Development Plan (CDP) incorporates the principles of providing opportunities for active and passive recreation, environmental conservation, and celebration of historic and cultural resources.

With over 1,200 acres, the size of the parkland is notable. During the analysis of alternative concept plans, key areas were identified as opportunity sites for redevelopment, while conserving critical natural features. Of the 1,200 acres only approximately 360 can be used for recreation activities with the remaining 840 acres being the golf course (280) and areas that will be protected as Resource Management Areas. The Plan is designed to provide areas for a variety of uses, combined in a way that creates a unique amenity for the region.

The CDP includes areas for recreation, environmental zones and cultural activities integrated throughout the park and is consistent with the park purpose and guiding principles. This plan acts as a framework to guide the location of recreational uses. However, depending upon engineering results, uses may be moved to another area.

6.2 Interpretation of the History of the Site

The following episodes should be interpreted through various interpretive devices, such as signage, kiosks, brochures and wall mount exhibit panels in selected buildings. Creating an “historic linkage” for the various areas of Laurel Hill Park is important to the park’s overall development.

- A. Prehistoric (Native American)
 - Overview of Native America Habitation throughout Fairfax County
 - Paleo-Indian
 - Archaic
 - Woodland
 - Native American Habitation at Laurel Hill
 - Archaic
 - Woodland
- B. European Contact
- C. Colonial Period – Laurel Hill
- D. Civil War
- E. Progressive Era/Establishment of prison on site/Stoney Lonesome Cemetery
- F. Suffragettes
- G. 19th-20th Century Agriculture
- H. Post-Progressive Era Prison
- I. Cold War/Nike Missile sites
- J. Property transfer from GSA to Fairfax County/National Register Historic District
- K. Parkland

6.3 Transportation

Access to Laurel Hill Park from the surrounding region should be effectively accommodated by Interstate 95, Route 1 and Route 123. Directional signage from these nearby facilities should be considered to help direct residents to this countywide park. Local transportation access however within the former correctional facility is limited, and while perhaps suitable for access to park facilities, existing roadways are not adequate to accommodate projected local and through traffic demands.

The existing local transportation network consists mainly of rural, two (2) lane roadways that in many cases do not meet current design standards. In addition, due to the site's proximity to the Vulcan quarry and private landfills, existing roads are subjected to significant volumes of commercial truck traffic. This combination of factors has contributed to a number of accidents, particularly along Lorton Road which currently accommodates approximately 5,200 vehicles per day. By VDOT projections, Lorton Road traffic is projected to increase to over 43,000 vehicles per day by the year 2020.

While it is clear that the local roadway network should be improved to serve regional transportation needs, the Park Authority is concerned that the current Comprehensive Plan guidance on transportation may be outdated and does not consider the impact that transportation improvements have on parks. The Park Authority recommends that a transportation study be done and that the Comprehensive Plan be updated to reflect the findings of the new transportation analysis.

As the County's parkland steward, and advocate for park patrons, the Park Authority advocates a review of the current Comprehensive Plan for transportation to assure that impacts to parkland are adequately addressed. Based upon the findings of the study, appropriate amendments to the Comprehensive Plan should be considered.

Given that a large portion of the Lorton Road and Furnace Road arterials are warranted by regional traffic needs and not the needs of patrons to Laurel Hill Park and given the desire of the Park Authority to preserve limited Park Bond funds for recreation improvements at Laurel Hill Park, funds needed to implement all transportation improvements at Laurel Hill recommended by the Comprehensive Plan should be identified from other sources of public funds at the County, State and Federal levels.

6.4 Description of Plan Elements / Areas

The following sections describe the Conceptual Development Plan in sub-area detail. The objective of the sub-areas is to provide focus-areas for the range of activities proposed at the park. The sub-areas are linked together through the philosophy that although they each provide a unique experience, together they work toward the over-arching themes of community, culture and nature.

6.4.1 Conservation Area

The northern section of the plan highlights the primary conservation area on the site. The conservation area extends to the pond just south of Silverbrook road. This zone is dedicated to

natural and wildlife habitat protection and historic interpretation, and can be accessed through the trail network linked to the rest of the park. The plan preserves the dense woodland character of this section of parkland as part of the Environmental Quality Corridor (EQC).

This Conservation Area section of the plan offers the opportunity for environmental education and stewardship through interpretative trail signage and markers. The uses within this area are limited to passive recreation, such as natural surface trails and nature observation. In addition, this area could include a nature center for interpretation of the natural resources.

6.4.2 Greenway Trail System

The CDP identifies a trail system that links the park internally from north to south. The primary corridor within the trail system is referred to as the Laurel Hill Greenway; a major trail that links the park regionally to an external trail network leading from Great Falls National Park in the north and the Occoquan Regional Park in the south. The Greenway is planned to be located on the original railroad bed which still exists in some areas of the park. This railroad originally served as a transportation system within the site linking the brick kiln near the Occoquan River with the prison complexes north of Lorton Road. The Greenway is planned with facilities designed for a variety of trail users. The Greenway Trail becomes the spine of the internal trail system within the entire site, with trail connections to the various amenities and facilities within Laurel Hill Park.

The Greenway and trail network serve as a recreational amenity with opportunities for education through interpretive signage and marked points of interest. A tour on the Greenway would be a varied experience, moving from dense woodland in the northern conservation area, to urban in the re-use and redevelopment areas, to pastoral, through the formerly agricultural meadowlands. In the non-urban stretches, the Greenway reflects a buffer of natural landscape in a band of vegetation.

The Greenway and internal trail system offer opportunities for education tools in history and ecology. One such element could be a History Walk as a means to connect significant historic, cultural and environmental features by trail as a tool for education, passive and active recreation, cultural awareness, and environmental stewardship.

6.4.3 Nike Recreation Area

Active recreation is distributed in different sections throughout the park. The northern most recreation area is located north of the golf course, situated between the planned high school and middle school. Within this park, the plan proposes lighted and irrigated rectangular fields and maintained lawn areas for active play. The athletic fields will serve local community athletic groups and periodic countywide tournament areas.

6.4.4 Crosspointe Area

The Crosspointe Area is located north of the golf course. It is planned as a local park within walking and biking distance from neighborhoods to the north and south. The plan proposes that this park be a small scale pocket park that primarily serves the local community and provides children's play equipment, a modest picnic area and open space.

6.4.5 Heritage Area

Heritage Park currently houses the former Nike Launch facility. The existing structures offer an opportunity for adaptive re-use as a cultural museum complex for education about site and national history. In addition it is possible that the existing gymnasium could offer opportunities for adaptive reuse within the park development.

6.4.6 Heritage Recreation Area

The Heritage Recreation Area encompasses the land adjacent to the Heritage Park. This concept takes advantage of the flat terrain to preserve the historic landscape character of the site. This recreation area could provide space for lighted and irrigated recreation through the placement of ball fields, comfort station, visitor facilities and parking. The former Barrett Farm residence is also located within this area and could potentially be integrated as a historic attraction for visitors. This area will include a maintenance facility to serve Laurel Hill Park and the surrounding park areas.

6.4.7 Central Green

Southeast of the golf course, the plan highlights a Central Green. The Central Green is envisioned as a vast maintained lawn suitable for a wide range of community activities such as fairs, markets and special events. This area also provides opportunities for various sports such kite flying, hiking and periodic use of model rocketry. (Model rocketry is subject to Park Regulation 1.17 governing model rocketry in parks and will be monitored by the National Association of Rocketry). Within the Central Green are additional opportunities for pavilions, an amphitheater for community events and picnic grounds. The picnic grounds will have reservable shelters that can be used for large gatherings such as family reunions or corporate picnics. Trails will provide connectivity to the Laurel Hill Greenway and other elements of the park. They will also allow controlled access into the meadow preservation areas. This open green area is one of the few large open play spaces for informal recreation in the park system.

6.4.8 Giles Run Meadow

A visitor/ nature center is proposed to be located in this area; the center will serve local and countywide park visitors. Services would include site orientation and natural and cultural resource interpretation. The plan also proposes opportunities for fishing, hiking and disc golf.

6.4.9 Community Park

This community park can be accessed from Lorton Road and serves residents located to the east and south of the park. The plan highlights a children's playground, ball courts, picnic facilities, in-line skating and skateboarding, and a dog park within this area. The Community Park has a direct link to the historic Laurel Hill house which is part of the Reuse Area as well as links to the park-wide trail system.

6.4.10 Workhouse Hills

The Workhouse Hills is located within the Lorton Prison Historic District due to its former use for agriculture, which was part of the prison's progressive era ideals. The undulating hills and meadows are characteristic of the park's pastoral history. The plan proposes uses that would complement the adaptive re-use of the Occoquan Workhouse such as an exhibit area for various art and sculpture displays, ornamental garden areas, a periodic market and picnic shelters. Recreation is proposed through a variety of trails that traverse the open meadows and hills, as well as designated locations for tent and RV camping. These trails will connect to the Laurel Hill Greenway and other elements of the park.

6.4.11 Equestrian Center

The plan highlights an equestrian center to be included within the historic dairy area of the park. This use celebrates the site's historic industry in agriculture and husbandry. The equestrian center is proposed as a full-service resident horse facility for classes, stabling, riding and a therapeutic riding program. The center also includes show rings, paddocks, stables, barns and meadows for horse trails. The concept also provides for parking of visitors to the equestrian center. The historic dairy and its associated buildings are currently located within this area and could potentially contribute to a new equestrian use.

A restored woodland area is proposed near the horse pasture. A portion of this area is located within the Lorton Prison Historic District; the goal is to return the landscape to a former condition and preserve the historic character. The areas outside the Historic District, adjacent to the Landfill offer opportunities for more rugged trails for use as mountain bikes trails.

A feasibility study for an equestrian center within the Laurel Hill Park was completed in the fall of 2003. The study concluded that there is adequate need within the county to support the construction of an equestrian center, and that Laurel Hill Park would be an appropriate location for such a center in comparison with other sites on which the study was based.

A community garden is also proposed at this location as a use that serves the local community. The objective is to further celebrate the history of this area and promote recreation through interpretive activities such as community-scale agriculture and gardening. Within this area, the plan also allows for designated camping locations for tent and RV camping. The camping and garden uses are envisioned as a way to preserve the land's pastoral character.

6.4.12 Apple Orchard Recreation Area

The Apple Orchard Recreation Area celebrates the park's historic agriculture by restoring the theme of apple orchards. This can be done as a design element reflecting the traditional orchard grid pattern through lighted and irrigated fields.

The plan proposes rectangular sports fields within this area to create a local community park. This contributes to the creation of a unique park entry experience through a commemorative gateway inspired by former agricultural uses. The athletic fields will serve local community athletic groups and periodic countywide tournament use.

6.4.13 Park Entrances

A series of park gateways are proposed in the site, and have been identified because of their existing location, accessibility or visibility. The gateways are proposed as marked entrance points for visitors arriving by foot, bicycle, horse or vehicle.

The major entrances are placed around the periphery of the site in a way that links to the surrounding community, inviting visitors and encouraging public use. The plan proposes a minimum of seven gateways that provide access from all sides of the park.

Park gateways should be designed in a way that is reflective of the park's history. This can be done through design treatments that visually announce entrance to the park and celebrate the character. This can be accomplished through special planting treatments emulating an orchard concept near the former agricultural sections, and with brick piers and arches representing the historic architectural character of the former prison buildings.

6.5 Adjacent Areas

The following section is a description of areas which are adjacent to Laurel Hill Park and are intended for future recreational or public use. These descriptions are based on guidance from the Comprehensive Plan.

I-95 Resource Recovery Facility and Landfill

This area is currently active and operating as a Resource Recovery Facility. Portions of the I-95 Landfill are currently under closure procedures, which have a 30 year duration. Future use of these areas for park uses as recreation after closure of the facility could be determined after extensive studies. The Fairfax County Park Authority is currently working with Virginia Tech to research design opportunities for the landfill after the closure is complete.

Sports Complex

The former youth facility is to be planned as an active recreation complex to include a range of facilities for the region. The sport complex may include championship size diamond and rectangular fields to be used for youth sports programs and tournaments. The complex would also include concessions, ticket booths, comfort facilities and visitor parking. The sports complex would serve as a county and regional facility. Prior to development of the sports complex an interim use for model aviation should be permitted.

Laurel Hill House

The Comprehensive Plan recommends that the Laurel Hill House and its gardens should be designated as a heritage resource area within the Countywide Park with a minimum of 20 acres to ensure that these resources are adequately conserved and protected. While the house is not currently on Park Authority property, the Park Authority's position on the house is that to reconstruct the Laurel Hill house to the period of significance, would be the least desirable of the FCPA's preservation policies. Such a preservation program for the house and immediate grounds should be pursued through a public – private partnership where the Park Authority provides technical support in developing a Historic Structures Report, Cultural Landscape Report and a phased historic preservation plan and a privately held organization obtains funding to implement the program including its future operations and maintenance.

Occoquan Regional Park

The Occoquan Regional Park has a number of park facilities such as ball fields, boat ramps, batting cage, and amphitheatre. The Northern Virginia Regional Park Authority (NVRPA) will continue to operate the Occoquan Regional Park and plans to expand the park to the north. NVRPA is developing a plan for their existing and future park areas.

Fairfax County Occoquan Water Treatment Facility

The Fairfax County Occoquan Water Treatment Facility has been expanded northward to the northern boundary of LP1 in order to meet the long term water treatment needs for Fairfax County. As an interim use, land not needed for the expansion should be used by Fairfax County Park Authority for athletic fields.

Vulcan Quarry

Approximately 115 acres of land located west of Route 123 and north of the Occoquan River is to be conveyed to the Fairfax County Park Authority. A portion of this property is currently being used for extraction by Vulcan Quarry. Upon completion of the operations, the land should be left in a safe and stabilized condition so that the area can be developed for recreation uses.

6.6 Park Management

Visitor Experience

For the first time in 90 years Laurel Hill will be open to the public. During the time that Laurel Hill was inaccessible, many important historic events occurred on the property. From the incarceration of the Suffragists to the development of a Nike Missile site, it is the intention of the Park Authority's master plan to celebrate and interpret the site's multi-faceted history. With the development of the Park master plan the goal of interconnectivity within the Laurel Hill site will be achieved. Laurel Hill will change from a place that had limited public access to one of total connectivity. Laurel Hill Park is designed to complement and allow for visits to the entire Laurel Hill site. Trails will connect the adjacent uses and allow the visitor to experience the whole site. The Laurel Hill Greenway will

extend the length of the site and will connect all of the elements of the site. The Northern Virginia Regional Park Authority's Occoquan Park, the Lorton Arts Foundation project at the Occoquan Facility, the Fairfax County Park Authority's parkland and the Adaptive Re-Use site at Central Maximum will be interconnected and accessible by a series of trails.

The size and diversity of Laurel Hill will allow it to serve many roles in the county's park system. It will provide extensive natural and cultural resource areas as well as recreation facilities. It will provide facilities that cater to a local community market and include some facilities not currently found in the park system. These local elements include picnic areas, community gardens, playgrounds and community meeting space. Unique facilities such as the equestrian center, sports complex and RV campground have countywide appeal as well as appeal to tourists visiting the Washington DC area. Because of the wide range of facilities proposed for Laurel Hill, a visit to the park would range from a short visit to watch an athletic event or play on a playground, to a longer visit enjoying the variety of trails (hiking, biking, equestrian) that connect the many elements of the park. The multi-purpose character of Laurel Hill makes it an important component in the Park Authority leisure service and open space preservation system.

Park Management

The Park Authority offers a variety of services with respect to the daily operations, improvement and expansion of parks, sports fields, and green spaces. These services help enable the public to have a sense of pride within their community.

The administration and operation of Laurel Hill will be consistent with the policies, goals and objectives of the Park Authority. Operational policies and procedures shall consider and accommodate to the greatest extent possible the needs of the citizens who use the park and recreational facilities and shall comply with appropriate standards and good management practices. Changes in operational policies may be made by the Authority as appropriate. Established Park Authority maintenance standards will be applied consistently throughout the park, and managed through accepted lifecycle management practices.

The Park Authority will provide oversight and management of active and revenue fund facilities in a manner consistent with Park Policy while focusing on customer needs and services. Revenue and business opportunities will be sought and managed in a manner to support and strengthen the Authority's fiduciary responsibilities.

Planning for infrastructure and facility development will be predicated on the responsible stewardship of all natural, archaeological and built resources within Laurel Hill Park. Funding authorizations and appropriations to develop, expand and/or upgrade facilities shall take into account fiscal requirements over the estimated life cycle of the facilities to ensure sustainable operations, visitor safety and enjoyment, and perpetuation of significant natural and cultural resources in accordance with program criteria and standards.

The Fairfax County Park Authority will provide leadership for establishment and management of an integrated network of Greenways and trails within Laurel Hill to conserve open space, to protect sensitive environmental and cultural resources including wildlife habitat, riparian corridors, water

quality, archaeological and historic sites and aesthetic values, to control flooding and erosion, and to provide continuity of non-motorized access between places where citizens and visitors live, work and play.

Natural resource management strategies may range along a continuum from outright preservation, in which natural processes are allowed to predominate with little or no human intervention, to intensive management, where overt actions are taken to manipulate populations of animals or plants, or their habitats, toward a desired level.

Under certain conditions, consideration may be given to interim levels of development and operations in partnership with community groups, where such agreements would facilitate the timely provision of recreation opportunities not otherwise available and would meet minimum safety standards.

The diverse active and passive recreational uses of Laurel Hill as well as the combination of both General Fund supported and revenue producing facilities provide opportunities for a management structure that is atypical to current operations. The management structure will be designed to maximize resource opportunities and management efficiencies.