Preferred Development Alternative

Plant Pallet

Vegetation selection and layout will be used to emphasize views, highlight places for people, and meet performance expectations in stormwater management areas. The plant pallet will change depending on soil depth and structure in certain areas, but this will only enhance the diversity and seasonality of the landscape. A variety of trees, shrubs, and perennials should be used to connect the interior of the campus to the surrounding landscape and tie the grounds back to the ecological context of the region. Species should be carefully selected by evaluating the health of the species that are planted on the grounds today.

In stormwater management areas and in larger gardens, a layering of low maintenance plants will create an informal and lush appeal that matches existing gardens. Adjacent to the mowed lawns and in more manicured areas, a more uniform and formal plant pallet should be used. A key factor in the ability of all vegetation and to survive will be determined by the soil quality, especially in areas that are on structure. Adequate soil depth and quality should be considered a priority especially where new trees are proposed.

Flowering Natives- Bio Retention Bed

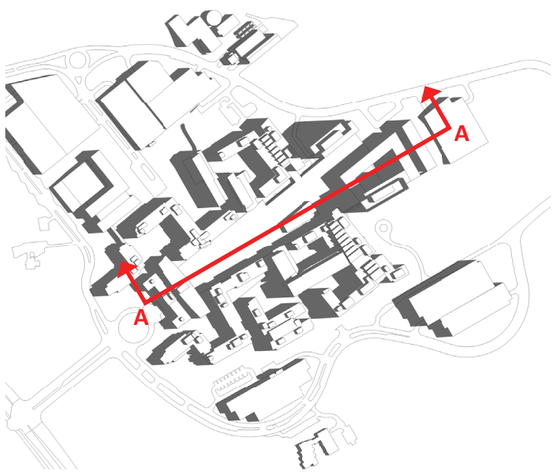
Red Maple Allee- Feature Lawn

Groundcover Tapestry- Shade Garden

Sedge Grass- Bio Retention Bed

Honey Locust- Tree Grove

Cinnamon Fern- Shade Garden



SECTION A-A

3.3.9 Sustainable Design Plan

The entire FDA Consolidation project is designed with the intent to achieve the highest possible degree of sustainability within the project constraints. Since 2003. all the buildings on campus have been designed to achieve a LEED silver certification using a variety of strategies summarized below. GSA plans to pursue LEED in the future.

Site

The LEED process began with the act of consolidating the scattered facilities of the FDA onto a single, pedestrian oriented campus. The chosen site is a former Naval Ordnance Laboratory. During this process, site disturbance has been kept to a minimum preserving wetlands and woodlands, including landscaped areas and mature trees . Located within walking distances of multiple stops for public bus lines, the consolidated site encourages the use of public transportation. The Transportation Management Plan expresses a commitment through the planning of limited employee parking, a campus circulating shuttle that connects to the public bus lines, and substantial biking and pedestrian paths on the campus.

Strategies employed in the past and in the future include:

- Increasing the parking ratio from 1:1.5 employee parking ratio to 1:1.8
- Provided preferred parking, 5% of total parking spaces each, for low emission vehicles and car/vanpooling
- Substantial secured storage and shower facilities for bicyclists
- Maximized open/green space on site vs. building and parking footprints
- Stormwater quality and quantity management
- Bio-retention areas for roof and parking runoff
- Minimizing the heat island effect -through the use of light colored roofs and shaded pavements
- Reduction of light pollution
- Reforestation in disturbed areas using native plants selected to blend into the existing mixed forest
- Restoration of steam valley with new tree plantings and no-mow designation
- Use of drought tolerant plants to minimize irrigation
- Rainwater harvesting for irrigation
- Use of a variety of native plant species to increase bio-diversity and provide habitat for pollinators
- Green roof and geo-thermal for heating; refer to the photo of the FDA Child Care Center on page 79.

Water

Maximizing water efficiency by implementing creative conservation strategies within the buildings on the campus has helped to reduce the burden on the municipal water supply and wastewater systems. In addition to being ecologically wise, the following measures also reduce total operating costs:

- Using low-flow/no-flow plumbing fixtures in the facilities
- Water efficient landscaping

Energy & Atmosphere

Through the use of high performance mechanical and electrical equipment and innovative design, the campus buildings have achieved increased levels of energy performance in order to reduce environmental and economic impacts associated with excessive energy use. Strategies include:

- A central co-generation plant provides electricity, and hot and chilled water for the entire campus
- Exhaust heat recovery system
- High-efficiency HVAC systems
- Occupancy sensors for office lights
- Active and passive solar techniques
- Energy (enthalpy) recovery wheel systems
- Free cooling/preheat conditioning systems
- Low temperature HVAC air systems
- Dual duct C02 system
- Natural ventilation systems
- Building commissioning
- Environmentally compliant refrigerators

Materials & Resources

Material waste has been reduced with the implementation of a campus wide recycling program. Recycled materials are collected at each of the buildings on campus and transported to a staging area in Building 51 and the Distribution Center loading docks where it is then hauled to a recycling facility. Strategies include:

- Recycling of demolished building materials
- Adaptive use of Building 1 and Building 100
- Use of locally manufactured brick
- On-site concrete batch plant
- Construction waste management plans

Indoor Environmental Quality

Efficient and filtered air handling systems, natural day lighting and ventilation, and low emitting interior materials provide occupants with a healthy, comfortable work environment. Strategies include:

- Under-floor air distribution in Building 51
- Natural thermo-syphon ventilation in Central Shared Use building
- Night flushing with thermal mass in Central Shared Use building
- C02 based demand control ventilation
- Enhanced building commissioning
- Low VOC materials

Innovative Design

Each building in conjunction with the Central Utility Plant has been targeted for Innovative Design strategies which include:

- Campus-wide green cleaning/housekeeping program
- Green education program
- LEED certified professionals on the design team

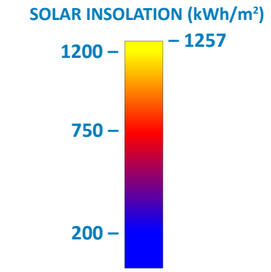
The Future

The proposed master plan is guided by the following Federal standards:

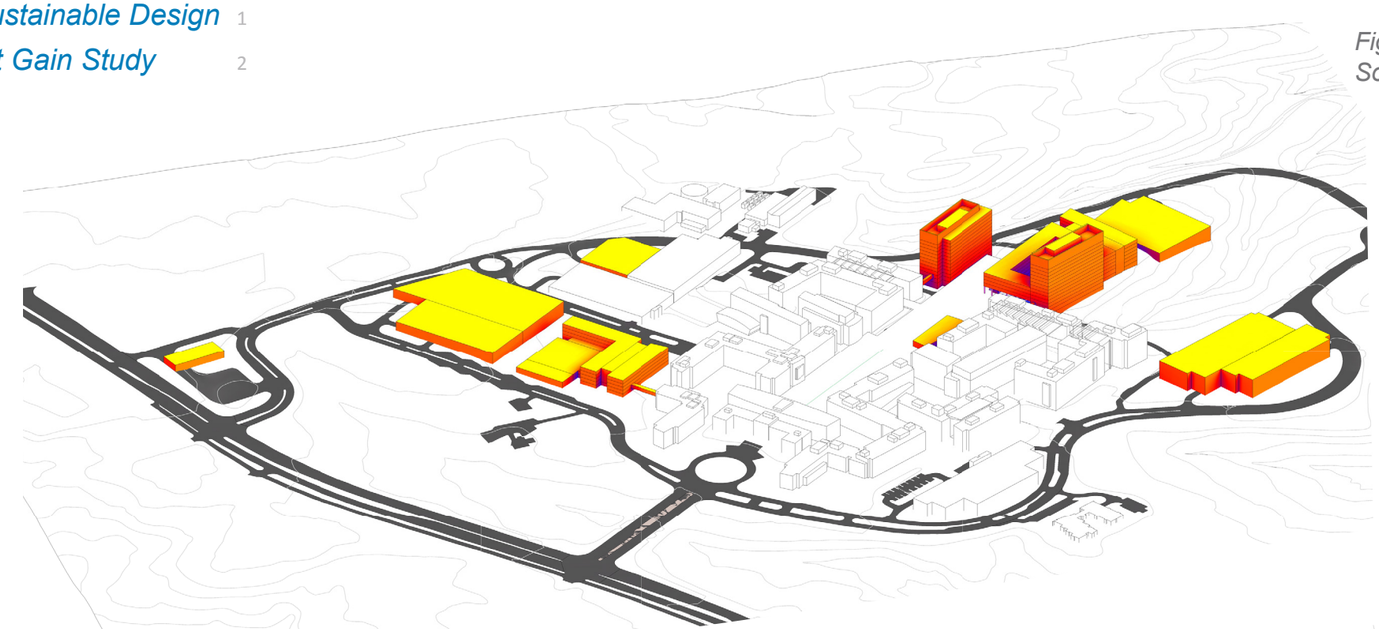
- Executive Order 13693 – Planning for Federal Sustainability in the Next Decade - “reduce agency direct greenhouse gas emissions by at 40% over the next decade”
- Executive Order 13653 - Climate Change Risk Mitigation and Resiliency
- Executive Order 13693 - Stormwater Management
- Executive Order 13508 - Federal Leadership in Chesapeake Bay Protection and Restoration
- FDA’s Agency Sustainability Plan
- EISA 438 - Stormwater runoff requirements for federal development projects
- MD MDE MS4 Permit - General Permit for Discharges from State and Federal Small Municipal Separate Storm Sewer Systems

This will result in future construction designed to meet the following strategies:

- LEED Gold
- Energy Net Zero Buildings
- Water Net Zero
- SITES Silver



CUMULATIVE INSOLATION



AXON – South/West

Figure 3-17: Preferred Development Alternative Solar Heat Gain Diagram

AXON – North/West

FDA Child Care Center with Green Roof and Geo-thermal for heating a well thought out sustainable design strategy

3.3.10 Perimeter Security

Perimeter Security Plan

As a civilian Federal facility, the FDA Campus must adhere to the most current version of the "Physical Security Criteria for Federal Facilities" produced by the Interagency Security Committee (ISC). Using the ISC Risk Management Process, the FDA Campus is designated as a Level IV Facility due to its specific factors related to Mission Criticality (Very High); Symbolism (Very High); Facility Population (>750); and Facility Size (> 250,000SF).

The perimeter of the FDA Campus is therefore required to meet the Level IV security requirements and reinforce its presence as a U.S. Government Facility. As such, the campus plan incorporates those elements necessary to restrict the uncontrolled access of both vehicles and pedestrians. These include the provisions for additional fencing and site lighting, access control equipment for both vehicles and personnel, intrusion detection devices, and added security patrol pathways. The perimeter of the existing outer perimeter fence will be extended and enhanced to accommodate all the new development. Ornamental fencing is used in areas of pedestrians and high public visibility, chain link fencing is provided in the more-hidden wooded locations. Where possible, the design of the site perimeter security boundary integrates existing natural site features and incorporates aesthetically-designed landscaping elements.

Vehicular Access

Access to the site occurs via two main roadways: from New Hampshire Avenue and via an upgraded access from the east via two-lane Dahlgren Road. From a transit perspective, commuter buses will be operationally restricted to the northwest portion of the inner loop road. Northbound buses enter Mahan Road and make a left toward the Visitor Center and then continue back to New Hampshire Avenue via Michelson Road. Southbound buses have the reverse movement with entry at Michelson Road and exit at Mahan Road. In the future, once the new transit center is built and in operation, there will no longer be unrestricted vehicular access into the traffic circle in front of Building 1. The existing operable vehicle barriers shall be used to restrict access to VIPs, official FDA-shuttle buses, and Emergency Operations only. In the meantime, public buses will continue to use the circle in front of Building 1 as a transit stop.

Michelson Road is the primary access for all service and delivery vehicles as it feeds directly to Campus Support Functions. All service vehicles utilize the road bypass to the Remote Inspection Facility for enhanced security vetting prior to site entry and access to the Material Delivery Facility and other service/loading areas. All rejected vehicles are redirected back to New Hampshire Avenue. The importance of the inspection process is to keep the higher risk vehicles as far away from the populated facility as possible until they have been cleared. In addition, Michelson Road supports the access of staff vehicles with convenient access to the north side of the Campus Loop and all parking structures. Finally, it supports the movements of the commuter buses indicated above.

Mahan Road is the major FDA Campus entry with the approach and views oriented towards Building 1. It supports staff vehicles with convenient access to the south side of the Campus Loop and all parking structures. Mahan Road is also identified as the primary visitor entry with access to the visitor center, conference center and visitor parking facilities. It also supports the movements of the commuter buses indicated above.

Dahlgren Road provides staff-only access from the East (via Cherry Hill Road). This road incorporates access control points at both ends in support of the security for the AEDC Facility.

FDA should implement proactive advance communications with all visitors and vendors so that they are aware of access requirements in advance of their visit. Likewise, enhanced and well-coordinated signage and wayfinding is important to integrate into the holistic site planning. The external and internal roadway signage and striping must clearly indicate the requisite vehicular movements to avoid confusion and security risks. For example, signage along New Hampshire Avenue must reinforce the visitor entry and service entry for both northbound and southbound traffic. Once onsite, all drivers should have clear signage to get them to their ultimate destinations. Increased use of secure shuttles (FDA-managed) and external parking structures are proposed as the most cost-effective strategies for the long-term.

Inner Perimeter

The primary security goal for the campus is the protection of the FDA staff. To achieve this, the design includes layered strategies to keep all vehicles as far away as possible from the inhabited facilities. The planning team worked with FDA Security to determine the minimum stand-off requirements for each individual inhabited structure (25'), and where possible, the campus planning maximized those distances (≥ 75') to provide efficient inner perimeters with elegant collective building groupings. Where the stand-off is less than 75', such as the NE corner of the new development, those buildings will require additional reinforcement for blast.

Most of the inner stand-off perimeter length is established using the natural topography and integrates thoughtfully-designed landscape elements. Additionally, this is created by strategically locating interactive and engaging outdoor spaces, creating recreational areas, and aligning the requisite stormwater best management practices.

The FDA Master Plan creates holistic solutions that establish the requisite stand-off while ensuring that the design integrates an aesthetically-pleasing campus experience within the context of a totally green pedestrian-friendly environment. Bollards and deployable barriers are only located where necessary to provide the requisite hardening and setbacks. Walking and other outside activities are key elements of the design and the campus planning encouraging wellness behaviors. Circulation pathways and adjacent green spaces are unrestricted and free-flowing to pedestrians within the inner campus once both staff and pass one of the security screening points located at all major building entrances. As the campus grows, the intent is to expand that concept and the extension of the commons to the east enables that capability.

Preferred Development Alternative Perimeter Security Plan

1
2
3
4

LEGEND

- 25’ Standoff
- 75’ Standoff
- Site Perimeter
- Vehicle Barrier
- Outer Perimeter Fence
- Restricted Access Road
- Permanent Gate
- Pedestrian Entrance Security Point
- Service Access Point
- Inner Campus Perimeter
- New Building
- New Building Garage
- Existing Building
- Existing Building Garage
- Entrance Function

NORTH

Scale 1:5,000

0 50 100 200 400m

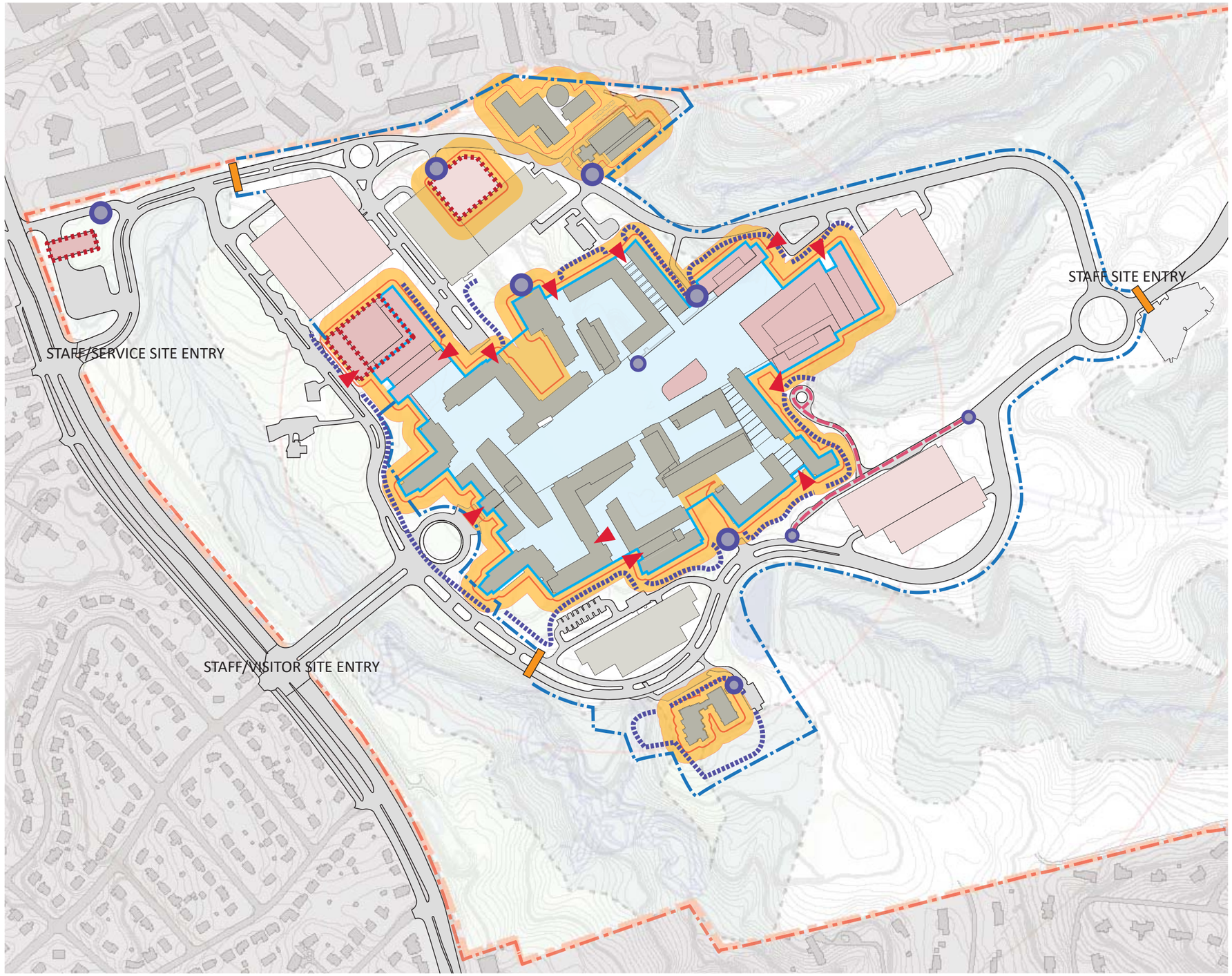


Figure 3-18: Preferred Development Alternative Perimeter Security Diagram

3.3.11 Parking and Circulation

Existing Campus Users

The primary current users of the FDA Headquarters at the FRC are employees of the FDA. A very small percentage of overall users are GSA employees.

Online surveys of existing on-campus and off-campus employees were conducted to determine current commuting patterns and how they might change after the consolidation as part of the Transportation Management Plan (TMP). The survey examined the modes by which employees travel to work, working hours, telecommuting, origin/destination, possible improvements to transit options, and reasons for mode choice. The survey results show that most (about 86.7%) of the existing on-campus employees work a typical 5 day/40 hours per week work schedule. In addition, a majority, 62.3%, of employees arrive between 7:00 AM and 9:00 AM and 61.2% depart between 3:30 PM and 5:30 PM.

Existing and Proposed Transportation Access

Regional access to the FDA Headquarters is provided from US 29, I-95, the Capital Beltway (1-495), and New Hampshire Avenue (MD 650). The FDA Headquarters can be accessed via two driveways (Michelson Road and Mahan Road) on New Hampshire Avenue, as well as Cherry Hill Road via FDA Boulevard. Upon completion of the Viva White Oak development, the site would also be accessed via a planned extension of Industrial Parkway from US 29 to FDA Boulevard.

Several bus routes serve the FDA Headquarters with stops along New Hampshire Avenue (MD 650) or internally within the campus. Most of the bus routes provide service during typical FDA operating hours at 15 to 30-minute headways. In addition to the bus services, FDA operates six commuter shuttle routes that serve local Metro stations. These shuttles are intended to fill gaps in the existing public transit network. Circulator shuttles are also provided internally to link the buildings and parking lots on the FDA Headquarters.

Four- to five-foot wide sidewalks are provided along most roadways, providing a network that connects the FDA Headquarters to nearby residential and retail areas. Sidewalks are provided along northbound and southbound Cherry Hill Road and southbound New Hampshire Avenue (MD 650). An eight-foot wide multi-use pathway is provided along northbound New Hampshire Avenue (MD 650). The FDA Headquarters is connected to the facilities on New Hampshire Avenue (MD 650) via sidewalks along Michelson Road and Mahan Road. A sidewalk and multi-use path are provided along FDA Boulevard and the multi-use path continues along Dahlgren Road to connect the FDA Headquarters with the facilities on FDA Boulevard and Cherry Hill Road.

Bicycle facilities are relatively limited for accessing the site. A narrow, five-foot wide bicycle lane is provided along northbound New Hampshire Avenue (MD 650) along the FDA Headquarters frontage that begins just south of the FDA Headquarters and continues to an area just north of Columbia Pike (US 29). Given the narrow width of the bicycle lane, its proximity to a heavily traveled roadway, and limited connections, it is not likely to encourage FDA employees to commute via bicycle. There is a multi-use path provided along the northside of FDA Boulevard that extends to the campus along Dahlgren Road. However, there are limited facilities on Cherry Hill Road, which does not make the multi-use path an attractive bicycle route.

The results of the employee survey show that approximately 75% of existing on-campus employees currently commute by driving alone to work. Of the 25% of campus employees that do not drive alone to work, 9% commute via transit, 12% carpool or vanpool, 2% utilize the FDA shuttles, and 4% bike or walk to work. In addition to commuting by other modes, FDA offers a robust telework program. Only 31% of on-campus employees typically work all five days on campus, and 87% of off-campus employees report telecommuting at least one day per week, on average.

There were many reasons cited for the reliance on driving to work alone; however, the recurring themes were convenience, shorter overall commute times, lack of suitable pedestrian and bicycle facilities, and the lack of a high-frequency and high-capacity transit service in White Oak.

Increased Volume Impact

Currently, 10,987 employees and support staff are assigned to the FDA Headquarters. Future development plans will accommodate another 7,018 people on-site, for a total population of up to 18,000.

A trip generation analysis was performed using existing data to estimate an AM and PM peak hour trip per employee rate based upon the current employee population. These rates account for the effect of site constraints, like parking capacity, as well as employees that telecommute or take transit. It is anticipated that the ratio of employees that telecommute or take transit would remain relatively consistent from the employee survey that was given; therefore, the rates developed based on existing activity likely provide a fair estimate of future vehicular trip generation.

The number of AM and PM peak hour entering and exiting trips was then calculated for the proposed 7,013 additional employees based on an AM peak hour rate of 0.195 entering trips per employee and 0.018 exiting trips per employee, and a PM peak hour rate of 0.008 entering trips per employee and 0.168 exiting trips per employee. A trip distribution analysis then was used to estimate how the new vehicle trips would travel to and from the site using the following established entrance/exit points:

- New Hampshire Avenue (MD 650) North
- New Hampshire Avenue (MD 650) South
- Columbia Pike (US 29) South
- Columbia Pike (US 29) North
- Cherry Hill Road South
- Powder Mill Road (MD 212) East
- Fairland Road East
- Musgrove Road East

The results of the capacity analysis indicate that the proposed site would generate significant additional delay and queuing on multiple intersection approaches to the campus. Given the built-out nature of the transportation network within the study area, emphasis should to be placed on improving overall intersection operations through adjustments to signal timing and phasing. In addition, physical capacity improvements will need to be evaluated for movements that would experience an increase in delay of at least ten seconds per vehicle.

It is possible that at least two, if not all three of the proposed BRT corridors serving the White Oak area, as well as the Purple Line, would be operational once the expansion of the campus is underway. However, suburban to suburban transit routes, even those located in higher density areas, tend to have a limited impact on journey to work trips for office sites, like the FDA Headquarters. To plan appropriately, roadway mitigation measures combined with transportation demand management (TDM) strategies will be required to support the Master Plan development.

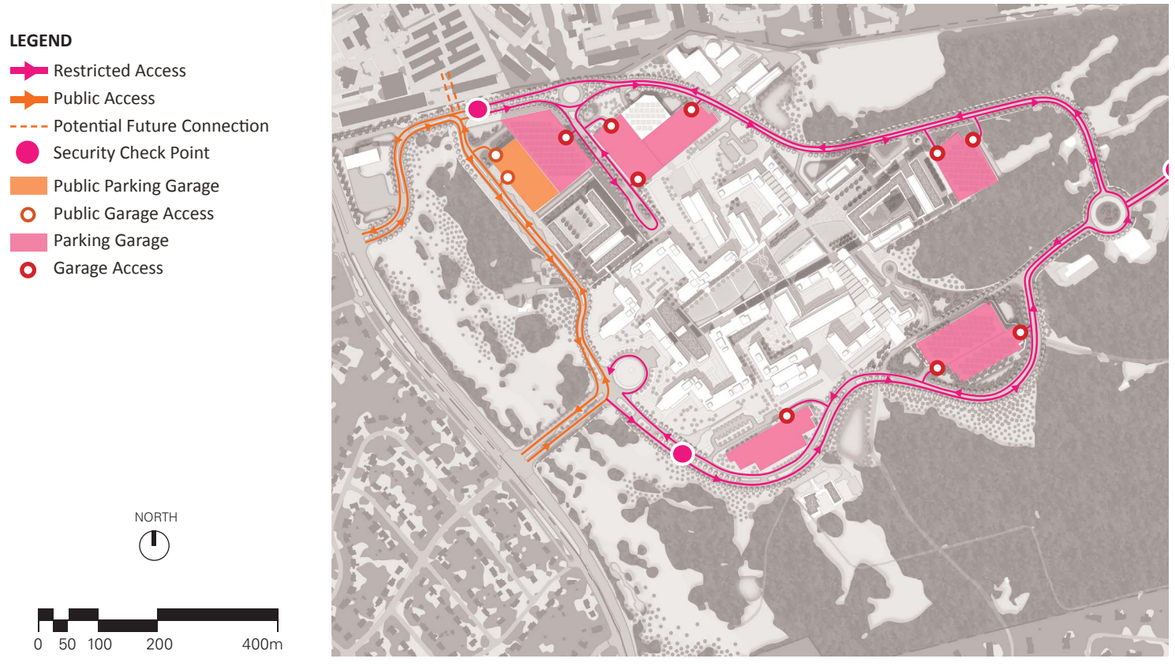


Figure 3-19: Preferred Development Alternative Campus Vehicular Circulation

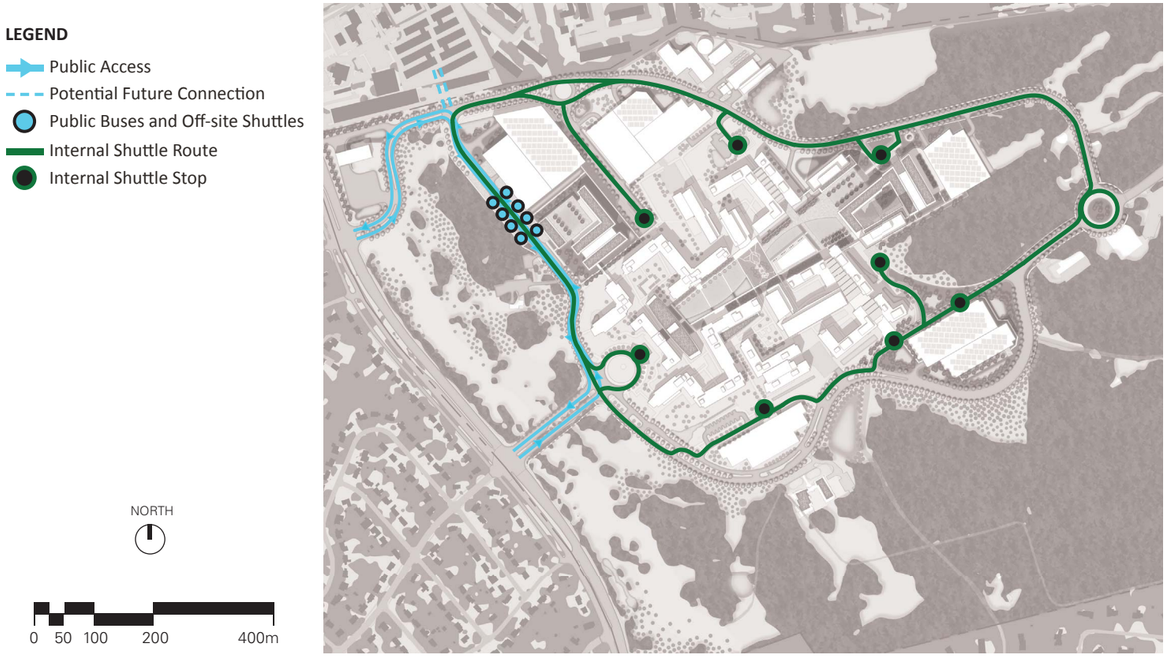


Figure 3-20: Preferred Development Alternative Campus Bus and Shuttle Service Diagram

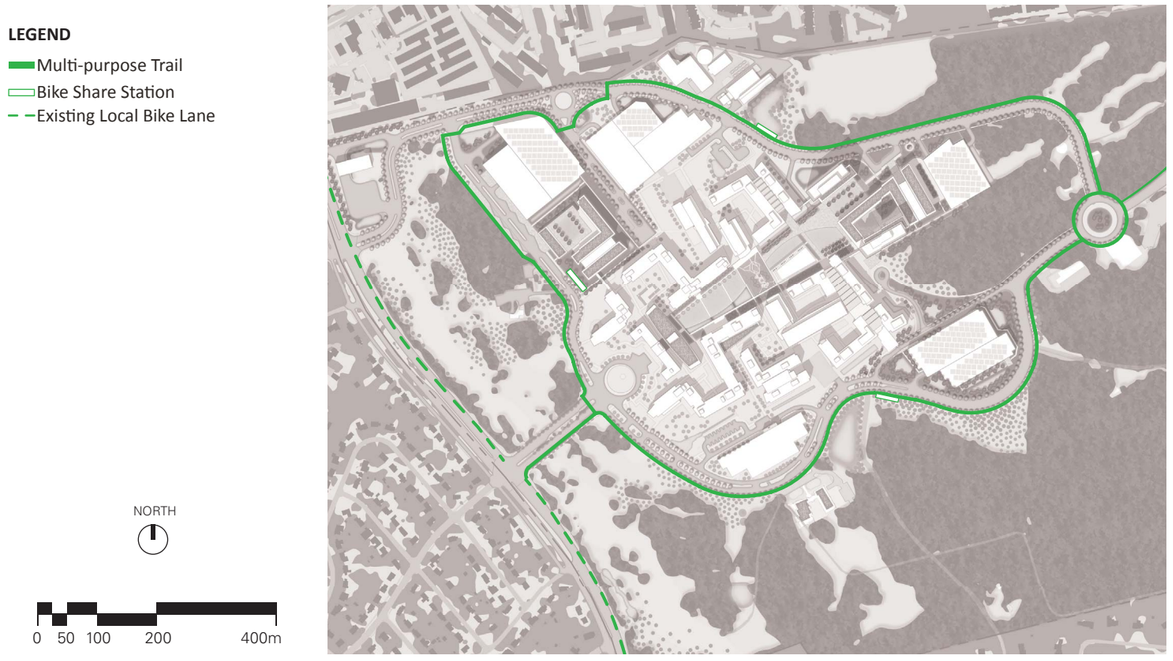


Figure 3-21: Preferred Development Alternative Campus Bicycle Circulation

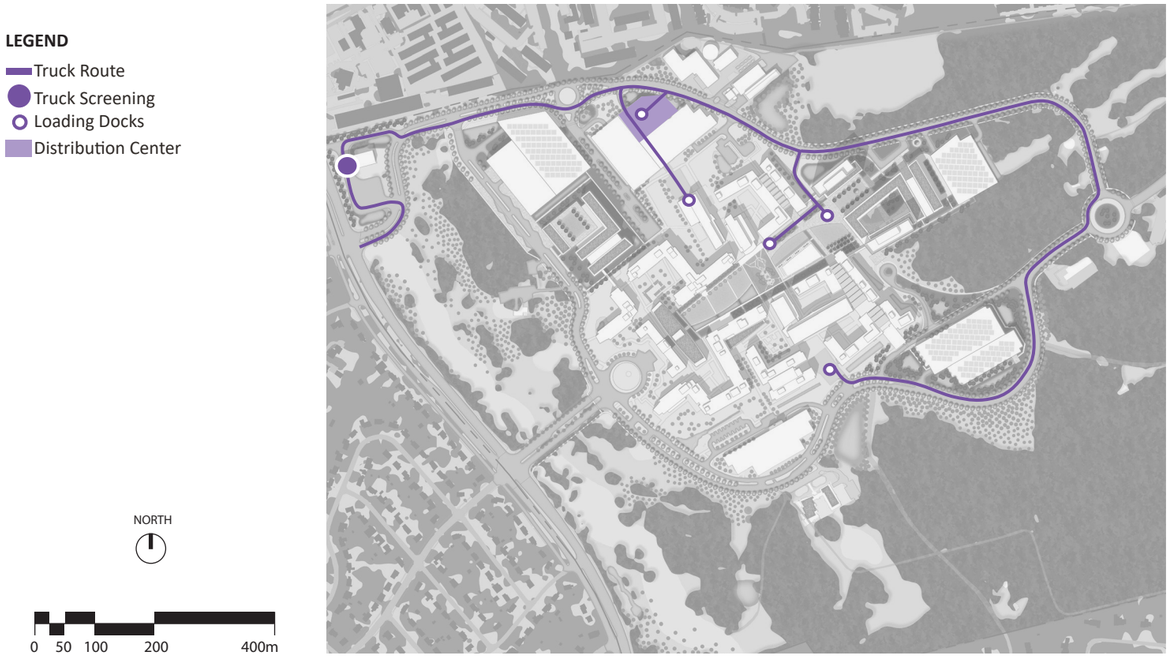


Figure 3-22: Preferred Development Alternative Campus Truck Screening, Service Access and Delivery

The transportation analysis and proposed mitigation measures are detailed further in the Traffic Transportation Report (TTR) and TMP.

Planned Onsite Circulation Improvements

Under the proposed Master Plan development, internal roadway improvements and increased parking capacity and management are planned to accommodate the increased driver population. Security check points will be enhanced and internal intersections improved through widening and roundabouts. Some consideration should also be given to building a new road which would by-pass the Air Force Wind Tunnel.

The existing FDA Headquarters already has a well-planned fabric of landscaped pedestrian walkways that employees and visitors use to traverse to and from parking garages and between buildings on campus. The proposed Master Plan expands this approach using ample sidewalk connections and nature/fitness path connections to and around the new structures planned to encourage and support pedestrian use.

Alternative Transportation Strategies

Based on the Transportation Management Plan (TMP), improvements to pedestrian, bicycle, and transit facilities and services are also recommended as part of a robust and comprehensive mitigation strategy that attempts to reduce and mitigate the impact of peak hour vehicle trips on the external roadway network by an additional 20% beyond what is currently being achieved onsite.

Several enhancements are recommended to provide better connections for alternative modes, such as transit, pedestrians, and bicyclists. These recommendations include:

- Enhance the existing TDM program to encourage more employees to commute via modes other than driving alone (see TMP).
- Provide a 10-foot wide multi-use or protected bicycle lanes path along the campus loop roads that connect pedestrian and bicycle facilities on the external roadway network to the on-campus facilities.
- Provide secure, covered bicycle parking near building entrances. FDA currently provides locker room and shower facilities as well as bicycle repair stations throughout the campus.
- Construct a new transit hub that provides a climate-controlled waiting area with amenities, such as benches, wi-fi, real-time transit information, defined boarding and alighting areas for bus, BRT, and shuttle services, a taxi/rideshare waiting area, and public bikeshare stations.
- Work with Montgomery County to provide a connection to planned bus rapid transit (BRT) corridor and the Purple Line.
- Work with Montgomery County, SHA, and Prince George's County to enhance pedestrian and bicycle connections to nearby residential and commercial centers, as well as to regional pedestrian/bicycle path networks.
- Enhanced shuttle services to transit facilities near areas with higher concentration of employee residences.

Parking Ratio

The Master Plan increases the number of FDA employees and support staff at the FDA Headquarters to 18,000. To accommodate the planned growth, up to an additional 1.9 million gross square feet (GSF) of building space and 7,342 additional parking spaces is proposed. The parking equates to a parking ratio of 1:1.8, or approximately one parking space for every 1.8 employees, plus 1,615 spaces for visitors.

Parking has been identified as one of the key issues on the FDA Headquarters. NCPC permitted 6,926 parking spaces (at a rate of 1:1.5 or 2 parking spaces for every 3 employees) as part of the 2009 Master Plan. However, a proposed parking structure that was to be located in the southeast side of the campus was not constructed. Thus, the FDA has implemented attendant-assisted parking to provide parking capacity for approximately 6,800 vehicles. The attendant-assisted parking is intended to be a stop-gap measure until additional parking can be provided because it is costly and not considered sustainable.

Based on NCPC guidelines, a suburban facility that is not located in close proximity to a high-capacity transit stop, such as a Metrorail station, can have a parking ratio as high as 1:1.5. Therefore, based on this ratio, up to 12,000 parking spaces for employees would be permissible on the FDA Headquarters. However, it is important to think critically about parking supply and demand because additional parking would likely lead to an increase in vehicle trips. During days of peak attendance, it is likely that all parking spaces would be occupied. Therefore, the site would be expected to see an increase in peak period vehicle trips of approximately 5,200 vehicles over a three to four-hour period. This would likely have a significant impact on the study area roadway network.

A sensitivity analysis was performed early in the master planning process to identify the threshold at which major intersections along New Hampshire Avenue (MD 650), US 29, and Cherry Hill Road would begin to fail, making it difficult for employees to access the campus, and requiring significant roadway improvements on a scale that would likely not be feasible. The results of the sensitivity analysis revealed that a lower parking ratio, approximately 1:1.8 would be more appropriate, reducing peak period trip generation by 2,000 vehicles. Refer to the TMP.

At a 1:1.8 parking ratio, approximately 10,000 parking spaces would be permitted for employees and support staff. However, some additional parking is needed for visitors. Thus, approximately 11,615 parking spaces are recommended in the FDA Headquarters Master Plan.

Excluding visitor parking, the additional employee parking will only accommodate approximately 54% of staff that is assigned to the campus. Based on information contained in the employee commuter survey, approximately 75% of existing on-campus employees drive alone to work, while 79% of employees at leased locations are anticipated to drive alone to work if they are relocated to the FDA Headquarters. Factoring in FDA's robust telework program, and peak employee attendance rate of 85% on any given day, the amount of employees that are anticipated to drive-alone to work will be 64%. This is 10% above the planned parking ratio. Refer to the TMP.

As required by NCPC, a Transportation Management Plan (TMP) has been prepared to recommend strategies that FDA can use to reduce the single-occupancy vehicle trips to the site and encourage increased vehicle occupancy and alternative modes of transportation.

Visitor Parking Analysis

The number of visitor parking spaces (1,615) proposed in the Master Plan, was verified utilizing information contained in the Urban Land Institute (ULI) Shared Parking Manual (2nd Edition), which is one of the only standard publications to address visitor parking demand for office uses. The comparative analysis shows that the 1,615 visitor parking spaces proposed in the Master Plan, calculated by applying the ratio of existing and projected site population to the existing number of visitor parking spaces (1,000), is within the range of demand as estimated by information contained in the ULI Shared Parking Manual.

With the increase in the number of employees located at the White Oak site, an increase in public

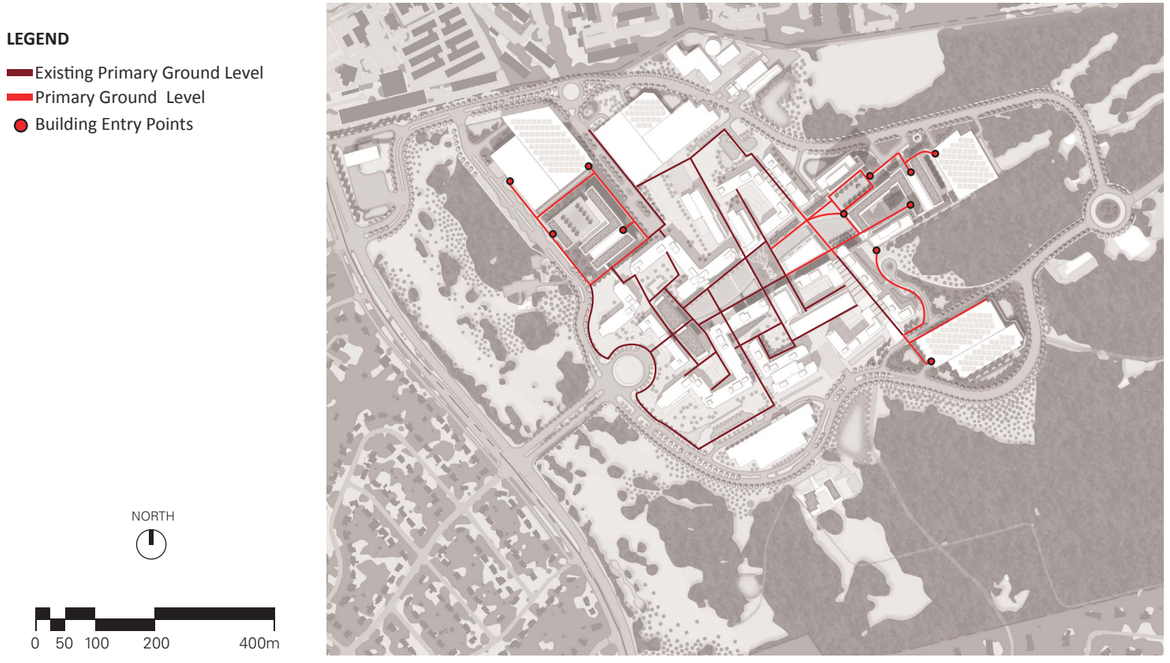


Figure 3-23: Preferred Development Alternative Plaza Level Pedestrian Circulation Diagram

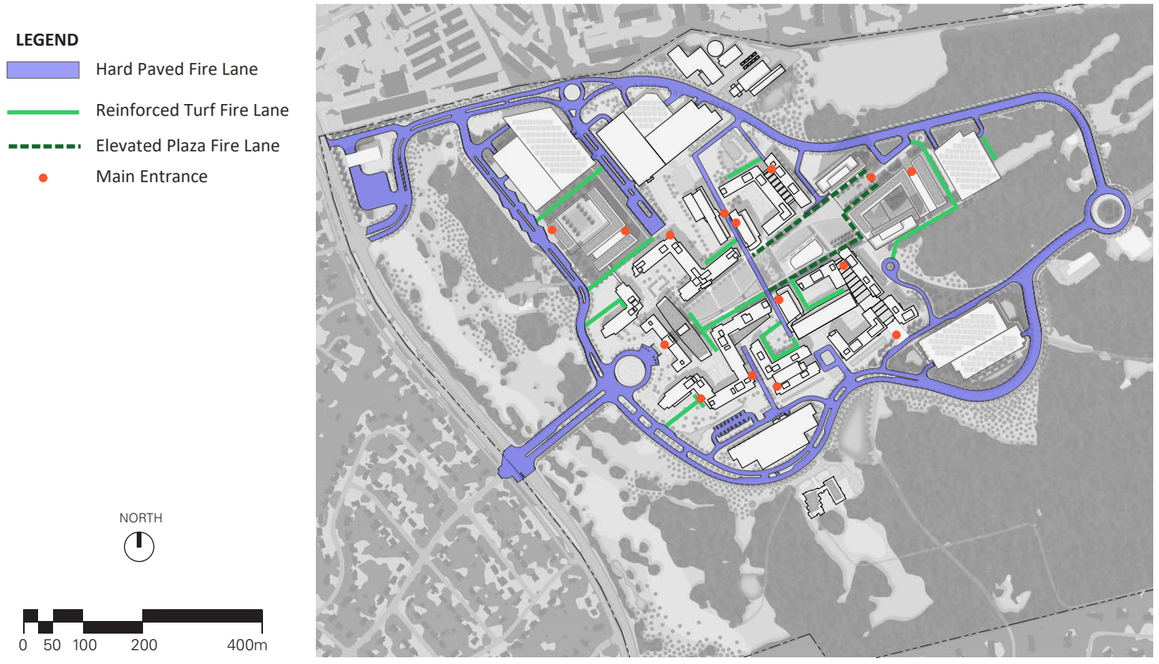


Figure 3-24: Preferred Development Alternative Fire Truck Access Diagram

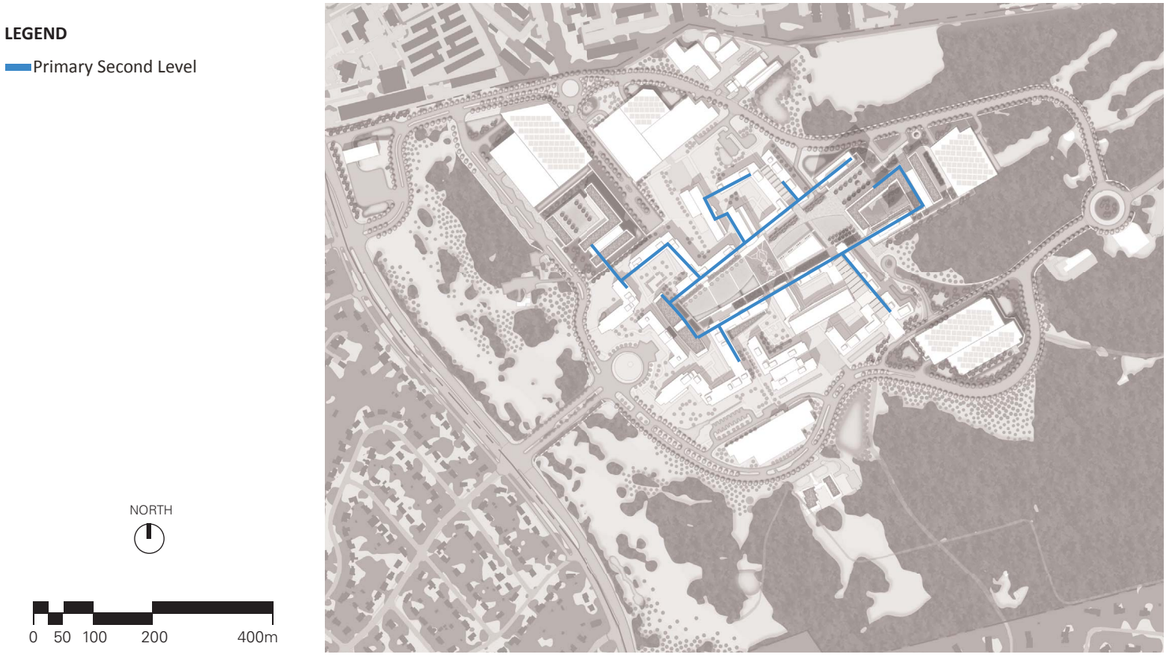


Figure 3-25: Preferred Development Alternative Elevated (2nd Level) Pedestrian Circulation Diagram

meeting space, and an increase in the amount of occupied space, FDA expects a proportionate increase in the demand for visitor parking. It is inherent to FDA's mission for it to be accessible to the public who it serves and who may choose to visit or conduct business with the agency. The demand for visitor parking at White Oak is generated by a variety of activities that can be categorized as follows:

- Daily and routine interaction with government personnel who are not assigned to the White Oak Campus.
- Daily and routine interaction with business/ public personnel.
- Routine public meetings required to be open to the public (fluctuating attendance).
- New Employee orientation activities occurring two days every two weeks (fluctuating attendance).
- Daily requirements to have personnel from the trades and services arrive in support of facilities and infrastructure project work.

With the present population of the FRC at White Oak, FDA routinely receives up to 400 public visitors a day. Additionally, FDA receives on average over 500 to 1000 government visitors (badged) who are not assigned to the White Oak site. While many of these government personnel are projected to be assigned to the White Oak site when the additional office space is provided, FDA will continue to have employees from large off-site locations in Beltsville and College Park whose occupants visit the White Oak Campus in addition to employees from national/ international locations who also visit the campus. FDA also receives government visitors from the Department of Health and Human Services and the General Services Administration. In addition, on days where FDA holds large public meetings there are a high number of visitors who arrive on site to access the semi-public meeting space and which can exceed 400 in a single day. Moreover, every two weeks FDA holds a two-day new employee orientation for onboarding new staff. On average there are over 50 new employees onboarded every two weeks and on occasion there are 150 or more. New employees arrive for these two-day sessions without an FDA badge and are therefore required to park in visitor parking.

As a large facility, the FDA facility and infrastructure needs are continuous. Outside vendors are frequently needed on site to provide for facilities and infrastructure projects that are commensurate with maintaining and occupying a technically advanced and technology intensive buildings. These requirements fluctuate based on the ongoing requirements but are continuous. As these vendors are often on campus for short duration activities, they are not assigned to the site and they are regarded as visitors.

The nature of visitor parking is that it ebbs and flows depending on the nature of activities occurring on site. Additionally, as all the activities that generate demand for visitor parking are critical to the Agency and its operations, it is not practical to plan visitor parking based on an average arrival rate. Table 3-2 provides FDA's existing peak visitor attendance and an estimate of future peak attendance.

While it is not practical or warranted to provide visitor parking at a one-to-one ratio, there is no direct formula for estimating the amount of visitor parking that may be needed on site. Therefore, for the Master Plan, the amount of recommended visitor parking spaces (1,615) was calculated by increasing the number of existing visitor parking spaces (1,000) at a ratio that matches the increase in onsite population.

The estimate was then verified utilizing data in the Urban Land Institute (ULI) Shared Parking Manual (2nd Edition) which provides a recommended visitor parking ratio of 0.2 spaces per 1,000 square feet for office and provides a recommendation that visitor parking should make up 7% to 8% of total parking supply. Thus, verification was done by calculating visitor parking based on total planned square footage and as a percentage of total parking supply.

Table 3-2: Peak Visitor Scenario

Visitor Type	Existing Condition	Future Condition
Government and Contract Personnel Not Assigned to the White Oak Campus	500	250
Business/Public	400	720
Event-Specific	400	800
New Employee (Orientation)	150	200
Facilities and Infrastructure Projects	50	100
Total Peak Demand	**1,500**	**2,070**

Table 3-3: Parking Demand Calculation Based on Square Footage

	Low	High
Square Footage	5,621,227	5,677,116
Base Video Parking Demand (0.2 per ksf)	1,124	1,135
Visitor Mode Split Credit (25%)	281	284
Adjusted Base Parking Demand	**843**	**852**
Peak Event/Conference Parking Demand	800	800
Mode Split Credit (12%)	96	96
Adjusted Event/Conference Parking Demand	**704**	**704**
Facilities/Infrastructure Parking Demand	100	100
Mode Split Credit (12%)	12	12
Adjusted Facilities/Infrastructure Parking Demand	**88**	**88**
Total Demand	**1,635**	**1,644**

Table 3-4: Parking Demand Calculation Based on Percentage of Total Parking

	Low	High
Percent of Total Parking	7%	8%
Base Parking Demand	**707**	**808**
Peak Event/Conference Parking Demand	800	800
Mode Split Credit (12%)	96	96
Adjusted Event/Conference Parking Demand	**704**	**704**
Facilities/Infrastructure Parking Demand	100	100
Mode Split Credit (12%)	12	12
Adjusted Facilities/Infrastructure Parking Demand	**88**	**88**
Total Demand	**1,499**	**1,600**

Refer to the FDA White Oak Campus Visitor Parking Demand Memo from Stantec to GSA, dated July 9, 2018.

In Conclusion, the comparative analysis, described in the FDA White Oak Campus Visitor Parking Demand Memo, shows that while the estimated demand based on square footage is slightly higher than the estimate based on percentage of total parking, the estimates are within a similar range. The 1,615 visitor parking spaces proposed in the Master Plan, calculated by applying the ratio of existing and projected site population to the existing number of visitor parking spaces (1,000), is within the range of demand as estimated by information contained in the ULI Shared Parking Manual. Therefore, this visitor parking estimate is valid and reasonable for FDA.

4 ENVIRONMENTAL AND HISTORICAL CONSIDERATIONS

4. ENVIRONMENTAL AND HISTORICAL CONSIDERATIONS

4.1 Historic Preservation

4.1.1 Area of Potential Effect (APE)

The Area of Potential Effect (APE) is defined in 36 CFR 880.16 as "the geographic area or areas within which an undertaking may directly or indirectly cause alterations in the character or use of historic properties, if any such properties exist."

The APE for the project contains the resources visually or physically affected by the demolition and construction associated with the expansion of the FDA Headquarters. The APE is contiguous with the boundaries of the historic 100 area of the White Oak Naval Ordnance Laboratory. This geographic area includes the existing FDA Headquarters and the portions of the 100 area outside the boundary of the FDA Headquarters, particularly the historic green buffer zone between the campus and New Hampshire Avenue. Within the APE lie the historic resources of the White Oak Naval Ordnance Laboratory Historic District that were retained under a previous Memorandum of Agreement executed as part of the initial development of the FDA Headquarters. These include the retained portions of the Main Administration Building (Building 1), the flagpole with a redesigned and relocated circle in front of Building 1, and the historic fire station, which is now part of Building 100. The APE includes all historic resources that may be affected by the proposed undertaking.

4.1.2 Historic Resources in the APE

When the Naval Ordnance Laboratory (NOL) was determined eligible for the National Register of Historic Places in 1997, there were 372 documented resources on the site, which included 260 contributing resources and 112 non-contributing resources. The enumerated resources included buildings, structures, and utilities. One contributing landscape was identified, the golf course at the western and southern edges of the property, which provided a "physical and natural buffer which preserves the visual character of the main complex" and was also important as an amenity

AREA OF POTENTIAL EFFECT

Area of Potential Effect (APE) means the geographic area or areas within which an undertaking may directly or indirectly cause alterations in the character or use of historic properties, if any such properties exist. The APE is influenced by the scale and nature of an undertaking and may be different for different kinds of effects caused by the undertaking.
36 CFR 800.16

Figure 4-1: Front Lawn, Flag Pole, and Main Administration Building 1

Figure 4-2: Former Naval Ordnance Laboratory Fire Station

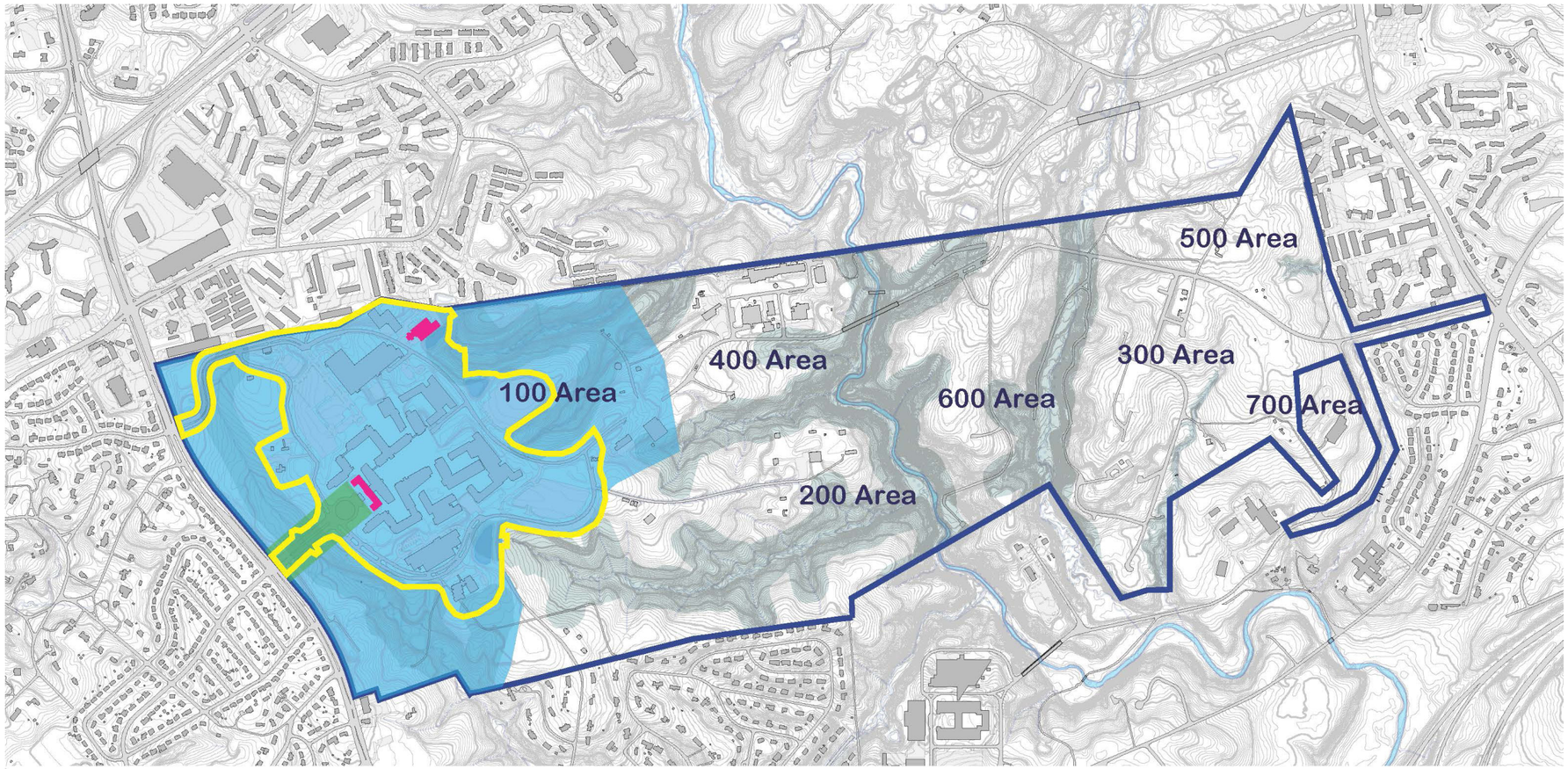


Figure 4-3: Area of Potential Effect Map

"conceived, built, and maintained entirely by the employees" of the NOL. Under a 2002 Memorandum of Agreement, a number of historic resources within the boundaries of the FDA Headquarters (100 area) were documented and removed during the development of that facility. Historic resources retained in this area include Buildings 1 and 100 and the flagpole. Additionally, following completion of the 2003 Memorandum of Agreement, nearly all the resources in the 300 and 600 area were removed. Historic resources remain in the 200 and 400 areas. GSA confirmed with the Maryland State Historic Preservation Office that there were no adverse visual effects on portions of the NOL outside the 100 area.

4.1.3 Approach to Addressing Historic Resources within the APE(s)

The 2002 Memorandum of Agreement (MOA) was to remain in effect until its termination or until a new MOA was negotiated. The 2002 MOA stipulated that GSA should consult with the Maryland State Historic Preservation Office (MD SHPO) on the design plans of proposed buildings that are "compatible with neighboring historic buildings in terms of their height, scale, massing, and materials." Under the 2002 MOA, GSA, MD SHPO, and other signatories established compatibility standards for future development at the Federal Research Center that have been adhered to throughout subsequent master plans (2006, 2009) and implementation. Because this is a new Master Plan, the existing MOA is closed out concurrently with the execution of the new MOA associated with the new master plan. It initiated consultation with potential consulting parties under Section 106 of the National Historic Preservation Act (NHPA), which was carried out in coordination with the Environmental Impact Statement under NEPA. GSA negotiated a Memorandum of Agreement (MOA) with the MD SHPO to govern work carried out under the new

master plan. GSA carried forward the compatibility standards established under the 2002 MOA to the new MOA.

No historic resources within the APE are expected to be physically affected by the planned construction under the Master Plan alternatives. The truck screening facility would be built north of Michelson Road, beyond the north edge of the historic buffer. Under Alternatives B and C, the construction of a high-rise tower (B) or towers (C) would represent a departure from the compatibility standards established under the 2002 MOA and would adversely affect the visual setting of Building 1. GSA initiated consultation under Section 106 of the National Historic Preservation Act to negotiate a Memorandum of Agreement for mitigation in the event of any adverse effects to the historic buildings or landscapes as a result of the Preferred Development Alternative.

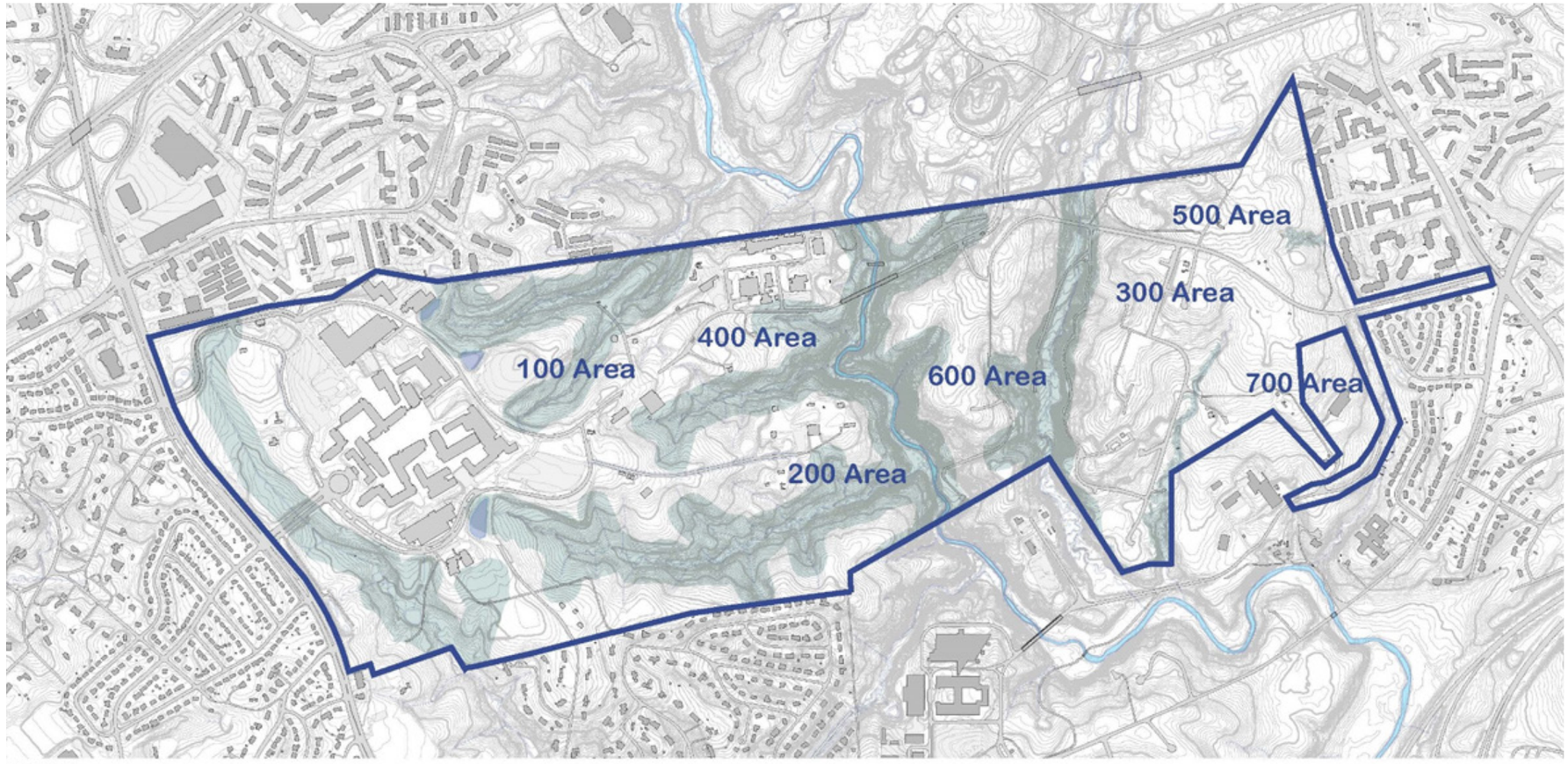


Figure 4-4: Historic District Boundary and Areas Map

4.2 Natural Resources

The existing natural features of the FRC defining the built-up land at the FDA Headquarters include large wooded land areas, wooded stream valleys, and grassy meadow areas. The rolling topography, water resources, and the wildlife habitats enhance the FDA's and Air Force's employee and visitor experience. GSA analyzed potential direct, indirect, short-term, long-term, and cumulative impacts on the natural resources associated with each of the alternatives under consideration.

4.2.1 Soils and Topography

There are eight soil unit types within the study area (see Figure 4-5). The most abundant soil type within the study area is Croom gravelly loam which accounts for over 70 percent of the soils. The next most abundant soil type is classified as Urban Land where 75 percent of the surface is covered by asphalt, buildings, or other structures. Approximately 9 acres in the FDA Headquarters contains Croom gravelly loam and Blocktown channery silt loam (USDA, 2017); the slope associated with these soils may have a severe hazard of erosion (USDA, 1995).

Prime farmland soils have the best combination of characteristics for producing crops such as food, feed, forage, fiber, and oilseed crops. Sassafras loam with 2 to 5 percent slopes (58B) is considered prime farmland soils in all areas. Soil map unit 58B comprises approximately 3 percent of the soil within the FDA Headquarters. Glenelg silt loam with 8 to 15 percent slopes (2C) and Croom gravelly loam with 3 to 8 percent slopes (61B) and with 8 to 15 percent slopes (61C) are classified as farmland soils of statewide importance and account for the majority of the soils within the project area (USDA, 2017). Although there are prime farmland soils within the FDA Headquarters, the land is classified as urban or built-up and therefore exempt from the Farm Protection Act.

Generally speaking, the topography of the FRC is generally rolling with elevations ranging from approximately 160 to 400 feet above mean sea level (msl). Within the FDA Headquarters, the topography is relatively flat due to grading and existing construction, ranging from approximately 350-to 390 feet msl. Towards the west end of the FRC, elevation is approximately 290 feet msl with steep slopes along the unnamed tributaries to Paint Branch. Slopes of greater than 15 percent are considered to have severe erosion potential.

Soil Unit	Soil Type	Slopes
2C	Glenelg silt loam	8 to 15 percent slopes
58B	Sassafras loam	2 to 5 percent slopes
58C	Sassafras loam	8 to 15 percent slopes
61B	Croom gravelly loam	3 to 8 percent slopes
61C	Croom gravelly loam	8 to 15 percent slopes
61 D	Croom gravelly loam	15 to 25 percent slopes
116E	Blocktown channery silt loam	25 to 45 percent slopes
400	Urban Land	

Figure 4-5: Soil Map Units Within the Study Areas (USDA, 2017)

Figure 4-6: Area adjacent to new loop road

Construction in areas of steep slopes will be avoided to the extent possible. Detailed subsurface engineering studies will be undertaken prior to design and construction to ensure that sound building practices are followed. Soil suitability will be determined, and appropriate building foundation specifications will be developed. A soil erosion and sediment control plan will be developed to minimize soil loss due to erosion. Best Management Practices (BMP), such as silt fencing, construction sequencing, and seeding exposed soil areas with grass seed, will be used to control and minimize sedimentation, which is the transportation and deposition of sediments from land into water.

4.2.2 Surface Water and Wetlands

All waterways on the FRC are unnamed tributaries of Paint Branch, located within the Anacostia River watershed. Perennial and intermittent streams on the FDA site are subject to Montgomery County Stream Valley Buffers (SVBs) and require a 150-foot minimum buffer, which may be expanded up to 200 feet to include steep slopes equal to or greater than 25 percent, 100-year floodplains, wetlands, and wetland buffers. No buildings, structures, impervious surfaces, or activities requiring clearing or grading are permitted within SVBs, except for unavoidable road, trail, or utility crossings.

Stream Valley Buffers and Mitigation Strategies

The expansion of the campus may require development within or adjacent to existing stream valley buffers. M-NCPPC provides guidelines for stream valley buffers and development. Based upon those guidelines, encroachments into the stream valley buffers could be mitigated by re-forestation plantings. The re-forested areas may be on a 1:1 basis within the FRC site, if possible.

M-NCPPC recommended guidelines for stream buffers states:

"5. The plan design provides compensation for loss of buffer function.

In reviewing buffer compensation proposals, staff will consider such options as buffer averaging, enhanced forestation, bioengineering practices, and other environmentally beneficial techniques. Buffer averaging provides environmentally comparable on-site area outside the delineated stream buffer in exchange for the allowance of encroachment elsewhere in the delineated stream buffer. The concept of enhanced forestation (as described in detail in Chapter V, section C) goes beyond the county legal requirements for forest conservation to enhance the existing riparian forest or to accelerate the creation of healthy mature forest in afforestation/reforestation areas."

p.19 Environmental Guidelines

Encroachments within SVBs will be subject to M-NCPPC review. All proposed encroachments to SVBs will be designed in accordance with Chapter 5 of the M-NCPPC Environmental Guidelines to the maximum extent practicable. M-NCPPC will be consulted prior to final design to determine additional avoidance, minimization, and appropriate compensatory mitigation for impacts to SVBs.

Implementation of the Master Plan will require authorization under the Maryland State Programmatic General Permit 5 (MDSPGP-5), co-administered by USACE and MDE, which authorizes projects that would result in less than 2,000 linear feet of stream impacts and less than 1 acre of wetland impacts. The MDSPGP-5 requires compensatory mitigation for stream impacts exceeding 200 linear feet and wetland impacts exceeding 5,000 square feet. By providing compensatory mitigation in accordance with the MDSPGP-5 and complying with the permit terms and conditions, the impacts to streams and wetlands would be reduced.

Examples of Stream Valley Mitigation Improvements