Preferred Development Alternative
Mahan Road Circle View

Figure 4-13: Preferred Development Alternative View from Mahan Road Circle

Preferred Development Alternative
South New Hampshire Ave View

Figure 4-14: Preferred Development Alternative View from South New Hampshire Ave.

Preferred Development Alternative
New Hampshire and Michelson Rd View

Figure 4-15: Preferred Development Alternative New Hampshire and Michelson Rd View

4.3.3 Changes in Light & Shadow

The anticipated impacts on light and shadow are depicted in the diagrams for various times and seasons.

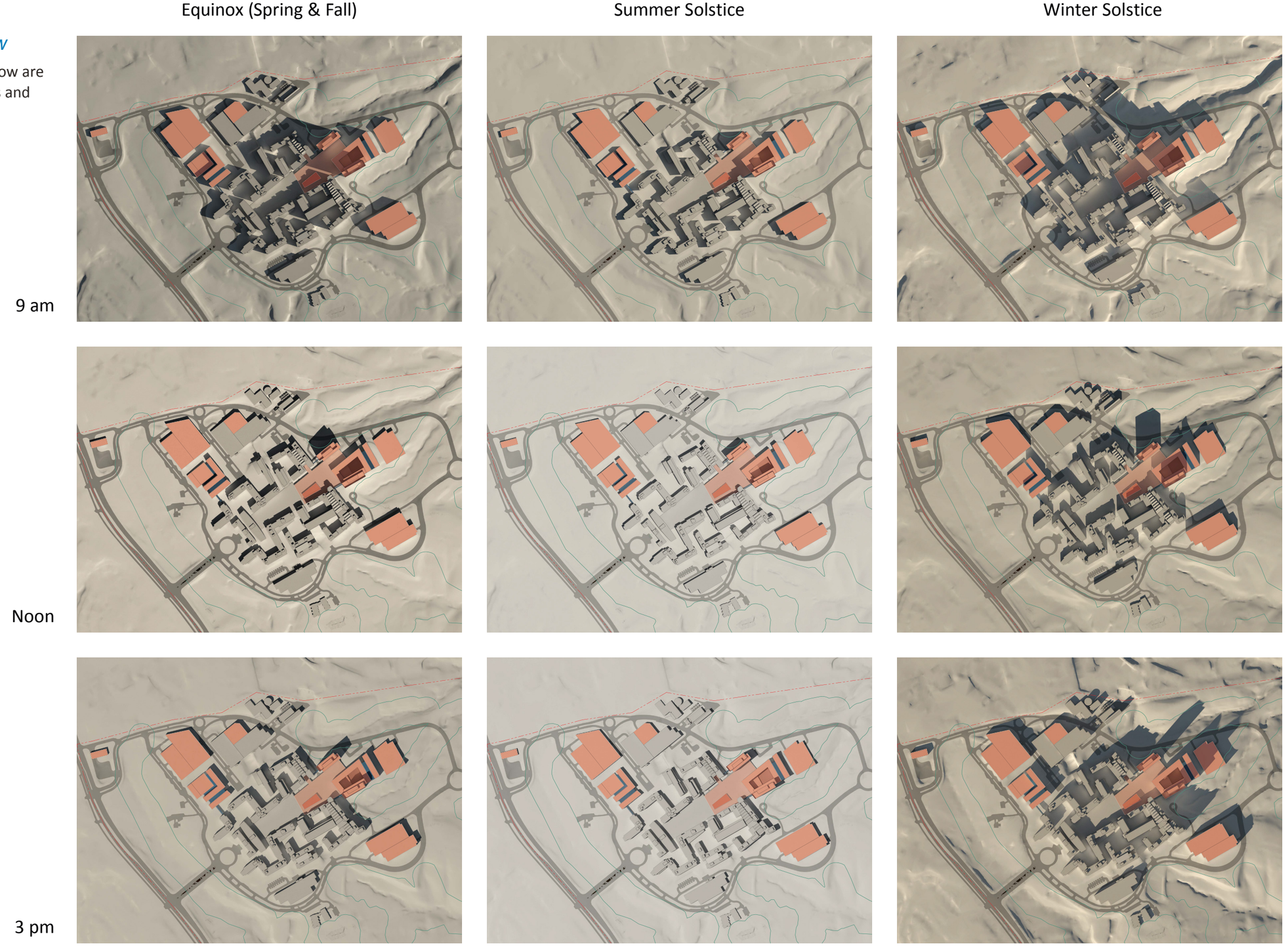


Figure 4-16: Preferred Development Alternative Shadow Study

4.4 Flooding

Based on a review of FEMA Flood Insurance Rate Maps (FIRM), floodplains for Paint Branch and several tributaries to Paint Branch are found on portions of the FRC and within the study area). The FRC is mapped on FIRM Panel 24031C0390D, effective September 29, 2006 (FEMA, 2006). These floodplains have been designated Zone AE which indicates a detailed study was performed to map the floodplain and Base Flood Elevations (BFEs), the elevation to which the flood is expected to rise during the 100-year storm, have been calculated. The floodplains on the FRC are primarily confined to the narrow channels of the streams and do not span large areas. The Preferred Development Alternative does not involve development within the 100-year floodplain. The implementation of the Preferred Development Alternative complies with Executive Order 11988 and the PBS GSA Floodplain Management Desk Guide, 2016. There would be no significant impacts to floodplains.

4.5 Stormwater Management Plan

4.5.1 Introduction

Figure 4-17 shows the proposed stormwater management plan for the Preferred Development Alternative.

Impervious area would be reduced by providing structured parking instead of parking lots, maximizing the office building heights, and providing pervious pavements in hardscape areas and some fire lanes.

The State of Maryland Environmental Site Design (ESD) strategies would be implemented to the maximum extent practicable. LEED and SITES points for stormwater management would be pursued for each building. Low Impact Development (LID) strategies would be employed in accordance with the Technical Guidance on Implementing the Stormwater Runoff requirements for Federal Projects under Section 438 of the Energy Independence and Security Act (EISA 438). Strategies to incorporate SWM facilities into the site as amenities and spatial drivers would be pursued, as well as exploring the potential to integrate the design into the natural systems of the White Oak FRC site.

Potential types of LID/BMP facilities for the expanded FDA Headquarters are: Micro-bioretention (Structural walled micro-bioretention may be used in lieu of graded micro-bioretention where space limitations dictate), Bio-swales (on road sides), Rooftop Rainwater Harvesting (Typical reuse methods are toilet flushing and cooling tower makeup water), Green Roof/Partial Green Roof (Green roof with 4" media provides 38% of the required MDE Environmental Site Design Volume (ESDv)), Pervious Pavements (The best opportunities on the campus are likely to be fire lanes, sidewalks, paths, and other hardscape areas), Submerged Gravel Wetlands (MDE will generally accept these if alternative ESD BMPs are not feasible), Tree Planting, and Stream Restorations (Tree planting and stream restoration can at times be credited toward meeting water quality requirements).

Roadways would maximize use of bio swales. Office buildings would maximize the use of rooftop rainwater harvesting as well as green roofs. Any untreated storm runoff from roads, buildings, and parking structures would be conveyed to new non-structural ESD/BMP facilities such as bio-retention areas. Once ESD measures have been implemented to the maximum extent practicable (MEP), then structural and other non-ESD type BMP facilities could be utilized. An existing SWM pond (Pond #3) located at the east end of the central commons would be removed and replaced via a re-design and expansion of existing SWM Pond #1 (adjacent to the Central Utility Plant). The existing SWM pond (SHA Pond #2) located north of Michelson Road, and adjacent to New Hampshire Avenue (MD 650) would be removed and replaced by a submerged gravel wetland located south of Michelson Road. The other existing stormwater facilities on the FDA Headquarters may be retrofitted, relocated, or replaced as necessary. These areas would drain to new storm pipe systems that would in turn outfall to existing tributaries of Paint Branch. Outfalls would be required to be non-erosive.

Construction would be authorized under the NPDES General Permit for Stormwater Associated with Construction Activity. Notices of Intent (NOI) would be filed and NPDES General Permits for Construction would be obtained for all new work. During construction, BMPs such as silt fence, erosion matting, inlet protection, sediment traps, sediment basins, and revegetation of exposed sediment would be implemented to minimize soil erosion and stormwater pollution. Stormwater management plans and erosion and sediment control plans would be prepared and submitted to MDE for review and approval prior to construction. MDE enforces a maximum limit of 20 acres of disturbed ground at any time. All disturbed areas would be permanently revegetated and stabilized following construction. Temporary impacts to streams and wetlands would be restored to pre-construction conditions to the maximum extent practicable following construction, including contour and elevation restoration, revegetation with native species, streambank stabilization, and stream substrate replacement.

Stormwater quantity and quality control measures would be designed and implemented in accordance with the following regulations, permits and guidance documents:

- COMAR 26.17.01 Erosion and Sediment Control
- COMAR 26.17.02 Stormwater Management
- Maryland Standards and Specifications for Soil Erosion and Sediment Control (MDE, 2011)
- Maryland Stormwater Management and Erosion & Sediment Control Guidelines for State and Federal Projects (MDE, 2015)
- Maryland Stormwater Design Manual, Volumes I & II (MDE, 2000) and Supplement 1 (MDE, 2009)
- Section 438 of the Energy Independence and Security Act of 2007 (EISA)
- Technical Guidance on Implementing the Stormwater Runoff Requirements for Federal Projects under EISA 438 (EPA, 2009)
- Guidelines for Environmental Management of Development in Montgomery County (M-NCPPC, 2000)
- NPDES General Permit for Stormwater Associated with Construction Activity, administered by MDE
- NPDES General Permit for Discharges from State and Federal Small Municipal Separate Storm Sewer Systems (MS4s), administered by MDE
- Maryland State Programmatic General Permit 5 (MDSPGP-5), co-administered by USACE and MDE

4.5.2 Calculations

Each proposed Development Alternative was analyzed against MDE Environmental Site Design (ESDv) requirements and EISA Section 438 Low Impact Development (LID) requirements to confirm the feasibility of the proposed SWM concepts and to estimate the amount of treatment that may be required. The proposed SWM BMPs would include micro-bioretention, bio-swales, green roof, submerged gravel wetlands, and rainwater capture and reuse.

BMPs are shown schematically on the SWM Plans and each shape represents the approximate size of the treatment area that would be needed. The exact location, size and shape of each BMP would be determined during design, and would consider factors such as contributing drainage area, site grading, site utilities, fire access, and aesthetics.

The enlargement of SWM Pond #1 was estimated based on including the storage volume that would be lost in the removal of Pond #3. The submerged gravel wetland located near Michelson Road was sized to replace the function of the SHA SWM Pond that would be removed for the construction of the new Truck Screening Area.

LEGEND

- Bio-swale
- Schematic locations for Micro Bio-Retention Facilities
- Rainwater capture and reuse
- Green Roof
- Submerged Gravel Wetland Area
- Re-design and expansion of Existing SWM Pond #1 ; Replaces function of SWMP #3 (removed)

NORTH

Scale 1:5,000

0 50 100 200 400m

Figure 4-17: Preferred Development Alternative - Stormwater Management Plan

4.6 Utilities Plan

4.6.1 Power Plan

The proposed addition of employees and support staff at the FDA Headquarters would result in increased demand for electrical, and HVAC services.

Power for the proposed new buildings on the FDA Headquarters would be provided by new feeder lines from the existing PEPCO substation, which currently only supplies backup power. Each new building would have its own individual power supply and dedicated mechanical spaces for HVAC. PEPCO would become the sole provider of electricity for the new Campus buildings. No new buildings nor equipment would be added to the existing Central Utility Plant (CUP) system.

Power could also be provided by expansion of the existing CUP and utility distribution system, or by the addition of a new and separate utility plant and distribution system that would serve only the new buildings. With the former, the existing utility plant capacity would be expanded, and the distribution system would be extended to the areas of new development to provide electrical power as well as chilled and heated water for HVAC. This would be accomplished by expansion of the existing CUP site and/or by adding a new satellite plant. With the latter, a new separate utility plant would be added, and a new separate distribution system would provide power and HVAC to the new buildings only. If the existing CUP were expanded or a separate utility plant built, additional studies and compliance activities would be required.

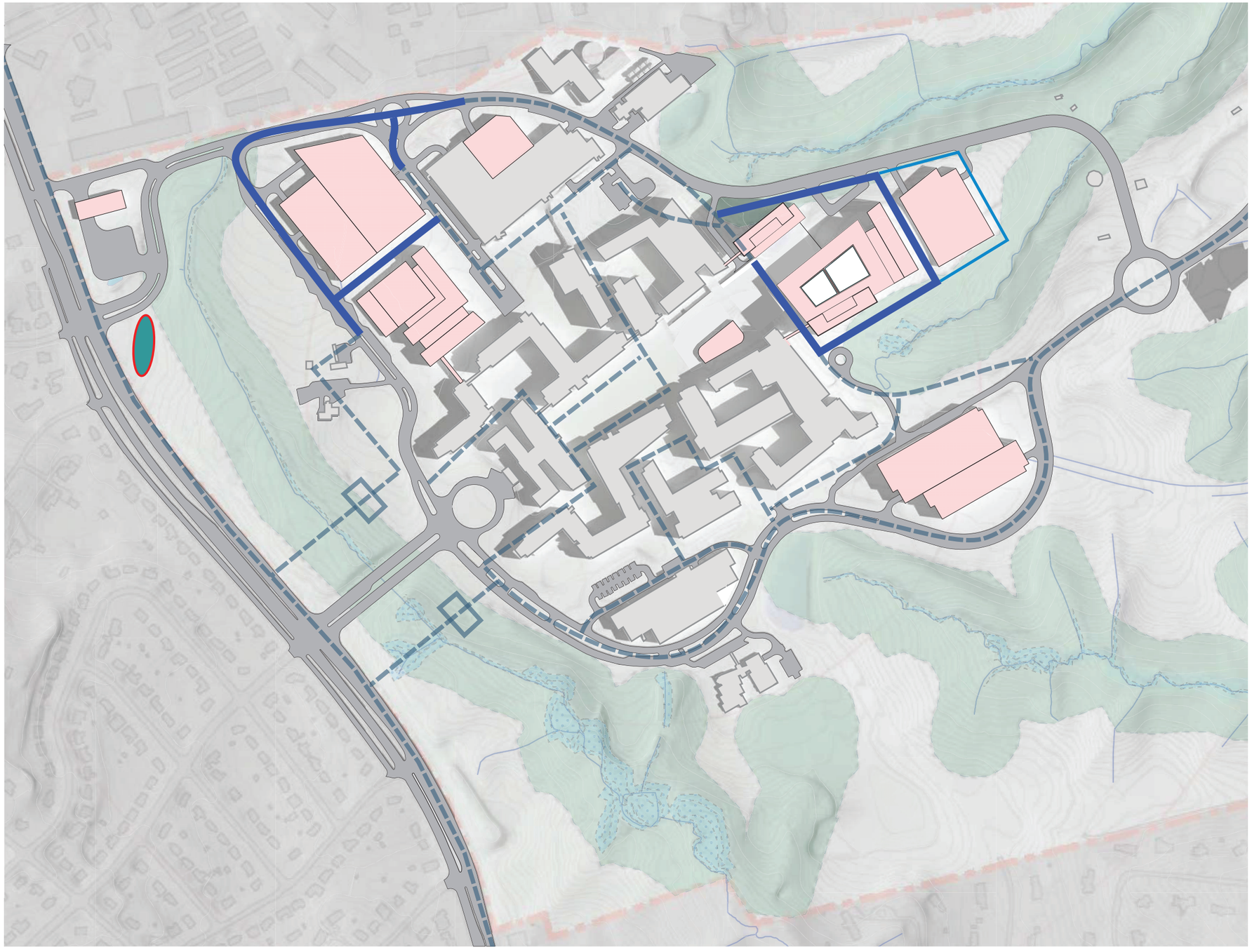
The following energy conservation strategies would be used: rooftop solar panels, active and passive solar techniques, high-efficiency lighting and occupancy sensors, modern and efficient heating and cooling equipment, natural ventilation systems, and ENERGY STAR® appliances. LEED® Gold certification and net zero energy usage would be achieved for all new buildings.

4.6.2 Water Plan

The proposed addition of employees and support staff at the FDA Headquarters would result in increased demand for water service. Water supply to the site would use a portion of the existing capacity of the regional water storage and water distribution. WSSC conducted a System Planning Forecast (SPF) to review the water and sewer demands for the Development Alternative. The Letter of Findings (LOF) for the SPF, issued May 31, 2017, concluded that the existing water service would be adequate for the Development Alternative.

While new 12”-inch and 8-inch water service lines would be constructed within the FDA Headquarters to service new buildings, no additional connections to the New Hampshire Avenue water main would be required. It is expected that a connection will be made from the existing 8” water line in Dahlgren Road to a new water system constructed as part of the VIVA White Oak project to the northeast.

The proposed new buildings and parking structures would include water-efficient landscaping and low-flow plumbing fixtures that would reduce potable water usage. Rooftop rainwater harvesting would be employed when possible, and rainwater would be reused for toilets and cooling towers, reducing the demand for potable water.



LEGEND

EXISTING WATER LINES

EXISTING BOOSTER PUMP STATIONS

NEW 12" WATER LINES

NEW 8" WATER LINES

NORTH

Scale 1:5,000

0 50 100 200 400m

Figure 4-18: Preferred Development Alternative Water Service Plan

4.6.3 Sewer Plan

The proposed addition of employees and support staff at the FDA Headquarters would result in increased demand for sewer service.

WSSC was contacted and they required that a System Planning Forecast (SPF) application be prepared and submitted before they would give an answer on their ability to provide additional sewer service to the site. The SPF application was submitted and WSSC conducted an extensive analysis and issued a Letter of Findings (LOF).

The WSSC Letter of Findings for the SPF, issued May 31, 2017, concluded that there is capacity available to provide sewer service for this project. Service may be obtained through a new (or existing) service connection to the Paint Branch trunk line; The WSSC LOF also stated that the project has the potential to exacerbate existing sewer overflows downstream of the FRC site (These existing overflows are occurring due to stormwater infiltration during large rain storm events). Therefore, WSSC would require the implementation of mitigation measures so that the impact would be minimized. Their analysis indicates a need to replace approximately 4,850 feet of 27" sewer trunk lines downstream of the FRC site. This replacement is not intended to increase capacity, but rather to make the system more resistant to water infiltration and less prone to overflows during storms. WSSC also stated that, in lieu of replacing the downstream pipe, the applicant may choose to participate in a sewer system rehabilitation effort to remove excess inflow/infiltration (As a part of the WSSC "Clearwater" program). This effort would include rehabilitation of an agreed upon number of existing manholes and pipes located on the Paint Branch sewer basin system (on and off the FDA site) to mitigate the effect of the increased wastewater flows from the expanded FDA Headquarters. Prior to receiving approval for development, a study and cost estimates would be performed to analyzes the options. This would be performed in conjunction with the design of sewer construction plans for the selected alternative.

The existing FDA 15" outfall sewer service line has capacity to serve the existing campus but will not handle the ultimate build out of the expanded site under this Master Plan. A new 15" outfall sewer service line will convey sewer flows from the new buildings (and some of the existing buildings) to the existing 27" WSSC Sewer Trunk Line running along Paint Branch. The sanitary sewer system materials will be per WSSC specifications. Piping would be PVC or DIP.

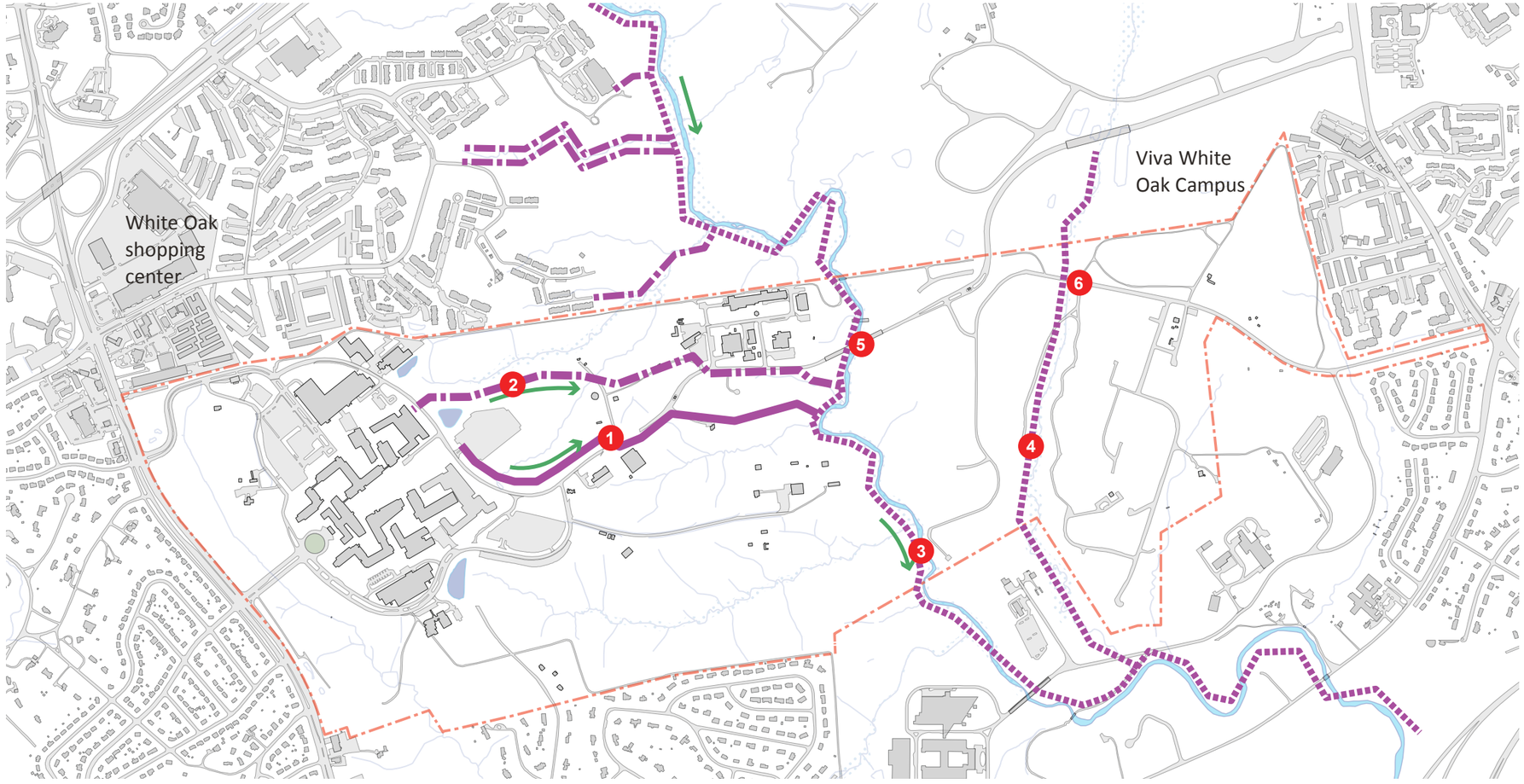


Figure 4-19: Sewer Service Plan

New Sewer

1. Proposed New 15" Sewer Line To Serve Expanded FDA Headquarters

Existing Sewer

2. Existing 15" Sewer PVC Sewer Line Serving FDA Headquarters
3. Existing 27" Paint Branch Trunk Sewer Line Serving The White Oak Area
4. Existing 20" West Farm Branch Sewer Trunk Line

Existing Other

5. Existing Bridge over Paint Branch
6. Existing Bridge over West Farm Branch