St. Elizabeths East Campus
Urban Hospital Site Feasibility Study
Preliminary Findings, December 2014
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SECTION 01.

Executive Summary

HISTORICAL BACKGROUND

A National Historic Landmark and local Historic District, St. Elizabeths East was established as the first hospital in the nation for the humane treatment of individuals with mental illness. At one time, the hospital employed over 7,000 staff members and was the source of economic stability for neighborhoods east of the Anacostia River. The District has committed to redeveloping St. Elizabeths East into a vibrant mixed-use campus featuring the District’s first Innovation Hub. The Innovation Hub is expected to spur the creation of new technology-related businesses and jobs for all skill levels, which will create economic opportunities for residents of Ward 8 and the District as a whole. The generation of new businesses and employment will accelerate the diversification of the District’s economy and reduce reliance on the federal government. The District’s ultimate goal is to revitalize this historic landmark to once again become a destination place for sustainable development that meets the needs of the community.

VISION OF ST. ELIZABETHS EAST

The St. Elizabeths East Master Plan and Design Guidelines, dated June 4, 2012 (the “Master Plan”) function as the outline for the ongoing redevelopment of St. Elizabeths East. The Master Plan contemplates that the redevelopment will include a range of end uses, including commercial office, educational, retail, and residential uses, as well as the District’s first Innovation Hub.

The St. Elizabeths East Innovation Hub is planned to be an integrated center of research, education and private sector commercial activities. Success will be defined by the District’s ability to co-locate community users, universities, technology businesses and technology-focused amenities (such as business accelerators, an innovation market place, and other related components) that are focused on cultivating commercial and globally significant economic opportunities.

An essential element of the Master Plan is ensuring that the redevelopment efforts incorporate the following stakeholder-driven development objectives:

1. Open up the campus,
2. Create connections with surrounding communities,
3. Attract new development,
4. Preserve the historic character, and
5. Treat existing residents fairly and equitably.

JOBS IN THE EDUCATION AND HEALTH CARE INDUSTRIES

The education and medical industries are amongst the largest and most vital components of the District’s economy.

- According to the 2013 Comprehensive Annual Financial Report, eleven (11) of the District’s top fifteen (15) employers were either universities, hospitals or health-care companies.

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The educational and health services industries employ an estimated 300,000 people in the District.

The Consortium of Universities of the Washington Metropolitan Area member activity represents almost 3 percent of the regional economy, an $11.3 billion impact.

In October 2014, the D.C. Department of Employment Services\(^3\) reported that the unemployment rate for the District was 7.6 percent, compared to the national unemployment rate of 5.8 percent. However, some Wards in the District have reached unemployment levels that are more than twice the regional and national averages. Unemployment levels in Wards 7 and 8 stand at 14.3 percent and 17.0 percent, respectively.

The health care and educational industries are major job generators. The development of these types of industries east of the Anacostia River would significantly benefit local residents and provide jobs where they are needed the most. Developing a new urban hospital would not only benefit the goals of the Innovation Hub, but also bring much needed jobs East of the River.

In addition, the development of a new hospital to anchor the Innovation Hub would help drive private commercial development. The District’s private sector economy, which now accounts for 88 percent of the region’s jobs, has long been dominated by federal contractors, telecommunications providers and professional services. In the past five years, however, this has begun to change dramatically as small and growing companies focused on education, healthcare, e-commerce, cybersecurity and energy have taken root in the District’s region.

These companies have a particular concentration in the District itself. In many neighborhoods of the District, particularly those along Metro’s Green Line (which serves as a direct link to St. Elizabeths East), hundreds of entrepreneurs have formed a technology-based creative class and startup culture.

The general scope of services consisted of the team conducting a high-level review of United Medical Center (UMC) supplied programming criteria and previous studies, and a review of site requirements for similar facilities elsewhere to determine what constitutes a successful urban hospital site.

A combined review group consisting of DMPED, Huron Healthcare on behalf of the UMC for specialized program input, and the team of CH2M HILL and Perkins + Will (collectively, the review team) studied the site layouts (See Appendix A) for the potential of locating an urban hospital on St. Elizabeths East. After feedback from the review group at multiple workshop sessions and producing variations of the potential site layouts, the group concluded that an urban hospital, such as UMC, could be hosted at St. Elizabeths East.

\(^{3}\) D.C. Department of Employment Services: http://does.dc.gov/node/184512

EVALUATION PROCESS
The team of CH2M HILL and Perkins + Will was directed by DMPED to study all potential locations at the St. Elizabeths East with no preconceived or predetermined preferences, except for the mandate to keep the main hospital building and tower outside the Phase 1 Real Estate Development RFP areas. This study resulted in the analysis of thirteen (13) conceptual site layouts on four (4) alternative parcels of St. Elizabeths East. The site analysis used the site-wide guidelines from the St. Elizabeths East Master Plan and Design Guidelines as the standards for historical, architectural, and parcel-specific design and development considerations. Also taken into consideration were land use combinations, development scale, open space systems, site circulation, access, and the creation of special places. A detailed evaluation process is outlined in Appendix A of this report.

A fundamental distinction encountered at the outset of the evaluation process was that between urban and suburban hospital models. Suburban hospital sites tend to be much larger, allowing for relatively inexpensive surface parking, optimization of both emergency and patient or visitor vehicular circulation, and primarily horizontal adjacencies among program elements. Urban sites, on the other hand, tend to be smaller and more constrained, requiring structured parking, vertical stacking of program elements, and sometimes unconventional vehicular circulation strategies. While suburban hospital sites often allow optimal functionality and adjacencies, their inherent remoteness can compromise their ability to fully serve their communities.

Though several of the parcels that were considered were large enough to allow for at least some aspects of a suburban hospital configuration, it was felt that such a model was not consistent with the Master Plan framework, and was not appropriate and did not allow for the most efficient use of what would ultimately be a relatively dense, urban campus.

Another distinction considered during the evaluation process was that between program components requiring at least partial governmental funding and those that could be delivered entirely by the private sector. This distinction informed building placement and massing, distribution of program, parking strategy, and other design aspects in all of the Site Options considered.

The site layouts were presented to the Review Team and after feedback via several workshops, Site Option 3e, with variations anchored by Parcels 13 and 16, was suggested as the most viable site for an urban hospital. It is described below. Detailed site layouts have been provided in Appendix A of this report.

The preferred Site Option was identified using multiple parcels located in the southern portion of St. Elizabeths East along proposed 13th Street SE. This Site Option was favored because it reinforces the Phase 1 Real Estate Development, brings opportunities for private development of ancillary facilities, and allows better connections to the Innovation Hub planned at the St. Elizabeths East.

Advantages
- Adjacent to 13th Street
- Relatively good site conditions
- Ample space for proposed program
- Compatible existing zoning
- Offers public/private redevelopment opportunities
- Provides for a major anchor tenant for Innovation Hub
- Metro accessibility

Disadvantages
- Low visibility due to location within the overall campus
- Existing St. Elizabeths Psychiatric Hospital entrance would have to be reconfigured in order to consolidate parcels.

Note: The illustrative drawing of Site Option 3e (Figure 5) is a conceptual plan created for the purpose of demonstrating the possible siting of the hospital program components used in this study.
SUMMARY

The site feasibility study is to be considered the first of many steps should the District further pursue locating an urban hospital at St. Elizabeths East. The study of the thirteen (13) potential layouts on four (4) anchor parcels indicated an urban hospital such as UMC could be accommodated at several parcels on St. Elizabeths East. It was also determined that an urban hospital would be very important to the establishment of an Innovation Hub by lending to the synergy of the educational component of the St. Elizabeths East redevelopment, the attraction of commercial health care end-users, and securing a major anchor tenant on the campus. Though at first blush a hospital program might appear incompatible with an Innovation Hub program, the combination has the potential to engender strong educational and research connections over the long term. In addition, a large hospital facility would catalyze other forms of development that also complement the Innovation Hub program, such as retail, housing, and hospitality.

The results of the study confirmed that the siting of an urban hospital on St. Elizabeths East as an anchor to the proposed Innovation Hub is worth exploring further. The general plans and layouts developed for the purposes of the feasibility study are not to be considered as definitive programs or specific site layouts. Additional studies, site plans and development parameters such as costs and timing will have to be completed, including significant coordination with the Phase 1 Real Estate Development agenda being pursued by DMPED.
The District is seeking a sustainable, long-term solution to stabilize and improve UMC while meeting the long-term healthcare needs of District residents, especially in Wards 7 and 8, east of the Anacostia River. In the “United Medical Center, Transformation Initiative Strategic Direction” (August 2013), the Board of United Medical Center noted that UMC is financially insolvent and unable to continue operations without significant, ongoing support from the District. The August 2013 report noted several issues:

- 85 percent of the residents within UMC’s Primary Service Area (PSA) were admitted to other hospitals in 2012
- UMC’s inpatient share in Ward 7 is less than 10 percent – little connects Ward 7 residents to UMC
- UMC has no physical, community-based presence beyond the main campus

As such, UMC proposed a strategic direction designed to:

- Build a quality medical staff comprised of physicians provide services within the community
- Amend or replace the negative reputation
- Develop a critical mass of physicians to support specialty program development (heart & vascular, cancer, diabetes, etc.)
- Address the problems with the Emergency Room (overcrowding, long wait times, service)
- Align with established System/group practices (prefer academic/training opportunities) to provide specialist access, improve image
- Become more visible within the community and inform the community about UMC
- Expand insurance products that use UMC and improve information concerning those insurance products
Section 02. Project Overview

• Address customer satisfaction
• Engage and empower employees to change service delivery within the hospital
• Provide a clean, safe environment with privacy
• Provide competitive quality facilities
• Expand UMC’s reach/image beyond the existing campus

In support of UMC’s new direction, the District of Columbia announced on March 26, 20147, a plan to invest approximately $300 million in a brand-new hospital on St. Elizabeths East designed to replace the aging District-owned UMC on Southern Avenue SE.

The District proposed that investing in a new hospital rather than capital improvements at the current UMC facility was a more viable option for a number of reasons including:

• Even after making a minimum of a $100 million funding for existing deferred maintenance and operational deficiencies and major capital investments in the nearly 50-year-old facility, the District would still be forced to cover $6-8 million annually in facility maintenance costs – twice what a new facility would incur annually.
• Investing in the current site does not offer the District a meaningful rebranding opportunity for the hospital.
• The current site is not Metro-accessible.
• Investment in the current site would not meaningfully increase the chances of the District attracting a high-quality operating partner for the hospital.

In addition, in December 2014, the District further announced that a letter of intent (LOI) was signed to enter into a collaborative agreement with Paladin Healthcare Capital, LLC and Howard University to transform UMC8. The letter of intent outlines the joint venture between Paladin and Howard which will acquire the operating assets of UMC.

The District will retain ownership of the property and physical plant. The joint venture company will lease the hospital from the District and assume the operational and maintenance cost of UMC. The impacts of this LOI were not assessed in this study.

The District has made the case that, while more costly in the short run, building an entirely new United Medical Center at St. Elizabeths, or another viable site east of the Anacostia River, might provide the greatest long-term advantages. A new facility also provides a long-term solution to the present challenge of providing high quality medical services east of the Anacostia River. Among other advantages, relocating UMC would:

• Allow the District to begin implementing its plans for sustainable, high quality medical services much more quickly than investing in the current UMC campus
• Address the real potential for significant competition at the existing UMC site from the new $600 million proposed medical center in Prince George’s County
• Provide a brand-new, state-of-the-art facility, affording the District a major rebranding opportunity and the potential for significantly increased market share for UMC

• Cut the ongoing costs for facility maintenance and operations in half
• Offer much better access to public transportation from across Wards 7 and 8, as well as other parts of the District
• Greatly strengthen the likelihood of attracting and/or partnering with a high-quality operating partner for the hospital (such as Paladin Healthcare Capital, LLC/Howard University or other operator)

To study this approach, DMPED engaged the CH2M HILL and Perkins + Will team with a goal of determining if any parcels on St. Elizabeths East could host the relocation of UMC or another urban hospital. DMPED’s goal in completing this study is two-fold:

1. Confirm whether the hospital could physically be accommodated on the site.
2. Confirm that an urban hospital could be incorporated in a manner that benefits the redevelopment of St. Elizabeths East and Innovation Hub development efforts.

DMPED requested that the proposed site for the main hospital building and tower itself be located outside the area covered by the Phase 1 Real Estate Development scope and conform to existing zoning/historic preservation/Master Plans.

HEALTHCARE NEEDS

The first step of the study was to understand the potential program(s) necessary to meet the health care needs of customers in the UMC service area. Much of this research was coordinated


8 Howard University News Room: http://www/howard.edu/newsroom/releases/2014/20141218HowardUniversityDistrictofColumbiaandPaladinHealthcareCapitaltoOperateUnitedMedicalCenter.html
with UMC staff and District staff. The potential new hospital and associated program were analyzed with the focus of serving a historically and currently medically-underserved community (Figure 7). The potential of a location within St. Elizabeths East would effectively position an urban hospital to serve these needs.

These needs are underscored by the following considerations:

- Deaths due to accidents, Diabetes, and Septicemia increased dramatically in Ward 8 from 2006 to 2010
- Ward 8 residents have the highest obesity rate and are the least likely to exercise or consume the recommended servings of fruits and vegetables
- 80 percent of UMC discharges come from 3 zip codes: 20019, 20020, and 20032, which are located in Wards 7 and 8
- Prevalence and mortality associated with diabetes are highest in District Wards 4, 5, 7, and 8 where rates are higher than the city-wide rate
- While 50 percent of youth live in Wards 7 and 8, less than 10 percent of the District’s grocery stores are located there
- Adults who reside in Ward 7 were more likely than all other wards to have heart disease, at 5 percent
- Adults who reside in Wards 5 and 8 were more likely than all other wards to have had a stroke, at 8 percent
- Adults who reside in Ward 8 were more likely than all other wards to be told by a doctor that they have diabetes, at 15.2 percent
- Ward 7 (43.6 per 100,000), Ward 8 (41.0 per 100,000), and Ward 5 (40.4 per 100,000) had the highest crude death rates while Ward 2 had the lowest mortality rate (6.3 per 100,000) in this category

- Cancer affects residents in every ward, but Ward 5 (259.7 per 100,000) had the highest rate of death, followed by Ward 4 (213.8 per 100,000), and Ward 7 (212.5 per 100,000)

The research confirmed the real and urgent need for an urban hospital to serve Wards 5, 7 and 8. It also reinforced the basis for the District’s initiative to upgrade and/or replace UMC and its mission to serve this need.
PROPOSED PROGRAM

To understand the potential size of buildings and site improvements, the team worked with the District and UMC to develop a base and ancillary program for a prototypical urban hospital and typical related medical support services.

The prototypical program consisted of core hospital functions (base), and ancillary functions such as innovation center, long-term care facilities and medical educational components. Relative sizes of these functional components, as well as estimated associated parking requirements, were developed by Perkins + Will. The functional components considered for this analysis consisted of the following:

**Base Program:**
- Hospital Diagnostic and Treatment (D&T) and Bed Tower: this accounts for the primary hospital component and consists of both diagnostic and treatment components and a 150-bed bed tower. Required area was based on Perkins + Will’s benchmarks as well as information provided by UMC
- Ambulatory Care Center and an Ambulatory Care Center (ACC) Program: this accounts for specialty physician offices, outpatient imaging, rehabilitation, clinics, and similar program
- Pediatric Emergency Department (ED)
- Medical Office Building (MOB): space allocated for medical offices
- Utility Plant: area reserved for cooling towers, emergency generators, and other large utility equipment

**Ancillary Uses:**
- Innovation Center: this accounts for office, laboratory, classroom, and other spaces associated with innovation center or incubator program
- Long-Term Care: space allocated for a 120-bed long-term care facility and associated program
- Medical Education Component: classrooms, lecture halls, study space, and other program associated with medical educational programs, possibly with a college or university affiliation

FIGURE 9: DISTRICT AREA HOSPITALS
Washington D.C. Area Hospitals.
1. Specialty Hospital of Washington-Capitol Hill
2. Psychiatric Institute of Washington
3. MedStar National Rehab Hospital
4. MedStar Washington Hospital Center
5. Sibley Memorial Hospital
6. Providence Hospital
7. George Washington University Hospital
8. MedStar Georgetown University Hospital
9. Howard University Hospital
10. Hospital for Sick Children
11. United Medical Center
12. Specialty Hospital of Washington-Hadley
13. St. Elizabeths Hospital
14. Children’s National Medical Center
Section 02. Project Overview

FIGURE 10: PROPOSED PROGRAM (gross square feet of required area)

<table>
<thead>
<tr>
<th>BASE PROGRAM</th>
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<tbody>
<tr>
<td>Hospital D&amp;T and Support</td>
<td>172,000</td>
</tr>
<tr>
<td>Hospital Beds (150 beds)</td>
<td>125,000</td>
</tr>
<tr>
<td>Ambulatory Care Center*</td>
<td>28,000</td>
</tr>
<tr>
<td>Additional ACC Program*</td>
<td>55,000</td>
</tr>
<tr>
<td>Pediatric ED*</td>
<td>12,000</td>
</tr>
<tr>
<td>MOB*</td>
<td>42,000</td>
</tr>
<tr>
<td>Utility Plant</td>
<td>3,500</td>
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</tbody>
</table>

<table>
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<th>ANCILLARY PROGRAM</th>
<th></th>
</tr>
</thead>
<tbody>
<tr>
<td>Innovation Center*</td>
<td>100,000</td>
</tr>
<tr>
<td>Long Term Care (120 beds)*</td>
<td>105,000</td>
</tr>
<tr>
<td>Medical Education Component</td>
<td>100,000</td>
</tr>
</tbody>
</table>

| TOTAL AREA                        | 742,500  |

* Private development or public/private partnership opportunity

FIGURE 11: RECOMMENDED PARKING SPACES

<table>
<thead>
<tr>
<th>BASE PROGRAM</th>
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<tbody>
<tr>
<td>Total Hospital Parking</td>
<td>892</td>
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<tr>
<td>ACC Parking</td>
<td>140</td>
</tr>
<tr>
<td>Additional ACC Parking</td>
<td>275</td>
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<tr>
<td>PED Parking</td>
<td>60</td>
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<tr>
<td>MOB Parking</td>
<td>210</td>
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<tr>
<td>Utility Parking</td>
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</table>

<table>
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<th>ANCILLARY PROGRAM</th>
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</thead>
<tbody>
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<td>IC Parking</td>
<td>100</td>
</tr>
<tr>
<td>LTC Parking</td>
<td>30</td>
</tr>
<tr>
<td>Educational Parking</td>
<td>100</td>
</tr>
</tbody>
</table>

| TOTAL PARKING                    | 1,810  |

** Parking requirements are based on Perkins + Will benchmarking standards, and do not account for potential reductions associated with LEED requirements, proximity to public transportation, limitations in the zoning code or other factors. While surface parking is discouraged, some proposed development options incorporate limited surface parking both as emergency room parking and as a method of reserving future expansion space.
Resilient design has become increasingly important in the wake of natural disasters like Hurricane Sandy and the Joplin Missouri Tornado. Hospital facilities represent a significant financial investment, often remaining functional for decades, and must not only remain operational but also accommodate increased demand during a large-scale emergency event. These considerations underscore the importance of resilient design with regard to the planning of a hospital facility.

According to the Resilient Design Institute, resilient design is defined as “the intentional design of buildings, landscapes, communities, and regions in response to their vulnerabilities to disaster and disruption of normal life.” Resilient design has become increasingly important in the wake of natural disasters, such as hurricanes, tornados, earthquakes, flooding, drought, wildfire, and others. Responding to the changing climate and depletion of natural resources, stressors in buildings, cities, and their communities have been identified to achieve stability and adaptability through the following initiatives:

- Strengthen building, infrastructure, organization and community resistance to chronic stressors arising from a changing climate and resource depletion
- Improve safety and stability during acute shocks from both manmade events and natural phenomena
- Reduce physical risks posed by extreme weather events to building occupants, building systems, organizations, and communities
- Reduce risk premiums associated with operations, insurance and financing
- Maintain continuity of business and community activities during chronic and acute events

Given its critical role in the community, a hospital is expected to serve as a hub of supply, storage, and refuge. Therefore, it becomes crucial that the site selection and design processes involved dialog to determine the most efficient, effective and feasible approach to making the facility resilient. This can be done in three ways:

- Hardening
- Redundancy
- Acquiescence

Resiliency considerations also provide a complementary framework for addressing sustainable project goals such as ecological well-being and long-term resiliency, energy and water efficiency, renewable power, improved indoor air, transit proximity, human and ecological health, diversity and productivity, community connectivity, and economic viability.

Resiliency considerations were a factor in the site evaluation process, and were also important considerations in the following project precedents.
The Einstein Medical Center required a careful master planning and community interaction effort, aimed at creating a destination hospital in line with community needs and expectations. Environmental responsibility, technology that maximizes clinical productivity, architectural image, staff retention, and provision of community amenities were primary goals. Amenities and user experience were important design drivers, and the lobby atrium and bed tower are designed to capitalize on surrounding natural views and to maximize the use of natural light. Overall, the project demonstrates an environmentally sensitive approach to its site. By consolidating the building functions into a relatively small footprint, a large amount of the extensive site was left undisturbed. The project achieved LEED Silver certification.

Spaulding Rehabilitation Hospital is a new 130-bed, 270,000 square foot facility constructed at the former Charlestown Navy Yard in Boston. The final design was the outcome of an extensive master planning process that explored a number of strategies for achieving SRH’s mission of achieving the highest level of patient care, research, education, and advocacy. In addition to 130 private rooms, the facility includes a sixty foot therapy pool and roof gardens that incorporate rehabilitative functions. Principles of sustainable design are incorporated throughout. US News & World Report recently called SRH “the best rehabilitation hospital in New England.”

Piedmont Replacement Hospital was challenged with implementing creative and innovative strategies for reducing costs without compromising its primary goals of delivering high quality patient care and positioning itself for maximal future growth and flexibility. Rigorous sustainability measures were an integral part of the cost-saving strategy, and included:
Anticipated 20 percent reduction in energy usage through the use of high-efficiency HVAC equipment and energy-sensitive design

- Anticipated 29 percent reduction in potable water usage
- Maintaining approximately 60 percent of the site in an undisturbed condition

The facility was completed in 2012, and has achieved LEED certification.

**RUSH UNIVERSITY MEDICAL CENTER**
Chicago, Illinois
Completion Date: 2012
304 beds
806,000 GSF

The cornerstone of a long-term campus transformation project, Rush University Medical Center (RUMC) is a new 14-story facility housing Rush’s acute and critical care patients as well as surgical, diagnostic, and therapeutic services utilizing the most advanced technology available. The facility’s unique shape reflects four years of planning and input by hundreds of Rush nurses, doctors, and patients. It also provides patients and visitors with expansive views of Chicago’s skyline and abundant natural light.

The facility also includes an innovative emergency preparedness center, which brings an unprecedented level of readiness to Chicago’s citizens in the case of a widespread emergency. RUMC was designed with a number of features that position it at the center of a coordinated response to a bioterrorism, pandemic, or large-scale industrial accident event. These include an emergency department configuration that allows for a doubling of capacity under emergency conditions, ambulance bays that can be converted to decontamination rooms, and the ability to isolate an entire quadrant rather than individual rooms.
RUMC also employs a number of sustainability initiatives, including multiple green roofs, extensive use of recycled materials, and use of energy-efficient systems for lighting, heating, and cooling. RUMC received LEED Gold certification, and was the largest new construction healthcare facility in the world to do so at the time.

ST. ELIZABETHS EAST MASTER PLAN

The Master Plan outlines a vision for a vibrant, mixed-use development with community-serving amenities that will create an important hub for the Ward 8 community and District’s emerging innovation economy. It is intended to be an implementable roadmap for the future development of St. Elizabeths East that will evolve over the next five to twenty years. The Plan is specifically designed to build on past planning efforts and form the foundation for the entitlement process that the city will complete to prepare the site for future development.

OVERVIEW

St. Elizabeths East Master Plan serves as a framework for creating a new community hub within the Congress Heights neighborhood, as well as promoting the District’s emerging innovation economy through redevelopment. The recommendations found in the Master Plan call for residential, commercial, cultural, and institutional uses intended to bring renewed vibrancy to St. Elizabeths East, as well as to surrounding areas and the District as a whole. Revitalization of this National Historic Landmark will be guided by detailed development and preservation goals as well as design principles outlined in the Master Plan. The District, the community, and the private sector will play key roles in carrying out the vision of the Master Plan. The goals of the Master Plan are intended to create dynamic urban places that reflect innovative, sustainable design solutions while maintaining the rich historical and cultures resources found on the campus today. The Master Plan proposes a balance of preservation goals with a market-based development approach. The Master Plan recommends parallel economic development planning efforts to support technology-related industries and the city’s flourishing innovation economy. St. Elizabeths East Master Plan will connect the unique historic campus with the Congress Heights neighborhood, creating a destination for both current and future residents to live, work, shop, play, and innovate.

PLACES: NEIGHBORHOOD ANCHORS

A primary goal of the Master Plan is the development of two neighborhood centers for Ward 8. These anchors are the Martin Luther King (MLK)
Neighborhood Center and the Congress Heights Metro Sector. These neighborhood anchors will cater to area residents and provide goods and services that will support the community for years to come. Three main place-making strategies constitute the basis of the Master Plan: places, paths, and connections. These opportunities help organize the principles of the Master Plan to create a sense of place within each neighborhood anchor.

MARTIN LUTHER KING NEIGHBORHOOD CENTER
The MLK Neighborhood Center Sector Plan will include the surrounding community and provide much needed services and amenities for the residents of Ward 8. Located on the western side of the campus, the Master Plan calls for the MLK neighborhood to have a neighborhood center and ground-level retail within new buildings fronting Martin Luther King, Jr. Avenue. The retail establishments in these locations will complement the existing businesses along Alabama Avenue, SE and extend the retail corridor to St. Elizabeths East. In addition, the neighborhood will house a wide range of community uses designed to support individuals and businesses from the area that are interested in the innovation- and technology-related industries.

CONGRESS HEIGHTS METRO STATION AND BUS TRANSFER FACILITY
Located just steps away from the core of St. Elizabeths East, the Congress Heights Metro Station and Bus Transfer Facility will be the gateway to St. Elizabeths East. It’s envisioned that this center will be a vibrant, mixed-use neighborhood center. New development will offer ground floor retail and restaurants, as well as offices and apartments. Wide sidewalks, café seating, outdoor entertainment, unique architecture and a diverse offering of local and national retailers are recommended for the development to ensure energetic activity and place-making. The Master Plan also raises the possibility of working with WMATA to assess the feasibility of adding a second entrance at the north end of the station which would provide direct and convenient access to the southern end of St. Elizabeths East.

PLACES: INNOVATION HUB
The historic quadrangles of the Maple Quad and Community Technology (CT) Village will become the “Innovation Hub,” an integrated center of research, education, training, entrepreneurship, technology transfer, and private sector commercial activities tied to technology related industries. The District’s Innovation Strategy for St. Elizabeths East seeks to expand and diversify the
city’s economy by linking to business, research and employment opportunities in the innovation sector. Beyond its key functions, the hub will also support complementary uses such as hotel, conference center, retail, and potentially residential development.

**PLACES: RESIDENTIAL/COMMUNITY SECTORS**
The final two sectors of St. Elizabeths East are the 13th Street Sector and the Farm Complex Sector at the north end of the campus. See figure 12. Due to the expansive views and Metro accessibility, this sector is a prime location for a wide variety of residential development. The Farm Complex is a unique site that provides an opportunity to create a community resource for urban agriculture. Due to the historic nature of the site and the existing historic farm structures, new development opportunities will be very limited in this location.

**PATHS/CONNECTIONS**
Fundamental to the Master Plan is the goal of connecting the campus to the surrounding community. A key aspect of the Master Plan is the collection of site-wide design guidelines that emphasize the creation of welcoming, walkable streets throughout the campus. An important connection within St. Elizabeths East is the reconstructed Dogwood Drive that links the two community anchors in the Master Plan: the MLK Neighborhood Center and the Congress Heights Metro Sector. The Master Plan recommends an active public realm, public art, creative programming, and active ground floor uses at all of these gateways to signal an open and welcoming atmosphere.

**HISTORIC BUILDINGS**
St. Elizabeths East consists of four major historic building groupings: the Farm Complex, the 1902 Buildings, the Maple Quadrangle, and the Community Technology (CT) Village. A more detailed historic description can be found in the Master Plan Design Guidelines.

The preservation of the historic campus core and its many significant resources is paramount to the success of the redevelopment of St. Elizabeths East. Once a closed historic property, St. Elizabeths East will now provide a unique redevelopment opportunity that preserves a historic asset and creates a new community within the District. The historic buildings and landscapes that characterize St. Elizabeths East represent a significant part of national and local history, and the implementation of St. Elizabeths East Master Plan will ensure that this treasure is preserved, revitalized, and made accessible. As part of the St. Elizabeths Hospital National Historic Landmark and local Historic District,
Section 02. Project Overview

St. Elizabeths East is protected under federal and local historic preservation laws and regulations. The Master Plan design guidelines are intended to create a cohesive and ordered development plan that carefully addresses historic preservation, land use and development, and the public realm.

The Master Plan encourages the future master developer and other designers to follow the core urban design principles highlighted in the Master Plan. The Master Plan highlights the importance of the arrangement and design of building lots, public spaces, transportation systems, services and amenities within the site.

The most successful master-planned neighborhoods or new communities have site-specific architecture, welcoming and engaging public places and views, identifiable landmarks and focal points, and a human element established by compatible scales of development. Community safety, accessibility, sustainability, quality of
life and protecting campus heritage are some of the key ideas of the Master Plan and are significant elements within its urban design goals. The following principles further describe the goals of the Master Plan:

- Design and site new development sensitively to preserve existing gateways, vistas, and campus landmarks
- Create focal points, such as fountains, plazas, and courtyards, to establish a sense of place and orientation within the public realm and key open spaces
- Activate streets with public or semi-public uses such as retail on the ground floors of buildings, and provide direct entry from the street where feasible
- Develop and strengthen pedestrian connections within the campus by designing streets and multiuse trails which are pleasant and safe for pedestrians.

**USE AND BULK GUIDELINES**

Within the District, St. Elizabeths East offers enormous potential as one of the few large remaining contiguous parcels where significant development can occur. Land uses were determined by studies that assessed future demand for retail, residential, office, hospitality, and other uses for St. Elizabeths East. The Master Plan studies suggested that there was significant demand for commercial, residential, and retail development in the vicinity, and that these uses could be built immediately. In addition, the development of the land use program was closely coordinated with research and planning for the District’s Innovation Strategy at St. Elizabeths East. This economic development planning process developed a set of
proposed land use and programmatic components that form the Innovation Hub on St. Elizabeths East and inform the range of uses being proposed within the campus plan. Some of the recommended land use principles and uses are noted below:

- Support a mix of development densities, particularly those that enhance the pedestrian experience and are within easily walkable areas adjacent to major activity centers
- Create a safe environment by mixing uses, programming activities in public spaces, and through design techniques that foster social activity and visibility
- Ensure a mix of uses is present within each sector during each phase of development

The physical form and density of the proposed development in St. Elizabeths East involves increased density without diminishing the lower-profile historic buildings. The density goals will govern the general placement and massing of the new buildings within the proposed campus plan. Massing strategies were explored for their ability to yield new buildings that work together to shape a high-quality public realm and sense of place. The methods used for controlling the placement and massing of buildings include the following:

- High/low density zones, which govern the distribution of development density throughout the planning area, and are based on criteria such as access to transit, proximity to historic resources and land use objectives
- Allowable building height is governed by the 2008 St. Elizabeths East Redevelopment Framework Plan and the District’s Comprehensive Plan
- Setbacks are recommended to reduce bulk and sculpt the massing of buildings

The Master Plan recommends that density be concentrated within a limited number of locations. The area that is most suitable for the largest share of new density is the 13th Street corridor. Because this area is located behind the historic core, new development will have less of an impact on the historic character of St. Elizabeths East. In addition, the new development will be concentrated on the edge of a ravine, so development can take advantage of the
topography by the addition of density. It should be noted that the Transportation Environmental Assessment has identified the ravine as a potentially sensitive area for development. Therefore, development in the ravine should be carefully placed, and effort should be made to restore the native planting once development is complete. There are areas on the site where new development must sensitively address the adjacent context. Setbacks and recommended build-to lines (RBL) are tools that can be used to control building massing and form. Façade setbacks can shape overall building massing by reducing the bulk of the building, increasing penetration of light and air, and providing opportunities for visual interest and architectural expression. In general, St. Elizabeths East Master Plan provides more design principles related to building heights, tapers, setbacks, and other architectural features.

**ZONING**

A primary goal of this site analysis exercise for an urban hospital on St. Elizabeths East was to adhere to a “by right” development strategy. This approach minimizes the need for rezoning or other special entitlement provisions. Though this objective was not achieved by all of the options that were considered, the most successful options were consistent with the density, bulk, and use requirements reflected in the current zoning provisions. Each parcel within St. Elizabeths East is governed by an independent set of zoning requirements, summarized in the table below, and intended to reflect the density, bulk, and use intentions described by the Master Plan. Existing zoning provisions also carefully address parking considerations, limiting the total number of on-campus parking spaces, discouraging surface parking, and prescribing setbacks and “liner” program in portions of the campus where architectural and public realm treatment is especially sensitive.

### FIGURE 19: ZONING REQUIREMENTS

<table>
<thead>
<tr>
<th>Zone District</th>
<th>FAR (Max.)</th>
<th>FAR Required Residential (Min.)</th>
<th>FAR Above Grade Parking (Max.)</th>
<th>Height (Max. Ft.)</th>
<th>Lot Occupancy (Max %)</th>
<th>Rear Yard (Min. Ft.)</th>
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<tr>
<td>StE-3</td>
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<tr>
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<td>-</td>
<td>80</td>
<td>75</td>
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<td>75</td>
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</tr>
<tr>
<td>StE-13</td>
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</table>
INITIAL SITE SELECTION

Initial site analysis began with four primary site candidates which were identified through group discussion at the project Kick-Off Meeting. Each of these sites offers distinct advantages and disadvantages. A summary of the opportunities and constraints offered by each site can be found below, with further information contained in Appendix A.

SITE 1: Site 1 consists of Parcel 1. Though this parcel was later considered in conjunction with other parcels, it was initially considered alone. The parcel is adjacent to Martin Luther King Jr.
Boulevard and is relatively flat - two characteristics conducive to large-scale development. However, it is also relatively small in size, is remote from both the central core of the campus and the anticipated extent of Phase 1 infrastructure, and its existing zoning is not consistent with high-density development. It also contains several existing historic buildings.

**SITE 2:**
Site 2 consisted solely of the Federal Use Parcel (Parcel 2). This parcel is larger in size than Parcel 1, but is less regular in shape. It is also relatively flat and offers potentially pleasing views to the east. Its current zoning is also conducive to high-density development, and therefore the District looked at Parcel 2 to determine if the hospital could be co-located on the site. Initial feasibility, programming, and planning work has been conducted for a new Federal Government use to occupy Parcel 2 at the north end of St. Elizabeths East. Parcel 2 as a Federal Government use best met the intent of the Master Plan to provide the Department of Homeland Security (DHS) a location that is compatible and suitable for the consolidation of their facilities and services. The study revealed that the hospital could not be co-located with a Federal Government use on Parcel 2.

**SITE 3:**
Site 3 consists of two development parcels: Parcels 13 and 16. While these parcels are more centrally located, they are unwieldy in shape and impose some development challenges in the form of difficult topography and the Green Line Metro tunnel traversing a portion of the site. Development of this site is further complicated by the presence of an access road to the new St. Elizabeths Hospital, which passes between both parcels. This site offers the benefit of being located within easy walking distance of the Congress Heights Metro Station.

**SITE 4:**
Site 4 involves a portion of the new St. Elizabeths Hospital Planned Unit Development (PUD) site. Though a portion of this site is also dedicated to a water tower and maintenance road, a significant portion of the site is underutilized. Despite this, this site is fairly remote from the heart of St. Elizabeths East and poses challenges regarding accessibility, visibility, and branding opportunities.
The proposed siting location designated as Site Option 3e, was one of many site development options that were studied, and represents a plan that best meets the goals of a hospital developer and the District, and conforms to the goals of the St. Elizabeths East Master Plan. The hospital will not only help transform St. Elizabeths East, but also will encourage economic development and create a vibrant, healthy neighborhood within the District.

**PATIENT AND VISITOR ACCESSIBILITY**
Patient and neighborhood connectivity was a key criterion that was evaluated during the planning process. Due to the close proximity of the Congress Heights Metro station, Site Option 3e meets the visibility and connectivity goals as well as supporting the Master Plan’s goal of connecting the Congress Heights neighborhood with St. Elizabeths East. As proposed in the Master Plan, a pedestrian and bicycle path will encourage greater access to the hospital and medical buildings which in turn will encourage use of the ground floor retail space that will be incorporated with the medical office buildings. The emphasis on walkability will also create a healthier community. The road configurations outlined in the Master Plan will allow greater flexibility for vehicular and emergency traffic to flow in and out of the site without congesting the historic Maple Quad and CT Village Quads.

**OPERATIONAL ACCESSIBILITY: SHORT AND LONG-TERM**
Short and long-term operational accessibility issues such as emergency access, building service, staff shifts, and helicopter access were important considerations during the evaluation of the sites. The proposed location of the hospital, medical office buildings, and education building allows for long- and short-term operational flexibility during the phasing and ultimate build-out of the hospital program. An important feature of the proposed plan is the extension of Cypress Street to the new St. Elizabeths hospital and the closing of the current new St. Elizabeths hospital access road. Relocating this access road allows Parcels 13 and 16 to be combined to create a larger, more developable lot for the hospital and long term care facility and allows service vehicles to service the lot from Cypress Street rather than 13th Street. It also allows staff to enter and exit a continuous, efficiently-configured below-grade parking area in multiple locations as well as allowing ambulance traffic to flow easily in and out of the site without
disrupting other campus functions or being encumbered by campus traffic. It also provides the additional benefit of improving public connectivity between the Metro and the St. Elizabeths East.

**OPERATIONAL EFFICIENCY AND FLEXIBILITY**

In addition to operational accessibility, the proposed siting location employs efficient building layouts and configurations for both the hospital and medical programs. Special care was taken to ensure that the configurations proposed were efficient in size while also meeting the urban design principles outlined by the Master Plan. The building locations and sizes allow for flexible patient circulation, physician circulation, large- and small-scale way-finding, efficient stacking of the medical programs, and parking. The building configuration for the ACC, MOB, and Education buildings allow for a flexible plan and core that support either an ACC tenant, MOB tenant, or a mixed-use commercial tenant. These buildings are also positioned in such a way as to allow for future expansion or more direct connections with adjacent buildings.

To allow greater ease of patient and physician circulation, a series of sky bridges is recommended to connect the hospital to the medical office buildings. The medical office and innovation programs have been located within the Phase 1 Real Estate Master Development Plan, which will encourage this program to be phased and constructed by private development entities. When in the future new modalities and acuities require new equipment or space, the proposed hospital plan has flexibility to grow across the currently proposed emergency drop off location.

**INTEGRATION WITH OVERALL MASTER PLAN**

As prescribed in the St. Elizabeths Master Plan, the greatest amount of density is recommended to be developed on Parcels 6, 13, and 16. Due to the building size and height of the proposed program, the Hospital and Long Term Care buildings have been placed on the combined Parcels of 13 and 16. The location of these uses will not diminish the character of the historic building but reinforce the public realm goals of campus and community connectivity. In addition, the Long Term care program complements the residential development goal as noted in the Master Plan and will serve as a

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**FIGURE 22: PROPOSED PROGRAM (gross square feet of required area)**

**BASE PROGRAM**

- Hospital D&T and Support: 172,000
- Hospital Beds (150 beds): 125,000
- Ambulatory Care Center*: 28,000
- Additional ACC Program*: 55,000
- Pediatric ED*: 12,000
- MOB*: 42,000
- Utility Plant: 3,500

**ANCILLARY PROGRAM**

- Innovation Center*: 100,000
- Long Term Care (120 beds)*: 105,000
- Medical Education Component: 100,000

**TOTAL AREA**: 742,500

* Private development or public/private partnership opportunity

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**FIGURE 23: RECOMMENDED PARKING SPACES**

**BASE PROGRAM**

- Total Hospital Parking: 892
- ACC Parking: 140
- Additional ACC Parking: 275
- PED Parking: 60
- MOB Parking: 210
- Utility Parking: 3

**ANCILLARY PROGRAM**

- IC Parking: 100
- LTC Parking: 30
- Educational Parking: 100

**TOTAL PARKING**: 1,810

* Parking requirements are based on Perkins + Will standards, and do not account for potential reductions associated with LEED requirements, proximity to public transportation, limitations in the zoning code or other factors. While surface parking is discouraged, some proposed development options incorporate limited surface parking both as emergency room parking and as a method of reserving future expansion space.
model to encourage more residential development within the remaining parcel. Located within the Phase 1 Real Estate Master Development Plan are the other medium density medical and education buildings. The location of these buildings creates a mix of development that enhances the public experience, encourages private development, supports the innovation hubs, creates urban focal points, reinforces the need for walkable pathways and encourages a healthy campus community.

BUILDING DATA
The final recommended development configuration (Site Option 3e) adheres to the initial project program, including the ancillary program introduced during the Round 1 Meeting. However, it combines a number of the ancillary program components into a single building complex, rather than locating them in individual buildings. This results in a building scale and massing that is consistent with surrounding proposed development density and bulk requirements, while also allowing for generous ground-floor retail space and public realm amenities such as courtyards and pocket parks.

CONCEPTUAL COST ESTIMATE
As part of the site evaluation process, a conceptual cost estimate was conducted for the recommended Site Option 3E. This estimate was based on benchmark unit cost metrics for each of the primary program components, and considered site utility work, infrastructure, mobilization costs, and contingency allowances in addition to both primary and supporting program components.
DEVELOPMENT TIMELINE

To develop a conceptual design for the hospital, the parties suggest that the District plan for at least 2 months of design and detailed planning effort. To obtain a Certificate of Need (CON) for a hospital at the new site, the District should anticipate that it will take approximately 6-10 months (further information regarding the CON process and timeline can be found at doh.dc.gov/node/160472). Site development and Hospital construction would be anticipated to require 30 to 36 months to complete after building permits are obtained.

Modification of infrastructure to accommodate a hospital for Site Option 3e layout and the extension of Cypress Drive for a new entrance to the existing St Elizabeths Hospital (DMH) can be accomplished in a number of ways: 1) as a change order to the present solicitation by DDOT for the Stage 1 infrastructure improvements, 2) be a part of the Stage 2 infrastructure improvements contemplated for St. Elizabeths East or 3) be a site development cost of the urban hospital project. Either way a conceptual estimated cost has been prepared for these improvements. All site and building facilities that falls within the envelope of “Adjacent Construction” with respect to the green line Metro facilities will have to follow WMATA Joint Development and Adjacent Construction (JDAC) specifications and procedures.

PRIVATE DEVELOPMENT OPPORTUNITIES

HOSPITAL RELATED COMPONENTS

The base program for an urban hospital includes the bed tower and two floors of the main hospital (Diagnostic & Treatment), patient and emergency entrance and parking garages for employees and customers. Several other facilities are included in the long term plan for the hospital complex, and many of these component facilities are ripe for development by third parties including private developers. Such opportunities are summarized in the table on the opposite page. So, the total potential private development components associated with the overall long term “Hospital Complex” at St. Elizabeth East could include facilities with up to 442,000 SF of buildings and up to 915 parking spaces (surface or garages). As of the date of this report, Redbrick LMD-Gragg Cardona Partners was selected as the Phase 1 Master Developer for the St. Elizabeths East redevelopment. While the team was not consulted in making this report, it is anticipated that the above facilities may be under consideration for Phase 1 opportunities or later private development initiatives depending on the pace of development for the hospital complex. DMPED anticipates

PRIVATE DEVELOPMENT OR PUBLIC / PRIVATE PARTNERSHIP OPPORTUNITIES

<table>
<thead>
<tr>
<th>Description</th>
<th>SF</th>
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</thead>
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<tr>
<td>Innovation Center</td>
<td>100,000</td>
</tr>
<tr>
<td>Long Term Care (120 beds)</td>
<td>105,000</td>
</tr>
<tr>
<td>Ambulatory Care Center *</td>
<td>28,000</td>
</tr>
<tr>
<td>Additional ACC Program *</td>
<td>55,000</td>
</tr>
<tr>
<td>Pediatric ED *</td>
<td>12,000</td>
</tr>
<tr>
<td>Medical Office Building (MOB)</td>
<td>42,000</td>
</tr>
<tr>
<td>Education Component</td>
<td>100,000</td>
</tr>
<tr>
<td><strong>TOTAL</strong></td>
<td><strong>442,000</strong></td>
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</tbody>
</table>

* Private development opportunity only; not appropriate for public/private development
working with the Phase 1 developer to identify build to suit and build to lease facilities from the above listing, with coordination with UMC. By utilizing private development capital investments in the facilities, the District can reduce up-front capital costs and subsidize operational or lease costs as an urban hospital is developed on St. Elizabeths East and becomes a financially self-sufficient operation. Even the option of a private parking garage with leased spaces to employees and public revenue control should be explored.

INNOVATION HUB/CENTER
The development of the Innovation Hub is a key component of the District’s Five Year Economic Development Strategy for the District and for St. Elizabeths East. The Strategy identifies the creation of a shared campus for academic institutions and technology firms as a key initiative for this administration. The District’s objectives in developing an Innovation Hub at St. Elizabeths East are to spur the creation of new technology-related businesses and jobs, to create economic opportunity at all skill levels for residents of both Ward 8 and the city as a whole, and to accelerate the diversification of Washington, D.C.’s economy, reducing reliance on the federal government.

The development of an urban hospital is of particular interest to the St. Elizabeths East redevelopment. A new hospital that features innovation and educational components and partnerships could serve as an anchor for the Innovation Hub and significantly bolster the District’s efforts to create an innovation economy in East Washington. The hospital would serve as a major magnet for other health, biotech and innovation end-users. A new hospital location could also allow the District to further support the St. Elizabeths East’s redevelopment effort and its ability to:

• Become a preferred location for the innovation-focused, high-tech facilities needed by Federal agencies, academic institutions, and private sector firms, especially to enable collaborative research and development, technology transfer and commercialization
• Support entrepreneurship and small business development, targeting both private sector markets and Federal contracting opportunities in healthcare, biotech, big data, and STEM related fields
• Serve as a focal point for networking and deal making interactions among individuals and organizations in the healthcare, biotech, big data, and STEM fields that are part of the broader region’s most important innovation clusters.

In addition, the new urban hospital would serve as a key investment and driver for the development of creative ideas such as the development of an “innovation marketplace” that provides flexible, shared conference and classroom space and infrastructure to support research and technology development, business and entrepreneurship development, as well as product demonstration and commercialization activities in the areas of healthcare, biotech, big data, and STEM related fields. Activities could include business incubation and early business expansion facilities, product prototyping, small scale assembly, storage and distribution, and light manufacturing, all of which can take place within either newly constructed facilities or renovated historic buildings on St. Elizabeths East.
EVALUATION PROCESS

SCORING MATRIX OVERVIEW
The primary tool used for evaluating and comparing the various development options that were studied was a quantitative scoring matrix, which had three basic features:

1. **A set of criteria** by which each development option was evaluated. This set of criteria was proposed by Perkins + Will, reviewed by CH2M HILL, DMPED, and UMC, and refined over the process in order to capture observations and nuances regarding the various options presented. The criteria are described in further detail below.

2. **A raw scoring system.** Though the actual scoring range is arbitrary, it was proposed and agreed that a 5-point scoring system (5 being the most favorable, 1 being the least favorable) represented the right balance of precision and ease of use. A score for each criterion was assigned collectively for each development option reviewed.

3. **A weighting system.** This is meant to reflect the relative importance of each criterion in the evaluation process. Like the scoring system, the actual weighting range was arbitrary, but it was agreed that each stakeholder would be allotted 25 weighting points to distribute as they saw fit among the criteria. This feature modifies the raw scoring so as to reflect the relative priorities of each stakeholder. These three features, when combined, created a mechanism by which various development options could be compared objectively, and the most viable development option identified. Refer to Figure 25 for a sample scoring matrix.

For each site and for each stakeholder, the raw score for each criterion was multiplied by the stakeholder’s weighting, resulting in a weighted score for that criterion. These scores were then summed, resulting in a total weighted score for each development option. The option with the highest weighted score thereby reflects each stakeholder’s preferred development option. For the purpose of this exercise, a final recommendation was determined by averaging the total weighted scoring for each stakeholder (in this case DMPED and UMC) and selecting the option with the highest total weighted score.

The criteria identified for analysis are described as follows:

**Site Conditions:** This criterion is intended to reflect the developability of the site in question. Factors impacting this include topography, soil conditions (insofar as they are known), and the presence of utilities, groundwater, below-grade obstructions, and any existing buildings requiring demolition or relocation.

**Patient and Visitor Accessibility:** This is intended to reflect the ease with which a patient or visitor can access the facility, using all relevant modes of transportation. Proximity of the Metro station, clarity of vehicular circulation, and parking efficiency were all factors impacting this criterion.

**Operational Accessibility:** This criterion is similar to the above, but applies to staff and emergency and service personnel rather than the patient and visitor experience. This began as a single criterion, but was later divided into two separate criteria to account for the possibility of differing conditions over time.
### FIGURE 25: EVALUATION CRITERIA

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<th>Criteria</th>
<th>SITE 1 Scoring</th>
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<td></td>
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<td>pedestrian access</td>
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<td></td>
<td>Operational accessibility (near term) - emergency, service, staff, and</td>
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<td>helicopter access</td>
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<td></td>
<td>helicopter access</td>
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<td>Availability of neighborhood amenities and services (long term)</td>
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<td>Visibility / branding opportunities</td>
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<td>Flexibility - accommodate future growth / shifts in program or phasing</td>
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**Availability of Neighborhood Amenities:** This is intended to reflect the availability of nearby (within walking distance) amenities that would be attractive to both staff and visitors, such as restaurants, dry cleaners, and services. Like the above, it was later separated into two distinct criteria to account for the possibility of future nearby development.

**Visibility/Branding Opportunities:** This criterion is intended to reflect the relative prominence of the site and its potential for branding and marketing opportunities.

**Flexibility:** This criterion reflects the ease with which a development option can accommodate future growth, changes in construction phasing, changes in program, or other similar changes.

**Building Construction Cost/Complexity:** This is intended to reflect the anticipated construction cost and complexity of the development scenario in question.

**Compatibility With Existing Entitlements:** This criterion addresses the degree to which the proposed development scenario is in compliance with existing zoning, environmental, preservation, and other requirements and guidelines.

**Compatibility And Integration:** What began as a single criterion was later subdivided into three separate but related criteria intended to reflect general compatibility with the spirit and intent of the St. Elizabeths East Master Plan, integration with the proposed Innovation Hub program, and integration with the proposed scope of Phase 1 development.
Availability Of Natural Light/Views:
This criterion reflects the degree to which the proposed development scenario makes natural light and views available to both staff and visitors.

Political Viability: This criterion accounts for any difficulty in facilitating a general political atmosphere conducive to the development of the scenario in question.

MEETING OVERVIEW
The evaluation process was iterative in nature, and involved a series of review sessions wherein various development options were presented and evaluated. After each session, a collection of new or refined development options were generated, followed by another review session. In addition to the Kick-Off Meeting, a total of four review sessions were held including a session reviewing the final proposed development scenario. The agenda, attendees, and outcome of each meeting are summarized below. The table accompanying each meeting summary indicates the name of each site development scenario developed for discussion at that meeting, and indicates (in blue) the parcels involved.

KICK-OFF MEETING
(JULY 8, 2014)
Attendees: DMPED, UMC, CH2M HILL, Perkins + Will
Summary: Project teams, background and goals were introduced and discussed. General time frame of the exercise was established. It was also agreed that initial analysis should focus on Parcels 1, 2, 13 and 16 in conjunction and the undeveloped portion of the St. Elizabeths Hospital PUD site.

ROUND 1 REVIEW MEETING
(JULY 23, 2014)
Attendees: DMPED, UMC, CH2M HILL, Perkins + Will
Summary: A proposed development program, generated by Perkins + Will, was presented and discussed. UMC presented some additional program components for inclusion in the project program. The evaluation process and score sheet were also presented, and initial development options (Site Option 1, Site Option 2, Site Option 3, Site Option 3a, and Site Option 4) were presented and discussed. It was agreed that Site Option 2 (Parcel 2) and Site Option 3 (Parcels 13 and 16) seemed to be the most favorable candidates for continued development.

ROUND 2 REVIEW MEETING
(AUGUST 6, 2014)
Attendees: DMPED, UMC, CH2M HILL, Perkins + Will
Summary: Two variations each on the most favorable development options presented at the previous meeting were presented and discussed. All four options reflected the augmented project program developed at the previous meeting, and expanded to partially or fully occupy adjacent parcels as a result. Site Options 2a and 2b expanded the footprint of Site Option 2 to the southeast and to the north, respectively, and the merits of both approaches were evaluated. Site Options 3b and 3c expanded on ideas explored by Site 3, expanding the development footprint.
to the west and north. It was agreed that Site Options 1 and 4 would not be further developed due to the limitations associated with those sites that were identified at the previous meeting.

**ROUND 3 REVIEW MEETING**
(AUGUST 14, 2014)
Attendees: DMPED, UMC, CH2M HILL, Perkins + Will

Summary: At this meeting, three options related to Site Option 2 and one related to Site Option 3 were presented. The Site Option 2 Options (Site Options 2c, 2d, and 2e) were intended to explore the full range of density options related to the parcels in question. Site Option 2c represented a low-density suburban model, while Option 2e represented a high-density urban development more consistent with the Master Plan. Site Option 3d represented a further refinement of the ideas represented by Site Option 3c from the previous meeting, and further capitalized on the development opportunities offered by the parcels involved.

**PRELIMINARY PRESENTATION**
(AUGUST 20, 2014)
Attendees: DMPED, UMC, CH2M HILL, Perkins + Will

Summary: On August 20, 2014, the project team made a joint presentation of progress to date to the District and Otero. The project background, program, challenges and opportunities, and development strategies were reviewed and were, in general, well-received. The relative merits of the two sites (Site Option 2 and Site Option 3) were briefly explored, and the remaining process and timeline were discussed.

**ROUND 4 REVIEW MEETING**
(SEPTEMBER 10, 2014)
Attendees: DMPED, CH2M HILL, Perkins + Will

Summary: The project team reconvened briefly on September 10 to further discuss the difficulties associated with development of Site Option 2, and to review a refined configuration for Site Option 3 (Site Option 3e). The remaining timeline was then discussed and it was agreed that work would commence on a draft of the final project report.
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### Appendix A. Evaluation Process

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**Legend**

- **URBAN HOSPITAL SITE FEASIBILITY STUDY, PRELIMINARY FINDINGS**
- **vii**
ADDITIONAL STUDY CONSIDERATIONS

Site Option 1 involved Parcel 1 at the far northern end of the campus. While topography and other site considerations were considered to be relatively favorable, its size and existing zoning proved incompatible with the proposed program.

Advantages
- Adjacent to Martin Luther King, Jr. Boulevard
- Relatively Good Site Conditions
- Good Site Access

Disadvantages
- Small Size
- Far from Phase 1 Infrastructure
- Parcel 1 Already Earmarked for Incompatible Use
- Incompatible Zoning
Site Option 2 involved Parcel 2 at the northern end of the campus, just south of Parcel 1. This site offered reasonable topography, enough space to accommodate the proposed program, and excellent accessibility. Although a stand-alone proposal involving Parcel 2 exclusively was not further pursued, variations involving expansion onto adjacent parcels were pursued.

**Advantages**
- Adjacent to Martin Luther King, Jr. Boulevard
- Relatively Good Site Conditions
- Ample Space for Proposed Program
- Compatible Existing Zoning.

**Disadvantages**
- Parcel 2 Presently Earmarked for Other Uses
Site Option 2a was a later variation on Site Option 2, which sought to further engage the surrounding campus by expanding onto two adjacent parcels to the southeast. In addition to improving the functionality and accessibility of Parcel 2, it also further activated Pecan and 13th Streets.

**Advantages**
- Adjacent To Martin Luther King, Jr. Boulevard
- Relatively Good Site Conditions
- Ample Space for Proposed Program
- Compatible Existing Zoning

**Disadvantages**
- Parcel 2 Presently Earmarked For Other Uses
- Larger Footprint

Appendix A. Evaluation Process
Site Option 2b was a further variation on Site Option 2, which sought to consolidate the full program on the portion of the campus north of Pecan Street with the exception of a single additional building on parcel 15.

**Advantages**
- Adjacent To Martin Luther King, Jr. Boulevard
- Relatively Good Site Conditions
- Ample Space for Proposed Program
- Compatible Existing Zoning

**Disadvantages**
- Parcels 1 and 2 Presently Earmarked For Other Uses
- Larger Footprint
- Somewhat Suburban Character
Site Option 2c was intended to explore the consequences of locating only the fundamental hospital program on Parcel 2, with the remainder of the program occupying surrounding parcels. Though this solution provides maximum flexibility and functionality for the hospital program, the result is an undesirable suburban character, poor utilization of valuable land, and an abundance of surface parking.

Advantages
• Adjacent To Martin Luther King, Jr. Boulevard
• Relatively Good Site Conditions
• Ample Space for Proposed Program
• Compatible Existing Zoning
• Good Accessibility and Functionality

Disadvantages
• Parcels 1 and 2 Presently Earmarked For Other Uses
• Very Large Footprint
• Suburban Character
• Very Low Density
• Heavy Reliance on Surface Parking
Site Option 2d was intended to represent a reasonable compromise between Sites Options 2c and 2e. The result is a medium-density solution with the central hospital program located on Parcel 2 and ancillary program located on surrounding parcels. It preserves flexibility and functionality while engaging the remainder of the campus and activating Pecan Street and Martin Luther King, Jr. Boulevard.

**Advantages**
- Adjacent To Martin Luther King, Jr. Boulevard
- Relatively Good Site Conditions
- Ample Space for Proposed Program
- Compatible Existing Zoning
- Good Accessibility and Functionality
- Activates Pecan Street and MLK Blvd.

**Disadvantages**
- Parcels 1 and 2 Presently Earmarked For Other Uses
- Very Large Footprint
- Suburban Character
Site Option 2e proposes to reconfigure the boundaries of Parcels 1 and 2 in order to optimize Parcel 2 for the fundamental hospital Program while reserving Parcel 1 as a possible site for Federal Government Use. The remainder of the program is distributed on adjacent parcels to the south of Parcel 2.

**Advantages**
- Adjacent To Martin Luther King, Jr. Boulevard
- High Density
- Urban Character
- Compatible Existing Zoning
- Good Accessibility and Functionality
- Activates Pecan Street and MLK Blvd.

**Disadvantages**
- Parcel 2 Already Earmarked For Other Uses
- Requires Revision of Parcel Boundaries
Site Option 3 involved Parcels 12, 13, and 16 on the eastern side of the campus. The site is well located and circumvents the challenges posed by Site Option 3 by expanding onto an adjacent parcel.

**Advantages**
- Near Metro
- Centrally Located
- Near Phase 1 Infrastructure
- Expansion Space Available

**Disadvantages**
- Difficult Topography
- Traversed By Metro Tunnel
Site Option 3a involved Parcels 13 and 16 on the eastern side of the campus. Although this site is well located, it is compromised by narrow parcels, difficult topography, and other site complications.

**Advantages**
- Near Metro
- Centrally Located
- Near Phase 1 Infrastructure

**Disadvantages**
- Difficult Topography
- Unusual Site Geometry
- Traversed By Metro Tunnel

Site 3a

1" = 50'-0"
Site Option 3b involved Parcels 5, 6, 12, 13, and 16. The site makes good use of available parcel, has good accessibility, catalyzes a number of adjacent uses, and activates 13th Street. However, it also addresses parking needs through a very large central parking structure which makes poor use of a prominent parcel.

**Advantages**
- Near Metro
- Centrally Located
- Near Phase 1 Infrastructure
- Good Accessibility

**Disadvantages**
- Difficult Topography
- Unusual Site Geometry
- Traversed By Metro Tunnel
- Significant Above-Grade Structured Parking
Site Option 3c is similar in character to Site Option 3b, but explores the implications of making minor adjustments to the surrounding street grid. Though this change would involve the need for additional approvals, it offers several distinct benefits including improved circulation, more reasonably shaped parcels, and a more coherent street grid.

**Advantages**
- Near Metro
- Centrally Located
- Near Phase 1 Infrastructure
- Good Accessibility and Circulation

**Disadvantages**
- Difficult Topography
- Unusual Site Geometry
- Traversed By Metro Tunnel
- Additional Approvals Required for Street Changes
Site Option 3d is similar in approach to Site Option 3c, but attempts to better consolidate the proposed program. It also proposes to relocate the entrance road to St. Elizabeths hospital in order to improve vehicular circulation and accessibility.

**Advantages**
- Near Metro
- Centrally Located
- Near Phase 1 Infrastructure
- Good Accessibility and Circulation

**Disadvantages**
- Difficult Topography
- Unusual Site Geometry
- Traversed By Metro Tunnel
- Additional Approvals Required for Street Changes
Site Option 4 involved a portion of the PUD site for St. Elizabeths hospital. Although this site seemed to offer adequate space for the proposed program, it was compromised by poor accessibility as well as branding and visibility challenges due to its proximity to St. Elizabeths hospital.

**Advantages**
- Adequate Space
- Reasonable Topography

**Disadvantages**
- Limited Access
- Poor Branding and Visibility
- Remotely Located
DUE DILIGENCE REPORT
FOR ST. ELIZABETHS EAST

This Due Diligence Report has been prepared to assess the existing conditions of St. Elizabeths East for purposes of locating the United Medical Center Hospital on the campus. Thirteen (13) development options were studied. The study included a combination of ten (10) parcels within the St. Elizabeths East, Parcel 1 through 6, 9, 12, 13 and 16. The information provided in the Appendix was relied on by CH2M HILL and Perkins + Will for the purpose of developing this study. This information is provided for background information only and should be independently verified.

A. GOVERNMENT ENTITLEMENTS

1. ZONING AND LAND USE INFORMATION

PARCEL 1
Overview: 6.72 acres - Urban Farm Parcel, is located at the far north end of St. Elizabeths East. The parcel contains the oldest existing buildings on the campus. The site’s two barns...
and two staff cottages are the last reminders of both the agricultural roots of St. Elizabeths East and the farm’s importance in the history of the Hospital. Restoring the historic agricultural use of the sector is a strong desire of the community.

Restoration of the farm complex will offer opportunities for physical activity and access to healthy food that enhance the neighborhood’s livability. Additional programming on the site could include child, youth, and adult education, workforce training, small business incubation and development, and potential employment opportunities, while future building rehabilitation could provide an additional community.

**PARCEL 2**

**Overview:** 12.36 acre proposed Federal Use Parcel, is situated to the north of Pecan Street. The parcel is a backwards L-shaped area wrapping two sides of the Farm Complex. The property lies north of the main part of St. Elizabeths East and extends along MLK Avenue at the western edge of the site.

The use of Parcel 2 has been designated for Federal Government use. Development on the parcel by the Federal Government will extend the presence of DHS from its main complex on the West Campus to St. Elizabeths East in this location.

Development for the parcel is guided by the DHS Master Plan Amendment – St. Elizabeths East, North Campus Parcel and the North Parcel Environmental Assessment. Continued coordination between the US General Services Administration and DHS will be needed as the development of the parcel is planned and comes to fruition.

**PARCEL 3**

**Overview:** 4.76 acres; 7 stories with a mix of commercial office, residential, and ground floor retail. This parcel lies prominently along Martin Luther King, Jr. (MLK) Avenue, at the western edge of St. Elizabeths East, and offers significant development potential for St. Elizabeths East and Ward 8. The parcel also offers the opportunity to create an attractive, open, and inviting campus façade along MLK Avenue and is located near the planned FEMA headquarters. Structured parking will also be accommodated on this parcel.

---

**PARCEL 1**

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<tr>
<th>ZONING</th>
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<td>Height</td>
<td>25’</td>
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<td>Parking</td>
<td>Off-street parking - maximum 4,800 total parking spaces limited for StE zone. Possible restraint due to existing underground streams.</td>
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<tr>
<td>Loading</td>
<td>One 30’ loading vehicle bay; one 55’ loading vehicle bay; one 20’ service vehicle bay.</td>
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<td>Lot Occupancy</td>
<td>25%</td>
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<td>LAND USE</td>
<td>Commercial/Innovation, Civic/Community</td>
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**PARCEL 2**

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<td>Loading</td>
<td>One 30’ loading vehicle bay; one 55’ loading vehicle bay; one 20’ service vehicle bay.</td>
</tr>
<tr>
<td>Lot Occupancy</td>
<td>60%</td>
</tr>
<tr>
<td>LAND USE</td>
<td>Residential, Commercial Office</td>
</tr>
</tbody>
</table>
PARCEL 4
Overview: 4.44 acres and features a series of existing 2-story buildings to be adaptively reused with a mix of commercial/innovation, educational institution, civic/community uses, and ground floor retail. This parcel lies immediately to the east of Parcel 3, along the east side of Sycamore Street, and includes the first facilities construction on St. Elizabeths East. Development in this area will focus on the preservation, rehabilitation, and judicious reuse of these structures for the Innovation Hub components including small office space, incubators, meeting and gathering spaces, and other specialty uses suitable for the unique spaces associated with these historic buildings.

PARCEL 5
Overview: 8.28 acres and features a series of existing multi-story buildings to be adaptively reused with a mix of commercial/innovation, educational institution, hospitality, and ground floor retail. This parcel lies between Parcel 4 and 13th Street at the heart of St. Elizabeths East and includes the Maple Quadrangle buildings. The Maple Quadrangle group comprises the largest set of buildings expected to remain on St. Elizabeths East, and is thus a major opportunity for both economic development and historic preservation. Structured parking will also be accommodated on this parcel.

PARCEL 6
Overview: 5.57 acres; 8 stories with a mix of commercial office, residential, and ground floor retail. This parcel sits directly across from the central building of the historic Maple Quadrangle complex and will allow for high-density development that will promote activity along 13th Street. Structured parking will also be accommodated on this parcel.

PARCEL 4
ZONING St. Elizabeths East -Site 1 – (StE-4)
FAR .5
Height 25’
Parking Off-street parking - maximum 4,800 total parking spaces limited for StE zone. Possible restraint due to existing underground streams.
Loading One 30’ loading vehicle bay; one 55’ loading vehicle bay; one 20’ service vehicle bay.
Lot Occupancy 60%
LAND USE Commercial/ Innovation Hub Educational/ Institutional Hospitality

PARCEL 5
ZONING St. Elizabeths East -Site 1 – (StE-5)
FAR 1.5
Height 65’
Parking Off-street parking - maximum 4,800 total parking spaces limited for StE zone. Possible restraint due to existing underground streams.
Loading One 30’ loading vehicle bay; one 55’ loading vehicle bay; one 20’ service vehicle bay.
Lot Occupancy 60%
LAND USE Commercial/ Innovation Hub Hospitality Educational/ Institutional

PARCEL 6
ZONING St. Elizabeths East -Site 1 – (StE-6)
FAR 3.2
Height 90’
Parking Off-street parking - maximum 4,800 total parking spaces limited for StE zone. Possible restraint due to existing underground streams.
Loading One 30’ loading vehicle bay; one 55’ loading vehicle bay; one 20’ service vehicle bay.
Lot Occupancy 75%
LAND USE Residential Commercial Office
PARCEL 9
Overview: 1.94 acres and features an existing multi-story building to be adaptively reused. The recommended building height for the new development is 5 stories and a mix of commercial/innovation, educational institution, and ground floor retail is allowed. This parcel is anticipated to be the programmatic link between the Maple Quadrangle and the Community Technology (CT) Village. It should incorporate Innovation Hub functions with a specific focus on production, technology transfer, and commercialization. Facilities could include small scale production and assembly, a technology testing and evaluation center, a prototyping and proof-of-concept center (where prototypes are assessed for market readiness), a demonstration center where companies can show their products and services, as well as supportive office space to incubate ideas and products. Structured parking will also be accommodated on this parcel.

PARCEL 12
Overview: 1.76 acres; 7 stories with a mix of commercial office, residential, and ground floor retail. This parcel lies directly between the CT Village and 13th Street, and provides one of the larger opportunities for development on St. Elizabethts East. Proposed uses within this parcel consist of residential and commercial office, possibly in association with a university or community college user at the CT Village. As this site is relatively regular in shape, it offers a particular opportunity to provide structured parking for the campus.

PARCEL 13
Overview: 3.50 acres; 8 stories with a mix of commercial office, residential, and ground floor retail. This parcel is similar to Parcel 6 except that it has no direct adjacency with any historic buildings. It therefore offers a similar set of development opportunities, but in a slightly less constrained context. Structured parking will also be accommodated on this parcel.

PARCEL 16
Overview: 1.73 acres; 8 stories with a mix of commercial office, residential, hospitality and ground floor retail. This parcel is situated directly to the north of the Congress Heights Metrorail station and is divided from Parcel 13 in order to provide a right-of-way for the hospital road. New development will be directly accessible to the Metro station. Structured parking will also be accommodated on this parcel.

Appendix B. Due Diligence Report
2. MASTER PLAN

On January 8, 2009, the National Capital Planning Commission (NCPC) approved the Final Master Plan for the DHS Headquarters Consolidation. The U.S. Commission of Fine Arts (CFA) approved the Final Master Plan on November 20, 2008. The NCPC Executive Director’s Recommendation (EDR), NCPC Commission Action, and the Final Master Plan can be downloaded from the Document Center. The Final Master Plan provides the development framework for accommodating 4.5 million gross square feet of office space for the DHS headquarters on both the St. Elizabeths West and East Campuses.

The Final Master Plan outlines 3.8 million gross square feet of office space on the West Campus and 750,000 gross square feet of office space on a portion of St. Elizabeths East (identified as East Campus, North Campus Parcel). The development will be consistent with a DHS Interagency Security Committee (ISC) Level V campus to house mission-critical Federal agencies. Part of the Master Planning process includes an Environmental Impact Statement (EIS) under the National Environmental Policy Act (NEPA), and compliance with the Section 106 regulations under the National Historic Preservation Act (NHPA).

3. AGREEMENTS WITH GOVERNMENTAL AGENCIES

Memorandum of Agreement (MOA) for Transportation Improvements (April 19, 2012)

This MOA is for transportation improvements along a segment of Martin Luther King, Jr. Avenue and Construction of the FEMA Headquarters within the Federal Use Parcel on St. Elizabeths East of St. Elizabeths National Historic Landmark. The MOA is made by and among the Offices of DMPED, GSA and DHS (November 23, 2008).

St. Elizabeths East Master Plan and Design Guidelines - Final Plan (June 4, 2012)

The intent of the Master Plan is to create a framework that renews historic and cultural resources on the campus while ensuring that new development creates dynamic urban places that reflect innovative, sustainable design solutions. To accomplish this, the Master Plan carefully balances preservation goals with a market-responsive development approach; this is critical to ensure that the resources generated from private sector development can be reinvested into the renewal of the campus’s infrastructure and historic resources. The Master Plan also links to parallel economic development planning efforts to ensure thoughtful placement of uses and programs that stimulate the city’s burgeoning innovation economy tied to technology related industries. The result of these intentions is a Master Plan that knits together the unique historic campus with the Congress Heights neighborhood, to create a destination for both current and future residents to live, work, shop, play, and learn.

St. Elizabeths Redevelopment Framework Plan, Resolution #R17-0899 (December 16, 2008)

This framework plan is designed to provide broad planning guidance that will shape development and help future master planners, developers, the District government, and surrounding neighborhoods navigate these challenges.

Due to the size and scope of the opportunity, the framework plan provides the lens to view the site, its historic context, current site conditions and historic preservation controls. It also outlines a set of stakeholder-driven development principles that define an ambitious agenda for future development. A new St. Elizabeths East must balance sensitive infill development with historic preservation while providing new multi-modal access and circulation. Redevelopment of the campus must also reflect a commitment to sustainable development, both in individual building design and campus wide systems. These development principles drive the content of the Redevelopment Framework chapter of this plan, which includes both land use and development guidance and illustrative site plans. The illustrative site plans suggest potential ways of developing the campus that embody the guidance and principles articulated throughout the document.

Programmatic Agreement among GSA, the Advisory Council on Historic Preservation, DCSHPO, FHWA, NCPC and DHS regarding the development of St. Elizabeths National Historic Landmark (December 9, 2008)

The Programmatic Agreement entered into on December 9, 2008 for the purpose to resolve adverse effects from certain complex project situations during the development of DHS Headquarters Consolidation at St. Elizabeths West and East campuses. GSA proposes through the implementation of St. Elizabeths Final Master Plan to develop the West Campus of St. Elizabeths together with the North Campus Parcel of St. Elizabeths East for use as a high-security federal campus.

Memorandum of Agreement by and among the Offices of DMPED, GSA and DHS (November 23, 2008)

In order to pursue development of St. Elizabeths East, GSA and DHS have entered into an agreement with the District Office of the Deputy Mayor for Planning and Economic Development to develop St. Elizabeths East on terms and conditions outlined in a separate, non-Section 106 Memorandum of Agreement executed November 23, 2008.

4. PERMITS

Permits were obtained for Stage 1 Infrastructure construction. New construction will require construction permits for buildings and connections and possible upgrades to existing infrastructure.

Typical Permits for New Construction:

- New construction and foundations
- Grading
- Building
- Additions, alterations, or repair of existing buildings
- Demolition
- Razes
- Construction of retaining walls, fences, sheds, garages, or vault construction
- Erection of signs or awnings
- Layout of interior space for tenants in new or existing commercial buildings. (e.g. changing the floor plan of a building)

5. PUBLIC UTILITIES

Note: Much of this information is excerpted from St. Elizabeths East Redevelopment Concept Infrastructure Plan and other studies from 2012 and is subject to change to meet current regulations and requirements.

POWER SYSTEMS

The existing electrical system on St. Elizabeths East was installed privately for the specific use of St. Elizabeths. Since the installation was not done by PEPCO, the system is not considered reusable by PEPCO. PEPCO has indicated it has no use for the existing infrastructure, so all existing electrical distribution, cables, switches, conduit and manholes, will be removed. Old cables and transformers will be removed/salvaged.

PEPCO has a substation on Alabama Avenue about a mile east of St. Elizabeths East. This substation has 140 MVA capacity. Several 13 KV feeders go by the campus on Alabama, but is said to have very limited reserve capacity available to tap into for the future and present needs of St. Elizabeths East.

A new 12 duct underground duct bank was constructed with 4 active feeders (8 ducts available for future needs of others). The duct bank is routed along Alabama Avenue, then north along Martin Luther King, Jr. Avenue, via 8th Street and Malcolm X Boulevard to the main gate (tunnel) at the West Campus. This will be a primary power point of connection for St. Elizabeths East.

Interconnecting system and coordination with a new hospital power service will require some relocating. The ultimate system will be reworked with this project to accommodate the new roadway configuration. Coordination will be
necessary to avoid service interruptions to the hospital and WMATA Congress Heights Metro Station.

Switching equipment may also need to be relocated in Phase 2 of St. Elizabeths East development. PEPCO lines servicing a new hospital, WMATA, and other existing users on campus will need to remain in service and any abandonment of service for development shall be coordinated with PEPCO.

Two sites may require temporary electric service from PEPCO for uses prior to Stage 1 construction. The user would pay for the installation and use of the services. These sites include

1. North Parcel (old farm) – may require a minimal power supply, perhaps a residential type service, to accommodate a community garden.
2. Temporary power supply to existing buildings which have cellular telephone provider antenna transmitter stations, which will remain operational until new locations are available, possibly some perimeter security.

PEPCO Regulations and Standards

The electrical power distribution infrastructure proposed for the development may be constructed by the developer, provided there is strict adherence to PEPCO standards. These standards may be found at: http://www.pepco.com/business/services/new/res/

For facilities built on private property there is no preference for contractors as far as PEPCO is concerned. Construction can begin once the proposed facilities drawings have been approved by PEPCO. If the property is made public before the infrastructure is built and certified then the contractors must be a PEPCO pre-approved contractor. Construction cannot begin until PEPCO has finished design, and work must be done under PEPCO’s design and permit.

POWER DEMAND
Demand Assumptions
(see Electrical Load Summary chart)

Power Load Growth
The above load summary is based on common loads found with the building types indicated. Very heavy users can be found within any of the categories. The FEMA property is not included in the loads above. It is anticipated the FEMA electric supply will come directly from MLK Jr. Ave. or Pecan Street and/or the West Campus system.

Electric System Design Criteria
The infrastructure described here assumes primary power of 12,000 volts will available from MLK Jr. Ave., primarily and potentially Alabama Avenue. PEPCO has recently installed new duct banks along MLK Jr. Ave. There are four feeders along MLK at this time.

Distribution System
The distribution system conceptualized for St. Elizabeths East includes a system of 4-way duct banks with 5” diameter conduits concrete encased. Each main street will include a 4-way duct bank with manholes spaced about 300’ apart. A 2-way duct bank is indicated for each building power supply. It is assumed each building will receive a pad mount transformer next to the building. PEPCO will extend 12KV cables through the duct bank system to the transformers near each building where power will be stepped down to the utilization voltage in the building. Transformers will be owned and maintained by PEPCO.

Switches/other Components
No switches are indicated on the conceptual plan. PEPCO may or may not choose to include such switches somewhere on St. Elizabeths East in its final design.

Back-up Generation
Original conceptualization of St. Elizabeths East development plan included on-site power generation of a co-generation character. The concept of co-generation was discarded when economic feasibility did not materialize, nor was there a logical solution to manage the operations of such a plant. Individual buildings will provide their own backup power on as needed basis.

**ELECTRICAL LOAD SUMMARY**

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<tr>
<th>Area (sf)</th>
<th>Calculated Maximum Demand (kw)</th>
<th>Diversified Demand (kw)</th>
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</thead>
<tbody>
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<td>7,231</td>
</tr>
<tr>
<td>Residential</td>
<td>1,627,475</td>
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<tr>
<td>Institution</td>
<td>600,524</td>
<td>21,018</td>
</tr>
<tr>
<td>Civic</td>
<td>61,689</td>
<td>1,542</td>
</tr>
<tr>
<td>Hotel</td>
<td>354,551</td>
<td>7,091</td>
</tr>
<tr>
<td>Parking</td>
<td>800,000</td>
<td>1,600</td>
</tr>
<tr>
<td>TOTALS</td>
<td>6,429,171</td>
<td>108,671</td>
</tr>
</tbody>
</table>
IT/COMMUNICATIONS
Nearly all existing telephone and communication wiring on the site is or was hospital-owned (private). Verizon was the telecommunication infrastructure owner only up to the main telecommunication building. This building, the Dix Building, is slated to be demolished. Cellular telephone antenna/transmitter equipment is now limited to the water tower on campus by a variety of vendors. These facilities will require coordination with vendors prior to power interruption.

All existing cables are deemed obsolete and unsuitable for future use and are planned to be removed. Conduit, manholes and duct banks are to be removed or abandoned in place as they are deemed unsuitable for new work and do not align with the new roadway and conceptual infrastructure locations. Existing entertainment TV wiring infrastructure is outdated and technologically unsuitable for reuse. Any existing security systems infrastructure on the East Campus are remnants of St. Elizabeth’s Hospital and thus, of little value to new development. All such security systems should be scheduled for removal. The new hospital is currently being served entertainment TV by Verizon FIOS. Although other commercial vendors are available for these types of services, infrastructure installed within the streets will be controlled by DCNET, while other vendors may offer services using the same infrastructure consistent with regulation and local agreements.

DCNET Regulations and Requirements
DCNET will require compliance with its design guidelines and an opportunity to review and comment on proposed infrastructure designs intended for its use. For further information concerning design guidelines contact Anil Sharma at DCNET at 202.715.3805.

General Assumptions
A system of pathways in the streets is proposed for DCNET and other telecommunication provider’s use. The pathways, typically, 4-way concrete encased duct banks with 4” diameter conduits concrete encased will be provided in the streets for all telecommunication wiring. Manholes will be provided with 4-way stub-out duct banks extending from a manhole to the property line for extension to individual buildings. The system of pathways, manholes and stub-outs is proposed to provide sufficient infrastructure with the roadways and utilities to preclude immediate and constant street damage as buildings of the development come online.

Two sites may require temporary telecommunication service for uses prior to Stage 1 construction. These sites include:
1. North Parcel (old farm)
2. Temporary telecommunication services to existing buildings which have cellular telephone provider antenna transmitter stations, which will remain operational until new locations are available

IT/Communication Infrastructure Layout
Multiple locations are indicated for connection to pathways in Martin Luther King Jr. Avenue, Alabama Avenue and extensions of 8th Street and Malcolm X Avenue. These access points will afford considerable flexibility in getting telecommunication cabling to the campus and/or to loop through to surrounding communities. The 4-way duct bank layout assumes two ducts will be immediately occupied by DCNET cables for distribution through the campus. Two ducts will remain spare and available for other users for which design is to be reviewed and approved by DC-Net.

Considerations for Other Users
The pathways will be constructed to DC-Net standards and generally available for other providers as necessary. One potential user of the telecommunications system pathways will be DC-Net by becoming the primary supplier and data hub to St. Elizabeths East. Other providers will have access to the system should the service be requested. The exact details will be coordinated and agreed upon during the utility preliminary plan development.

NATURAL GAS
Existing natural gas piping on St. Elizabeths East is owned and maintained by Washington Gas. The gas lines do not go to each building, but go to three buildings of the St. Elizabeth facilities that required gas, like the central heating plant, and cooking facilities. Existing piping does not follow existing roads, but tend to be a direct routing from the street mains to the delivery point. Such routing conflicts with current concept development plans; including locations of proposed buildings where gas piping now exists. Thus, nearly all existing gas piping will be removed or purged/capped and abandoned in favor of new.

Washington Gas Regulations and Requirements
Natural gas piping will be provided by Washington Gas or its qualified contractors. Washington Gas typically does not invest in infrastructure until reasonable certainty exists that natural gas will be requested for a property. This concept is counter to this Concept Infrastructure Plan which is trying to organize all utilities on site, and place infrastructure to minimize disturbance to roadway infrastructure.
Washington Gas has an 8-inch 20 lb. pressure main in MLK. The infrastructure is in reasonable condition but the system pressure is weak. Washington Gas is contemplating upgrades to the system in this Southeast region of The District but needs a clear vision of future increased demand to make the investment. A substantial commitment to natural gas for the proposed development may be sufficient.

**General Assumptions and Standards**

It is noted that many modern buildings have minimal heating loads and often are constructed without natural gas supply. Office buildings, as an example, are largely cooling loads, minimal heat, often relying on localized electric reheat only. Large office buildings may or may not choose to use natural gas for heating in the large roof mounted or central plants. Buildings and facilities with logical gas requirements include food preparation and cooking facilities, large hot water users, or large heating loads. Such buildings usually include; residential, restaurants, hospitals, hotels, hair salons, etc. Energy efficiency criteria being applied to building design will play a big role in building owners choosing to include natural gas as an energy source. With the above in mind, Washington Gas will be reluctant to bear the cost for the infrastructure proposed with this development plan.

While Washington Gas will insist on installing all gas lines with their own or pre-qualified contracting sources, the cost of such infrastructure will be passed on to the developer.

Washington Gas will provide natural gas directly to each building that requests gas. Washington Gas will provide meters and measure usage at each building or group of buildings under common ownership. The new infrastructure on site will be owned and maintained by Washington Gas all the way up to the building metering point. Exact details of design, construction, ownership and operations will be coordinated and agreed upon during the preliminary utilities plans preparation.

**Demand for Natural Gas**

Consistent with the discussion above, natural gas may not be used in all buildings. The type of occupant, hours of operation, etc. all contribute to the load calculations.

**POTABLE WATER AND WASTEWATER**

The existing privately owned potable water system within St. Elizabeths East will be replaced with a new public system. Integral components of the new system that will be built separately by the District Water and Sewer Authority (DC Water) include a 24-inch transmission main from Martin Luther King, Jr. Avenue, within the right-of-way of Pecan Street, to a new 2 MGD elevated water storage tank on St. Elizabeths East near a new hospital. This separate construction is scheduled to be completed in 2015 and must be operational before the construction of any new buildings on St. Elizabeths East. At a minimum, this will require that the Stage 1 connections to the DC Water system along Martin Luther King, Jr. Avenue, SE and Alabama Avenue, SE be completed to allow for connection of the Hospital to the new water distribution system. DC Water may require that the construction of the new water tank and 24-inch transmission connection to Martin Luther King, Jr. Avenue, SE be complete, prior to removal of existing water tank.

Coordinated efforts during development are necessary to ensure continuity of service, particularly to the hospital, availability of fire protection at an estimated rate of 1,000 gallons per minute (gpm) to existing buildings on St. Elizabeths East.

St. Elizabeths East will not be on a master meter system, as such all buildings (existing and proposed) will be individually metered for water usage.

The existing private gravity wastewater sewer system connects to DC Water’s system through an existing 18-inch vitrified clay pipe (VCP) sewer along
the ravine at a manhole near the north boundary of St. Elizabeths East adjacent to Suitland Parkway. DC Water will analyze the capacity and condition of its receiving facilities downstream on receipt of this report. An existing 8-inch sewer connecting to the 18-inch outfall will serve the north parcel including the parcel intended for future agricultural use. With rehabilitation by a trenchless technology in accordance with DC Water standards, these two existing sewers are the only salvageable portions of the existing system on St. Elizabeths East. The remainder of the private system will be replaced by new sewers. The connection to the 18-inch outfall in the ravine can only be made if DC Water determines that the existing public pipe systems have adequate capacity.

Design and construction details of all water and wastewater sewer systems within the existing or future ROW are to be coordinated with DC Water and DDOT during plans preparation phase.

**DC Water Regulations and Requirements**
The applicable regulations and requirements of DC Water include:
1. D.C. Water Design standards and forms,
2. Project Design Manual Volume 3 Infrastructure Design,
3. Standard details and
4. Permit application and documents.

All of these documents are available on-line at DC Water’s website: http://www.dcwater.com/business/permits/criteria.cfm

**General Assumptions and Abbreviations**
A specific requirement of particular note from the Project Design Manual, Volume 3, Infrastructure Design, Part C, Section I, Subsection 1.3 states: “The minimum size of water mains that are used for fire protection is 8-inch diameter.” Consequently, it is anticipated that the majority of the new water distribution mains will be 10-inch diameter or larger.

New gravity collector sewers with a minimum diameter of 10 inches serving the greater part of the campus are anticipated.

Summary design flows shown assume all flows have been distributed or collected in the proposed systems at a single point. Actual design flows will vary depending upon actual water distribution and wastewater collection piping in the networks provided.

**Demand Analyses**
Estimates of flow are based upon typical industry water and wastewater sewer flow projection factors as shown in the following chart. These factors originate from usages of various dwelling and building types and are expressed as gallons per day (gpd) on a per unit basis such as square foot (SF). The analysis is further detailed by the calculation of potable water demands and wastewater flows for 17 individual service areas identified as parcels.

<table>
<thead>
<tr>
<th>Flow Factor Per Parcel Usage Type</th>
<th>Parcel Usage Type</th>
<th>Unit</th>
<th>Flow Factor (gpd)/Unit</th>
</tr>
</thead>
<tbody>
<tr>
<td>Retail</td>
<td>SF</td>
<td>0.048</td>
<td></td>
</tr>
<tr>
<td>Residential</td>
<td>SF</td>
<td>0.120</td>
<td></td>
</tr>
<tr>
<td>Residential</td>
<td>DU Water:</td>
<td>121</td>
<td></td>
</tr>
<tr>
<td>Residential</td>
<td>DU Sewer:</td>
<td>130</td>
<td></td>
</tr>
<tr>
<td>Large Office</td>
<td>SF</td>
<td>0.200</td>
<td></td>
</tr>
<tr>
<td>Small Office</td>
<td>SF</td>
<td>0.200</td>
<td></td>
</tr>
<tr>
<td>Institution</td>
<td>SF</td>
<td>0.620</td>
<td></td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>Flow Factor Per Parcel Usage Type</th>
<th>Parcel Usage Type</th>
<th>Unit</th>
<th>Flow Factor (gpd)/Unit</th>
</tr>
</thead>
<tbody>
<tr>
<td>Civil</td>
<td>SF</td>
<td>0.100</td>
<td></td>
</tr>
<tr>
<td>Hotel</td>
<td>SF</td>
<td>0.256</td>
<td></td>
</tr>
</tbody>
</table>

The number of square feet in each parcel usage type and number of residential dwelling units used in the subsequent calculations are based upon the current master plan for development for the St. Elizabeths East Redevelopment.

### POTABLE WATER DEMANDS SUMMARY

<table>
<thead>
<tr>
<th>Parcel No.</th>
<th>1</th>
<th>2</th>
<th>3</th>
<th>4</th>
<th>5</th>
<th>6</th>
<th>7</th>
<th>8</th>
<th>9</th>
</tr>
</thead>
<tbody>
<tr>
<td>ADF (gpd)</td>
<td>0</td>
<td>0</td>
<td>114,700</td>
<td>15,000</td>
<td>223,700</td>
<td>114,300</td>
<td>36,200</td>
<td>3,900</td>
<td>100,500</td>
</tr>
<tr>
<td>MDF (gpd)</td>
<td>0</td>
<td>0</td>
<td>229,400</td>
<td>30,000</td>
<td>447,400</td>
<td>228,600</td>
<td>72,400</td>
<td>7,800</td>
<td>201,000</td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>Parcel No.</th>
<th>10</th>
<th>11</th>
<th>12</th>
<th>13</th>
<th>14</th>
<th>15</th>
<th>16</th>
<th>17</th>
<th>Hospital</th>
</tr>
</thead>
<tbody>
<tr>
<td>ADF (gpd)</td>
<td>2,100</td>
<td>147,400</td>
<td>26,300</td>
<td>45,600</td>
<td>23,400</td>
<td>109,600</td>
<td>33,900</td>
<td>79,500</td>
<td>103,800</td>
</tr>
<tr>
<td>MDF (gpd)</td>
<td>4,200</td>
<td>294,800</td>
<td>52,600</td>
<td>91,200</td>
<td>46,800</td>
<td>219,200</td>
<td>67,800</td>
<td>159,000</td>
<td>207,600</td>
</tr>
</tbody>
</table>
Potable Water Demands
The following potable water flow projections detail the usage types, the number of units in each usage type, the associated flow factors and the resultant average daily flow (ADF) and maximum daily flow (MDF) in gpd in parcels 1-17. The flow rates are summarized in the chart below.

Wastewater Flows
The next wastewater flow projections detail the usage types, the number of units in each usage type, the associated flow factors and the resultant base wastewater flow (BWF), average wastewater flow (AWF), peak wastewater flow (PWF) and design flow (DF) in gpd in each of the 17 parcels and for the hospital. The peak and design flow rates are summarized in the chart below.

POTABLE WATER DISTRIBUTION SYSTEM

Potable Water and Fire Flow Demands
In conjunction with the potable water demands, a fire flow of 3500 gallons per minute (gpm) is required for the proposed system.

Existing Fire Flow Analysis and results
Fire protection work was conducted on St. Elizabeths East between November 2010 and August 2011 to enable compliance with the requirement of 750 gpm at each hydrant. Pressure testing was performed and recorded for all hydrants with 100 percent compliance above 750 gpm. The construction during this timeframe was to enable minimal fire and domestic service to the existing facilities with no consideration for future development.

In general the new development of St. Elizabeths East will be served by existing facilities as follows (reference Exhibit titled “Road Names and Parcel Layout,” sheets 1 and 2 for parcel locations):

1. Parts of parcels 2, 3 and 7 drain west to Martin Luther King Jr. Avenue,
2. Parts of parcels 14 and 17 drain south to Alabama Avenue, SE.
3. All other parcels areas, including the proposed Federal Emergency Management Agency (FEMA) parcel and the Farm parcel intended for future agricultural use, drain east and north through the existing 54-inch outfall,
4. All roadway areas drain east and north through the existing 54-inch outfall; except the section of 13th Street, SE south of Dogwood Street which will drain south to Alabama Avenue, SE.

Local Regulations and Requirements
The District Department of the Environment (DDOE) is responsible for water quality regulation which includes:

1. Water Quality Regulatory and Legislative Affairs
   • Resources for Businesses
   • District Stormwater Fee
   • Separate Storm Sewer System
   • Flood Zone Building Permits

WASTEWATER FLOWS SUMMARY

<table>
<thead>
<tr>
<th>Parcel No.</th>
<th>1</th>
<th>2</th>
<th>3</th>
<th>4</th>
<th>5</th>
<th>6</th>
<th>7</th>
<th>8</th>
<th>9</th>
</tr>
</thead>
<tbody>
<tr>
<td>PWF (gpd)</td>
<td>0</td>
<td>0</td>
<td>660,800</td>
<td>86,400</td>
<td>1,288,400</td>
<td>658,400</td>
<td>208,400</td>
<td>22,400</td>
<td>578,800</td>
</tr>
<tr>
<td>DF (gpd)</td>
<td>0</td>
<td>0</td>
<td>991,200</td>
<td>129,600</td>
<td>1,932,600</td>
<td>987,600</td>
<td>312,600</td>
<td>33,600</td>
<td>868,200</td>
</tr>
<tr>
<td>Parcel No.</td>
<td>10</td>
<td>11</td>
<td>12</td>
<td>13</td>
<td>14</td>
<td>15</td>
<td>16</td>
<td>17</td>
<td>Hospital</td>
</tr>
<tr>
<td>PWF (gpd)</td>
<td>12,800</td>
<td>849,200</td>
<td>151,600</td>
<td>262,800</td>
<td>136,000</td>
<td>631,200</td>
<td>195,200</td>
<td>458,000</td>
<td>598,000</td>
</tr>
<tr>
<td>DF (gpd)</td>
<td>19,200</td>
<td>1,273,800</td>
<td>227,400</td>
<td>394,200</td>
<td>204,000</td>
<td>946,800</td>
<td>292,800</td>
<td>687,000</td>
<td>897,000</td>
</tr>
</tbody>
</table>
2. Total Maximum Daily Load (TMDL) Documents
   - Anacostia Watershed
   - Potomac River & Other Tributaries
   - Recently Approved TMDLs
   - Chesapeake Bay TMDL

3. Water Related Laws and Regulations
   - Water Quality Regulations
   - Watershed Protection Regulations
   - Stormwater Regulations
   - Floodplain Management Regulations
   - Water Pollution Control Act of 1984 (DC Law 5-188)
   - Water Quality Monitoring Regulations (21 DCMR Ch. 19)
   - Soil Erosion and Sediment Control and Stormwater Management Regulations

All of these regulations are available on the DDOE’s website: http://ddoe.dc.gov/service/water-quality-regulation. Their disclaimer recommends obtaining printed versions for legal matters.

The District Department of Transportation (DDOT) is responsible for the development and maintenance of a cohesive sustainable transportation system while protecting and enhancing the natural, environmental and cultural resources of the District. This mission is accomplished in part through the enforcement of its standards and guidelines which include:

3. Manual on Uniform Traffic Control Devices
4. Pedestrian Safety and Work Zone Standards
5. Public Realm Design Manual
7. Sidewalk Construction
8. Standard Drawings
9. Standard Specifications
10. Temporary Traffic Control Manual
11. Utility Work Zone Traffic Control Plan (TCP) Typical
12. Work Zone Safety and Mobility Policy


General Assumptions for Stormwater Systems Construction Phasing
The storm drain construction in Stage 1 includes the construction of a new connection to the existing 54” outfall. The alignment of this new connection is within the new extension of 13th Street, SE adjacent to the location of the existing water tower serving the Hospital.

Outfall Capacity
DC Water is presently verifying the capacity of their storm sewer system downstream of the 54” outfall pipe. Further study may be required to determine exact connection point to DC Water’s system downstream of the culvert below Suitland Parkway.

General Information for Stormwater Systems Site Location
Hydrologically, the majority of St. Elizabeths East discharges the stormwater runoff into the adjacent ravine that flows to the downstream Suitland Parkway drainage system and ultimately outfalls into the Anacostia River.

Rainfall
Rainfall intensity, duration and frequency are determined in accordance with the DDOE’s Stormwater Guidebook. This reference is available on the DDOE’s website: http://ddoe.dc.gov/publication/stormwater-guidebook.

Soils
Soil conditions were analyzed and the impervious percentages were determined by Arup USA, Inc. (Arup), under separate contract to DMPED. The impervious area percentages provided in the Arup report were used to calculate Run-off Coefficients in order to provide Storm Drainage and Stormwater Management quantities.
Flood Protection
The Federal Emergency Management Agency (FEMA) has designated the area of this site as “Zone X,” within the National Flood Insurance Program. This is shown on Flood Insurance Rate Map (FIRM) Number 1100010076C, revised September 27, 2010. Zone X is defined as, “Areas determined to be outside the 0.2% annual chance floodplain.”

STORMWATER MANAGEMENT

Detention Volume Criteria
Current DDOE stormwater regulations require that the peak stormwater discharge rate from the 2-year and 15-year storm events must be controlled to the predevelopment rate. The current policy defines the predevelopment condition as meadow, prior to man’s influence. This means that the predevelopment condition is considered to be before any development was performed at the site and not the current condition of the site as it is today.

The new DDOE stormwater regulations will require retention of stormwater within the site (drainage area) in addition to detention requirements. Detention requirements and methods will only be used when controlling up to 15-year storm event is needed to prevent flooding downstream of a development site.

Retention Volume Criteria
New DDOE stormwater management regulations change the required storage volumes from detention to retention. Each site (drainage area) is required to retain 1.2” of stormwater runoff from the entire site area, using varying reduction factors based upon the proposed surface composition. Reduction Factors will range from 0.95 for impervious areas to 0.00 for natural cover.

Retention requires that the stormwater volume be infiltrated (on-site) or reused (on-site) without any discharge to a DC Water sewer (separated or combined) system. This retention requirement also applies to the Public Right-of-Way, but only to the Maximum Extent Practical unless new roadways are proposed.

In a meeting with DC Water the design strategy of a regional stormwater management facility, which would serve the whole St. Elizabeth East was discussed. DC Water’s current policy is that any storm drain infrastructure upstream of a stormwater management facility is considered a private system, which would create a separate private utility service within the public roadway. Additionally, a regional facility would require legal agreements among St. Elizabeths East property owners for the purposes of future maintenance and operation of the facility. As a result, the current design strategy proposes that each development parcel will provide separate on-site (within the parcel boundary) stormwater management facilities. This will allow greater design flexibility for the design of each parcel, eliminate the need for a “private” utility within the public road system, and reduce any easement/covenant documents between individual ownership entities.

Possible stormwater retention methods for the individual parcels include: bio-retention, green roof, infiltration, re-use for building mechanical systems or irrigation, and permeable pavements. DDOE’s new regulations cover providing retention credits for trees that are planted in association...
within a development. The storm run-off from the public roadway will be treated separately using LID methods. The following chart shows preliminary calculations of the stormwater retention volume required for each parcel based on draft regulations.

Pretreatment and Water Quality Criteria
The DDOE stormwater regulations require that: “Any stormwater discharge facility which may receive stormwater run-off from areas which may be potential sources of oil and grease contamination in concentrations exceeding ten (10) milligrams per liter (mg/l), will include a baffle, skimmer, grease trap or other mechanism which prevents oil and grease from escaping the stormwater discharge facility in concentrations that would violate or contribute to the violation of applicable water quality standards in the receiving waters of the District…”

The new DDOE stormwater regulations require a Total Suspended Solids (TSS) removal rate of at least 65% if the site (or drainage area) cannot achieve at least 50% of the required retention volume, as defined above.

Additional water quality treatment criteria apply to areas within the Anacostia Watershed Development Zone. It is understood that the St. Elizabeth’s site is not within this zone.

Design Calculations
A summary of the 15-year stormwater flow rates to the outfalls locations as shown in the table below.

<table>
<thead>
<tr>
<th>Parcel No.</th>
<th>1</th>
<th>2</th>
<th>3</th>
<th>4</th>
<th>5</th>
<th>6</th>
<th>7</th>
<th>8</th>
<th>9</th>
</tr>
</thead>
<tbody>
<tr>
<td>RV (Ac.-ft.)</td>
<td>0.37</td>
<td>0.71</td>
<td>0.40</td>
<td>0.24</td>
<td>0.50</td>
<td>0.48</td>
<td>0.32</td>
<td>0.14</td>
<td>0.13</td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>Parcel No.</th>
<th>10</th>
<th>11</th>
<th>12</th>
<th>13</th>
<th>14</th>
<th>15</th>
<th>16</th>
<th>17</th>
<th>Hospital</th>
</tr>
</thead>
<tbody>
<tr>
<td>RV (Ac.-ft.)</td>
<td>0.06</td>
<td>0.67</td>
<td>0.15</td>
<td>0.29</td>
<td>0.17</td>
<td>0.40</td>
<td>0.17</td>
<td>0.19</td>
<td>1.56</td>
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</tbody>
</table>

Note: Retention Volume calculations are based upon Impervious Area percentages defined in “Stormwater Quantity Control” Report, dated March 12, 2012 by Arup USA, Inc.

15-YR STORM EVENT FLOW RATES

<table>
<thead>
<tr>
<th>Outfall Description</th>
<th>15-yr Flow (cfs)</th>
</tr>
</thead>
<tbody>
<tr>
<td>Ravine located at northern end of 13th Street</td>
<td>427.7</td>
</tr>
<tr>
<td>Intersection of Alabama Ave &amp; 13th Street</td>
<td>13.5</td>
</tr>
<tr>
<td>Intersection of Alabama Ave. &amp; 12th Street</td>
<td>8.0</td>
</tr>
<tr>
<td>South West of Proposed Parcel 7 going southwest along Martin Luther King Jr. Ave</td>
<td>18.3</td>
</tr>
<tr>
<td>West of Proposed Parcel 3 going north along Martin Luther King Jr. Ave</td>
<td>27.3</td>
</tr>
</tbody>
</table>

Regulations and Requirements
All abatement, whether removal of tunnels or containment, will be performed in compliance with EPA abatement regulations and all other regulations.

These guidelines can be found at EPA website: http://www.epa.gov/osw/hazard/.

The hazardous materials must be abated. Typically, two methods are used, containment or proper removal and disposal. Both methods are proposed. It is proposed to remove tunnels where the tunnel’s existence will interfere with new construction such as roadways or new buildings. Where possible the existing tunnels will be abandoned in place after sufficiently capping and sealing entry and access points.

Demolition of Steam Tunnels
The East campus of St. Elizabeths
St. Elizabeths East of St. Elizabeths used a central plant concept for heating. This concept utilized a system of steam tunnels to house heating pipes to distribute steam to each of the buildings. These steam tunnels date back to the early 1900’s. Materials used in the tunnels and used as insulation on the pipes are now considered hazardous materials, including asbestos. The tunnels connect buildings, one to another. The tunnels will not be reused in the new development, can be deemed a security breach and the hazardous materials a health issue.

The hazardous materials must be abated. Typically, two methods are used, containment or proper removal and disposal. Both methods are proposed. It is proposed to remove tunnels where the tunnel’s existence will interfere with new construction such as roadways or new buildings. Where possible the existing tunnels will be abandoned in place after sufficiently capping and sealing entry and access points.

6. EMERGENCY SERVICES
Unified Communications Center
The District opened the Unified Communications Center (UCC) on St. Elizabeths East in 2006. The UCC is an integrated call center and public safety/emergency response facility that consolidates key public safety communications functions of multiple District of Columbia agencies, including Metropolitan Police, Fire and Emergency Medical Services, and Emergency Management.
Fire and Rescue Services
The DC Fire and Emergency Medical Services Department provides fire and rescue services for St. Elizabeths. The closest station, which houses Engine Company 25 and Medic Unit 25, is located at 3203 Martin Luther King, Jr. Ave., approximately 0.7 miles from St. Elizabeths East. The response time to St. Elizabeths East Campus is approximately 2 minutes. The Engine Company 32 station is located at 2425 Irving St., approximately 2 miles from the project site. The response time to St. Elizabeths East Campus from Engine Company 32 is approximately 4 minutes.

Hospital and Medical Services
The United Medical Center Hospital, which is located at 1310 Southern Ave., approximately 1½ miles from St. Elizabeths Campus, provides general hospital service in the area. This is a full-service hospital with a 354-bed capacity. St. Elizabeths East contains St. Elizabeths Hospital, a 292-bed hospital on the southeastern portion of St. Elizabeths East. The hospital, owned and operated by The District and opened in April 2010, is a public psychiatric facility for individuals with serious and persistent mental illness who need intensive inpatient care.

Law Enforcement Services
St. Elizabeths Campus is within The District’s Seventh Police District, located at 2455 Alabama Ave. approximately 1.4 miles from the study area, this district location is the nearest police station to the St. Elizabeths Campus. The Seventh Police District contains seven Police Service Areas (PSAs); the St. Elizabeths Campus is in PSA 703.

Crime has been declining in District Seven and citywide dating back to at least 1993, when District Seven experienced twice as many crimes as in 2010 (DCMPD 2011).

7. PROPOSED PUBLIC IMPROVEMENTS
• Drainage Reports (onsite retention)
• Utility Constraints by Utility Companies

8. CONDEMNATION AND EMINENT DOMAIN
There are no pending or proposed condemnation proceedings, eminent domain proceedings or similar action or proceedings pending or threatened against the Real Property.

9. PENDING OR PROPOSED GOVERNMENTAL AGENCY APPLICATIONS, ACTIONS OR PROCEEDINGS
Memorandum of Agreement by and among the Offices of DMPED, GSA and DHS (November 23, 2008).
WMATA Parcel – 13th Street Right of Way Access Agreement.

10. WETLANDS
An ecological survey conducted April – May 2011 identified two wetlands in the undeveloped eastern section of the project area (Exhibit A).

Wetland 1
Wetland 1 is a 0.24-acre (10,450-square-foot) isolated forested wetland located within the eastern woodland between the current St. Elizabeths Hospital and St. Elizabeths East (Exhibits A and B). The majority of Wetland 1 is outside the study area, with the exception of a small portion at the western end. It is an isolated forested wetland, which appears to receive surface water runoff from the surrounding hillsides and groundwater from several seeps located to the south and east.

Exhibit A
Wetland 1 meets the full criteria for a wetland according to the USACE manual (USACE, 2010). However, it appears to have no surface connections to the tributary system to navigable waterways.

**Wetland 2**

Wetland 2 is a 0.22-acre (9,790-square-foot) scrub-shrub wetland located east of the access road to the current St. Elizabeths Hospital (Exhibit A and C). Wetland 2 appears to be a man-made basin (created by the access road to a new hospital) that collects stormwater runoff from parking areas associated with the hospital and surrounding upland areas. The basin has no apparent outlet. Water stands in the basin for extended periods, which has contributed to the development of hydric soils and hydrophytic vegetation. The eastern end of Wetland 2 connects to a channel, which was flowing at the time of the field visit. The channel originates at a concrete culvert to the east, but the source of the flow is unknown.

Wetland 2 meets the full criteria for a wetland according to the USACE manual (USACE, 2010). However, it appears to have no surface connections to the tributary system to navigable waterways.

**Data Point A**

Data Point A documents a 150-square-foot remnant depression that appears to have been created when the Metro access road was constructed in or around 1999. The remnant depression is located adjacent to the access road to the south (Exhibit B). Water pools in the low lying area, possibly a product of rutting from the construction activities, and stands for a sufficient time to allow for hydrophytic vegetation growth. A culvert connects the remnant ditch to Wetland 1 and flows during rainfall.
events. The culvert was most likely installed during the Metro access road construction to divert standing water into Wetland 1.

Data Point A does meet the criteria of a wetland for hydrology and hydrophytic vegetation but does not appear to meet the criteria for soils, and therefore was not considered to be a wetland.

Data Point B

Data Point B documents a second 260-square-foot remnant depression that appears to have been created when the Metro access road was constructed in or around 1999. The remnant depression is located adjacent to the access road to the south, near the above ground Metro structure (Exhibit B). As with Data Point A, water pools in the low lying area, possibly a product of rutting from the construction activities, and stands for a sufficient time to allow hydrophytic vegetation growth. Data Point B does meet the criteria of a wetland for hydrology and hydrophytic vegetation but does not appear to meet the criteria for soils, and therefore was not considered to be a wetland.

A ditch runs parallel to the gravel access road between Data Points A and B. Ditches that parallel roadways, were apparently created in a non-hydric soil, and do not represent the relocation of a natural channel, are not considered to be jurisdictional wetlands even though they support wetland vegetation. These ditches were considered “drainage ditches” or “ditches through uplands,” which are generally not regulated as waters of the United States under the CWA (USACE, 1999). Therefore, this ditch was also excluded as a wetland.

B. ENVIRONMENTAL REPORTS AND FILINGS

1. ENVIRONMENTAL AGENCY APPROVALS
   • Final Environmental Impact Statement (FEIS) (March 2, 2012)
   • NEPA Compliance - Record of Decision (ROD) for the Amended Master Plan for the DHS Headquarters Consolidation at St. Elizabeths in Southeast Washington, D.C. (May 2012)

2. HAZARDOUS WASTE INFORMATION

Federal and state databases were reviewed to identify former and current land uses that could result in the contamination of soil or groundwater within the project area. The objective of the review was to identify and document reported releases of hazardous or toxic materials to the environment as well as to locate businesses and industries that use, generate, store, transport, or dispose of regulated hazardous materials.

In April 2011, Environmental Data Resources, Inc. (EDR), conducted a computerized search of available environmental databases, including those of the U.S. Environmental Protection Agency (USEPA), for known and suspected contaminated sites within a 1-mile radius of the project area. Some of the sites appeared in more than one database. Irregularities in site locations, information, and the current status of USTs for some sites were noted.

Sites that were located more than 2 blocks from the project area were noted but not evaluated because they are not as likely to affect the project as those sites identified within or adjacent to the project area. One site was identified as being located within the project area, and four sites were identified as being directly adjacent to the project area.

District of Columbia Regulatory File Review

Based on the EDR and USEPA database searches, Freedom of Information Act (FOIA) requests were submitted to the District Department of the Environment (DDOE) for permission to review files of sites that could affect the project area based on documented reported releases of hazardous or toxic materials to the environment. Documents from the UST and Hazardous Waste Divisions were reviewed.

Asbestos

Asbestos is a potential concern when a project requires demolishing or modifying buildings or other structures with ACM. USEPA and the Occupational Safety and Health Administration (OSHA) regulate the remediation of ACM. Asbestos fiber emissions are regulated in accordance with Section 112 of the Clean Air Act (CAA), which established the National Emissions Standards for Hazardous Air Pollutants (NESHAP). These standards regulate the demolition or rehabilitation of buildings with ACM.

Two categories are used to describe asbestos-containing material. Friable ACM is defined as any material containing more than 1 percent asbestos (verified by polarized light microscopy) that, when dry, can be crumbled, pulverized, or reduced to powder by hand pressure. Nonfriable ACM is material that contains more than 1 percent asbestos and does not meet the criteria for friable ACM.

ACM was commonly used in buildings and structures before the 1970s, when laws regulating its use and disposal were established. Asbestos can be found in a variety of building materials,
including exterior siding, roofing shingles, linoleum flooring and vinyl asbestos tile, sprayed-on fireproofing, insulation, soundproofing, and ceilings. Asbestos was commonly used as a major component of heating systems, including steam or hot water pipe coverings, gaskets, pipe wrapping, and wire duct linking.

Asbestos study results were not readily available for review during this assessment. EHT (2011) performed an intensive survey of St. Elizabeths East buildings, during which suspected ACM vinyl tiles and pipe insulation were observed. In addition, during the site reconnaissance activities, exposed piping with possible ACM insulation was observed through open windows under a ramp at Building 116. Based on the age of the buildings (those built prior to 1970) and utilities on St. Elizabeths East, it is highly likely that ACM is present in the buildings and utilities there.

PCB
Prior to 1978, PCBs were industrial compounds used in electrical equipment, primarily capacitors and power transformers, because they are electrically nonconductive and stable at high temperatures. Because of their chemical stability, PCBs persist in the environment, bio-accumulate in organisms, and become concentrated in the food chain.

No site-specific surveys were conducted to identify PCB hazards within St. Elizabeths East project area. During the site reconnaissance, power transformers were observed at Buildings 88, 90, 92, 93, 94, 117, 119, and 124. Power transformers within the project area are owned by either General Services Administration or the District. The power transformers on St. Elizabeths East are non-PCB-containing transformers (ERM, 2003).

Lead-Based Paint
LBPs were used extensively before 1977. After 1977, the Consumer Product Safety Commission prohibited the sale of LBP to consumers and banned the use of such paints where consumers may have direct contact with the paint. LBP is regulated under OSHA, RCRA, and Toxic Substance Control Act (TSCA).

No site-specific surveys were conducted to identify LBP hazards within the project area, and LBP study results were not readily available for review during this assessment. According to EHT (2011), LBP is suspected in the interior wall and ceiling paint and in the wood trim. Based on the age of the buildings on St. Elizabeths East (those built prior to 1977), it is highly likely LBP may have been used to paint the exterior of the buildings. There is also the possibility that maintenance of the painted exteriors of these buildings may have led to LBP chips falling on the ground surrounding the buildings, which would in turn lead to possible elevated lead concentrations in the soil.

Radon
Radon gas is a naturally occurring, odorless, and colorless radioactive gas produced by the decay of naturally radioactive materials such as potassium and uranium. Atmospheric radon is diluted to insignificant levels; however, when concentrated in enclosed areas, radon can present human health risks. Radon gas is a Class “A” carcinogen and is associated with the long-term health risk of lung cancer. USEPA and the U.S. Geological Survey (USGS) have compiled a map of radon zones for counties within Maryland and the District. The rocks and soils found in the vicinity of St. Elizabeths East were mapped as having low radon potential (average readings of 0 to 4.0 picocuries per liter (pCi/L). (See Exhibit D.)

STORAGE TANKS
Underground Storage Tanks (USTs)
Based on a 1995 RCRA Compliance Evaluation Inspection conducted by EPA on the St. Elizabeths Campus, there were 10 USTs. At that time, only four were in compliance of the UST regulations (fitted for leak detection). These four tanks were located at Building 81 (motor pool located on the North Parcel). The remaining tanks were used for emergency generators or heating fuel for onsite buildings or have been removed from service.

The buildings within the project area on St. Elizabeths East that are associated with known USTs are listed below. The approximate locations of the known USTs are shown in Exhibit E.

EXHIBIT D: RADON POTENTIAL OF ROCKS AND SOILS IN THE GREATER WASHINGTON, DC METROPOLITAN AREA (USGS 2005)

AR - Arlington County
AL - Alexandria

RADON POTENTIAL
- High
- Moderate
- Low
Locations of Known USTs
At the time of the 1995 EPA RCRA Compliance Evaluation Inspection Report, the USTs located at Buildings 109 and 124 were not regulated for leak detection.

Aboveground Storage Tanks (ASTs)
There are two 10,000-gallon aboveground diesel storage tanks and multiple smaller sized aboveground diesel storage tanks located around St. Elizabeths East for emergency fueling of the boilers and generators, respectively (ERM 2003). These emergency fuel tanks are provided with concrete pads and curbing for secondary containment.

Documentation for the storage tanks was not readily available or provided. Therefore, this assessment relied primarily on site reconnaissance.

Locations of Known ASTs
The ASTs listed are used as emergency fueling sources for generators. During the site reconnaissance, staining and diesel odor was noted around the ASTs at Buildings 95, 100, and 111, and many of the ASTs appeared in poor condition and exhibited poor housekeeping.

Fly Ash and Fill Materials
Approximately 30 acres along the northern most portion of St. Elizabeths East, between Suitland Parkway and Building 81, were formerly operated by the District Department of Public Works as a landfill under Permit 1-83 (FHWA 2008). The landfill was split into four sections and the materials disposed of in the landfill included storm sewer cleanings, street sweepings, road construction debris, and incinerator fly ash from the Benning Road Incinerator (FHWA 2008, ERM 2003). The landfill was closed between 1983 and 1989, prior to regulation under the RCRA. The District DOH determined that the surface soil levels of polychlorinated dioxins and furans present at the site should not pose a public health threat to employees, patients, residents, or landfill workers (FHWA 2008). It is recommended that core sampling be performed in landfill areas of future construction that would be at depths greater than 1 foot (FHWA 2008).

In the late 1990s, the area of the fly ash on St. Elizabeths East was disturbed during the construction of the Congress Heights Metro Station. Prior to the construction of the metro line, WMATA conducted an investigation of the fly ash on St. Elizabeths East. The results of the WMATA investigation were not available for review at the time of the publication of the EA.

Hazardous Materials Associated with Electrical Equipment
The chiller plant at Building 125 contains two electric chillers without back-up fuel sources (ERM 2003). During the site reconnaissance, several unlabeled 55-gallon drums and two 55-gallon Freon drums on pallets were observed behind the building; a small drum of refrigerant was observed in front of the building. Many of the unlabeled drums were open and filled with what appeared to be rainwater; the contents of others, which were closed, could not be determined.

**EXHIBIT E**

<table>
<thead>
<tr>
<th>UST Location</th>
<th>UST Description</th>
</tr>
</thead>
<tbody>
<tr>
<td>Building 109</td>
<td>6,000-gallon diesel UST used to operate an emergency generator at the CT Kitchen</td>
</tr>
<tr>
<td>Building 119</td>
<td>Suspected UST of unknown size and content</td>
</tr>
<tr>
<td>Building 124</td>
<td>3,000-gallon diesel UST used to operate an emergency generator at the Rehabilitation Medicine Building</td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>AST Location</th>
<th>AST Description</th>
</tr>
</thead>
<tbody>
<tr>
<td>Building 89</td>
<td>Approx. 500-gallon diesel AST with secondary containment</td>
</tr>
<tr>
<td>Building 94</td>
<td>Approx. 40-gallon diesel AST with secondary containment</td>
</tr>
<tr>
<td>Building 95</td>
<td>Approx. 40-gallon diesel AST with secondary containment</td>
</tr>
<tr>
<td>Building 100</td>
<td>Approx. 100-gallon diesel AST with secondary containment</td>
</tr>
<tr>
<td>Building 102</td>
<td>Approx. 300-gallon diesel AST with secondary containment</td>
</tr>
<tr>
<td>Building 111</td>
<td>Approx. 10,000-gallon diesel AST with secondary containment</td>
</tr>
<tr>
<td>Building 119</td>
<td>Suspected AST of unknown size and content</td>
</tr>
<tr>
<td>Building 124</td>
<td>8,000-gallon diesel AST; approx. 300-gallon AST (contents unknown)</td>
</tr>
</tbody>
</table>
Appendix B. Due Diligence Report

The East Substation (Building 129) is associated with the operations at Building 119. Possible hazardous materials that may be related to the substation include mineral oil (used as an insulation medium and coolant for electrical equipment), batteries for electrical equipment, and sulfur hexafluoride gas (used as an insulator and arc suppressor in circuit breakers).

Medical and Radioactive Waste Materials
According to EHT (2011), the Blackburn Laboratory (Building 88) was used as a laboratory with a medical focus; therefore there are some unique hazardous materials present.

- During the visual site inspection, the interior of Building 88 exhibited evidence of poor housekeeping, and an apparent lack of institutional controls (e.g., “space inhabitable,” “infectious materials,” and “biohazard” signs). The following waste and equipment were observed in Building 88 during the visual site inspection.
  - 15-gallon drums with potential medical waste
  - Two full cabinets of biological slide boxes
  - “Red bags” with medical waste
  - Biological safety cabinets
  - Chemical fume hoods
  - Nine-shelf cadaver refrigerator unit
  - Autopsy room with floor drain and no waste tank observed. The drain may have discharged to the sanitary sewer system.
  - Radioactive material and waste storage area. It was unclear where the associated radiological labs were located in the building. Multiple Cobalt-57 lead-lined film cans and plastic vials and containers were observed.

3. REGULATORY REVIEW

Environmental Protection Agency (EPA) National Priorities List (NPL)
The Comprehensive Environmental Response, Compensation and Liability Act (CERCLA) established the National Priorities List (NPL) of federal “Superfund” sites. This list identifies Superfund sites that have been designated as national priority clean-up sites and targeted for immediate action due to their high assigned ranking, in terms of potential public health effects, by the EPA.

- The subject property does not appear on the NPL.
- There are no facilities noted on the NPL within approximately one mile of the subject site.

EPA Comprehensive Environmental Response, Compensation and Liability Information System (CERCLIS)
The CERCLIS lists and identifies suspected contamination sites throughout the nation; CERCLIS contains information on sites identified by the US EPA as known or suspect abandoned, inactive, or controlled hazardous waste sites which may require cleanup.

- The subject property is listed on the CERCLIS list.
- There is 1 facility noted on the CERCLIS list within approximately one half mile of the subject area.

This facility is identified as “St. Elizabeths Hospital” located at 2700 Martin Luther King Avenue; however the site is mapped at the same location as the New St. Elizabeths Hospital located east of the John Howard Pavilion. Review of the CERCLIS related information indicates the subject property was initially evaluated in 1987 and 1988 during the Discovery Process. In October 1989, a Preliminary Assessment (PA) determined that the site does not qualify for the NPL based on existing information, and assigned it a No Further Remedial Action Planned (NFRAP) status. In September 1991, a Site Inspection (SI) of the site assigned it a low priority for further assessment. In May 2003, a Removal Assessment was completed; however no specific details were included regarding this Removal Assessment. No other information was provided.

The CERCLIS-NFRAP list contains information pertaining to facilities that have been removed from the EPA’s CERCLIS Database. NFRAP sites may be sites where, following an initial investigation, either no contamination was found, or contamination was removed quickly without need for the site to be placed on the NPL, or contamination was not serious enough to require federal Superfund action or NPL consideration.

No other CERCLIS or NFRAP listings on, adjacent to, or surrounding the subject property appear in the database.

Based on this and other regulatory database information for the subject property discussed below; it is assumed that this information does pertain to the subject property. As such, despite the NFRAP status and determination that the site does not qualify for the NPL, this is considered to be a REC, since on-site soil and ground water may be impacted to some extent.

EPA Resource Conservation and Recovery Information System (RCRIS)
RCRIS is the EPA database of facilities that generate, transport, treat, store, or dispose of hazardous wastes. Generators and transporters are found on the RCRIS List of Notifiers. Treatment, Storage, and Disposal (TSD) facilities are found on the RCRIS TSD
List, and TSD facilities with corrective action activities are found on the CORRACCTS List. Facilities that do not currently generate wastes are listed on the RCRIS Non-Gen list.

- The subject property is listed on the RCRIS Non-Generators (NonGen) list.
- One adjacent site appears on the RCRIS Conditional Exempt Small Quantity Generators (CESQG) List.
- One nearby surrounding property is on the RCRIS NonGen list.

4. LANDSCAPING
The majority of the study area is developed, with manicured lawn and mature landscape street trees between buildings and pavement. The developed area comprises nearly 90 percent of the study area.

Unmaintained, natural, and naturalized areas comprise about 9.5 acres along the eastern edge of the study area. This area includes woodland, scrub, and open field areas.

The remnant forest is classified as early successional. Dominant trees include yellow poplar (Liriodendron tulipifera), elm species (Ulmus sp.), cottonwood (Populus deltoides), and black cherry (Prunus serotina). Boxelder (Acer negundo), tree-of-heaven (Ailanthus altissima), river birch (Betula nigra), black locust (Robinia pseudoacacia), bigtooth aspen (Populus grandidentata), and honeylocust (Gleditsia triacanthos) are minor components. The understory contains prolific amounts of invasive species such as English ivy (Hedera helix), amur honeysuckle (Lonicera maackii), kudzu (Pueraria montana), garlic mustard (Alliaria petiolata), multiflora rose (Rosa multiflora), and Japanese honeysuckle (Lonicera japonica). Several large trees, including sweetgum (Liquidambar styraciflua) and Eastern chestnut oak (Quercus prinus), were identified during the tree survey, scattered along the far slope near the current hospital.

Scrub areas are largely dominated by invasive species, including tree-of-heaven, amur honeysuckle, Japanese honeysuckle, smooth sumac (Rhus glabra), and kudzu.

Open field areas, along the northeastern corner of the study area and along the hospital access road embankment, include planted grasses such as fescue (Festuca sp.), herbs such as crown vetch (Securigera varia), red clover (Trifolium repens), Queen Anne’s lace (Daucus carota), and purple dead nettle (Lamium purpureum), and, in some locations, small trees and shrubs such as Eastern red cedar (Juniperus virginiana), black cherry, boxelder, and blackberry (Rubus sp.).

C. GEOLOGY AND HYDROLOGY

1. GEOLOGIC SETTING

St. Elizabeths East is located in the Coastal Plain Physiographic Province. The Coastal Plain consists mainly of marine sediments, which were deposited during successive periods of fluctuating sea level and moving shorelines. The formations dip slightly eastward and several are exposed at the surface in bands paralleling the coast. Many beds exist only as fragmental erosion remnants sandwiched between more continuous strata above and below.

The soils in this province are typical of those laid down in a shallow sloping sea bottom: sands, silts, and clays with irregular deposits of shells. Some of the existing formations contain predominantly plastic clays interbedded with strata of sands and poorly consolidated limestone. Others contain predominantly sands and chalky or porous limestones with local lenticular deposits of highly plastic clays.

The specific soil associations mapped at the site include the Beltsville association. Beltsville soils are described as nearly level to moderately sloping. They are further described as having a silt loam texture, and are well drained with an intermediate water holding capacity. The depth of the water table can be as shallow as 3 and 6 feet below ground surface; with a slow infiltration rates (Class C). Beltsville soils generally have layers impeding downward movement of water, and fine textures. These soils do not meet the requirements for hydric soil. It should be noted that recently completed geotechnical borings indicate the site-specific depths to ground water, where encountered, are between 16 and 20 feet below ground surface.

The study area is generally underlain by the Sunderland Formation of lower Pleistocene age and the Potomac Group of lower Cretaceous age. The Sunderland consists of coarse gravel, including cobbles and boulders a foot or more in diameter, cross-bedded sand, silt and clay. Color ranges from orange-red to pink, yellow and blue-gray. The Sunderland extends to about 40 to 50 feet below ground surface. The Potomac Group consists of gray to pink silty to clayey feldspathic sands that overlie greenish-gray, mottled red and brown silts and clay that are moderately to highly plastic and montmorillonite and illite rich.

2. SURFACE DRAINAGE

The land surface of the study area is located on a small plateau southeast of the Anacostia River and is approximately 175 feet above mean sea level (amsl). The study area slopes...
3. GROUND WATER
In the geologic setting of the subject property, shallow ground water typically occurs as an unconfined (water table) aquifer, and the water table is usually a subdued reflection of the surface topography. Locally, confined aquifers or perched water tables also may occur. Shallow ground water typically flows towards the nearest stream or other water body; these topographically low areas commonly consist of local drainage features that have eroded deeply enough to intersect the water table or to act as groundwater discharge zones. Based on interpretation of the local topography, it is assumed that the ground-water flow direction within the majority of the study area is east-northeast toward the unnamed stream and Suitland Parkway.

It is likely that those portions of the study area adjacent to Alabama Avenue will exhibit ground-water flow direction toward the south and southeast toward drainage features in the Congress Park and Congress Heights neighborhoods. These features discharge to Oxon Run, which flows southwest to the Anacostia River.

It should be noted that surface topography does not always reflect the actual hydraulic gradient, and that fluctuations are sometimes encountered. Ground water flow direction measurements would be necessary to establish the actual on-site direction and gradient.

D. SURROUNDING REAL ESTATE DEVELOPMENT (IF APPLICABLE)

1. DC OWNED AND OPERATED BUILDINGS
Gateway DC
2700 Martin Luther King, Jr. Ave.,
Washington, D.C. 20032

R.I.S.E. Demonstration Center
2730 Martin Luther King, Jr. Ave.,
Washington, D.C. 20032

E. MISCELLANEOUS

1. RIGHTS OF THIRD PARTIES
- MOA for Proposed Transportation Network for the St. Elizabeths Hospital, East Campus (June 26, 2012)
- MOA for Transportation Improvements along a segment of MLK Jr. Avenue and Construction of the FEMA Headquarters within the Federal Use Parcel on St. Elizabeths East of St. Elizabeths National Historic Landmark (April 19, 2012)
- St. Elizabeths Redevelopment Framework Plan (December 16, 2008)
- Programmatic Agreement among GSA, the Advisory Council on Historic Preservation, DCSHPO, FHWA, NCPC and DHS regarding the development of St. Elizabeths National Historic Landmark (December 9, 2008)
- Memorandum of Agreement by and among the Offices of DMPED, GSA and DHS (November 23, 2008)

2. LITIGATION
There are no known legal actions or liens against the Real Property.