

# Buzzard Point Soccer Stadium Environmental Mitigation Study

## PUBLIC REVIEW DOCUMENT



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**BUZZARD POINT SOCCER STADIUM**

**ENVIRONMENTAL MITIGATION STUDY**

**PUBLIC REVIEW DOCUMENT**

**ABSTRACT**

The District of Columbia proposes to assemble property in the District of Columbia for the purpose of establishing a soccer stadium for Washington's Major League Soccer franchise, DC United. This Environmental Mitigation Study (EMS) has been prepared to evaluate the potential impacts of the proposed stadium. The proposed stadium site is located in Southwest Washington, DC, within Buzzard Point, near Potomac Avenue and 1st Street. This document has been prepared by the District consistent with National Environmental Policy Act standards, including specific impact assessment methodologies and the identification of appropriate mitigation measures. Applicable federal, District, and local regulations, laws, and guidelines were addressed in the preparation of this EMS.

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# **1.0 PURPOSE AND NEED**

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## **1.1 Introduction**

The District of Columbia (the District) proposes to assemble land at Buzzard Point in order to establish a soccer stadium in the District of Columbia. The site in Southwest Washington is bound by Potomac Avenue SW and R Street SW to the north, Half Street SW and a PEPCO transformer to the east, T Street SW to the south, and 2<sup>nd</sup> Street SW to the west. A portion of the property is already controlled by the District, while three other parcels are privately owned. Unless otherwise noted, all streets referenced within this document are SW.

This Environmental Mitigation Study (EMS) is a comprehensive analysis of the proposed soccer stadium project that has been prepared by the District and its environmental team. The EMS identifies and documents the impacts on the natural and man-made environmental associated with the proposed stadium, including potential impacts related to the acquisition and consolidation of property and the construction and operation of the proposed stadium. Because the proposed stadium is not a federal action, the National Environmental Policy Act (NEPA) is not applicable. However, the EMS has been prepared consistent with NEPA and District standards, including specific impact assessment methodologies and the identification of appropriate mitigation measures. Applicable federal, District, and local regulations, laws, and guidelines were addressed in the preparation of this EMS.

## **1.2 Purpose and Intent**

The District proposes to acquire, assemble, and prepare property at Buzzard Point for the purpose of establishing a soccer stadium for Washington's Major League Soccer franchise, DC United. In addition to acquiring private property through fee-simple and exchange methods, the District would be responsible for preparation of the land prior to stadium construction. Such preparations could include the remediation of hazardous materials, utility relocation, demolition of existing structures on the site, and approvals for street closures. The District would enter into a ground lease with DC United, who would then be responsible for the design, construction, and operation of a soccer stadium.

The intent of the project is to enable DC United to construct a state-of-the art, LEED-certified soccer stadium at Buzzard Point. The stadium is anticipated to seat 20,000 a spectators through general seating and suites. On-site parking would be limited to approximately 300 spaces. Although the stadium is designed primarily to accommodate soccer, the facility shall also be used for other sporting events and as an entertainment venue for other events. DC United also anticipates additional development, such as hotel or retail/restaurant space, at the site.

### **1.3 Site Description**

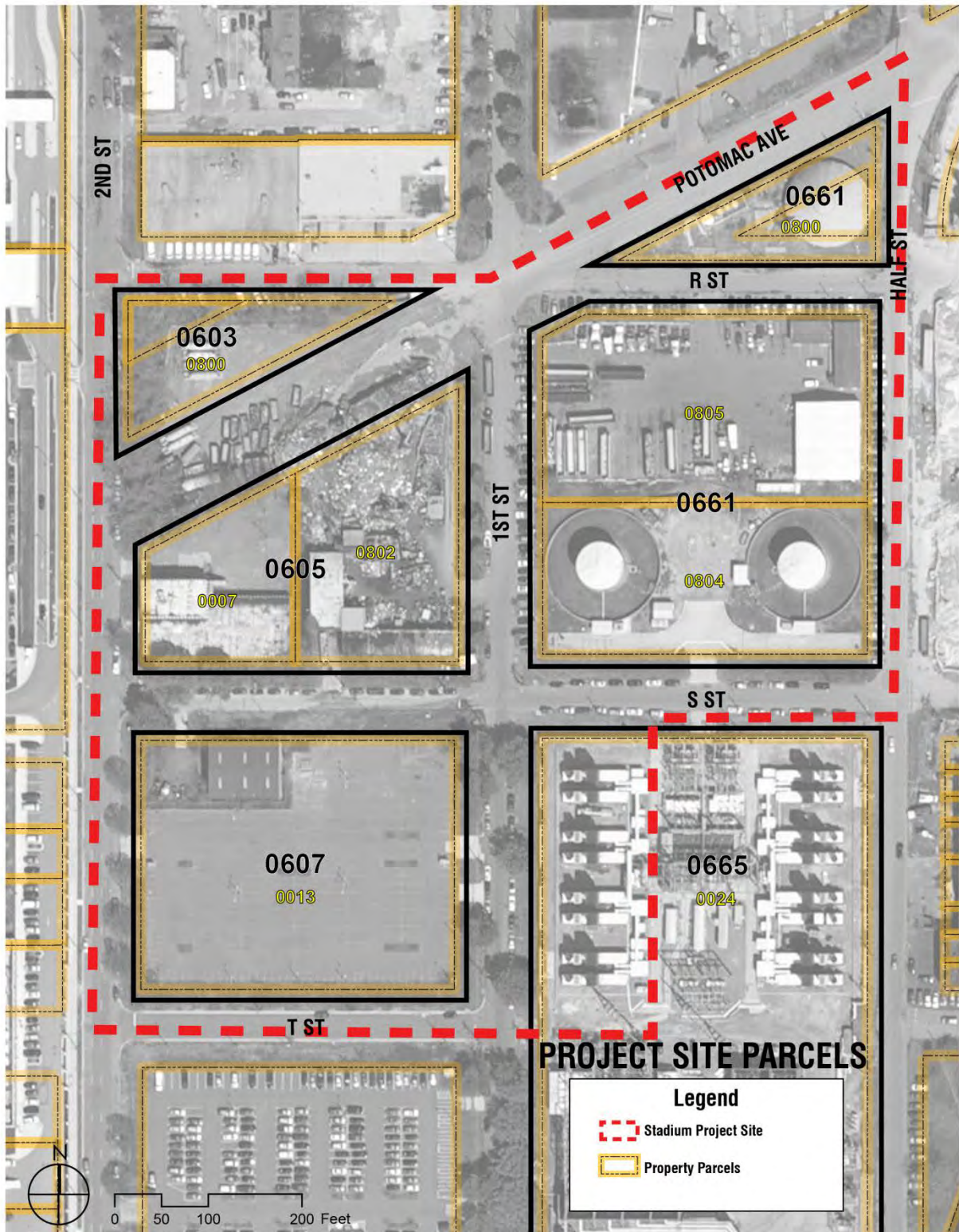
The proposed stadium site is located in Southwest Washington, DC near the Anacostia River in an area known as Buzzard Point. The site is approximately 14 acres bound by Potomac Avenue and R Street to the north, Half street and a PEPCO transformer to the east, T Street to the south, and 2nd Street to the west (Figure 1-1). The project site is located in the southern portion of Ward 6, is approximately twelve blocks southwest of the U.S., Capitol Grounds, one block from the Anacostia River, one block from Nationals Park, and one block west of Fort McNair. The project site includes five city squares (0603, 0605, 0607, 0661, and the northern portion of 0665) as shown in Figure 1-2.





**Figure 1-1: Project site context**  
Source: Google Earth, District of Columbia, AECOM 2014





**Figure 1-2: Project site parcels map**

Source: Google Earth, District of Columbia, AECOM 2014

## **1.4 History and Background**

### **1.4.1 History of Soccer in DC**

DC United became a professional soccer team in 1996, when it and nine other teams formed Major League Soccer (MLS). Throughout its operation, DC United has played its home games at Robert F. Kennedy Memorial Stadium (RFK), which is located at 2400 East Capitol Street near the Anacostia River. Events DC operates RFK Stadium and its grounds, and leases the facility to DC United. In 2014, an average of 17,029 people attended each DC United home game, with combined attendance at the 17 regular season games totaling 289,506 (ESPN 2014). In comparison, MLS as a whole averaged 19,151 attendees per game during the regular season in 2014, with a total aggregated attendance of 6,128,404.

Since its inception, DC United has desired a stadium designed and built specifically for soccer. Plans for the development of a soccer-specific stadium in Washington at Poplar Point were announced in 2006, but the development did not move forward. In 2008, DC United began exploring relocation of the team to other jurisdictions. DC United announced a selected location in Prince George's County, Maryland in 2009, although this plan also did not come to fruition. Since then, DC United has studied sites in Baltimore, Maryland; Loudon County, Virginia; and Washington. On July 15, 2013, the District and DC United announced an agreement to locate a soccer stadium at the project site. The agreement represents the District's efforts to retain its professional soccer team within its boundaries.

### **1.4.2 Use of RFK Stadium**

As mentioned above, DC United currently plays home matches at RFK Stadium and will play there until the new soccer stadium is ready for operation, which is anticipated to be March 2017. RFK Stadium was originally constructed in 1961 as a multipurpose sports facility, but was primarily built for baseball and served as home to the MLB Washington Senators from 1962 to 1971, and the Washington Redskins National Football Team until 1996. RFK Stadium and grounds also hosts large concerts and other events.

Events DC (then operating as the DC Sports and Entertainment Commission) made minimal improvements to RFK Stadium prior to April 1, 2005 to restore the multipurpose facility (configured for professional soccer) to a baseball configuration suitable for Major League Baseball. The improvements to upgrade RFK for use by the Washington Nationals cost approximately \$18 million.

The current configuration, which is an oblong shape built to accommodate a baseball diamond, includes three levels. The large lower deck consists of two seating areas running the length of the playing field. No lower level seating exists behind the goals. The mezzanine level, made up of a small section of white seats, circles the field below the upper

deck. The upper deck encloses the entire field. The main video/scoreboard hangs from the roof above the upper deck seats at the south end of the stadium. Additional video ribbon boards are located along the middle rim of the stadium. For most DC United matches, only the lower and mezzanine levels are made available to attendees.

In its current condition, RFK Stadium does not meet the long-term needs of DC United or contribute to stadium events as a spectator experience. In its 53<sup>rd</sup> year, RFK Stadium is sufficient as a temporary venue for the team but is too outdated to be the soccer team's permanent home. The economics of Major League Soccer require suites and club seats, guest services and amenities (such as adequate restrooms, and sufficient facilities for food, beverage and merchandise), and sufficient advertising and sponsorships that are crucial to the success of a franchise.

Renovating RFK Stadium to meet the project's program requirements would require major structural change to bring the facility up to current building codes, and provide modern amenities. Such changes would likely approach the cost of building a new stadium.

### **1.5 Planning Process and Institutional Framework**

The District Department of General Services (DGS) is leading the effort to acquire the property for the construction of soccer stadium. DGS serves as the District's property management agency, including the acquisition of real property by lease or purchase. In this role, the agency is responsible for ensuring the best value for the District's property acquisition.

To help meet its mandate to protect the public interest and guide its decisions-making, DGS prepared an environmental analysis document for the proposed soccer stadium. The EMS has been prepared to fully evaluate direct, indirect, and cumulative impacts generated by the proposed soccer stadium at the selected site. The EMS addresses short-term construction related impacts and long-term changes to the existing environmental conditions, as well as potential cumulative impacts that may be expected from the proposed stadium as it relates to additional revitalization changes in the area.

The EMS addresses socio-economic resources, cultural resources, natural resources, transportation systems, and environmental health; identifies potential impacts related to the construction and operation of the soccer stadium; and recommends mitigation measures to alleviate negative impacts or enhance positive impacts.

The preparation of the EMS was coordinated with the District Office of Planning (OP), the District Historic Preservation Office (SHPO), and the District Department of Transportation (DDOT). In addition, it is intended that the EMS will be reviewed and commented on by a range of local and federal agencies, including the Department of Consumer and Regulatory

Affairs (DCRA), the District Department of Health (DOH), the National Capital Planning Commission (NCPC), the U.S. Commission of Fine Arts, the Department of Defense, and the National Park Service (NPS).

## **1.6 Relationship to Laws, Policies, and Plans**

Current District plans, policies and regulations that govern land use and planning provide the framework within which a soccer stadium would be developed. This section describes the regulatory environment and relevant policies that are intended to guide development in the area.

### **Comprehensive Plan for the National Capital – District Elements**

The *Comprehensive Plan for the National Capital* provides overall guidance for future planning and development in the National Capital region. The Plan is comprised of two parts, the *District Elements*, the District’s Comprehensive Plan, and the *Federal Elements*, used by NCPC to guide the planning of federal facilities in Washington, DC and the surrounding region.

The *District Elements*, prepared by the District of Columbia, contain policies and maps that guide planning decisions for non-federal lands and facilities within the District of Columbia. The plan, adopted in 2006 and updated in 2011, includes thirteen elements that provide goals, objectives, and policies for development citywide, and ten area elements that relate to specific geographic areas of the city.

General goals relevant to the proposed stadium include directing growth and new development to achieve economic vitality while minimizing adverse impacts on residential areas and open space; encouraging mixed-use development; increasing bicycle and pedestrian connections, routes and facilities; reducing erosion and stormwater run-off; encouraging green building techniques; increasing job opportunities for District residents; and improving the public realm, particularly street and sidewalk space.

The Lower Anacostia Waterfront/Near Southwest Area Element identifies goals for the area that includes the project site. Its goals include revitalizing and preserving established neighborhoods, ensuring new development respects the scale and integrity of existing neighborhoods and includes affordable housing, and providing amenities and benefits for existing and new residents. Specifically, the area element states:

- “Develop new destinations for sports, recreation, and celebration on or near the Anacostia waterfront. Ensure that these destinations are served by adequate and efficient transportation systems and infrastructure.”

- “Support the long-term redevelopment of Buzzard Point with mixed medium- to high-density commercial and residential uses. Recognize the opportunity for innovative design and architecture in this area, and for the creation of a unique urban waterfront.”

### **Anacostia Waterfront Initiative (AWI)**

The proposed stadium site in Buzzard Point is part of the Anacostia Waterfront Initiative (AWI) Framework Plan, published in 2003. It is one of several communities that are part of the AWI along the Anacostia Waterfront. The AWI is a long-term initiative that is a partnership of regional and federal agency partners, led by the District of Columbia, to restore the Anacostia River and its waterfronts.

The AWI Framework Plan establishes a vision and revitalization strategy for the Anacostia River waterfront. It promotes river clean up and restoring the river’s natural environment, re-establishing connections between the Anacostia Waterfront and other parts of the city and the region, new parks and waterfront recreation, job-creating commercial centers, cultural destinations, revitalized neighborhoods, and multi-modal transportation options.

### **Memorials and Museums Master Plan**

The *Memorials and Museums Master Plan* was developed by NCPC in 2001 to guide the development of future commemorative and cultural facilities. The plan establishes a framework for future memorials within the circles and squares of major avenues, at urban gateways and scenic overlooks, and along the Anacostia and Potomac Rivers. It also identifies 100 new sites in Washington for memorials and museums, including 20 prime sites. One of the prime sites recommended in the plan is located near to the proposed stadium site along the Anacostia River on axis with South Capitol Street (between S and T Streets). In addition, a candidate site is located south of V Street and west of Half Street (in Buzzard Point Park).

### **DC Historic Landmark and Historic District Protection Act**

The DC Historic Landmark and Historic District Protection Act requires that District agencies take into account the effects of their undertakings on historic properties, and to consult with and afford the DC State Historic Preservation Officer (SHPO) a reasonable opportunity to comment. Historic properties are those listed or eligible for listing in the DC Inventory of Historic Sites and the National Register of Historic Places. Archaeological sites are also considered “historic properties” and are protected by the DC Historic Landmark and Historic District Protection Act. DC agencies are to fulfill these requirements prior to the authorization of design and construction funds or the permit, licensing or approval processes for a DC undertaking. If an adverse effect were to occur, the District agency (in

this case, the Department of General Services) would be required to avoid, minimize, or mitigate the effect in consultation with the DC SHPO.

### **District of Columbia Bicycle Master Plan**

The District of Columbia's Bicycle Master Plan provides recommendations for bicycle facilities, bicycle-friendly policies, and bicycle-related education, promotion, and enforcement within the District. The plan includes several recommendations that address the area surrounding the proposed stadium. The recommendations include developing of the Anacostia Riverwalk and Trail, supporting the Potomac Heritage National Scenic Trail routes, and ensuring bicycles are accommodated in District of Columbia projects.

### **Southwest Neighborhood Plan**

The Draft Southwest Neighborhood Plan is a small area plan currently being developed for the area bound by I-395 to the north, South Capitol Street to the east, P Street SW to the south and Maine Avenue SW to the west. The small area plan will create an urban design, land use, and neighborhood preservation framework for the area. The plan aims to enhance parks and community amenities, increase connectivity and transportation choices, support neighborhood retail, and accommodate and guide the direction of future growth in the Southwest neighborhood.

### **Sustainable DC Plan**

The Sustainable DC Plan is a 20 year plan released in 2011 that identifies immediate actions for strengthening the local economy, promoting more efficient resource use and protecting the District from negative impacts of climate change(DCOP, DDOE 2012). In addition to actions for government and residents, the plan describes roles for how businesses and business improvement districts can contribute to city sustainability goals. The Sustainable DC Budget Challenge projects in 2013 include starting a green purchasing program for District agencies; initiating a climate adaptation plan study; and, assessing the feasibility for a waste-to-energy facility (DCOP, DDOE 2013).

Sustainable DC outlines strategies for mitigating climate change by reducing the District's emissions of greenhouse gases (GHGs) 50% below 2006 levels by 2032 and 80% by 2050. A combination of energy efficiency actions and polices across the District is helping to reduce GHG emissions by 12.5% since 2006 (DDOE 2012). Reductions from the building sector translate into significant savings in total GHG emissions since emissions from buildings are the largest portion (approx. 75%) of the District's total emissions (District 2010). GHG reductions also yield multiple co-benefits in addition to mitigating climate change impacts including energy cost savings for taxpayers, homeowners and renters;



reduced air and water pollution; and, greater resilience in the face of energy supply disruptions, decreasing fossil fuel supply, and rising fuel costs.

Sustainable DC also includes a goal to enhance DC's resilience to climate change by calling for all new building projects to undergo climate impact assessments that review how projects integrate climate adaptation solutions to protect future residents and businesses from severe events.

### **DC Green Building Act**

The DC Green Building Act of 2006 and amendments require all public and private new construction to meet LEED certification. Private development projects starting in January 2012, greater than 50,000 sq. feet, must meet LEED certified or a higher level of LEED certification while public projects 10,000 square feet for larger must meet or exceed LEED silver (DC Council 2006).

The Green Building Act along with the Clean and Affordable Energy Act of 2008 require all private buildings in DC over 50,000 gross square foot to initiate energy benchmarking while all public buildings over 10,000 gross square foot must benchmark building energy use. Benchmarking is the process of tracking a building's energy and water consumption and comparing the performance against peer buildings nationwide. By comparing energy intensity ratings among peer buildings and a national reference standard, this can inform owners and operators of potential ways to improve performance.

### **National Capital Revitalization Corporation and Anacostia Waterfront Corporation Reorganization Act of 2008**

The National Capital Revitalization Corporation and Anacostia Waterfront Corporation Reorganization Act of 2008 defines the Anacostia Waterfront Development Zone and provides a description of environmental standards to apply within that zone. A subsequent amendment to the Act adopted in 2011 established stormwater regulations for projects with a building footprint or soil disturbance of 5,000 square feet or greater that are publicly owned, publicly funded (at least 15 percent of the total costs), or constructed on land purchased, leased, or donated from the District. The bill also eliminated penalties on regulated sites that meet their stormwater management requirements through off-site mitigation or payment in lieu of mitigation (Government of the District of Columbia Office of the Chief Financial Officer, 2012).

### **Anacostia Waterfront Environmental Standards Amendment Act of 2012**

The Anacostia Waterfront Environmental Standards Amendment Act of 2012 implemented stronger protections until new stormwater rules required by the District's municipal separate storm sewer system (MS4) permit take effect. The act applies to publicly-owned



and/or financed land-disturbing projects of 5,000 square feet or greater, or project involving substantial property improvements with a footprint of 5,000 square feet or greater. The act also made technical corrections to and clarified ambiguities of previous legislation, as well as updated language to reflect current stormwater management practices.

### **1.7 Proposed Project Components**

The project phases for the proposed Ballpark include land acquisition and consolidation, demolition of existing structures and site cleanup, construction of a new facility, and operation of a new Ballpark facility.

#### **Proposed Land Acquisition and Consolidation**

The District's Office of Property Management has identified four parcels of land owned by three entities for acquisition. Property appraisals were prepared and the District began negotiating offers to private property owners in March 2013. Once the parcels are acquired, the consolidated site would be transferred to DGS for demolition and cleanup.

#### **Proposed Site Preparation**

Prior to construction, DGS would prepare the assembled parcels through demolition and cleanup of the site. DGS would remove above-surface and below-surface structures to the depth of excavation, including buildings, roadways, utilities, and infrastructure. Demolition would produce solid demolition waste, some of which could include hazardous waste from old building materials (such as asbestos or lead-based paint). In addition, contaminated soil from previous uses could be encountered.

Modification and improvements to the infrastructure of the stadium site would include the relocation of existing utilities prior to stadium construction. As the stadium nears completion, the site improvements would include connecting to services such as water, stormwater, sewer, electrical, and communication lines; and site work including site drainage, landscaping, paving, fencing, and construction of sidewalks.

#### **Proposed Construction**

DC United would be responsible for constructing the soccer stadium, which would involve several major phases. Among these phases would be excavating the site, establishing a foundation, implementing subsurface drainage, erecting the structure, finishing interior spaces, and exterior improvements (installation of landscaping, fencing, plazas, and walkways). Additional activities would include rebuilding site utilities and improving the adjacent infrastructure.

### **Proposed Project Operation**

The soccer stadium would operate in accordance with a long-term ground lease agreement between DGS and DC United. The term of the lease would be for 30 consecutive years plus two five-year options. The lease would require the team to operate and maintain the DC United team at the stadium within the District. Additionally, DC United shall keep its principal offices within the District and will use reasonable efforts to locate its practice field within the District. The lease would permit use of the stadium for soccer events, including soccer home matches, training, practices, exhibition games, or other Major League Soccer or DC United- sponsored clinics, fan or sponsored theme events, press conferences, events, activities, promotions, sales of soccer or DC United products, services, information, or media content.

#### **1.8 Agency/ Public Participation**

The Buzzard Point planning process has involved federal, District, and local agencies, property owners, and the general public through participation in concurrent outreach efforts, coordination with established organizations, contact with government agencies, a series of smaller community meetings, and several larger public meetings. Project meetings engaged key stakeholder groups including the local Advisory Neighborhood Commission, the Capital Riverfront Business Improvement District (CR BID), historic preservation specialists, government representatives, and local community members to provide individualized stakeholder attention, demonstrate rationale for decisions, and develop cost-effective mitigation measures. In conjunction with the preparation of this EMS, several soccer stadium meetings have been convened by the DGS to publicly share the land transfer concept and address potential issues regarding the design and identified mitigation measures.

**Community Meetings**

- October 21, 2013      ANC 6D Meeting: This was a regularly scheduled Monday evening meeting where DGS introduced the stadium project. Approximately 60 people were in attendance.
- October 26, 2013      Public Scoping Meeting: This Saturday meeting introduced the stadium project to the community through a formal presentation, followed by a question and answer period. Approximately 70 people attended.
- December 17, 2013    Public Meeting: This Tuesday evening meeting at the Reeves Center reviewed potential issues and public input about the land swap involving that facility. Approximately 50 people attended.
- September 30,  
2014                    Public Open House: This Tuesday evening session at 100 M Street SE provided residents with an opportunity to review display stations organized around key topics and have in-depth discussions with senior representatives of the DC government, DC United, and subject matter experts.

Additional meetings held for the greater Buzzard Point Urban Design Plan also discussed the Buzzard Point Soccer Stadium on the following dates.

- January 22, 2014      Riverfront BID property owners: Approximately 15 Buzzard Point property owners attended a in order to discuss their future development plans within Buzzard Point
- February 6, 2014      Southwest area community leaders: Approximately 20 leaders of the SW community, including several ANC 6D commissioners, attended a meeting to discuss the urban design concept for Buzzard Point, including the soccer stadium's relationship with the existing community.
- April 23, 2014        Southwest Area Community Leaders and property owners: Approximately 20 leaders of the SW community and Buzzard Point property owners reviewed the refined urban design concept for Buzzard Point, which included open space and oriented development toward the east.
- June 17, 2014        Riverfront BID property owners: Approximately 10 Buzzard Point property owners reviewed the refined urban design concept for Buzzard Point.

**City Council Hearings and Public Input Opportunities**

- June 26, 2014      City Council Hearing: Attendees commented on the proposal to acquire and prepare land to establish a soccer stadium at Buzzard Point
- July 23, 2014      Public Roundtable: This Wednesday evening meeting at the Reeves Center focused on the transfer of city-owned property to a private developer as part of the Buzzard Point soccer stadium land acquisition.
- July 24, 2014      Public Roundtable: This Thursday evening meeting at the District’s 1100 M Street SW offices focused on the development of a soccer stadium at Buzzard Point and the potential impacts on neighborhood residents.
- November 5, 2014      Public Roundtable: This Wednesday meeting focused on the financial costs and benefits of the soccer stadium development, including the real estate transactions related to assembling properties.

## 1.9 Scoping Issues

Based on the solicited and recorded comments from community representatives, stakeholder organizations, and government agencies, the following list of key issues and concerns was compiled:

### Planning/Stadium Context

- Context of stadium location
- Relocation of current project site land uses
- Other uses for redeveloped project site, such as museum or small business incubator

### Economic Growth/Impacts

- Jobs at new stadium
- Percentage of new jobs at stadium devoted to District residents
- Outreach to neighborhood residents for jobs
- Preservation and availability of low-income housing

### Transportation

- Traffic congestion
- Traffic impacts during construction
- Traffic during multiple events in Southwest
- Solutions to address potential impacts
- Parking supply and demand
- Pedestrian safety
- Pedestrian activity in existing neighborhoods
- Connections to points east
- Bicycle facilities
- Ability of transit system to accommodate new stadium visitors
- Streetcar planning

### Hazardous Materials

- Types of hazardous materials
- Potential exposure of residents to hazardous materials
- Disposal methods

### **Utilities/Infrastructure**

- Changes to PEPCO facilities
- Neighborhood impacts due to change to PEPCO facilities
- Impacts on levees at Buzzard Point

### **Historic Resources/Archaeology**

- Protection of Dent House
- Archaeological resource exploration
- Reservations 244 and 245 and South Capitol Street project MOA

### **Natural Resources/Sustainability**

- Floodplains
- Sustainability
- Climate change

### **Range of Alternatives**

- Range of alternatives to include the location of the stadium at Poplar Point, near the Anacostia Metrorail station; the adaptation of RFK stadium; and a no action alternative.

### **1.10 Cumulative Impact Projects**

In addition to, but separate from, the proposed soccer stadium, there are several transportation and land use development projects planned or underway in the surrounding Near Southeast area. These projects are being considered for cumulative impacts in the EMS, including:

- reconstruction of South Capitol Street as an urban boulevard with at-grade intersections;
- replacement of the Frederick Douglass bridge with a new, lower memorial bridge across the Anacostia River;
- future development at The Yards, including residential and retail uses;
- further redevelopment of the Arthur Capper/Carrollburg public housing project as part of a mixed use, mixed income community;
- consolidation and expansion of personnel at the Washington Navy Yard;
- expected improvements to the Anacostia waterfront adjacent to the site and on Poplar Point;
- expected redevelopment of the Buzzard Point industrial area;
- expected redevelopment of the Transfer of Development Rights (TDR) zone located north of M Street, SE; and
- future revitalization of James Creek and Syphax Village public housing projects in the Southwest neighborhood.

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## **2.0 CONSIDERATION OF ALTERNATIVES**

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## **2.1 Site Selection Process**

The site selection process for the proposed stadium included identifying and evaluating a list of potential alternative sites. For over a decade, DC United has considered numerous sites within the Washington, DC metropolitan area for locating a new soccer-specific stadium. Priority was given to sites that were considered to have potential to help strengthen the economy and spur neighborhood revitalization. Additional factors considered in the process included the dynamic development economic climate and real estate market of the District and its environs, the transportation infrastructure and extensive mass transit system in the region, and the interests of a wide variety of stakeholders and constituents, including municipal governments, business owners, local residents, and community leaders.

### **2.1.1 Site Selection History**

DC United has desired a new, soccer-specific stadium since their inception in 1996 and has been actively searching for suitable home for more than ten years. Throughout that time, the team has preferred to remain in the District. Washington, DC is the heart of the region, central to the team's fan base, and the jurisdiction best served by mass transit. In addition, the District is part of the team name and it is where the team's foundation, United for DC, is the most active in youth programs and charitable endeavors.

During the past years, DC United has considered many potential sites within the Washington, DC metropolitan region, as well as the possibility of moving outside the area. The sites within the region included Poplar Point and Buzzard Point within the District and a series of locations within Prince George's County in Maryland. In 2004, the team initially considered Poplar Point, located in southeast Washington, DC, east of the Anacostia River. However, the District determined that mixed-use development without a stadium would be more appropriate for the area, including the portions to be transferred from the National Park Service to the District. The subsequent planning effort and property transfer is currently being initiated.

After negotiations with the District government regarding Poplar Point proved unsuccessful, DC United evaluated locations outside of the city. DC United pursued a series of sites in Prince Georges County and the City of Baltimore, but none of the sites, including Greenbelt, New Carrollton, Morgan Boulevard, Bowie State, nor southern Baltimore had the optimal combination of locational factors desired by the soccer team. The team had negotiated with Prince George's County to establish a soccer stadium near the Largo Town Center Metro station and FedEx Field. In 2009, the State of Maryland failed to pass the necessary financing legislation to enable the move to Prince George's County. The County Council opposed allocating funds to construct the facility.

DC United is currently considering locating the proposed soccer stadium at Buzzard Point in southwest Washington, west of the Anacostia River. The site currently serves as a parking lot, public works facility, industrial site, and a power transformer facility. DC United has agreed to construct the stadium itself, and has entered into negotiations with the District to assemble the property and lease the site.

### **2.1.2 Site Selection Considerations**

The District government and DC United have given priority to sites with the potential to help strengthen the local economy and spur neighborhood revitalization. As a result, sites with adjacent vacant or underutilized parcels appropriate for new mixed-use development have been the focus of the search. Additional factors include the connections to the regional transportation infrastructure and Metrorail system, as well as the interests of a wide variety of stakeholders and decision makers.

### **2.1.3 Alternatives Considered but Dismissed**

#### **Redevelopment of RFK Stadium**

In addition to the sites described above, the renovation of RFK Stadium was considered. While the RFK site has served the District well for 50 years, and may be appropriate for a football stadium with larger crowds and greater demand for parking, there are limited opportunities for generating spin-off development at RFK or Reservation 13. In addition, there are a number of reasons why the RFK site is less than optimal for a new soccer stadium.

The current RFK stadium is too large and outdated for use as a modern soccer stadium, and as currently configured, does not meet the needs of DC United. The facility seats 45,423 spectators, more than twice the number seats needed for the fans that regularly attend DC United soccer games. RFK cannot be renovated to create a 20,000 seat soccer-specific stadium without demolishing the existing stadium. In addition, the aging facility, which originally opened in 1961, requires substantial improvements as a result of deferred maintenance and a lack of modern amenities, such as dining options, luxury suites, and other features.

Additionally, RFK stadium and the surrounding parking lots are owned by the federal government. The site is leased to the District through 2038 for RFK stadium purposes, recreation facilities, public open space, public outdoor recreation and other similar public purposes and prohibits a transfer of the property to an entity other than the District or the federal government. Accordingly, for DC United to finance construct and operate a new DC United Stadium at the RFK site, the lease would need to be renegotiated with the National Park Service.

Due to its location and configuration between the Anacostia River, Reservation 13 and residential neighborhoods, there is little to no opportunity for a facility at the RFK site to drive adjacent economic development. RFK Stadium was developed in an era when multi-use stadiums were designed to be accessible primarily by car, set in vast parking lots and evolved away from the neighborhood-based stadiums of earlier generations. While this may have appeared forward looking in the 1950s through 1980s, the focus from an urban design perspective has changed, and the emphasis has turned to integrating stadiums into neighborhoods. Given the number of events and flexibility of use, one of the important factors in choosing ballpark or soccer stadium site is the manner in which public investments in sports and entertainment facilities have catalytic impacts on the surrounding neighborhoods and promote development. As a result, the renovation of RFK Stadium was considered but dismissed.

### **Poplar Point**

Congress passed legislation in 2006 to provide a process for the transfer of 110 acres at Poplar Point from the National Park Service to the District of Columbia. As a result, DC United pursued a new soccer stadium at Poplar Point and entered discussions with the District from 2006 through 2008. However, the District and DC United were unable to agree on certain issues, and negotiations between the District and the team were discontinued. As a result, the establishment of a stadium at Poplar Point was considered but dismissed.

### **Other Sites within the District of Columbia**

Few sites in the District possess the right combination of attributes suitable for a soccer stadium. The necessary factors include 10 or more acres of generally flat land, adjacent property zoned for mixed use development, Metrorail service within walking distance, and regional access via vehicular circulation. The District and DC United initially considered a site off of Brentwood Parkway across from Hamilton Middle School. That site had access challenges and does not provide full opportunities for generating economic development. In addition, the site involves National Park Service land that is not readily available. Opportunities were explored for a new soccer stadium at DC Village, but that site does not have suitable access and is not served by Metrorail. As a result, these sites were considered but dismissed.

#### **2.1.4 Economic Considerations**

The evaluation process for the agreement to establish a soccer stadium at Buzzard Point entailed a comprehensive economic analysis and cost estimate. The following items were included in the estimates of the project costs and benefits to the District:

- Estimated site acquisition and remediation costs
- Stadium revenues
- Stadium fiscal impacts
- Overall financial feasibility
- Site improvements

The District is estimated to spend approximately \$150 million in order to acquire and, if necessary, remediate property for the stadium. An estimated on-time benefit of \$92.1 million in economic activity would accrue to the District during construction, with an estimated \$7.3 million in fiscal revenue for the District. An estimated \$51.7 million in economic activity would benefit the District annually. Over the next 30 years, the District would receive an estimated \$197.2 million in fiscal revenue (Brailsford and Dunlavey 2014). The impacts from these estimates are analyzed in Chapters 3 and 4 of this document.

## **2.2 Site Selection**

After a decade of working to find an appropriate home for the team, the District of Columbia and DC United have agreed to establish a new soccer stadium at Buzzard Point. The agreement was based on the comprehensive evaluation of alternative sites within the District and supporting financial analysis. The Buzzard Point site emerged as the optimal location for a new soccer stadium for a number of reasons.

In particular, the site has been identified as appropriate due to its opportunity to contribute to local redevelopment of an industrial area along the waterfront into a mixed-use, walkable neighborhood. The underutilized industrial area has long been targeted for redevelopment, is located near Nationals Ballpark, and includes land already owned by the District of Columbia.

Buzzard Point has been the subject of numerous revitalization plans and proposals over the past few decades. In anticipation, and consistent with the comprehensive land use plan, the area has previously been rezoned for higher-density uses. However, until recently, redevelopment of the area was considered to be 20 years away because of the great need for infrastructure and physical improvements.

The public improvements and infrastructure investments represented by the proposed soccer stadium and the South Capitol Street Corridor project are expected to accelerate the redevelopment of Buzzard Point, thereby increasing the tax base and improving the conditions for nearby residents. In addition to building on the successes of The Yards and

The Wharf, the Buzzard Point Soccer Stadium would help anchor a new mixed-use neighborhood that would reconnect residents to the waterfront, reintroduce and enhance the natural environment, and establish an attractive gateway to the Nation's Capital.

### **2.3 Proposed Soccer Stadium Program**

Although the design of the stadium is in its preliminary stages, the following program requirements are anticipated

- Approximately 20,000 to 25,000 seats
- Approximately 300 parking spaces
- Spectator facilities including seating areas, picnic areas, plazas, public bathrooms, food service space, restaurants, souvenir/gift shops, suites, ticket windows, ATM stations, first aid stations, telephones, water fountains, elevators/escalators, lighting and signage, and scoreboards;
- Support facilities including press box facilities and support, conference space, administrative offices, player clubhouse/locker rooms, security facilities, maintenance and grounds keeping facilities, loading and service/delivery docks, trash compactor/containers;
- Natural turf playing field, including a drainage and irrigation system, field lighting system, a scoreboard with video screen, and other display boards; and
- Physical site improvements, including modification, relocation, and improvements to the existing infrastructure; connection of new utility services and communication lines; and site drainage and landscaping.

### **2.4 Proposed Soccer Stadium Plan**

#### **Site Development**

The proposed soccer stadium would include a stadium suitable for soccer and other events; an open-air plaza suitable for pre-game gatherings; parking; and commercial development. Improvements to the streetscape surrounding the stadium and Potomac Avenue from the project site to South Capitol Street are also included in the proposed action. The 20,000-seat stadium would be oriented north-south on the western portion of the site along 2<sup>nd</sup> Street between R and T Streets. The primary entrance to the building would be from the northeast corner of the stadium near the intersection of Potomac Avenue and R Street. Secondary entrances would be on the eastern portion of the building near the S Street axis and on the western portion of the building from 2<sup>nd</sup> Street. Delivery and parking access

would be available through a driveway access point at 1<sup>st</sup> and T Streets. A preliminary site plan is shown in Figure 2-1.



**Figure 2-1: Preliminary Buzzard Point Soccer Stadium site plan (subject to modification)**

Source: Populous, 2014

The plaza would generally be bound by the stadium on the west, Potomac Avenue to the north, the S Street axis to the south, and commercial development to the east. The plaza would be used for pre-game gatherings, open space during non-event days, and potentially retail kiosks. Similarly, north-south pedestrian access (near the current 1<sup>st</sup> Street alignment) would also be available at the site during non-game days.

Commercial development would occur along Half Street, north of S Street within the site. It is anticipated that the development would likely include a mix of uses and consist of lower-height buildings. The uses would likely support the stadium experience, such as restaurants or specialized retail. The use of a portion of the commercial space as a limited-service hotel would also be considered.

### **On-site Parking**

Approximately 300 parking spaces would be located on the eastern portion of the site, adjacent to the remaining PEPCO facility. The parking spaces would be restricted to DC United staff and other facilities-related personnel. Parking for deliveries and media vehicles would be available along S Street and the plaza.





**Figure 2-2: Preliminary Buzzard Point Soccer Stadium, birdseye view from above Potomac Avenue SW**

*Source: Populous, 2014*



**Figure 2-3: Buzzard Point Soccer Stadium, preliminary perspective from Potomac Avenue SW**

*Source: Populous, 2014*

### **Streetscape Improvements**

As part of its agreement with DC United, the District will upgrade the site-adjacent streetscape and that of Potomac Avenue between the site and South Capitol Street. It is anticipated that the streetscape along R, 2<sup>nd</sup>, T, and Half Streets would include 10-foot sidewalks, landscape buffers, and stormwater management facilities. Along Potomac Avenue, the sidewalks would be approximately 15 feet in width, along with landscape buffers and stormwater management facilities, which could include bioretention cells.

### **Sustainability**

The development of the Buzzard Point Soccer Stadium would be LEED certified by the U.S. Green Building Council. As such, the structure would include a series of strategies to minimize its environmental impact. Such strategies could include efficient water and power usage, green roofs, and the use of sustainable building materials. It is anticipated that in order to comply with the District's existing regulations, the ancillary development would also be LEED certified.

### **2.5 Early Mitigation Measures**

Early in the project planning process, including scoping, the community expressed persuasive arguments concerning the need for early mitigation measures that would become part of the stadium proposal. The two measures, the Urban Design Framework Plan and the Draft Transportation Management Plan are found in attached documents as Appendices A and B. The Draft Transportation Management Plan identifies specific strategies for transportation function and mitigation related to the development of a stadium.

The Urban Design Framework Plan for Buzzard Point provides guidance for future decision making related to the development, the public realm, and other infrastructure in the Buzzard Point area. These would include guidelines and requirements to include a robust mix of uses and housing, protect existing affordable housing units, and meeting accessibility and neighborhood compatibility goals established during the planning process. The proposed Urban Design Plan is illustrated in Figure 2-4.





Figure 2-4: Diagram of Buzzard Point urban design concept

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## **3.0 AFFECTED ENVIRONMENT**

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### **3.1 Socio-Economic Resources**

#### **3.1.1 Land Use**

“Land use” describes the natural or developed condition of a given parcel of land or area and the type of functions or structures it supports. This section characterizes the existing uses on, adjacent to, and in the area surrounding the project site to provide context for the evaluation of land use impacts that could result from the construction and operation of the proposed soccer stadium. The descriptions presented in this section are based on existing reports and plans, field observations, aerial photography, and maps.

Unless otherwise noted, the streets described in this section are located in the Southwest quadrant of Washington, DC.

#### **Project Site**

The site of the proposed soccer stadium is located in the Buzzard Point area of Washington, DC’s Southwest quadrant (Figure 1-1). The project site is bounded by R Street and Potomac Avenue to the north, Half Street to the east, T Street to the south, and 2<sup>nd</sup> Street to the west. The site is transected by S Street between 2<sup>nd</sup> Street and Half Street and 1<sup>st</sup> Street between Potomac Avenue and T Street. The western shoreline of the Anacostia River is located less than 0.25 mile southeast of the stadium site.

The project site and its surrounding area are located in a highly urbanized area of Washington, DC. Consequently, land cover for the site and its vicinity consists almost entirely of paved surfaces with little vegetation or permeable area. Land use on the project site is a mixture of industrial, institutional and utility uses, as illustrated in Figure 3-1.

The soccer stadium site consists of eight individual parcels totaling approximately 14 acres. Existing uses occurring on each parcel are briefly summarized in Table 3-1 and shown in Figure 3-2 through Figure 3-5.





**Figure 3-1: Existing land use**  
 AECOM, District of Columbia 2013



Parcel ID <sup>1</sup>	Use
Square 0603, Lot 0800	DC Reservation No. 244; truck parking and equipment storage associated with metal salvage yard (see Square 0605, Lot 0802)
Square 0605, Lot 0007	Capital Bikeshare maintenance and storage facility (see Figure 3-2)
Square 0605, Lot 0802	Metal salvage yard
Square 0607, Lot 0013	Possible vacant building in northwest corner of parcel (see Figure 3-3) and paved parking lot
Square 0661, Lot 0800	DC Reservation No. 243, road sand/salt storage facility (see Figure 3-4)
Square 0661, Lot 0804	Vacant lot associated with Potomac Electric Power Company (PEPCO) electrical substation (see Figure 3-5)
Square 0661, Lot 0805	Paved parking lot associated with PEPCO electrical substation
Square 0665, Lot 0024	PEPCO electrical substation
<b>Note:</b>	
1. Square and lot numbers correspond to those shown in Figure 1-2 in Chapter 1.	
Source: DCDGS, 2013; M & M 2013	

**Table 3-1: Project Site Land Uses**

*DGS, 2013*



**Figure 3-2: Capitol Bikeshare maintenance and storage facility, located at 2<sup>nd</sup> and S Streets**



**Figure 3-3: Possibly vacant storage building, located at 1<sup>st</sup> and S Streets**



**Figure 3-4: Road sand/salt storage facility, located at Potomac Avenue and Half Street**



**Figure 3-5: PEPCO vacant lot, located on S Street**

## Adjacent Parcels

As shown in Figure 3-1, land uses on properties adjacent to the project site can be broadly characterized as industrial and commercial, with a mixture of institutional, federal/public and other uses also present. Industrial uses are represented along the north side of R Street and Potomac Avenue and include a former commercial bakery (Figure 3-6), two building supply businesses, and a retail parking lot. A strip of apparently vacant warehouse-type buildings (Figure 3-7) and a nightclub (Figure 3-8) are located along Half Street immediately east of the PEPCO electrical substation. A gravel/ concrete processing yard spans two blocks to the east of the project site and is designated as both commercial and public/quasi-public/ institutional. The PEPCO electrical substation is identified as an institutional use and extends two blocks to the south of the project site. A surface parking lot located west of and adjacent to the substation is designated as commercial. Fort Lesley J. McNair, which occupies 100 acres and includes the National War College and the National Defense University, is a federal/public use and is the sole land use immediately to the west of the project site.



**Figure 3-6: Commercial bakery, located at the corner of 2<sup>nd</sup> and R Streets**



**Figure 3-7: Vacant warehouse buildings, located at Half and T Streets**



**Figure 3-8: Nightclub, located at Half and T Streets**

### **Surrounding Area**

A similar variety of uses is found on land beyond the soccer stadium site and the properties adjacent to it, as illustrated in Figure 3-1. Within the Buzzard Point area, a commercial heliport and an eight-story office building (Figure 3-9) are located east and southeast, respectively, of the project site along the west bank of the Anacostia River. The former headquarters of the United States Coast Guard is located at the southern tip of Buzzard Point; it is flanked by the National Park Service (NPS)-operated Buzzard Point Marina to the east and James Creek Marina to the west (Figure 3-10). Both parks occupy about two acres and both include vehicle parking areas and docks for berthing private watercraft.

Land uses extending north from Q Street to M Street are predominantly low- and medium-density residential (Figure 3-11). However, automotive-oriented commercial and industrial uses, including two automotive repair shops, a limousine service, a corner convenience store, and a moving and self-storage facility (Figure 3-12), are located in the three-block area bounded by P Street to the north, South Capitol Street to the east, Q Street to the south, and 2<sup>nd</sup> Street to the west. Row houses front South Capitol Street between O and P Streets (Figure 3-13); north of O Street, the nine-story Camden South Capitol apartment building, a recently-completed planned unit development (PUD) with 276 rental units and ground-floor retail space (Figure 3-14), is located on land designated as commercial fronting South Capitol Street.

East of the apartment building across South Capitol Street, Nationals Park (Figure 3-15) occupies land designated as institutional. Facilities occupied by the DC Water and Sewer Authority's (DCWASA's) Department of Sewer Services and Department of Fleet Management are located on an approximately 11.5-acre property immediately east of the stadium. The property includes the National Register-eligible, Beaux Arts-style DCWASA Main Station, built in 1906.



Diamond Teague Park is located immediately south of the DCWASA property along the west bank of the Anacostia River. The park includes a 39,000 square foot plaza and piers for ferries and privately-owned watercraft (CRBID 2013). The Florida Rock property is a 5.8-acre parcel along the south side of Potomac Avenue, SE between Diamond Teague Park and the foot of the South Capitol Street/Frederick Douglass Bridge. Although the property's underlying land use is a mix of industrial, institutional, and commercial, it is the site of an approved PUD that would include a 350-unit residential building and possibly an office building and hotel (Land 2013).



**Figure 3-9: Office building (left) and heliport (right), located along Half Street, east of the proposed stadium site**



**Figure 3-10: Boats berthed at James Creek Marina, located on 2<sup>nd</sup> Street, south of the proposed stadium site.**



**Figure 3-11: Medium-density housing, located on 2<sup>nd</sup> Street north of Q Street, north of the proposed stadium site**



**Figure 3-12: Moving and storage business located on South Capitol Street at P Street, northeast of the proposed stadium site**



**Figure 3-13: Rowhouses located along South Capitol Street between O and P Streets, northeast of the proposed stadium site**



**Figure 3-14: Apartment building located along South Capitol Street between N and O Streets, northeast of the proposed stadium site**



**Figure 3-15: Nationals Park, located at South Capitol Street and Potomac Avenue, northeast of the proposed stadium site**

### 3.1.2 Zoning

Zoning regulations in the District govern the density, character and uses of new development, including the height and size of buildings and other structures, the open spaces around them, and the activities occurring in or near them. For this purpose, the District is divided into zoning districts and, in some areas, zoning overlays. Overlays create a zoning district with special or unique provisions in addition to those applying to the underlying zoning district(s).

#### Project Site and Surrounding Area

Zoning of the project site and its surrounding area is illustrated in Figure 3-16. The entirety of the project site falls within the Commercial Residential (CR) zoning district. CR districts are intended to regulate the form and density of development and promote a mixture of uses including but not limited to commercial and residential activities. Provisions of CR

zoning districts are summarized on the District of Columbia Office of Zoning's web site (DCOZ 2013c) as follows:

- Residential, commercial, recreational and light industrial uses are permitted.
- Maximum lot occupancy is 75 percent for residential uses, 20 percent for public recreation and community center use (or up to 40 percent with approval from the Board of Zoning Adjustment [BZA]), and 100 percent for all other structures.
- The maximum floor area ratio (FAR) (the ratio of a structure's total square footage to its lot size) may not exceed 6.0, and no more than 3.0 may be used for non-residential uses.
- The maximum height for public recreation and community centers is 45 feet and 90 feet for all other buildings and structures.
- An area equivalent to 10 percent of the total lot area shall be required at ground level for all new development, and rear yards shall be provided for each residential building or structure.

The project site is also located within the Capitol Gateway (CG) overlay district. The CG overlay district is intended to establish South Capitol Street as a gateway into the District, promote the development of residential and commercial uses in the Buzzard Point and Capitol Gateway areas, and regulate the form of any such development. The provisions of the CG overlay district override those of the CR zoning district when there are conflicts between the provisions of the two districts. The District of Columbia Office of Zoning's website states that the CG overlay district (DCOZ 2013b)

...was established to provide use, height, density (including incentives for bonus density and height), combined lot development, and design requirements to ensure an appropriate mixture of residential and commercial uses and suitable height, bulk, and design of buildings. The overlay is applied to the Buzzard Point and Capitol Gateway areas, which are in the southwest and near southeast quadrants of the city, north or west of the Anacostia River. Specific development objectives of the overlay are: to encourage support and visitor-related uses and continued existing industrial uses; to reduce the height and bulk of buildings along the Anacostia riverfront; to require suitable ground-floor retail and service uses along M Street, near the Navy Yard metro; to provide for a ballpark for major league sport and entertainment and associated uses at Squares 702-706 and Reservation 247; to establish South Capitol Street as a monumental boulevard; and to provide for the development of Half Street, S.E. and First

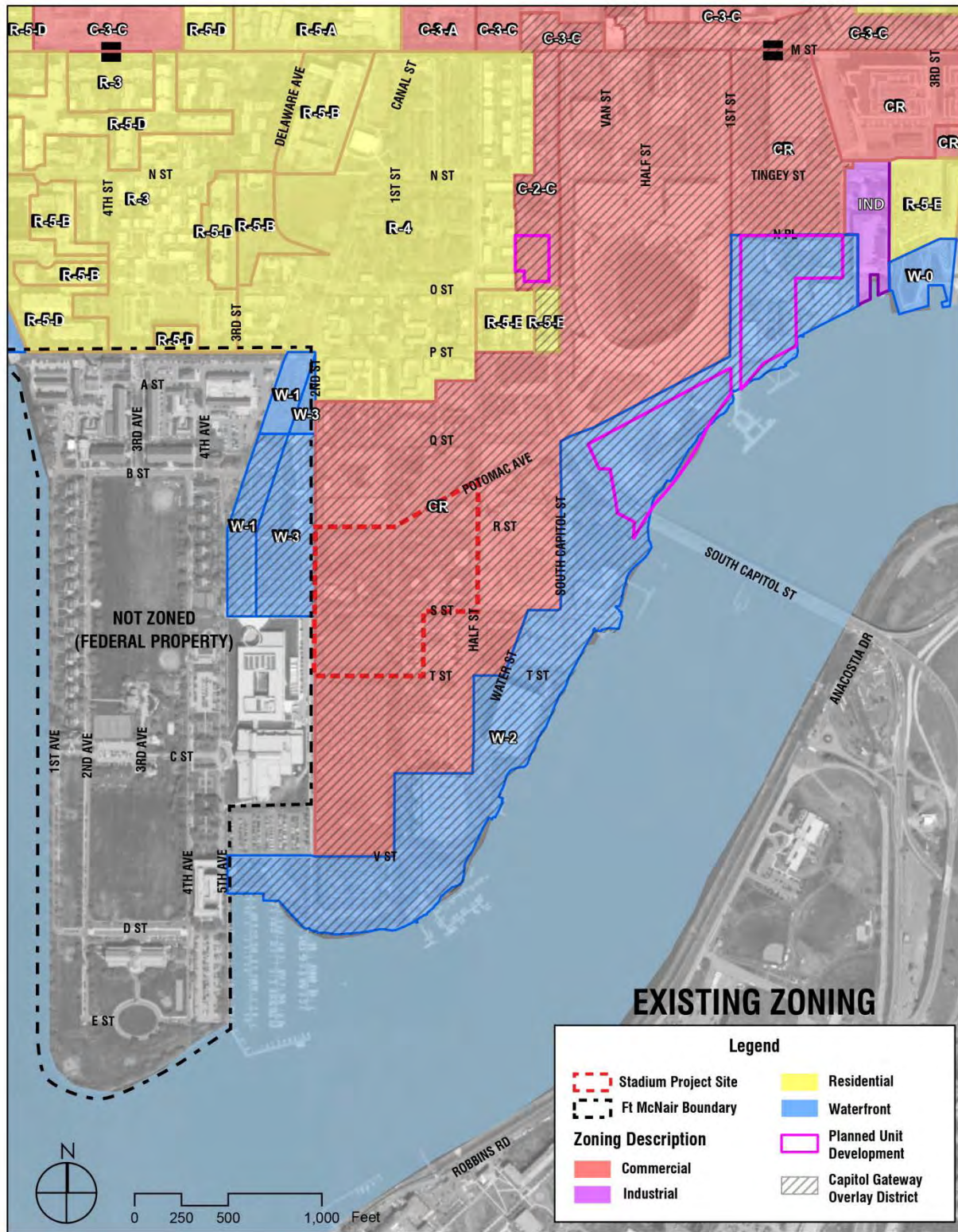


Street, S.E. as active pedestrian-oriented streets...Bonus density, and sometimes additional height, is available and density transfers are permitted under certain circumstances...

As shown in Figure 3-16, the zoning of properties immediately west of the project site is W-3 and, somewhat further west, W-1. These properties are also included in the CG Overlay District. W-3 zoning districts permit high density residential, commercial, and certain light industrial development in waterfront areas to a maximum lot occupancy of 75 percent for residential uses and public recreation and community centers; a maximum FAR of 6.0 for residential uses and 5.0 for other permitted uses; and a maximum height of 90 feet. W-1 zoning districts permit low density residential, commercial, and certain light industrial development in waterfront areas to a maximum lot occupancy of 80 percent for residential uses; a maximum FAR of 2.5 for residential and 1.0 for other permitted uses; and a maximum height of 45 feet. W-1 and W-3 zoning districts both require a minimum rear yard 12 feet deep (DCOZ 2013c).

Parcels east of the project site but not adjacent to it are zoned W-2, and also fall under the CG overlay district. These parcels lie along the west bank of the Anacostia River. W-2 zoning districts permit medium density residential, commercial, and certain light industrial development in waterfront areas to a maximum lot occupancy of 75 percent for residential uses and public recreation and community centers; a maximum FAR of 4.0 for residential and 2.0 for other permitted uses; and a maximum height of 60 feet. As with W-1 and W-3 districts, rear yards a minimum of 12 feet deep are required in W-2 districts (DCOZ 2013c).

Properties approximately 1.5 blocks north of the project site are predominantly zoned R-4, but also include small area zoned R-5-B and R-5-E. A portion of the area zoned R-5-E fronting South Capitol Street is also included in the CG Overlay District. R-4 zoning districts permit medium-density single-family residential uses, such as detached and semi-detached houses, row dwellings, and flats. Churches and public schools are also allowed in R-4 districts. R-5-B zones permit medium to high density residential development, including single-family dwellings, flats, and apartment buildings, to a maximum lot occupancy of 75 percent, a maximum FAR of 3.5 and a maximum height of 90 feet, with minimum rear yards of 15 feet. R-5-E zoning districts permit high density development of general residential uses, including single-family dwellings, flats, and apartment buildings, to a maximum lot occupancy of 75 percent (20 percent for public recreation and community centers), a maximum FAR of 6.0 for apartment houses and hotels, and 5.0 for other structures, and a maximum height of ninety (90) feet (45 feet for public recreation and community centers) (DCOZ 2013c).



**Figure 3-16: Existing zoning of Buzzard Point**

Source: District of Columbia, 2013

### 3.1.3 Community Facilities

Community facilities consist of activities and services that support, enhance, and protect the quality of life of neighborhoods and the general public. Examples of community facilities include schools, recreational facilities, medical clinics and hospitals, police stations, and fire stations and emergency medical services. Community facilities are often funded and/or operated by local, state, or the federal government, but also include privately-operated facilities such as charter schools, hospitals, and certain types of sports and entertainment facilities.

#### Educational Facilities

Five educational facilities are located within a one-mile radius of the project site (educational facilities on the east side of the Anacostia River are not included because the project would have no potential to affect them). Their locations and distance from the project site are presented in Table 3-2. The nearest branch of the District of Columbia Public Library is the Southwest Library at 900 Wesley Place, SW approximately 0.6 mile north of the project site.

Name	Address	Approximate Distance and Direction from Project Site
<b>Amidon-Bowen Elementary School</b>	401 I Street, SW	1 mile north
<b>AppleTree Amidon Public Charter School (PCS)</b>	401 I Street, SW	1 mile north
<b>Jefferson Middle School</b>	801 7 <sup>th</sup> Street, SW	0.8 north
<b>Eagle Academy PCS</b>	1017 New Jersey Avenue, SE	0.7 northeast
<b>Richard Wright PCS</b>	770 M Street, SE	1 mile northeast
<b>Source: DCPS 2013</b>		

**Table 3-2: Educational facilities near project site**

#### Recreational Facilities

Recreational resources located near the project site include public and community parks, marinas, organized recreation centers, and a professional sports stadium. Anacostia Park, along the eastern side of the Anacostia River approximately 0.5 mile from the project site, is under the jurisdiction of the National Park Service and is the largest recreational facility in Ward 6. It serves as the major recreational area for Wards 5, 6, 7, and 8. Diamond Teague Park, owned and maintained by the Capitol Riverfront Business Improvement District, is located Potomac Avenue, SE approximately 0.4 mile northeast of the project site. The park is the western anchor of the Anacostia Riverwalk Trail and features a 39,000 square foot public plaza with water taxi and public piers (CRBID 2013) (see Figure 3-17). James Creek



and Buzzard Point Marinas are operated and maintained by the National Park Service (NPS) and are located at the southern end of Buzzard Point less than 0.25 mile from the project site. The marinas include comfort stations, parking areas, and berths for private watercraft (see Figure 3-18 and Figure 3-19).



**Figure 3-17: Diamond Teague Park, located at 1<sup>st</sup> Street and Potomac Avenue SE**



**Figure 3-18: Open lawn at James Creek Marina, located at 2<sup>nd</sup> and V Streets**



**Figure 3-19: Watercraft berthed at James Creek Marina, located at 2<sup>nd</sup> Street**

Public recreation facilities in Southeast and Southwest Washington, DC serve the community and/or are associated with educational facilities that are located near the project site. The King Greenleaf Recreation Center is located approximately 0.3 mile north of the project site within the Greenleaf housing complex and serves residents of the Greenleaf, Syphax Gardens, and James Creek complexes. The facility includes basketball courts, a soccer field, tennis courts, softball courts, indoor meeting spaces, exercise rooms, locker rooms, and learning centers. The Randall Recreation Center is located approximately 0.7 mile north of the project site at South Capitol and I Streets, SW. This facility includes sporting fields and ball courts, an outdoor swimming area and public playground (DCSEC 2006).

Nationals Park, the home field of Major League Baseball's Washington Nationals, is located less than 0.25 mile northwest of the project site at the intersection of South Capitol Street and Potomac Avenue, SE. The open-air stadium seats over 40,000 spectators and annually hosts 81 regular-season baseball games between late March and late September. Music concerts, festivals and other events are also held at the facility throughout the year. Two four-story parking garages are located adjacent to the north side of the stadium.

### **Medical Facilities**

The nearest medical facility is Unity Health Care at 850 Delaware Avenue, SW approximately 0.7 north of the project site. This facility offers primary medical care and dental, laboratory, and social services. George Washington University Hospital, located approximately three miles northeast of the project site in the District's Northwest quadrant, is the nearest hospital.

### **Public Safety**

#### *Police*

The project site is located in the District of Columbia Metropolitan Police Department's (MPD's) First District, and in Police Service Area 105. The First District is divided operationally into two areas: west and east. The western part of the district includes the US Capitol, the White House, Federal Triangle, the downtown business district (including the DC Convention Center and the Verizon Center), Chinatown and the waterfront. The eastern part of the district is served by the First District Substation and includes the historic Capitol Hill neighborhood and the Washington Navy Yard (MPD 2013a). The First District Station is located at 101 M Street, SW, approximately 0.5 mile north of the project site. The First District Substation is approximately 1.2 miles northeast of the project site at 500 E Street, SE (MPD 2013b).

DC United games are currently played at RFK Stadium, which is also located in the MPD's First District. RFK Stadium is located within Police Service Area 108. During DC United games, 15 police officers from the MPD's Special Operations Division are assigned outside the stadium and 19 off-duty officers are hired directly by Events DC to work inside the stadium.

#### *Fire and Emergency Medical Services*

Three units of the District of Columbia's Fire and Emergency Medical Service (EMS) Department are located within a 1.5-mile radius of the project site. Engine Company 07 of Battalion 2 is located approximately 0.5 mile north of the project site at 1101 Half Street, SW. The unit includes a 1,250 gallon per minute (gpm) pumper truck, a brush fire unit, and a medical unit. Engine Company 13 of Battalion 6 is located at 450 6<sup>th</sup> Street SW, approximately one mile north of the project site, and includes a 1,250-gpm pumper and an ambulance unit. Engine Company 15 of Battalion 3 is located on the east side of the Anacostia River at 2101 14<sup>th</sup> Street SE, approximately 1.4 miles from the project site, and includes a 1,250-gpm pumper, an EMS unit, ambulance unit, rescue squad, and medic unit (Fire and EMS Department 2013).

EMS services for DC United games held at RFK Stadium are provided by a private ambulance company contracted by DC United.

### **3.1.4 Demographics and Housing**

#### **Introduction**

The proposed soccer stadium site is located within an economically and racially diverse area of the District. Housing north of the project site is also varied, with a range of type and age of housing structures available in the vicinity of the proposed site. The larger area of Southeast and Southwest DC along the Anacostia Waterfront includes areas of recently completed and planned redevelopment and revitalization with housing components, in particular within the Capitol Riverfront Business Improvement District (BID).

#### **Methodology**

The analysis of demographics and housing is based primarily on data from the 2000 and 2010 U.S. Census. American Community Service (ACS) data was also referenced for 2006 to 2010 five-year average numbers at the census tract level. Between 2000 and 2010, several Census Tracts in the study area were combined and the 2000 data has been aggregated where necessary to reflect 2010 Census Tracts for comparison purposes. This data has been grouped by topics following Census characteristics:

- Total population and population characteristics;

- Household and income characteristics, and;
- Housing unit characteristics

Population, as enumerated by the Census, is based on a person's usual residence, which is where the person lives and sleeps most of the time. Population characteristics include age, race, educational attainment, and population change (growth or loss). These characteristics help to describe the demographic profile of an area.

### **Households and Income**

Households consist of all the people who occupy a housing unit, including both related family members (family household) and all unrelated people who share the housing unit. Persons living alone or sharing a home exclusively with unrelated people constitute a nonfamily household.

Several factors are considered to determine general income levels for a geographic area including household income, poverty status, and public assistance. Median income is a measurement of the distribution of pay between individuals or households in an area. Median income divides income distribution into two equal groups, half having incomes above the median and half having incomes below the median. Poverty levels are defined by the Census Bureau using a set of income thresholds that vary by family size and composition. Poverty thresholds set by the Census Bureau for 2010 include a range from \$11,139 for one person to \$45,220 for a family unit of nine or more people (the range includes weighted averages accounting for children and adults under and over 65 years of age). If the family income is less than the established threshold, every member of the family unit is considered to be living in poverty. The income threshold considers money income before taxes and does not include capital gains or noncash benefits (such as public housing, Medicaid, and food stamps).

### **Housing**

A housing unit is defined by the Census as "a house, an apartment, a mobile home or trailer, a group of rooms, or a single room that is occupied, or, if vacant, is intended for occupancy as separate living quarters". Housing within an area can be discussed in terms of characteristics such as number of units, occupancy/vacancy rates, housing tenure (rented or owned), housing values, and level of affordability (as a percentage of household income spent on gross rent). When more than 30% of household income is spent on housing expenses, those households are considered to be facing a cost burden.

### **Study Area**

The proposed Stadium is sited in Census Tract 64 and situated in the southwest portion of the District. The data collected on existing demographic characteristics and related social

and housing characteristics is defined within the study area that is adjacent to the proposed project site, including Census Tracts 64, 72, 102, 105, and 110. In order to provide a regional context for the comparison of the affected environment, data on population, ethnicity, housing, and income for the District were gathered to compare to and evaluate against the study area characteristics and impacts. Census data was gathered at the tract level for the tracts included in the study, as shown in Figure 3-20.



**Figure 3-20: Study area**

*Source: US Census, 2010*



## Population

Total population in the District, as reported in the U.S. Census 2010, was 601,723 persons. Total population in the study area, as reported in the U.S. Census 2010, was 14,382 persons. Between the years of 2000 through 2010, a significant increase in population occurred in Tract 72 (population growth of 53.1 percent). Tract 72 includes a number of new developments that are part of the Capitol Riverfront area. Population growth decreased by 4.5 percent in the census tract where the project site is located (Tract 64) between 2000 and 2010. Within the boundaries of the entire study area, a modest increase in population of 5.1 percent occurred, which matches the District increase through the ten year period. The transitional growth trends for the District and the study area are summarized in Table 3-3.

	District of Columbia	Study Area	Census Tract 64	Census Tract 72	Census Tract 102	Census Tract 105	Census Tract 110
<b>2000</b>	572,059	13,676	2,240	1,825	2,444	3,288	3,879
<b>2010</b>	601,723	14,382	2,139	2,794	2,324	3,410	3,715
<b>% Change</b>	5.19%	5.16%	-4.51%	53.10%	-4.91%	3.71%	-4.23%

**Table 3-3: Population change**

*Source: US Census, 2000 and 2010*

The study area is composed of a variety of racial and ethnic groups. Race was a self-identification data item on the 2010 Census, where respondents selected the race(s) with which they most closely identified themselves using one of seven racial subgroups: White; Black; American Indian or Alaskan Native; Asian; Native Hawaiian or other Pacific Islander; Some Other Race; or of Two or More Races. Besides these racial categories, the Census also enumerates Hispanic or Latino persons who can be of any race. Ethnicity is defined as the classification of a population that shares common characteristics such as religion, cultural traditions, language, tribal heritage, or national origin.

Of the total 2010 District population, Black or African American persons composed the largest racial group, at 50.7 percent. Persons identified as White composed the next largest group at 38.5 percent. Within the study area persons identified as Black or African American composed the largest racial group at 50.3 percent and White represented the next largest racial group with 39.5 percent. The remaining 10.7 percent in order of descending proportions are Hispanic or Latino, Asian, Two or More Races, and Some Other Race. While there are comparable proportions of racial and ethnic diversity within the study area as a whole to that of the surrounding District, Tract 64 (project site location) differs from this trend and is primarily composed of persons identified as Black or African American (Table 3-4).

In 2010, the median age for the District was 33.6 years of age. The age characteristics of the study area population are similar to that of the District, at a median age of 35.6 years. Of the study area population, approximately 26 percent were children or elderly populations (13 percent at 19 years of age and under, and 13.3 percent at 65 years of age and over). Within Tract 64 (in which the project site is located), 29.8 percent of the population was 19 years of age and under, a higher percentage than the District as a whole and the other census tracts in the study area.

	White Alone	Black Alone	American Indian/Alaska Native Alone	Asian Alone	Native Hawaiian / Pacific Islander Alone	Some Other Race Alone	Two or More Races	Hispanic or Latino
<b>District of Columbia</b>	38.5%	50.7%	0.3%	3.5%	0.1%	4.1%	2.9%	9.1%
<b>Study Area</b>	39.5%	50.3%	0.6%	4.7%	0.04%	1.5%	3.4%	5.2%
<b>Census Tract 64</b>	6.6%	87.0%	1.1%	1.8%	0.0%	1.4%	2.1%	3.0%

**Table 3-4: Race/Ethnicity**

Source: US Census, 2010

The 2006-2010 American Community Survey showed that, in general, educational attainment in the study area tended to be comparable to that of the District as a whole. In the District, 5.0 percent of the population had less than a ninth grade education, as compared to 6.3 percent for the Tract 64 where the project site is located. None of the citizens in Tract 102 fell into this category. In the study area, 91 percent of the population had a high school degree or higher, compared with 86.5 percent for the District as a whole. Tract 64 had the lowest percentage of high school graduates or higher in the study area, at 72.8 percent. On average, 57.5 percent of residents attained a bachelor’s degree level of education, or higher within the study area. Tract 102 stands out within the study area in percentage of graduate or professional degrees—47.5 percent of that area’s residents obtained such a degree as compared with 27.2 percent of the District’s residents and a range of 12 percent to 37.5 percent in the rest of the study area.

## Households and Income

According to the 2010 Census, the study area contains a total of approximately 8,617 households. Like the District, within the study area both the total population and the average number of households increased. Between the years 2000 and 2010, Tract 72 underwent the most significant growth in households, with a 116.5 percent change (Table 3-5). This tract includes new development and redevelopment associated with the Capital Riverfront area (discussed in further detail in the Housing Units section below).

The average household size for the study area, at 1.7 persons per household, is slightly smaller than the average household size for the District of 2.1 persons per household. The District and study area both have a large quantity of one-person and non-family households. In addition, both also contain small percentages of households with five or more people.

	District of Columbia	Study Area	Census Tract 64	Census Tract 72	Census Tract 102	Census Tract 105	Census Tract 110
<b>2000</b>	248,338	7,739	961	845	1,577	1,832	2,524
<b>2010</b>	266,707	8,617	977	1,830	1,465	2,000	2,345
<b>% Change</b>	7.40%	11.35%	1.66%	116.57%	-7.10%	9.17%	-7.09%

**Table 3-5: Households over time**

*Source: US Census, 2000 and 2010*

Income characteristics for the study area population are described below using two measures: median household income and the percentage of households receiving public assistance. The median household income represents the mid-point of all household incomes in each Census Tract within the study area.

The study area median household income was calculated to be \$56,034, based on 2010 dollars, using income data from the 2006-2010 ACS data for average numbers at the census tract level. These median household income figures represent a weighted average of the median incomes for the census block groups located within the study area. An average was used to determine the study area median household income due to the fact that the median household incomes varied within the study area. Median household income in 2010 ranged from \$21,191 to \$79,297 for the census tracts considered (Table 3-6). In addition, the data provides a general correlation between the households with low-income residents and larger percentages of households utilizing public assistance. Residents of Tract 64 have the lowest household income and the highest percentage of households using public assistance at 15.8 percent.

	District of Columbia	Study Area	Census Tract 64	Census Tract 72	Census Tract 102	Census Tract 105	Census Tract 110
<b>Median Household Income</b>	\$58,526	\$56,034	\$21,191	\$47,885	\$74,744	\$57,052	\$79,297
<b>Percentage of Households with Public Assistance</b>	4.4%	4.4%	15.8%	0.9%	0.0%	2.4%	5.8%

**Table 3-6: Average household and family income**

*Source: American Community Survey, 2006-2010*

The 2006-2010 American Community Survey data indicate that approximately 18.1 percent of the population within the study area had incomes below the poverty level (Table 3-7). While varied income levels are found throughout the study area, poverty rates were greatest among those residents located in Census Tract 64. As noted above, this tract also had much higher percentages of households receiving public assistance, almost 16 percent, which more than three times the District average.

	District of Columbia	Study Area	Census Tract 64	Census Tract 72	Census Tract 102	Census Tract 105	Census Tract 110
<b>Percentage of Population Below Poverty Level</b>	18.5%	18.1%	31.1%	11.7%	10.6%	19.4%	17.4%
<b>Percentage of Population Under Age 18 Below Poverty Level</b>	29.6%	37.8%	51.0%	0.0%	15.7%	34.7%	52.6%
<b>Percentage of Population Age 65 and Over Below Poverty Level</b>	14.10%	14.2%	16.6%	51.6%	10.8%	11.1%	7.5%

**Table 3-7: Income characteristics**

*Source: American Community Survey, 2006-2010*

## Housing Units

No residences are located at the project site or immediately adjacent to it. The existing housing characteristics within the larger study area reflect a wide variety in architectural quality; current building condition; construction dates between the late 19th century to the middle of the 20th century, as well as recent construction; and affordable and market-rate units. These housing units represent rowhouses, condominiums, and apartments.

The total number of housing units in the District was 296,719 of which 55.2 percent comprised of 1-9 unit structures, 44.7 percent comprised multi-family units. Of the total occupied housing units in the District, 58.0 percent were renter-occupied, and of all housing units, 10.1 percent were vacant units. The total number of housing units within the study area was 10,099, of which 25.7 percent comprised of 1-9 unit structures and 73.2 percent comprised multi-family units.

Within the study area, all of the Tracts except for Tract 110 have higher concentrations of rental properties than the overall District, and there is a heavy concentration of multi-unit residential buildings in all of the Tracts except for Tract 64. The occupied housing units in the study area were approximately 65 percent renter-occupied and 35 percent owner-occupied. Of the total housing units in the study area, 14.7 percent were vacant units (Table 3-8).

	Total Housing Units	Median Year Built	Percentage of Structures with 1-9 Units	Percentage of Structures with 10 or more Units	Percentage of Vacant Units	Percentage of Renter Occupied Units
<b>District of Columbia</b>	296,719	1949	55.2%	44.7%	10.1%	58.0%
<b>Study Area</b>	10,099	1967	25.7%	72.3%	14.7%	64.7%
<b>Census Tract 64</b>	1,055	1960	77.5%	22.5%	7.4%	83.8%
<b>Census Tract 72</b>	2,370	2005	14.7%	85.3%	22.8%	84.0%
<b>Census Tract 102</b>	1,654	1967	21.2%	73.5%	11.4%	68.2%
<b>Census Tract 105</b>	2,347	1968	19.0%	81.0%	14.8%	69.4%
<b>Census Tract 110</b>	2,673	1965	19.5%	80.5%	12.3%	35.4%

**Table 3-8: Residential housing units**

*Source: US Census, 2010 and American Community Survey 2006-2010*

While all tracts in the study area have lower median housing values of owner-occupied units than the median for the District as a whole, Tracts 64 and 105 have the among the highest values in the study area at \$367,800 and \$377,000 respectively. The lowest median

gross rent was also reported in Tract 64 where a number of multi-family public housing units are located (Table 3-9).

	District of Columbia	Study Area	Census Tract 64	Census Tract 72	Census Tract 102	Census Tract 105	Census Tract 110
<b>Median Gross Rent</b>	\$1,063	\$1,128	\$351	\$1,225	\$1,258	\$1,091	\$1,128
<b>Median Gross Rent at Percentage of 2010 Household Income</b>	29.6%	27.5%	24.2%	31.2%	24.0%	27.5%	28.3%
<b>Median Value of Owner-Occupied Units</b>	\$443,300	\$360,800	\$367,800	\$360,800	\$343,000	\$377,000	\$273,400

**Table 3-9: Median housing costs and values**

*Source: US Census, 2010 and American Community Survey 2006-2010*

The study area has a number of affordable and public assisted housing units in the vicinity of the project site. Within the Buzzard Point section of the study area (generally south of I-395 and west of South Capitol Street within Census Tracts 102, 105, 110, and 64), established District of Columbia Housing Authority (DCHA) developments including Greenleaf Gardens and Greenleaf Senior, Syphax Gardens, and James Creek Dwelling provide over 900 public housing units. These properties include a range of unit sizes. DCHA owns and manages public housing properties to provide homes at reduced rents for very low-income families, seniors, and persons with disabilities. Tenants residing in DCHA units pay 30 percent of their income as rent. The Table 3-10 below lists the number public housing units in the Buzzard Point area by DCHA property.

Syphax Village is comprised of 41 owner-occupied units, 29 units for low-income households and 12 units for workforce households within the renovated Syphax School and adjacent recently constructed townhouses. St. James Mutual Homes and Tel-Court Cooperative Apartments provide assisted housing. St. James Mutual Homes provides 36 assisted units in its 107-unit complex of one-, two- and three-bedroom apartments. The Tel-Court Cooperative Apartments provides 56 assisted housing units in one- and two-bedroom units.

Residential complex	Total units
Greenleaf Gardens and Greenleaf Senior	493
James Creek Dwelling	239
Syphax Gardens	174
<b>Total units:</b>	<b>906</b>

**Table 3-10: Public housing in the Buzzard Point area**

To the east of the South Capitol Street (Census Tract 72), a large number of public affordable housing units were historically located within the 707-unit Arthur Capper and Carrollsburg public housing complexes. As part of a 2001 HOPE VI grant, the housing complexes were demolished and the area being redeveloped as a higher density, mixed-income development that replaces the 707 units of public housing, adds 1,000-plus market-rate and workforce-rate rental and ownership units, and 50 Section 8 ownership units, along with office space and retail space. As of March 2014, approximately 386 public housing units were completed as part of the ongoing redevelopment project.

The Capper/Carrollsburg housing redevelopment is located in the Capitol Riverfront BID. The BID was created in 2007 and encompasses the area along the Anacostia waterfront in Southeast DC between the river and the S.E. Freeway from west of Pennsylvania Avenue to South Capitol Street. From there the BID continues south along the river in the southern portion of Buzzard Point east of Fort McNair and generally south of Q and P Streets, including the project site. According to the Capitol Riverfront BID 2013 Annual Report, there are currently 564 affordable units located in mixed-income projects throughout the BID (including the Capper/Carrollsburg development). Of all completed units in the BID, 22 percent are affordable apartment units and 9 percent are affordable for-sale units. Nine percent of the units in the BID development pipeline are projected to be affordable.

The 2013 annual report notes that 2,758 residential units have been completed, 1,264 are under construction, and 7,594 are planned for a projected future total of 11,616 total units at full-build out (as currently forecast). The completed unit total includes the Camden South Capitol, located outside of, but adjacent to the BID. The total number of units at build-out is an estimate based on the allowed zoning by right on lots where a building program has not yet been determined. Residential units within the BID are comprised of townhouses, apartments, and condominiums. Based on the BID development estimates, approximately 20 percent of all existing units within the Capitol Riverfront BID are affordable units, and at complete build-out, 11.7 percent of the units will be affordable units.

New residential development within the District is subject to inclusionary zoning requirements targeted at increasing affordable housing. Inclusionary zoning supports the creation and preservation of affordable housing opportunities by requiring new rental or condominium buildings over 10 units, and renovations increasing the building size by over 50%, to include an assigned percentage of affordable units in exchange for a density bonus. The program seeks to create mixed income neighborhoods and produce affordable housing for a diverse labor force, including rental and homeownership opportunities.

Maximum rents and purchase prices for the affordable units are based on the Washington Metropolitan Statistical Area Median Income (AMI) (\$107,500 for a family of four in 2012). The maximum allowable rent and purchase prices are identified for low income units (50 percent of AMI) and moderate income units (between 50 and 80 percent of AMI). Calculations for single-family and multi-family developments factor in number of bedrooms, occupancy limits, utility costs, and condo or homeowner association fees to establish a maximum rent or purchase price (DHCD 2013).

While some limited areas are exempt from inclusionary zoning requirements (i.e. certain zones, overlays, and historic districts, and some existing Planned Unit Developments), the inclusionary zoning requirements apply to much of the study area. Proposed future development related to the Capital Riverfront BID with residential components located near the project site and where inclusionary zoning would likely apply includes: an 8 story residential building with retail square footage along the waterfront at 1st and V Streets and a 2.7 million square foot proposed mixed-use development on the 9 acre site located between T, V, 1st and 2nd Streets.

The type of units set aside for affordable housing under inclusionary zoning depends on zoning and density. In low density construction, 10 percent of the floor area ratio must be set aside and split evenly between units targeted at 50 percent of AMI and at between 50 and 80 percent of AMI. Units created in higher density construction in areas that are not zoned strictly for residential use must set aside eight percent of the floor area ratio for units targeted at 80 percent of AMI.

In addition to DC Zoning laws, affordable housing requirements are included in the Anacostia Waterfront Development Zone development requirements. The entire study area is located within the Anacostia Waterfront Development Zone. These requirements note that development projects on real property owned, controlled, or disposed of by the District shall include no less than 15 percent of residential units affordable to moderate-income (income equal to or less than 60 percent of AMI) households and at least 15 percent of the units affordable to low-income (income equal to or less than 30 percent of AMI) households.



### 3.1.5 Environmental Justice

Executive Order 12898, *Federal Action to Address Environmental Justice in Minority Populations and Low-Income Populations*, was published in February 1994 and requires federal agencies to identify and address disproportionately high and adverse human health or environmental impacts of its programs, policies, and activities on minority and low-income populations. Environmental Justice analyses are guided by this executive order and further guidance issued by the US Environmental Protection Agency (US EPA).

The US EPA Office of Environmental Justice defines environmental justice as: "The fair treatment and meaningful involvement of all people regardless of race, color, national origin, or income with respect to the development, implementation, and enforcement of environmental laws, regulations, and policies. Fair treatment means that no group of people, including racial, ethnic, or socioeconomic group should bear a disproportionate share of the negative environmental consequences resulting from industrial, municipal, and commercial operations or the execution of federal, state, local, and tribal programs and policies" (US EPA 1998). The goal of fair treatment is not to shift risks among populations, but to identify potential disproportionately high and adverse effects and identify alternatives that may mitigate these impacts.

The purpose of Environmental Justice analysis is to identify and address, as appropriate, disproportionately high adverse human health or environmental effects of its activities on minority and low-income populations. Executive Order 12898 also requires federal agencies to work to ensure greater public participation in the decision-making process. Meaningful involvement requires community input in the environmental process. It further requires that meetings and notices are accessible to low-income and minority populations potentially affected by a project.

The environmental justice analysis for the proposed soccer stadium was undertaken to identify any minority and/or low-income populations within the study area who could potentially be impacted by changes to the area and to determine the proposed action's potential impacts on these populations. The impacts analysis in Chapter 4 will identify and address any potential disproportionate and adverse health or environmental impacts on minority or low-income populations that could result from the proposed action, as well as discuss recommended mitigation.

#### **Methodology**

The environmental justice analysis for the proposed soccer stadium follows the guidance and methodologies recommended in the federal Council on Environmental Quality's Environmental Justice Guidance under the National Environmental Policy Act (December 1997). These are summarized below. The federal Council on Environmental Quality (CEQ),

which has oversight of the federal government's compliance with Executive Order 12898 and the National Environmental Policy Act (NEPA), developed its guidance to assist federal agencies with their NEPA procedures so that environmental justice concerns are effectively identified and addressed.

The CEQ methodology involves collecting demographic information on the area where the project may cause significant and adverse effects and identifies low-income and minority populations in that area using census data; and identifying whether the project's adverse effects are disproportionately high on the low-income and minority populations, in comparison to those on other populations. Mitigation measures should be developed and implemented for any disproportionately high and adverse effects.

### **Methodology Used for this Assessment**

The assessment of environmental justice for the proposed action was based on CEQ guidance, as described above:

1. Identify the area where the project may cause significant and adverse effects;
2. Compile population and economic characteristics for the study area and identify potential environmental justice areas;
3. Identify the proposed action's potential adverse effects on minority and low-income communities; and
4. Evaluate the proposed action's potential adverse effects on minority and low-income communities relative to its overall effects.

### **Delineation of Study Area**

The study area for environmental justice encompasses the area most likely to be affected by the proposed action and considers the area where potential impacts resulting from construction and operation of the proposed action could occur. The study area for environmental justice includes all census tracts adjacent to the project site. As shown in Figure 3-20, the study area includes Census Tracts 64, 72, 102, 105, and 110.

Data on race, ethnicity, and poverty status were gathered from the U.S. Census Bureau and were compiled for the study area and, for comparison purposes, the District of Columbia. Based on Census data on racial, ethnic characteristics, and poverty status and the guidance described above, potential environmental justice areas were identified as follows:

- **Minority communities:** The guidance documents define minorities to include American Indians or Alaskan Natives, Asian and Pacific Islanders, African Americans or Black persons, and Hispanic persons. This environmental justice analysis also considers minority populations to include persons who identified themselves as being either "some other race" or "two or more races" in the 2010 Census. Following

CEQ guidance, minority populations were identified where either: (1) the minority population of the affected area exceeds 50 percent; or (2) the minority population percentage of the affected area is meaningfully greater than the minority population percentage in the general population or other appropriate unit of geographic analysis. The District is used as the statistical reference area with a minority population of 70.6 percent. The minority population percentage of the study area is lower than the statistical reference area; therefore, the minority population percentage threshold was used to identify minority communities

- Low-income communities: The percent of individuals below poverty level in each census tract, based on the 2010 Census, was used to identify low-income communities. In this analysis, any census tract having a low-income population greater than the percent of the total population living below poverty level in the District is considered a low-income community. Therefore, the threshold for identifying low-income communities is a low-income population of more than 18.5 percent.

#### Environmental Justice Populations

Overall, approximately 65.8 percent of the residents of the study area are minority, which is lower than the District of Columbia statistical reference area, which has minority populations comprising 70.6 percent of the District population. Only two of the individual census tracts in the study area have a minority population greater than the minority population percentage of the District: Census Tracts 64 and 105. The study area has similar percentages of low-income residents as compared to the District. Two individual census tracts within the affected area have a higher percentage of low-income residents than the District, Census Tracts 64 and 105. Based on the guidelines described above, both of these census tracts qualify as potential environmental justice communities of concern because they have minority and low-income populations greater than the statistical reference area. The environmental justice study area population and economic characteristics in terms of race, ethnicity, and poverty status are shown in Table 3-11 and Table 3-12.

	District of Columbia	Study Area	Census Tract 64	Census Tract 72	Census Tract 102	Census Tract 105	Census Tract 110
<b>Total Population</b>	601,723	14,382	2,139	2,794	2,324	3,410	3,715
<b>Total Minority<sup>1</sup></b>	70.6%	65.8%	96.4%	45.8%	57.2%	73.9%	61.0%
<b>Black Alone</b>	50.7%	50.3%	87.0%	30.9%	39.5%	55.4%	46.1%
<b>American Indian/ Alaska Native Alone</b>	0.3%	0.6%	1.1%	0.1%	0.3%	0.4%	0.8%
<b>Asian Alone</b>	3.5%	4.7%	1.8%	5.2%	5.1%	6.8%	3.8%
<b>Native Hawaiian/ Pacific Islander Alone</b>	0.1%	0.04%	0.0%	0.0%	0.0%	0.1%	0.1%
<b>Some Other Race Alone</b>	4.1%	1.5%	1.4%	1.0%	1.3%	1.7%	1.8%
<b>Two or More Races</b>	2.9%	3.4%	2.1%	3.0%	5.0%	3.3%	3.5%
<b>Hispanic or Latino</b>	9.1%	5.2%	3.0%	5.5%	5.9%	6.2%	4.9%
<b>Minority Population Below Poverty Level<sup>2</sup></b>	21.5%	22.9%	32.0%	16.9%	9.1%	26.1%	23.6%
<i>1-Universe includes persons of "Hispanic Origin" which may be of any race, therefore figures could total greater than 100%.</i>							
<i>2-Universe includes persons for whom poverty status is determined, based on 2005-2010 ACS data</i>							

**Table 3-11: Race/ethnicity and minority communities**

Source: US Census, 2010 and American Community Survey, 2006-2010

	District of Columbia	Study Area	Census Tract 64	Census Tract 72	Census Tract 102	Census Tract 105	Census Tract 110
<b>Percentage of Population Below Poverty Level</b>	18.5%	18.1%	31.1%	11.7%	10.6%	19.4%	17.4%

**Table 3-12: Poverty levels**

Source: American Community Survey, 2006-2010

In addition to Census data, the location and concentration of public and assisted housing within the study area was also considered. There are two public housing complexes (James Creek and Syphax Gardens) and one HUD Multifamily property (Tel-Court Cooperative) in Census Tract 64. Syphax Village, owner-occupied affordable and workforce housing, is also located in Tract 64. Greenleaf Gardens and Greenleaf Senior provide public housing in

Census Tract 105. Capitol Park Plaza offers affordable housing units (422) under the Low Income Housing Tax Credit program in Census Tract 105. Census Tract 110 includes affordable housing in the St. James Mutual Homes (a HUD Multifamily property) and Channel Square, a privately owned affordable housing development. In Census Tract 72, a large number of affordable housing units were recently constructed, are under construction, or are planned in mixed-income developments to replace the Arthur Capper and Carrollsburg public housing complexes demolished in 2001. Based on the Census Tract data and the public and assisted housing located in Census Tracts 64, 72, and 105, these areas of the study are considered potential environmental justice communities of concern.

### **Public Participation**

Public outreach was initiated in October 21, 2013 during Advisory Neighborhood Commission Ward 6D monthly meeting to report to community groups and provide an overview of the Stadium project and the environmental mitigation process. Commission members expressed concerns over the site remediation and public improvements in association with health risks of the surrounding community. The Commission also questioned how the proposed action would affect the citizens of the public and subsidized housing areas. In addition, concerns over the implications of the methods and timeframe in which the surround communities were informed of the proposed action. Information concerning the Stadium project was communicated by mail and mass automated telephone calls to residents in precincts within the area.

An additional panel discussion was held on October 23, 2013 during the DC Fiscal Policy Institute and Southwest Neighborhood Assembly meeting where approximately ninety-five participants were in attendance. The aspects of the proposed project that were discussed included potential impacts to environmental resources such as water quality of the Anacostia River, and soil contamination due to remediation efforts of the PEPCO site. Other key concerns of participants in the panel discussion included impacts to other resources such as property rezoning and displacement, community cohesion, traffic levels and transit accessibility, and diversion of public dollars from local schools and community libraries.

On October 26, 2013, the District held a public scoping meeting in order to receive input from the community. Residents within the community were notified via phone and flyer of the meeting. The District's project team outlined the environmental review and mitigation process, as well as identified the resources that would be considered in the environmental review process. The community provided input on a number of issues, including expressing concern about the potential for hazardous materials at the site, the likely increased difficulty in parking and driving in the area, the need to preserve affordable housing, and the need for the stadium project to be considered in context with numerous plans. A fully summary of the issues identified during the scoping period is in Section 1.9.

The City Council held several public meetings regarding the project. The City Council held one public hearing on June 26, 2014 in order to receive comments on the proposed soccer stadium agreement. On July 23 and 24, 2014, two roundtables were held in order to receive comments on the transaction and the proposed soccer stadium. Members of the public, including the surrounding community, were invited to provide input on the project. In addition to informing the City Council, the comments were also taken into consideration in the development of this document.

### **3.1.6 Economic/Fiscal Resources**

According to the DC Real Property Assessment Database, the property tax revenues generated from the parcels that comprise the project site were approximately \$1,727,145 in 2012. The total taxable assessment for these parcels in 2013 was \$87,535,969. Two of the parcels are owned by the District of Columbia and do not generate property tax revenues. In addition, approximately one third of Square 0665) is included in the project site. The property tax and assessment values used to determine the totals for the project site only included one third of the value for Square 0665 (bounded by Half, T, 1st and S Streets) to account for the partial land area of this square (approximately 1/3) that is included in the project site.

Several businesses operate from the project site. These include the Potomac Electric Power Company (PEPCO), Capital Bikeshare (a subsidiary of Alta Bicycle Share), and Super Salvage Inc. The DC Government also operates a road sand/salt storage facility on the project site. PEPCO and the DC Government do not have any permanent employees assigned to the project site. Capital Bikeshare and Super Salvage employ approximately 60-65 part- and full-time employees (an estimated 37-42 full-time equivalents).

Existing employers in the area include Fort McNair, the U.S. Navy, two marinas, the gravel plant, a salvage yard, Capital Bikeshare maintenance, an office building, and small automotive-oriented commercial and industrial businesses.

## 3.2 Cultural Resources

Background cultural contexts for the history and prehistory of the project area of the study area and surrounding region have been developed on the basis of primary and secondary historical documents, numerous writings by professional archaeologists and historians published in peer-review journals and cultural resources management technical documents, all of which are cited in this report. Additionally, in conducting background research the following parties provided invaluable assistance and consultation:

- Dr. Ruth Troccoli, DC HPO;
- Dr. James Krakker, Smithsonian Institution

Cultural resources were identified within the study area based on the National Register of Historic Places, the DC Inventory of Historic Sites, consultation with the DC State Historic Preservation Office (DC SHPO), and review of relevant historic context surveys and research.

### 3.2.1 Prehistoric Context

#### Late Wisconsin (18-12,000 yBP<sup>1</sup>) and Early Holocene (10-8000 yBP)

The cyclical advance and retreat of the vast Wisconsin ice sheets had considerable effects on the environment and geography of Virginia, particularly in the region of what is now the Coastal Plain. The continental shelf would have been exposed during maximum glaciation and into the late Wisconsin, broadening the coastal plain near the project study area by some 80km (William and Mary Geology). No concrete data exist on what conditions existed on the exposed shelf, but Bloom (1983:221) and Goudie (1977:176) have pointed out the number of mastodon and mammoth finds that have been made on the submerged shelf.

If the occurrence of megafauna remains reflects the attractiveness of the exposed continental shelf for megafauna, it may well have been attractive to Paleoindian groups as well. Most researchers believe that human adaptation to late Pleistocene environmental conditions involved mobile, kin-related bands of hunter/gatherers with restricted movements related to exploitation of the environment. However, there is debate over the relative economic importance of hunting versus gathering activities. Based on information derived from the Shawnee-Minisink Site, McNett (1986) has suggested that these hunter/gatherers may have relied on a broad base of plant and animal resources, and that megafauna played a minor role in their subsistence program. Gardner (1978) has also suggested that site location is closely linked to the availability of high-quality lithic raw materials. Most researchers (Cleland 1976; Stoltman and Baerreis 1983:254; Custer 1989;

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<sup>1</sup> years Before Present



Custer and Wallace 1982:151) hold to a more traditional view that hunting played the most significant role in the resource base.

Although no well-documented Paleoindian sites are known within the District of Columbia, many Paleoindian sites in the region demonstrate a preference for riverine settings. Many Paleoindian sites in Virginia also follow this pattern: the Cactus Hill (44SX202) site is situated on the Nottaway River in southeastern VA, the Saltville-2 Site (SV-2) is located on the previous course of the Saltville River, and the Thunderbird Site (44WR11) is found on the South Fork of the Shenandoah River (McDonald 2000; Goodyear 2006:104-107; Gibbon and Ames 1998:178)<sup>2</sup>.

Similarly, it has been argued that the Potomac River valley below the Fall Line would have been a favorable locale for Paleoindian groups (Flanagan et al. 1985; Artemel et al. 1989). While fluted points have been gathered from the ground surface in both Northwest Washington and Anacostia, no scientific excavation of Paleoindian sites has occurred in DC (Moore and McNett 1992). Two Paleoindian sites have been reported in the Potomac Valley both above and below the Fall Line, the Pierpoint site and the Catocin Creek site (Dent 1995:108, 116-117).

#### Mid-Holocene (8-2000 yBP)

Across the Mid-Atlantic Region, the Early Archaic Period is recognized as a period represented by relatively few archaeological sites (Kinsey 1972:331; Kraft 1982:62). Early and Middle Archaic Period sites in Virginia include the Daugherty's Cave site, the Slade site (Whyte 1990). Hantman (1990) recognizes that although there appear to be significant occupational discontinuities between the Paleoindian and early Archaic periods throughout much of North America, but he notes that in Virginia the high frequency and wide distribution of Early Archaic diagnostic artifacts suggests the opposite: that at least in Virginia, populations may have been little affected in size or range by the rapidly changing natural environment. Additionally, Custer (1990) notes a great deal of cultural continuity from the Paleoindian through Middle Archaic periods in Virginia.

Archaeological evidence points to a subsistence strategy of generalized foraging relying on a more diverse range of plant and animal resources than is generally accepted for the Paleoindian period. Early and Middle Archaic deposits at sites in east Tennessee and Virginia reveal a range of resources possibly exploited by peoples at those times including: hickory nut (*Carya* sp.), acorn (*Quercus* sp.), walnut (*Juglans* sp.), chestnut (*Castanea* sp.),

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<sup>2</sup> There are exceptions of course, as in the case of some sites apparently devoted to raw material procurement/workshop areas such as the Williamson Site in Dinwiddie County (McCary 1951).

beechnut (*Fagus* sp.), various seeds, greens and fruits and diverse animal species such as cottontail rabbit, whitetail deer, elk, turtles, fish and birds (Whyte 1990). Unfortunately, with the exception of acorns and hickory nuts, it is unclear whether these sources were actually exploited or simply naturally deposited at the locations under consideration (*ibid*: 124, 126).

Additionally, as noted by Custer (1990:27), the Fall Line Zone and the Coastal Plain have been underrepresented in early studies of the Early and Middle Archaic Periods<sup>3</sup>. Based on a survey of existing collections, he makes several generalizations regarding the distribution of settlements in the Coastal Plain and Fall Line Zone during the Early and Middle Archaic Periods. Custer states that:

- The number of sites in these zones increases through the time period in question.
- There is little change in the distribution of sites from Paleoindian through Middle Archaic times.
- Emerging, productive freshwater wetlands, swamps and bogs increasingly become the focus of opportunistic exploitation from Paleoindian through Middle Archaic times.

“The broad-based adaptations and highly mobile lifeways of Early and Middle Archaic groups were more than flexible enough to take advantage of these newly opened ecological niches without radically altering their lifeways and adaptations” (Custer 1990:32-34).

#### Late Holocene (2000-0 yBP)

During the Late Holocene, immature and emergent coastal and estuarine resource areas created by rising sea levels during the Early and Middle Archaic became fully established offering a rich and extensive range of plant and animal species to native people. These emergent estuarine environments may not have greatly affected the immediate area of the study area, given its proximity to the Fall Line, but regionally its importance cannot be underestimated. This maturation allowed increased intensive exploitation of wetland and coastal resources during the subsequent Late Archaic Period (Custer 1990:34).

Beginning around 3-2000 yBP, the end of the Archaic Period is marked by population growth, increased sedentism and increased reliance on riverine, palustrine, estuarine, lacustrine and coastal resources. Within the eastern woodlands, evidence for permanent housing began to appear at this time (Griffin 1978:231), and Witthoft's Transitional Period (or Terminal Archaic) is marked, among other things, by the introduction of steatite bowls, and steatite tempered ceramics. It seems clear that the use of heavy soapstone bowls would indicate a more sedentary existence (Tuck 1978:38). The Late Archaic also saw the

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<sup>3</sup> Moore and McNett (1992) think that Archaic sites are often buried by later floodplain deposits.

florescence of the eastern agricultural complex (EAC). Through interaction with humans since the Middle Archaic Period and subsequent selective breeding, a range of local plant species were domesticated and cultivated during the Late Archaic. These included little barley (*Hordeum pusillum*), sunflower (*Helianthus annuus*), goosefoot (*Chenopodium berlandieri*) and sumpweed (*Iva annua*) (King 1985; Asch and Asch 1985; Cowan 1985).

Major river floodplains in the Lower Coastal Plains were preferred settings for Late Archaic base camps that were probably occupied during the spring and early summer to exploit anadromous fish runs. These sites and the larger social groups that they supported are believed to have been abandoned later in the year, when smaller social units moved into the interior and camped among the streams, swamps and hills of the Upper Coastal Plain. Evidence of the seasonal intensive exploitation of saltwater oysters becomes evident during this period in the form of deep coastal shell mounds as early as 4000 B.P. (Potter 1982; Waselkov 1982). During this period based on the state-wide distribution of materials like steatite from the Blue Ridge Mountains and quartzite from the Fall Line Zone, trade routes and intergroup exchange become established, allowing indirect access to nonlocal useful raw materials (Virginia Center for Digital History 2014).

The Woodland Period is traditionally marked by archaeologists by evidence of increased sedentism, and a gradual shift from generalized foraging to the exploitation of native seeds and grasses to the use of tropical domesticates (maize, beans, and squash) by the Late Woodland Period. These cultigens of Mesoamerican origin are understood to have entered the region along the Coastal Plain from the south. The earliest convincing evidence for maize in the eastern U.S. comes from the Little Tennessee River in Tennessee with a date of A.D. 175, and maize-dominated agriculture did not dominate Native American economies in the east until *ca.* A.D. 1150 or later (Smith 1992:110-111; King 1999:12-13). Along with the introduction of these cultigens, ceramic technology entered Virginia from coastal South Carolina and Georgia around 1400 yBP.

Along with this intensification of food production, settlement size increased dramatically. Archaeological evidence from burials, house size/design and settlement layout, as well as ethnohistoric evidence from contact period accounts, indicate increasing social and economic differentiation and sociocultural complexity during the Late Woodland (Turner 1986). By this time, Native American groups had settled in sedentary villages, often surrounded by a palisade wall taken as evidence of increasing competition for and conflict over land and valued resources. In addition to food production, Coastal Plain groups intensified their exploitation of the food resources offered by a mixed environment of freshwater and saltwater bays, rivers and marshes, taking shad and sturgeon with spears and weirs (Figure 3-21) and collecting oysters in the spring. In addition to aquatic resources, Coastal Plains groups made use of temporary/seasonal hunting and gathering camps (Virginia Center for Digital History 2014).



Source: SANGIS 2010; ESRI 2011



0 500 1,000 Feet  
Scale: 1:10,000; 1 inch = 1000 feet

**Figure 1**  
**Old Southwest and Study Area**

Path: N:\Cultural Resources\CR DEPARTMENT\GIS\_Data\_Library\DC Buzzard Point\Figure\_1.mxd, 11/17/2014, lawrencejw

**Figure 3-21: Old Southwest and study area for archaeology**

When Captain John Smith explored the Powhatan (Potomac) River in 1608, the Coastal Plain region was densely populated with permanent villages located on the banks of major rivers and creeks with individual houses and camps located in the hinterland. Regional-scale political alliances known to earliest European explorers and settlers may also have begun to evolve at this time. Sites like the Accokeek Creek site (Stevenson and Ferguson 1963) generally experienced intensified occupation during this time. Beginning in A.D. 200, settlement of the Chicacoan locality began near the mouth of the Potomac and increased in intensity until the introduction of European colonies (Potter 1993). Much like with the Archaic period, stone and pottery tools from the Woodland Period were collected on the banks of both the Potomac and Anacostia Rivers in the late nineteenth century, particularly along the east bank of the Anacostia (Bromberg et al. 1990:15; Moore and McNett 1990:70; Fiedel et al. 2008). Although Spanish exploration of the Chesapeake Bay region began by A.D. 1580 or earlier (Dent 1995), the earliest historical record relevant to Native American occupation of the Potomac River valley is Captain John Smith's exploration of the area in 1608. Smith recorded the settlements of Nacotchtank on the east bank of the Anacostia River and Nameraughquend on the Virginia side near Roosevelt Island (Knepper et al. 2006). It was thought that residents of these two sites may have been related to two distinct regional polities, the Conoy confederacy on the Maryland-DC side of the river, and the Powhatan confederacy on the Virginia side of the river (Feest 1978a; 1978b; Ferguson and Ferguson 1963). However, more recent information suggests that the settlements on the Virginia side were probably largely independent of the Powhatan polity, and possibly more closely allied with the Conoy (Potter 1982). Regardless of their alliance, the residents of the settlements in the Washington, DC area spoke related languages of the Eastern Algonquian (Goddard 1978). Many of their villages were located on floodplain terraces adjacent to rivers and some were heavily stockaded.

### **3.2.2 Historic Context**

This historic cultural context focuses on an area that has been called the "Old Southwest" section of the District. The "Old Southwest" is a subsection of Southwest DC that has experienced its own historical trajectory that is part of, but somewhat separate from, the broader historical currents of Southwest DC (University of Maryland Historic Preservation Studio [UMDHPS] 2005:2; Kraft 2006). UMHPS defines the Old Southwest by the following boundaries (2005:ii): M Street to the North, Buzzard Point to the south, South Capitol Street to the east, 1<sup>st</sup> Street, Canal Street, and 2<sup>nd</sup> Street to the west (Figure 3-21). The archaeological study area falls within the southern half of this area.





**Figure 3-22: 1792 Map of Washington showing proposed community of Carrollsburg; approximate location of study area in red**

Source: LOC n.d

Southwest DC forms one of the oldest sections of European settlement in what is now Washington, DC, with Euroamerican settlers or plantation owners settling in the area well prior to the city's founding. What is now Southwest DC was originally granted by royal charter in 1623 to George Calvert, Lord Baltimore, by King Charles I of England. Large tracts of this land were eventually acquired by consanguineal male heirs Charles Carroll and Notley Young. Charles and Notley were half-brothers, sons of Ann Rozier, whose first husband was Daniel Carroll and second husband was Benjamin Young (Rubenstein *et al.* 1990:78).

Before Charles Carroll passed in 1773, he had designed the first planned development in Southwest DC: Carrollsburg. A grid pattern of north-south and east-west running streets were planned on paper, but never executed on the ground (Figure 3-22). However, the first buildings built in the Old Southwest – substantial, two-story brick plantation houses – were

not part of Carrollsburg. Sometime prior to 1773, Charles Carroll built a two-story brick residence between South Capitol and Potomac avenues near Q Street, northeast of the study area. Notley Young inherited Buzzard Point on 400 acres of land which would become known as Duddington Pasture; the plantation house appears to have been along the Potomac River near 10<sup>th</sup> and G Street, SW (Rubenstein *et al.* 1990:79, 87).

Upon creation of the Federal city in 1791, there was renewed impetus to develop an urban core to the nation's capital and investments were made in Southwest DC by some substantial figures from the Revolution. With the confluence of the Potomac and Anacostia rivers and proximity of the fall line, Southwest was seen as an attractive residential location and for development of transportation (shipping goods across the fall line) and agriculture (fertile river terraces) (Design Research 1997:8). George Washington purchased a number of house lots in Southwest but it was financiers such as James Greenleaf and Robert Morris who made the heaviest investments. Up to 6,000 house lots were purchased between the two of them around 1793 (DC Redevelopment Land Agency 1957:1). Development did not progress as initially projected however. The high prices charged by Morris and Greenleaf for their properties was a major impediment (UMDHPS 2005:223). In any event, most of the earliest buildings in Southwest were built in the northern end of Southwest DC, closest to the capital. The one exception is the Johnson House, a two-story brick building built by Capitan Joseph Johnson in 1800 at 49 T Street, approximately one block outside the archaeological study area to the east (HABS 1934). The house was still standing in the 1930s and may have not been demolished until the period of urban renewal of the mid-1950s.

The confluence of the Potomac and Anacostia rivers also attracted federal attention for purposes of military defense and the first Federal Arsenal was established on Greenleaf Point in 1794. Greenleaf Point lies west of what was James Creek and is approximately half a mile southwest of the archaeological study area. The military reservation on which the Federal Arsenal was built was established in 1791 and was only the third such military reservation established in the nation, after West Point and the Carlisle Barracks (Joint Base Myer-Henderson Hall). The British attacked the arsenal from the west (Potomac River) and destroyed it in 1814.

Early nineteenth century development of the Old Southwest was complicated by the decision to adopt Pierre L'Enfant's canal system, which called for channelizing the St. James (or James) Creek, which bifurcated the peninsula formed by the confluence of the Potomac and Anacostia rivers. The Washington Canal Company began work on the City Canal in 1802 and completed the work in 1815 (UMDHPS 2005:22). The system as a whole was envisioned as a means of transporting goods and people through the city between the two rivers, but it effectively cut off most of Southwest (but especially the Old Southwest) from the rest of the city. The area south or east of the canal became known as "the island" and



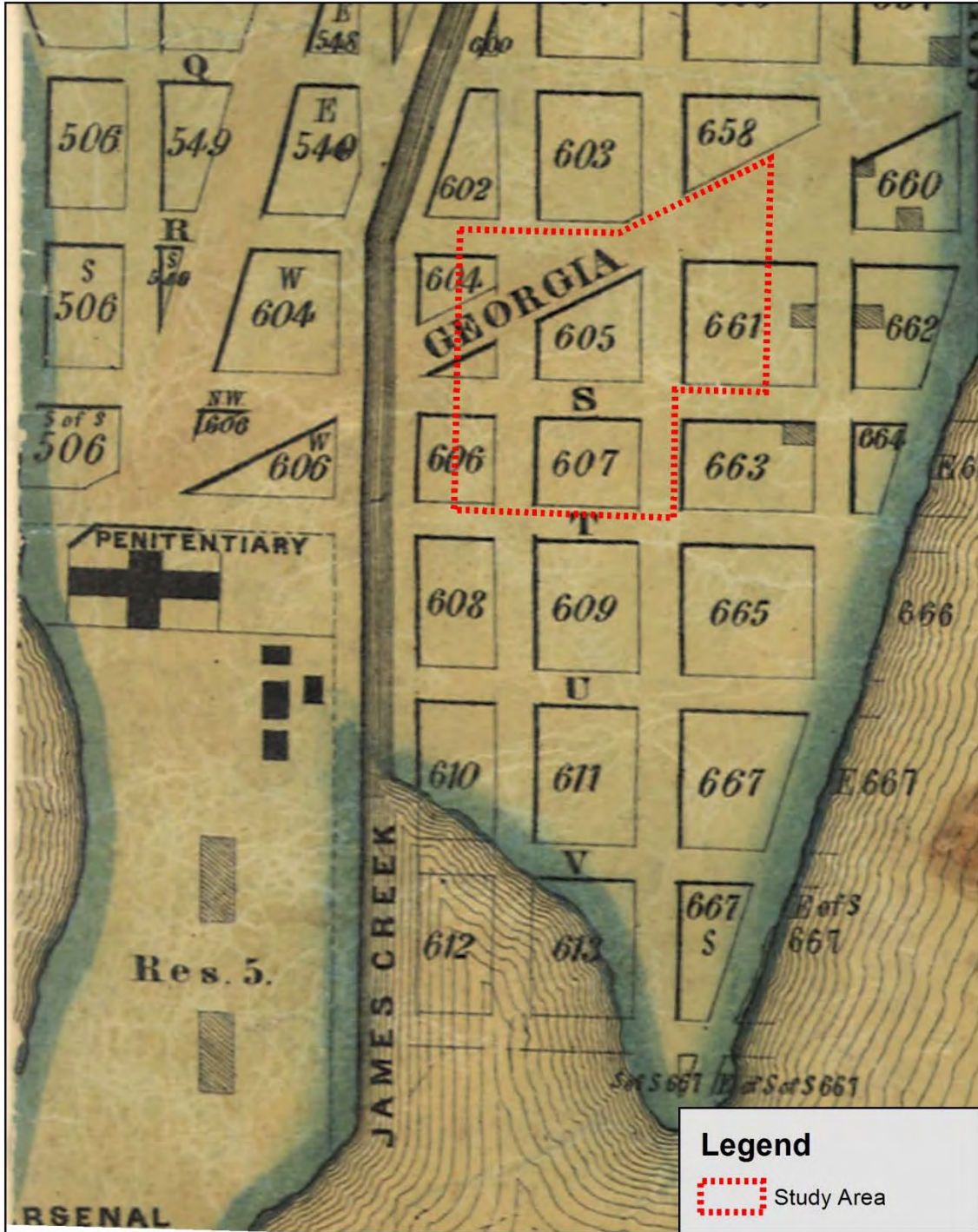
both residential and industrial/commercial development languished. Thomas Law built a sugarhouse at Buzzard Point sometime between 1800 and 1812, which building was later used as a brewery, but “despite such ventures, very little industry seems to have occurred in the Old Southwest in the early years of the capital” (UMDHPS 2005:23).

The first federal penitentiary was built between 1826 and 1831 just north of the rebuilt Washington Arsenal on Greenleaf Point (Werner Ramirez 1977:5). This was the prison where the conspirators in the assassination of President Lincoln were held and eventually executed (District of Columbia Redevelopment Land Agency 1957:2). Based on the 1851 Keily and VanDerveer Map, neither of these federal institutions prompted noticeable residential development in the area (Figure 3-23). Very few structures are shown in the Old Southwest and those are mostly taking advantage of a low ridge bordering the Anacostia River. Most of the African-American civilians who worked in support of federal institutions on Greenleaf Point lived in Southwest, but to the north in the vicinity of Squares 387, 388 and 411 (Rubenstein *et al.* 1997:113-114). Resident Bryon Sunderland, remembering Washington in the 1850s, remarked that only the northern and western margins of Southwest were developed at that time (Kraft 2006:22).

That the Old Southwest remained sparsely settled through the mid-nineteenth century is readily apparent in the 1857 Boschke Map as well (Figure 3-24). A street grid is laid out, but one pre-grid road is depicted (on general alignment of what is now 1<sup>st</sup> Street). The margins of James Creek were reputed to be marshy (Kraft 2006:24) and this may be what is indicated by the map symbols employed by Boschke in the alignments of South S, T and U streets as well as 1<sup>st</sup> and 2<sup>nd</sup> streets. The limits of tidal marsh bordering James Creek are also depicted. Some of the residential blocks were either fast land or had been in-filled by this time. Some isolated topographic relief is indicated on the map to the north and east of the study area and a number of long buildings are present in that area, probably warehouses. Only one building, undoubtedly a residence, had been constructed within the study area at this time, at the northeast corner of Square 661, the intersection of R Street and Half Street. Very few, scattered residential structures are indicated in the area.

During the Civil War years, the Washington Arsenal employed a large workforce in armaments manufacture, particularly percussion caps. The pool of employees was apparently drawn from that part of Southwest DC north of Greenleaf Point. For security reasons as well as for lack of sufficient space for munitions production, the penitentiary was closed during the early part of the war. A 1,000-tent military hospital was established on Arsenal grounds, from P to T streets between the City Canal and the Potomac River (Rubenstein *et al.* 1997:98).

Monumental changes in both population structure and settlement patterns occurred in Southwest upon the conclusion of the Civil War. Many of these do not appear, however, to



Source: 1851 Keily and Vanderveer Map

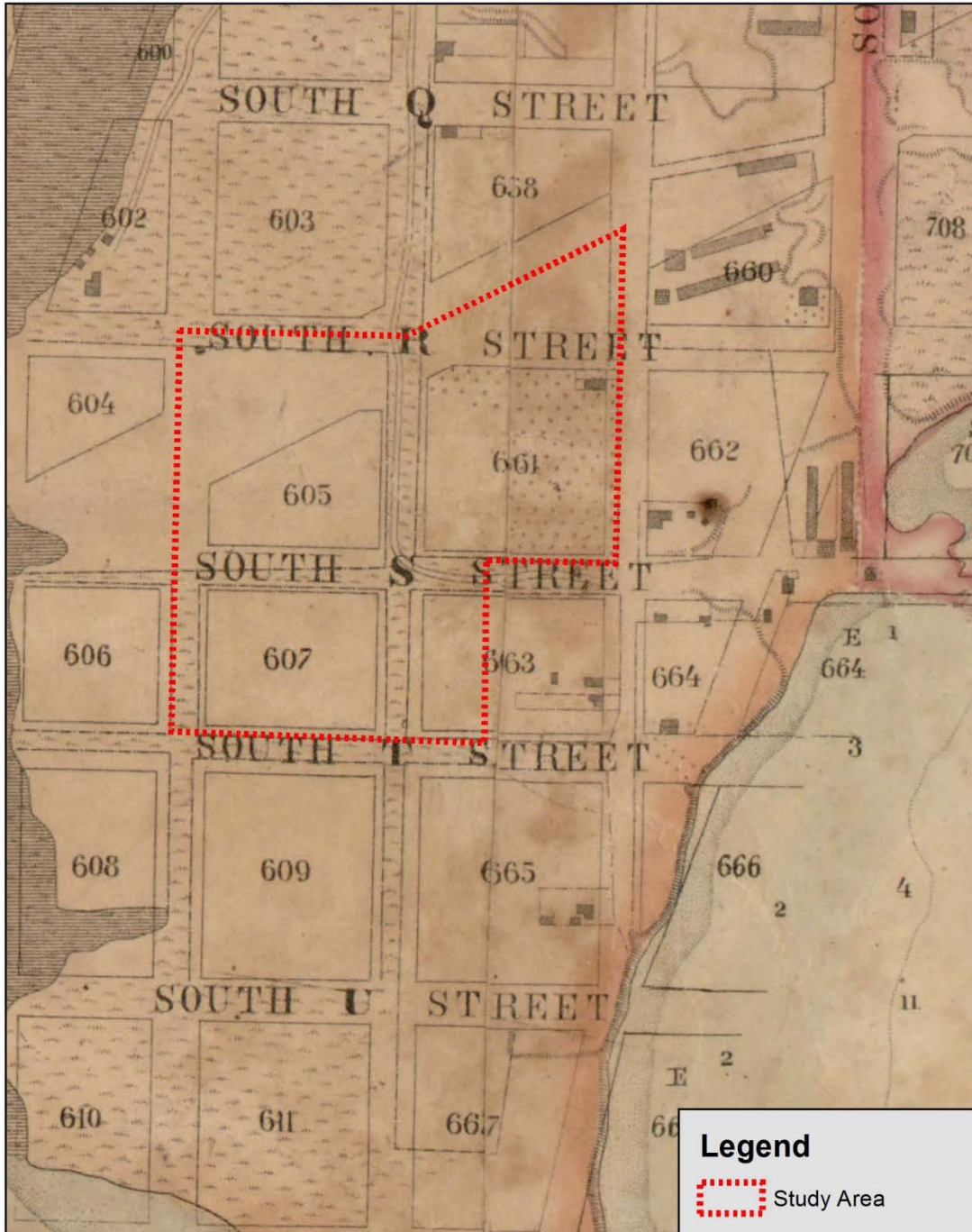


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Scale: 1:5,000; 1 inch = 500 feet

1851 Keily and Vanderveer Map

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Figure 3-23: 1851 Keily and Vanderveer Map



Source: 1857 Boschke Map



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Scale: 1:3,500; 1 inch = 350 feet

1857 Boschke Map

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Figure 3-24: 1857 Boschke Map



have affected the Old Southwest as much as Southwest, or the District of Columbia as a whole.

In 1862 an estimated 400 freed blacks lived in the DC area. By 1865, that number had risen to an estimated 40,000 new black residents in the city. Between 1860 and 1870, the number of blacks in the SW nearly quadrupled from 1,805 to 6,697, when African Americans comprised 40 percent of the population of the SW (UMDHPS 2005:25). European immigrants from diverse countries complemented the growing late nineteenth-century community:

The 1880 census data for Old Southwest identifies white immigrants who worked as bakers, butchers, laborers, stablemen, blacksmiths, and whitewashers. The census reveals two scenarios for how blacks and non-blacks coexisted in Buzzard Point. Data for First Street and Half Street, SW reveals a mixture of both black and white residents. Some black residents did live as servants in white households; however, the data also show a number of black families living on equal terms with white families, with the males working in area brickyards or ironworks and females employed at their respective local schools. Both R Street and S Street, SW comprised of white immigrants, most of them Irish or Bavarian descent who held skilled jobs as tailors, dressmakers, carpenters, and tanners.

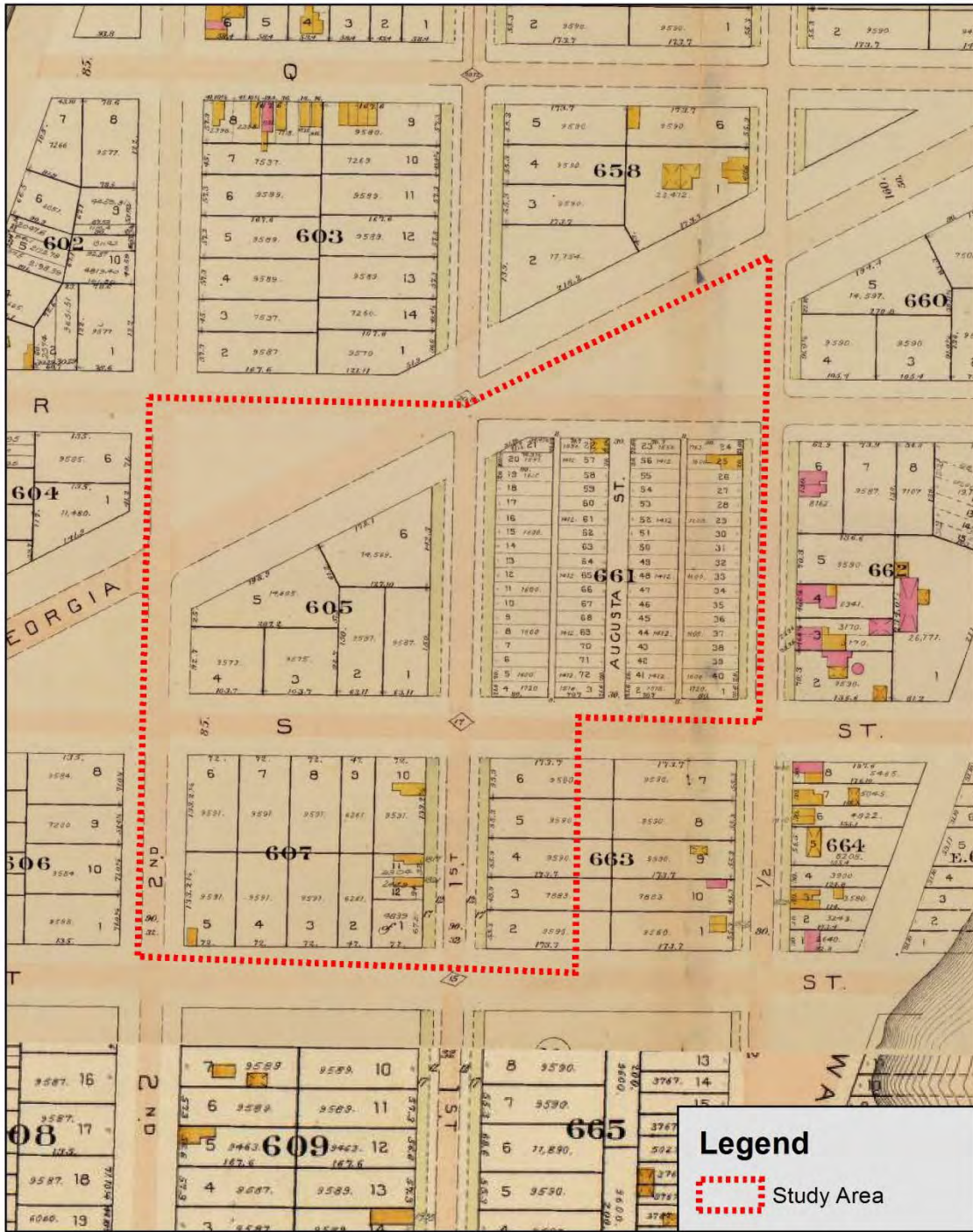
(UMDHPS 2005:26)

Population growth, however, continued to concentrate on areas north of the City Canal and outside of the Old Southwest. There is no direct evidence for the well-documented pattern of racially-segregated housing- with African-Americans relegated to alleyways- in or surrounding the archaeological study area in the Old Southwest. Development in general remained very sparse in this area, based on a review of insurance maps spanning the first quarter of the twentieth century (Baist 1903, 1915, 1921; Sanborn 1928). In 1903, there were six, free standing wood frame structures are depicted in the study area; in 1921 the same six structures were standing and no others had been built (Figure 3-25; Figure 3-26)<sup>4</sup>.

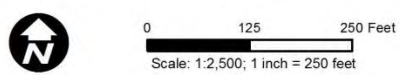
By the late 1920s, the National Capital Park & Planning Commission had pushed for the new Potomac Electric Power Company (PEPCO) plant to be constructed near Buzzard Point, hoping that it would spur more building interest in what was characterized as a “desolate area” (UMDHPS 2005:25). In 1932, the Potomac & Pennsylvania Railroad extended a line down Potomac Avenue and then 2<sup>nd</sup> Street, with a spur down Half Street, to bring coal to the new PEPCO generating plant. The generating plant was completed in

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<sup>4</sup> The available 1928 Sanborn coverage for the study area is incomplete; but it only depicts two free standing dwellings and an out building.



Source: 1903 Baist Real Estate Atlas

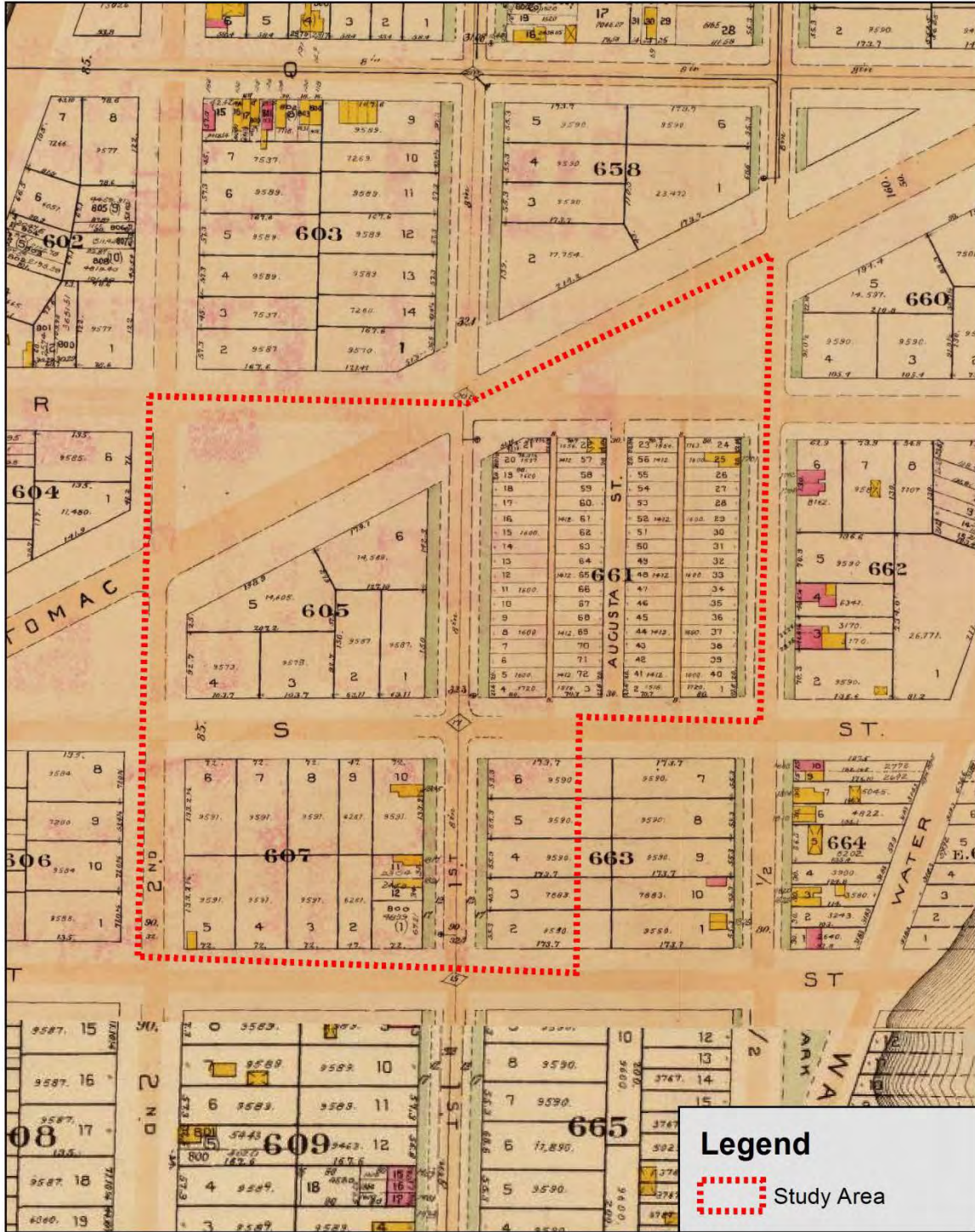


1903 Baist Atlas Map

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Figure 3-25: 1903 Baist Map indicating six buildings located on the project site





Source: 1903 Baist Real Estate Atlas



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Scale: 1:2,500; 1 inch = 250 feet

1921 Baist Atlas Map

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Figure 3-26: 1921 Baist Map, indicating six buildings located on the project site

1933. The plant, which still stands, is located between the southern end of Half and 1<sup>st</sup> streets.

Two separate waves of development during the mid-twentieth century would irrevocably change Southwest DC. The first wave was to alleviate the acute housing shortage in the District of Columbia during the Second World War; the second wave of development is associated with a period of urban renewal at mid-century. Arthur Goodwillie (1942) of the National Capital Park and Planning Commission was the first to propose using a nine-block area in Southwest DC for redevelopment to alleviate the war-time housing shortage. Goodwillie's plan was outside the archaeological study area to the north and in any event, was never constructed. However, temporary housing was built on previously vacant land east of Fort McNair in the early 1940s; some of that housing may have been in the study area (Kraft 2006:40).

Established in 1946 by the U.S. Congress, the Redevelopment Land Agency (RLA) was given the authority to condemn, redesign, rehabilitate or renew entire communities and "Southwest [DC] became the largest laboratory for urban renewal for the nation and world" (Design Forum Architects n.d.:15). In Southwest, the effort tended towards "renewal" rather than the "rehabilitation" or existing housing stock. Although the resulting Urban Renewal of the 1950s and 1960s caused a massive wave of demolition and new construction in some areas of Southwest, these changes caused limited impact on structures in Old Southwest (UMDHPS 2005:27).

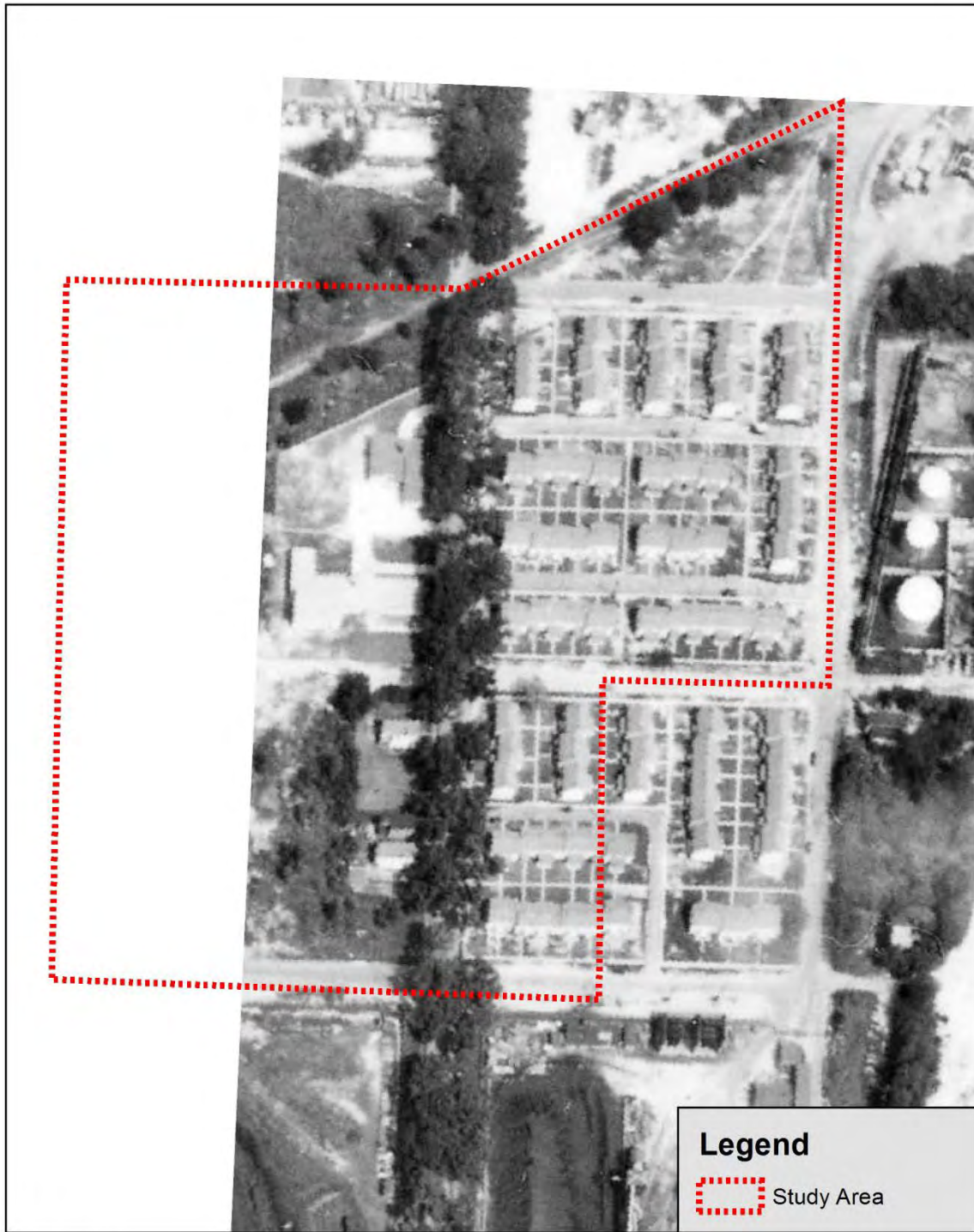
Old Southwest was outside the Urban Renewal area, and therefore, was spared the most destructive impacts of renewal efforts. One possible reason for this beneficial oversight may have been the large number of public housing units already located in the area [constructed during or shortly after WWII] that met the sanitary requirements of the neighborhood evaluators

(UMDHPS 2005:29).

Aerial photographs of the study area for this time period illustrate the renewal process. Although its coverage of the study area is incomplete, a 1944 aerial photograph illustrates the degree to which WWII housing modified previously existing development. Only three buildings that had been standing in the archaeological study area on 1<sup>st</sup> Street between S and T Streets since at least since 1903 were still present in 1944 (Figure 3-27). Seven years later even they were gone under a blanket of redevelopment (Figure 3-28).

By the late 1960s, of the residential development erected in the archaeological study area (and much of the surrounding area) a few decades earlier, was gone. PEPCO had expanded its holdings northward, and by 1968 a combustion turbine area occupied the block defined by S and T streets and Half and 1<sup>st</sup> Street, and fuel storage tanks occupied the block north.





Source: 2013 EDR

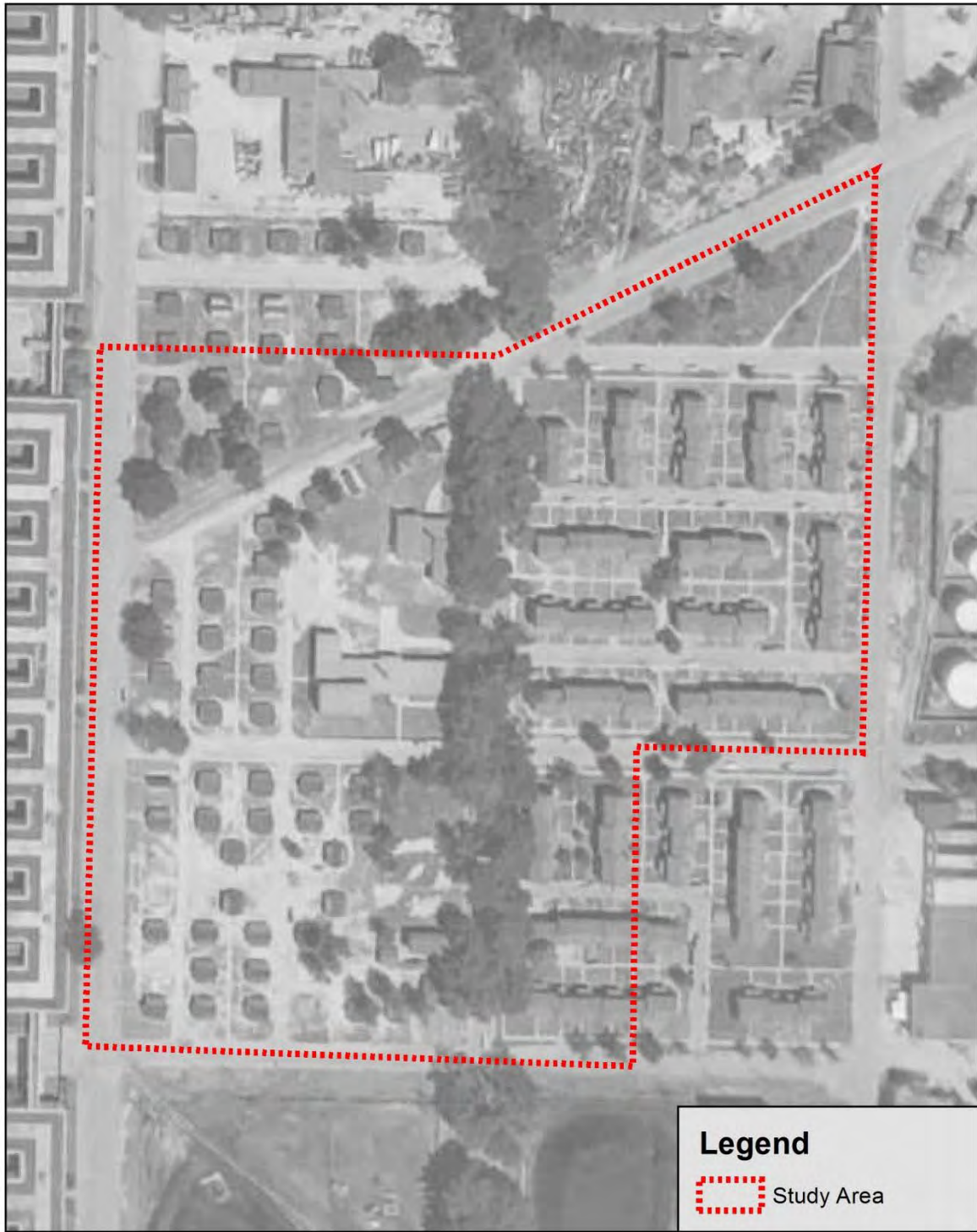


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Scale: 1:2,500; 1 inch = 250 feet

1944 Aerial Photograph

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Figure 3-27: 1944 Aerial photograph



Source: 2013 EDR



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Scale: 1:2,500; 1 inch = 250 feet

1951 Aerial Photograph

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Figure 3-28: 1951 Aerial photograph





Source: 2013 EDR



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Scale: 1:2,500; 1 inch = 250 feet

1968 Aerial Photograph

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**Figure 3-29: 1968 Aerial photograph**

The remainder of the study area was vacant or occupied by industrial buildings. The study area remains substantially the same in 2014, with the exception that the vacant lot in the block between S and T Streets and 1<sup>st</sup> and 2<sup>nd</sup> Streets is now a paved parking lot. The lot immediately to the north is a scrap metal storage yard operated by Super Salvage, Inc. The surrounding area is overwhelming industrial.

### Previous Investigations

No studies associated with National Environmental Protection Act (NEPA) or National Historic Preservation Act (NHPA) review have previously been conducted with the archaeological study area and no archaeological sites or historic properties are recorded within its boundaries. Several cultural resources surveys have been conducted within one half mile of the archaeological study area (Table 3-13) (Figure 3-30).

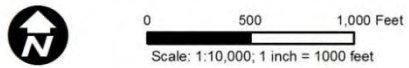
Survey Name	Report Type	Report #	Author	Date
<b>Capitol Gateway (SE) EIS</b>	Intensive Archival	101	Cisna <i>et al.</i>	1981
<b>Sqs. 702, 703</b>	Survey Report	124	A. Friedlander and LeeDecker, C.	1985
<b>Marinas at Buzzards Point and Ft. McNair EA</b>	Phase I Reconnaissance	127	National Park Service	n.d.
<b>Sqs. 602, 604 Ft. McNair Metrobus Garage</b>	Phase I Reconnaissance	129	C. LeeDecker	1982
<b>P St. Reach- USACE DC Flood Control</b>	Phase I Reconnaissance	138	Goodwin <i>et al.</i>	1988
<b>Syphax School - Weisman Fish House</b>	Combined Phase I/II	211	Pfanstiehl <i>et al.</i>	2000
<b>Ft. McNair Dental Clinic Sq. 506</b>	Phase I Reconnaissance	325	R. Wall and Israel, S.	1985a
<b>Ft. McNair Ntl Defense U Library Sq508,510</b>	Phase I Reconnaissance	326	R. Wall and Israel, S.	1985b
<b>DC Penitentiary &amp; Wash Arsenal at Ft McNair</b>	Phase I Reconnaissance	512	Seibel <i>et al.</i>	2012

**Table 3-13: Cultural resources surveys conducted within a half mile of the study area**

As a result of those surveys, two archaeological sites have been recorded as a result of professional archaeological surveys and two additional archaeological resources have been reported apart from contemporary cultural resources surveys (Table 3-14). Site P26/BE 205 consists of 30 prehistoric lithic artifacts and one prehistoric ceramic sherd collected by William Henry Holmes, probably between 1891 and 1892. The site was recorded at the base of 2<sup>nd</sup> Street east of James Creek Canal. Based on the location of these features as mapped on the 1857 Boschke map, this was less than 250 feet south of the archaeological study area. The size of Site P26/BE 205 is unknown. H67 is a submerged shipwreck, off shore but visible from 1900 Half Street. Nothing else is known about this site at this time.



Source: SANGIS 2010; ESRI 2011; DCSHPO 2014



Previous Surveys

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Figure 3-30: Previous surveys



Site #	Report #	Site Name	Site Type	NRHP Status	Period
51SW015	211	Syphax School/ Weisman Fish House	Historic	Not eligible	19-20 c. houses and Industrial facilities
51SW023	512	Fort McNair	Historic	Not evaluated	19th & 20 <sup>th</sup> c., Military, Prison/Penitentiary
H67	N/A	Submerged boat in Anacostia R.	Historic	Not evaluated	Historic vessel, post-dredging?
P26/BE 205	N/A	James Creek	Prehistoric	Not evaluated	Prehistoric, L. Archaic, Woodland (Savannah River point, Mockley series pottery)

**Table 3-14: Recorded archaeological sites within a half mile of the study area**

### 3.2.3 Historic Resources

The study area for historic resources (sites, structures, objects, districts, and landscapes) is bounded by M Street to the north, South Capitol Street to the east, the Anacostia River to the south and the Washington Channel to the west (Figure 3-31.).

#### L'Enfant Plan of the City of Washington

Pierre Charles L'Enfant's 1791 Plan for Washington, one of the best American examples of a comprehensive Baroque city plan, defined the physical and symbolic character of the nation's capital through its arrangement of buildings, parks, rights-of-way, and views. The plan is characterized by a coordinated system of radiating avenues, associated vistas, and parks overlaid on a regular grid of orthogonal streets. The future sites of the White House and the Capitol Building are focal points within the plan and the Mall is envisioned as a greensward running through the center of the city. The many odd-angled intersections created additional federal acreage. These parcels, known as reservations, were created by portions of intersections not used for vehicular travel.

The streets surrounding and bisecting the project site were originally planned by L'Enfant. Potomac Avenue, originally Georgia Avenue, was planned as a 160-foot wide diagonal right-of-way. Half, 1st, 2nd, R, S, and T Streets were part of L'Enfant's orthogonal street grid.

The L'Enfant Plan is listed in the National Register of Historic Places (NRHP). A draft National Historic Landmark nomination was prepared in 2002. It is also listed on the DC Inventory of Historic Sites. The area nominated reflects the street grid, diagonal avenues, parks and their statuary, vistas among monuments, and the airspace above this matrix up to the legal height limit in the city.



Figure 3-31: Historic resources study area



The nomination recognizes elements that contribute to the plan of the city. Within the project site, Potomac Avenue is a contributing Avenue with a 160-foot right-of-way (from 1st Street, SW, to 1st Street, SE, and from 12th to 19th Streets, SE). South Capitol Street is a contributing Major Street that serves as the axial route radiating due south from the Capitol and has a 130-foot right-of-way. Half Street (70' right-of-way), 1st Street (90' right-of-way), and 2nd Street (90' right-of-way) are all contributing North-South Streets. R Street (90' right-of-way), S Street (90' right-of-way), and T Street (90' right-of-way) are each contributing East-West Streets from 2nd to Half Streets. Contributing Associated Vistas in the project area include Potomac Avenue, which provides views between various parks, and South Capitol Street, which provides views to the U.S. Capitol.

The Plan is significant for its relationship with the creation of the new United States of America and the creation of a capital city; because of its association with Pierre Charles L'Enfant and subsequent groups responsible for the planning and design of the city; and as a representative example of a Baroque Plan with Beaux Arts modifications.

### **Fort Lesley J. McNair (Fort McNair) and the National War College**

Fort McNair's location at the confluence of the Potomac and Anacostia Rivers (called Greenleaf Point) was included in the original plan for the City of Washington, where L'Enfant envisioned the city's arsenal. As previously mentioned, the site was originally used for defense of the Federal City, and then became an arsenal. The site has also been used as a penitentiary, barracks, a hospital, and a college. The trial and execution of the Lincoln assassination conspirators took place on the present-day grounds of Fort McNair and malaria research that was conducted at the site by Major Walter Reed led to the control of the disease. The Army War College, founded in 1901 and housed at the site, was the Army's center for education and training of senior officers. McKim, Mead and White redesigned the installation in 1903 to create the campus-like setting for the new Army War College and the Army Engineer School. The character of the campus setting remains today and it is the home of the National Defense University.

The Fort McNair Historic District is listed in the DC Inventory of Historic Sites and has been determined eligible for listing in the NRHP. It is significant in the fields of architecture, military history, military education, and health and medicine. Fifty-four buildings, 5 structures, and one site contribute to the significance of the historic district. Of these buildings, six pre-date the 1903 Beaux Arts campus plan.

The National War College building, located at the southern end of Fort McNair, was designed by McKim, Mead, and White and constructed between 1903 and 1907. The McKim, Mead and White Beaux Arts campus plan for the Army War College is centered around this domed Neo-Classical style building. The Army War College, the National War College and the National Defense University have each utilized the campus. The National

War College contributes to the significance of the Fort McNair Historic District and is listed individually in the NRHP and in the DC Inventory of Historic Sites. The building has also been designated as a National Historic Landmark.

The National War College Building is significant for its contributions to the development of the armed forces in the United States. The Army War College, as an expression of the “New Army” created by Elliott Root and Theodore Roosevelt, was a manifestation of the emergence of the United States as a world power in the military as well as the economic sense.



**Figure 3-32: National War College on Fort McNair**

*Source: Tim Evanson, Creative Commons*

### **Residential Structures Related to the Early Development of the Federal City**

Wheat Row, the Duncanson-Cranch House, and the Thomas Law House were all built by the Greenleaf Syndicate as speculative housing with building designs attributed to William Lovering. These three structures are some of the few that still remain in the city from the period of land speculation that occurred around the founding of the Federal City. The Edward Simon Lewis House, constructed approximately 20 years later, is representative of an early nineteenth century vernacular building type. All four structures are some of the few older buildings preserved in the Southwest Urban Renewal Area. These structures are each listed in the NRHP and in the DC Inventory of Historic Sites, and contribute significantly to the cultural heritage and visual beauty of the District of Columbia.

Wheat Row is located along 4th Street between N and O Streets and was constructed circa 1794. Wheat Row is likely the first speculative housing constructed after Washington was chosen as the seat of government. These four attached, three-story brick houses were built as a unit. The building has a symmetrical, late Georgian façade. Today the buildings are incorporated into the Harbour Square residential complex.



**Figure 3-33: Wheat Row**

*Source: NCinDC, Creative Commons*

Duncanson-Cranch House is located at 468-470 N Street and was constructed circa 1794. The building is a symmetrical, brick, Federal period double house with vernacular characteristics typical of early Washington domestic architecture. Today the building is incorporated into the Harbour Square residential complex.



**Figure 3-34: Duncanson-Cranch House**

*Source: Slowking4, Creative Commons*



The Thomas Law House is located at 1252 6th Street on the corner of what was 6th and N Streets, prior to their closing. It is a late eighteenth century, three-story brick structure with a high basement and wings attached on the north face that were added in the twentieth century. The Federal style house was constructed between 1794 and 1796. Today the building is incorporated into the Tiber Island residential complex.



**Figure 3-35: Thomas Law House**

*Source: NCinDC, Creative Commons*

The Edward Simon Lewis House is located at 456 N Street, near the corner of 4th Street. It is an early nineteenth century Federal style house constructed circa 1817. The north and south facades are representative examples of the standard, early nineteenth century, Washington three-bay-wide façade. Today the building is incorporated into the Harbour Square residential complex.



**Figure 3-36: Edward Simon Lewis House**

*Source: Slowking4, Creative Commons*

### James C. Dent House

The James C. Dent House is located at 156 Q Street on the corner of 2nd and Q Streets. It is a detached, two-story, single-family brick house, unusual in Southwest as it was not constructed as part of a row. It was constructed in 1906 for James C. Dent, a local pastor.

The house is listed in the NRHP and the DC Inventory of Historic Sites. It is significant as one of the few remaining late nineteenth and early twentieth century working-class houses that once characterized Southwest Washington.



**Figure 3-37: James C. Dent House**

*Source: Slowking4, Creative Commons*

### William Syphax School

The William Syphax School was designed in 1900 by March & Peter, noted Washington architects, and construction was completed in 1902. The design of the two-story brick masonry building is in an early Colonial Revival style as applied to public school construction in Washington. Additions to the building in 1941 and 1952 were designed in a compatible Colonial Revival style. These additions have since been demolished.

The school building commemorates the life and work of its namesake, William Syphax, a prominent African American who worked to create equal educational opportunities in the Washington, DC public school system. He was the first president of the *Board of Trustees of Colored Schools of Washington and Georgetown* and was a proponent of a unified public



school system. The building is an illustrative example of the public schools designed by private Washington architects for the Office of the Building Inspector during the early twentieth century that promoted progressive civic design philosophies. The building establishes a civic presence in the local community.

The building is listed in the NRHP and in the DC Inventory of Historic Sites. It is also listed as a contributing resource in the multiple property NRHP listing “Public School Buildings of the District of Columbia, 1862-1960.” The school building was converted into a mixed-income condominium development, which opened in 2005.



**Figure 3-38: William Syphax School**

*Source: Elvert Barnes, Creative Commons*

### **Southwest Rowhouse Historic District/Carrollsborg Place**

The rowhouses within the blocks of 1300 Carrollsborg Place and 1300 Half Street, SW, along with several rowhouses along N Street and South Capitol Street are relatively late examples (dating to the late 19th and early 20th centuries) of a type of residential development that was common in the District of Columbia. The rowhouses are more modest workers' housing that once encompassed portions of the lower Southeast and Southwest quadrants. The identification of historic architectural resources and analysis completed as part of the South Capitol Street Corridor Improvements Section 106 process recommends the rowhouses as eligible for listing in the NRHP as a historic district. The South Capitol Street Section 106 process recommends the resources as eligible because they are architecturally significant within Southwest as they represent late 19th and early 20th century worker housing, and a DC public housing pilot project (Parsons Brinckerhoff 2005).

### Urban Renewal Era Structures

Tiber Island is located at 429 N Street, bounded by 4th, 6th, M, and N Streets. Harbour Square is located at 500 N Street, bounded by 4th, 6th, N, and O Streets. These two residential complexes were constructed as part of the urban renewal of southwest Washington, DC, and are listed in the DC Inventory of Historic Sites. Both complexes are significant for their association with the redevelopment of Southwest Washington in accordance with the principles of modern urban planning, as some of the first such redevelopment projects to be created entirely by a development team local to the Washington area, and as outstanding examples of modernist architecture and urbanism. Harbour Square is also significant for its association with prominent political and governmental figures.

Tiber Island consists of four nine-story apartment towers and 85 single family townhouses. It was constructed between 1963 and 1965 and incorporates the eighteenth century Thomas Law House (described in Section 3.2.3 above) as a community center.



**Figure 3-39: Tiber Island**

*Source: Elvert Barnes, Creative Commons*

Harbour Square includes 430 apartments in lower-rise multi-unit structures and ten single unit row houses constructed between 1963 and 1966, as well as seven late eighteenth and early nineteenth century row houses (Wheat Row, the Duncanson-Cranch House, and the Edward Simon Lewis House described in Section 3.2.3 above).

## Titanic Memorial

The Titanic Memorial is located in Southwest Waterfront Park at the end of P Street along the Washington Channel, just north of Fort McNair. It was designed by sculptor Gertrude Vanderbilt Whitney and architect Henry Bacon. The pink granite memorial was originally erected and dedicated in 1930-1931 at the intersection of the Rock Creek and Potomac Parkway and New Hampshire Avenue, NW. The design is representative of Academic Abstraction, which was popular during the beginning of the twentieth century. It was relocated to its present site in 1968 due to construction of the John F. Kennedy Center for the Performing Arts. The memorial commemorates the men who gave their lives during the Titanic disaster in order to save the lives of women and children.

The memorial is listed in the NRHP and in the DC Inventory of Historic Sites. According to the National Register Nomination, the memorial is significant as one of five public sculptures created by a woman in Washington, DC, one of four representational figures in the city, and a rare example of a secular monument with overtly religious symbolism.



**Figure 3-40: Titanic Memorial**

*Source: Ron Cogswell, Creative Commons*

### **Potomac Electric Power Company (PEPCO) Buzzard Point Power Plant**

The PEPCO Buzzard Point Power Plant is located between Half and 1st Streets, to the north of V Street. The plant was designed and constructed as a modular, expandable building. The plant opened in 1932 and was expanded twice, in 1940 and 1943. The electric power plant was powered by coal until its equipment was converted to burn fuel oil in 1964-1965, and was later closed in 1983. Designed by Stone & Webster Engineering Corporation, the building is a monumental representation of late, Depression-era Art Deco and Art Moderne stylistic motifs. Identification of historic architectural resources and analysis completed as part of the South Capitol Street Corridor Improvements Section 106 process recommends the plant and its riverside pump house as eligible for listing in the NRHP because the building exemplifies the late period of the Art Deco style. In addition, the South Capitol Street Section 106 analysis notes the plant can be considered significant for the original expandable design and its later implementation (Parsons Brinckerhoff 2005).



**Figure 3-41: PEPCO Power Plant**

*Source: AECOM*

### 3.2.4 Visual Resources

The area around the project site lacks many of the distinct architectural features that are characteristic in other parts of the District. In addition, there are some mature street trees at the site, particularly along 1st Street and the east side of 2nd Street, but sidewalks are unavailable except along western side of 2nd Street, outside of the project site. The project site and its area surrounding can be described using six distinct character areas: (1) the industrial area encompassing and surrounding the project site; (2) Fort McNair to the west; (3) the commercial and riverfront area to the south; (4) the residential areas to the north; (5) Nationals Park to the northeast; and (6) distant views to and from the east, west, and south.

#### Proposed Project Site and Adjacent Area

The visual environment surrounding the project site is characterized by industrial and some small commercial uses. The visual character is dominated by materials storage and handling facilities of various kinds, including: sand, crushed rock, and metal salvage. Surface parking lots, a combustion turbine yard, site fencing (including metal and concrete), a limited number of single-story and two-story buildings of varying quality, heavy machinery, large piles of crushed rock, overgrown vegetation, and heavy truck traffic are also visually prominent (see Figure 3-42).

Views to and from the site along the existing road network are somewhat constrained by existing structures and vegetation. The site and its surroundings are located in a relatively flat area with a gradual north to south slope towards the river, limiting distant views to the north. The southern bank of the Anacostia River and, in some places, the Frederick Douglass Memorial Bridge can be seen looking east from the site across R and S Streets, given the short distance to the river and limited trees and structures. This view along T Street from 1st and 2nd Street is obstructed by the walled PEPCO yard (Figure 3-43).

Potomac Avenue's wide and prominent view corridor is currently lined by a salvage yard, warehouses, a domed sand storage facility, overgrown vegetation, metal fencing, a rock plant with cement/rock silos, vacant lots, and Nationals Park. The view from the site is framed by and terminates at the DC Water Main Pumping Station to the east and terminates at trees along the edge of the salvage yard to the west (Figure 3-45).





**Figure 3-42: Half Street, looking north from S Street**  
*Source: AECOM*



**Figure 3-43: T Street, looking east from 2nd Street**  
*Source: AECOM*



**Figure 3-44: 1<sup>st</sup> Street, looking south from Q Street**

*Source: AECOM*



**Figure 3-45: Potomac Avenue view corridor, looking northeast from 1<sup>st</sup> Street**

*Source: AECOM*



## Fort McNair

The visual character of Fort McNair, located to the west of the project site, is that of a campus setting with brick buildings set among trees and open spaces, behind a fence. The McKim, Meade and White Beaux Arts campus plan is still evident and makes up the primary visual character and spatial organization of the installation.

The fence runs parallel to the 2nd Street sidewalk along the length of the installation and is comprised of black wrought-iron segments set between brick pillars, interspersed by some solid brick sections. At T Street, adjacent to the project site, a large mid-rise rectangular brick building is sited parallel to 2nd Street. A second brick building is located immediately to the south. These buildings are setback from the fence on 2nd Street. Surface parking lots and an internal roadway sit between the buildings and the fence (Figure 3-46).



**Figure 3-46: Fort McNair, looking west across T Street from 1st Street**

*Source: AECOM*

### Commercial and Riverfront

South of the project site, along the Anacostia River, the visual character is comprised of several large structures and two marinas. The two large, 1970s mid-rise office buildings and the 90-foot tall PEPCO power plant are large rectangular structures in the viewshed looking from the project site towards the river. Some open space and vegetation associated with the Buzzard Point and James Creek marinas are visible surrounding these structures. These structures dominate the view south of the site and the 180-foot high PEPCO smokestacks rise above the power plant (Figure 3-47).



**Figure 3-47: PEPCO Power Plant and Office Building south of the project site**  
*Source: AECOM*

**Residential**

The residential area along and to the north of Q Street, is characterized by primarily low-rise residential structures. This includes attached brick structures dating from the late-1800s to the mid-1900s, including rowhouses and three- to four-story garden- and townhouse-style apartment buildings, as well as more recently constructed rowhouses with vinyl siding and a new high-rise apartment building (see Figure 3-48 through Figure 3-51). Further to the northwest lie the large modernist style residential complexes constructed as part of the Southwest Urban Renewal Area, including Tiber Island and Harbour Square. This residential area is not visually well-connected to the project site due to the rise in elevation to the north of the project site and the mature street trees in the area.



**Figure 3-48: Syphax Gardens**  
Source: AECOM



**Figure 3-50: The Camden**  
Source: AECOM



**Figure 3-49: Syphax Village townhomes**  
Source: AECOM



**Figure 3-51: Brick rowhouses at 2nd and Q Streets**  
Source: AECOM

**Nationals Park**

Nationals Park and ancillary development is located on six city blocks to the northeast of the project site. The 110-foot tall Nationals Park and associated vertical circulation are dominant elements in the vista from the project site along Potomac Avenue. A pedestrian entrance plaza extends from the ballpark to South Capitol Street and Potomac Avenue, SE.

**Distant Views**

Views to and from the project site and Joint Base Anacostia-Bolling across the Anacostia River are limited by the two large intervening office buildings, the PEPCO power plant, and trees along the riverfront. Views to and from the project site and Anacostia Park and the Washington Navy Yard on the Anacostia River are generally obscured by the Frederick Douglass Memorial Bridge. Views to and from the project site and East Potomac Park across the Potomac are primarily obscured by Fort McNair. South of the project site, the PEPCO smoke stacks are visible from East Potomac Park over the buildings on Fort McNair. There is currently no visual connection between the project site and landmarks to the north, such as the Capitol Building and the Washington Monument.

Joint Base Anacostia-Bolling Field, Anacostia Park, and East Potomac Park are all characterized with waterfront open space bordered by existing roadways and infrastructure. The Washington Navy Yard is characterized by infrastructure related to the working docks, open space along the Anacostia Riverwalk Trail, and the warehouses and other large installation structures.

### **3.3 Natural Resources**

#### **3.3.1 Geophysical Resources**

The project site lies within the physiographic province of the Coastal Plain Region, southeast of the geological Fall Line of the Atlantic Coastal States, which delineates crystalline and sedimentary rock formation regions. The Atlantic Coastal Plain is characterized by unconsolidated and semi-consolidated sedimentary deposits ranging in geological age from the Cretaceous to Quaternary periods, overlying bedrock, at approximately 300 feet below sea level (EL) on the stadium site. The site itself falls within the unconsolidated terrace deposits of the Coastal Plain (Johnston, 1964).

The land within the stadium site is generally flat, gently sloping terrain with slopes less than one percent. The ground slopes toward the south/southeast to the Anacostia River. Elevations range from approximately El 26 on the northeast side of the site to El 16 in the southwest corner. The southeastern most portion of the stadium site is located approximately 1830 feet from the eastern shoreline of the Anacostia River. The site topography has been modified over the last 200 years with the addition of fill material introduced to develop the site. Prior to the development of the District, the topography of the site had a steeper slope southward toward the river. Prior to urban development, a natural drainage called James Creek bisected Buzzard Point, running parallel to 2<sup>nd</sup> Street, draining southerly through what is now National Defense University.

The area of the stadium site is within the natural formation of Buzzard Point, though through the years there have been non-agronomic human activities such as grading and cut-and-fill operations which have influenced the soils on the site. The soils in the area have significant spatial and vertical variability, influenced by human activities such as excavation and backfilling. According to the DC Soil Survey, the soils have been categorized as 'Urban Land', a catch-all for areas that have been modified by humans to the point which they do not resemble their natural, physical or chemical properties. Careful onsite investigation is needed to determine the potential and limitations for any proposed use.

#### **3.3.2 Water Resources**

Rainfall events produce stormwater on land surfaces, which runs off impermeable surfaces during episodes of heavy rainfall, and is collected in storm sewer drains on nearby streets. General stormwater drainage on the stadium site occurs to the south/southwest towards the Anacostia River. There are no natural surface water bodies on the project site. Stormwater flows directly into storm-drains along the street curbs, and is generally not retained or detained on-site, with the possible exception of Square 0605 Lot 0802. The stadium site is serviced by the District's Municipal Separate Storm Sewer System (MS4).



The site discharges to an outfall approximately 1400 feet to the south, just east of the James Creek Marina.

According to the draft Phase I Environmental Site Assessment, the on-site stormwater for Square 0605 Lot 0802 is captured in a sump located in the southwestern portion of the lot. This same lot has a NPDES Stormwater Discharge Permit (NPDES DCU00035) for industrial stormwater discharges. It is unclear how stormwater is discharged from this site.

### **Water Quality**

The stadium site is located within two blocks of the Anacostia River, which is a navigable Water of the United States subject to the regulatory control of the US Army Corps of Engineers (USACE). The Anacostia River converges with the Potomac River approximately one mile downstream from the site, which eventually discharges to the Chesapeake Bay in southeastern Virginia. Water quality of the Anacostia River historically has been degraded predominantly by non-point sources, such as uncontrolled stormwater runoff from urban development, as well as point source discharges including combined sewer overflows of untreated sewage into the river. Currently, the river is listed as an impaired waterway by the Environmental Protection Agency (EPA), and has had several Total Maximum Daily Load (TMDL) restrictions applied to limit trash, fecal coliform bacteria, organics, metals, biochemical oxygen demand, oil, grease, and total suspended solids. TMDLs can be thought of as “pollution diets” that are used by regulators to gradually improve the water quality of the river.

In addition to the restriction of the Anacostia River TDMLs, the EPA issued a region wide TMDL in 2010 for the District of Columbia as well as the six states within the Chesapeake Bay watershed. In 2012, the District Department of the Environment (DDOE) completed its Phase II Watershed Implementation Plan designed to reduce nitrogen, phosphorus, and sediment loads by the year 2025. Technology and best management practices to accomplish these goals are implemented on non-federal lands through the Districts MS4 National Pollutant Discharge Elimination System (NPDES) permit, stormwater management regulations, and the associated 2013 Stormwater Guidebook.

### **Wetlands**

Wetlands, as defined by the USACE, are those areas that are inundated or saturated by surface or ground water at a frequency and duration sufficient to support, and that under normal circumstances do support, a prevalence of vegetation typically adapted for life in saturated soil conditions. Wetlands generally include areas colloquially called swamps, marshes, and bogs. According to 2008 USACE guidance on the *Rapanos v. United States* United States Supreme Court case (547 U.S. 715), areas with a significant nexus to waters of the US may also be considered jurisdictional wetlands. Areas that may have a significant

nexus to waters of the US include roadside ditches, enclosed stormwater culverts, and groundwater springs.

Wetlands connected to waters of the US are subject to Section 404 of the Clean Water Act and would require a permit to impact. According to the US Fish and Wildlife Service's (USFWS) National Wetland Inventory, there are no wetlands within the vicinity of the stadium site. Based on a site visit by AECOM on October 17, 2013, no areas of wetland, potential wetland, or of significant nexus to a wetland or waters of the US were observed.

### **Floodplains**

100-year floodplains were located within the project area using FEMA Flood Insurance Rate Maps. There is approximately 8,200 square feet of the stadium site located within the 500-year floodplain, located in the southwest corner near the intersection of 2<sup>nd</sup> Street and T Street SW. The base 100-year flood elevation for the River near the site is EL11 and is approximately 300-feet from the proposed stadium site. The DDOE Watershed Protection Division reviews all projects proposed in floodplains within the District as part of the Floodplain Management Program. The review ensures that development is consistent with building codes and will minimize or eliminate possible flood damage.

The 100-year floodplain in the vicinity of the site is associated with the Anacostia River to the east and the Potomac River to the west. The Anacostia River in the vicinity of the proposed stadium site has a variety of flood controls ranging from bulkheaded seawalls, rip-rap reinforced shoreline, and levee embankments. The shoreline of the Potomac River that are nearest to the project site are within the grounds of Fort McNair, and have either a rip-rap or bulkheaded seawall reinforced shoreline.

Flooding of Buzzard Point generally arises from factors like storm surges, caused by high precipitation events such as intense storm systems or hurricanes. Significant flooding has occurred in portions of Buzzard Point in the years 1771, 1869, 1889, 1924, 1936, 1942, 1969, 1972, 1985, 1996, and 2001 (Ambrose et al., 2002). Floods due solely to high river flows have been relatively minor and have never defined floodplain boundaries. The greatest recorded floodplain is therefore determined by a combination of storm surges, tidal surges, and high river flow conditions. In response to the flooding of the Anacostia River in 1955, the United States Army Corps of Engineers initiated a flood control program for the river to address the persistent flooding problems.

### **Stormwater**

Rainfall events produce stormwater on land surfaces, which runs off impermeable surfaces during episodes of heavy rainfall, and is collected in storm sewer drains on nearby streets. General stormwater drainage on the Stadium site occurs to the south/southwest towards

the Anacostia River. Due to exposed soils and roadways, stormwater runoff originating from the site has the potential to erode soil and transport sediments and contaminants to the river. Relatively level site topography reduces the rate of stormwater flow and soil erosion. There is little potential for absorption and assimilation of stormwater due to limited vegetated areas and extensive, “hard-packed,” exposed soils on the site. In addition, during high rainfall events, surface soils may become saturated causing stormwater to run off as if the surface were impermeable. Impervious and semi-porous surfaces cover the majority of the site, including streets, sidewalks, driveways, parking areas, and buildings. Impervious surfaces total approximately 48% (6.6 acres) of the site (14 acres).

Stormwater runs off the site and enters street storm drains. Subsurface stormwater BMPs, such as oil/grit separators, may be installed and runoff is transported via DC Water’s storm sewer for direct discharge into the Anacostia River via a storm drain outfall located just east of James Creek Marina. The District’s stormwater management regulations are used to control water runoff from new development and redevelopment projects. Specifically, at the project site, the Anacostia Waterfront Environmental Standards also guide stormwater management. Additionally, all stormwater that discharges to the District’s MS4 is regulated under an NPDES permit from the EPA.

### **Groundwater**

Groundwater in the District of Columbia is regulated by the DC Department of the Environment for beneficial uses including, surface water recharge, drinking water in other jurisdictions, a drinking water resource, and anti-degradation of ecological sensitive habitats. The proposed stadium site is located above the Coastal Plain surficial aquifer. The water table of the aquifer varies at depths between 24 feet and 8 feet below ground surface (BGS). All groundwater within the District is classified as Class G1, which is considered the most restrictive classification. Class G1 is defined as groundwater that is highly vulnerable to contamination, lies within areas of recharge of drinking water aquifers of adjacent jurisdictions, and is hydrologically connected to surface waters.

Common sources of potential groundwater contamination in urban areas include road salts, storage tanks, pesticides, herbicides, industrial processes, and leakage from trucks or other vehicles. In 2005, the US Geological Survey (USGS) tested samples of groundwater across 17 sites in the Anacostia Watershed, and the results were generally below the published standards for groundwater in the District, USEPA maximum contaminant levels, and USEPA Region III risk-based concentrations (Klohe, 2007). However, this study is not comprehensive for the site.

### 3.3.3 Vegetation and Wildlife Resources

The natural ecosystem of the site has been completely displaced by the urbanized and industrial development on the site. In the pre-Columbian era, the site would have most likely been a riverine hardwood forest, mixed with associated wetland and riparian features. Currently the site is nearly devoid of any natural species, with existing vegetation consisting of a limited number street trees, shrubs, weeds, and volunteer trees. There are approximately 27 street trees in the area of the stadium site, ranging from 2 to 29 inches in diameter at breast height. The species are mostly Zelkova (*Zelkova serrate*) and Littleleaf Linden (*Tilia cordata*). There is a small cluster of mixed volunteer trees and shrubs in the northwest corner near the corner of 2<sup>nd</sup> and R Street, totaling approximately 15,000 square feet. The vegetation in this area is comprised of mostly fair condition volunteer trees and shrubs such as Tree-of-Heaven (*Ailanthus altissima*), white mulberry (*Morus alba*), bush honeysuckle (*Lonicera* spp.), and red maple (*Acer rubrum*). Grass and grass-like species in the area include fescue (*Festuca* spp.), bluegrass (*Poa* spp.), and ryegrass (*Lolium* spp.).

With the natural conditions of the Stadium site virtually eliminated by urbanization and development, the site provides only minimal habitat to wildlife adapted to high urbanized conditions. Animals such as gray squirrels (*Sciurus carolinensis*), black rats (*Rattus rattus*), pigeons (*Columba livia*), starlings (*Sturnus vulgaris*), and house sparrows (*Passer domesticus*) are common to this type of urban environment. There are no plant or animal species identified as threatened or endangered by the US Fish and Wildlife Service and the District of Columbia in the immediate vicinity of the project site. There are no unique conservation areas, wildlife refuges, or natural areas on the Stadium site.

### **3.4 Urban Systems**

“Urban systems” refer to utility supply networks such as water, sewer, stormwater, energy, and communications/data, as well as solid waste collection and disposal that support and enable the daily functions of an urbanized area. Such systems may be located above- or underground within a particular area. The project site and its surrounding area are served by an extensive network of urban systems.

#### **3.4.1 Water Supply**

The District receives its water supply from the Dalecarlia and McMillan Water Treatment Plants (WTPs), which are located approximately seven miles northwest and 3.5 miles north of the project site, respectively. Both WTPs are operated by the United States Army Corps of Engineers (USACE) and are supplied with raw water from the Great Falls intake of the Potomac River. Water is delivered via pump stations and service mains located throughout Washington, DC. The potable water distribution system in the District is owned, operated and maintained by the District of Columbia Water and Sewer Authority (DC WASA, or DC Water) (DCSEC 2006).

During Fiscal Year 2012, DC Water pumped an average of 100.9 million gallons of water per day. DC Water stores 61 million gallons of treated water at a total of eight facilities. An additional 49 million gallons is stored in the Washington Aqueduct, operated by the USACE (DC Water 2013a). Water consumption in the District is metered and users pay according to the quantity used.

Potable water is provided to the project site and its surrounding area primarily by a main underlying 1<sup>st</sup> Street. Additional lines underlying S and T Streets are also present.

#### **3.4.2 Sanitary Sewer and Stormwater Infrastructure**

Stormwater and sanitary sewer collection and treatment systems in the District are owned, operated, and maintained by DC Water. The District’s sanitary sewer system includes approximately 600 miles of large interceptor sewers and smaller gravity collection sewers, for a total of about 1,800 miles of sewer pipes. DC Water also administers sewer lateral connections from the sewer mains to the property lines of residential, government, and commercial properties (DC WASA 2013b).

District wastewater is conveyed through the system to the Blue Plains Advanced Wastewater Treatment Plant (Blue Plains), located along the eastern bank of the Potomac River at the southern tip. On an average day, over 330 million gallons of raw sewage flows into Blue Plains, and the facility has the capacity to treat up to 370 million gallons per day (DC WASA 2013d). Treated wastewater is discharged into the Potomac River.

Approximately two-thirds of the District's wastewater collection system is composed of sewers that convey stormwater and raw sewage in separate pipes, known as a municipal separate storm sewer system (MS4). In this part of the system, raw sewage is conveyed to the Blue Plains treatment plant, and stormwater is discharged into receiving water bodies via outfalls. Combined sewers, which convey raw sewage and stormwater through the same pipes, are prevalent in Downtown and older portions of the service area (DC WASA 2013c).

Sewage and stormwater conveyance systems within the project site and its surrounding area are part of the District's MS4. Raw sewage is conveyed from connected buildings in the project area to the Blue Plains treatment plant. Stormwater is collected primarily through inlets at the intersection of R and 2<sup>nd</sup> Streets, T and 2<sup>nd</sup> Streets, T and 1<sup>st</sup> Streets, and multiple locations along 2<sup>nd</sup> Street, and discharged into the Anacostia River through an outfall at the southern end of Buzzard Point near the James Creek marina.

### **3.4.3 Solid Waste Disposal**

Solid waste collection in the District is the responsibility of the Department of Public Works (DPW). However, the DPW does not collect solid waste from mixed-use and commercial properties (DCDPW 2013). Solid waste is collected from businesses and organizations doing business on and in the vicinity of the project site by licensed private contractors. Such wastes are hauled to and disposed of at permitted solid waste disposal facilities and/or landfills.

### **3.4.4 Energy Systems**

#### **Electrical**

Electrical service on and in the vicinity of the project site is provided by the Potomac Electric Power Company (PEPCO). A PEPCO electrical substation occupies a three-block area in Buzzard Point totaling approximately 10 acres. A one-block portion of the substation is included in the southeast corner of the project site, with the remainder of the facility extending south for an additional two blocks. Electrical lines are primarily suspended between utility poles throughout Buzzard Point, and there are over 90 utility poles within the project site. Four 138 KVA transmission lines and 18 feeders are located along 1<sup>st</sup> Street and two 230 KV lines run from the substation, on west on S Street and one south on First Street (M & M 2013b).

#### **Natural Gas**

Natural gas is supplied to the District by Washington Gas. It is distributed through a network of conduits integrated into large, high-pressure transmission pipes that underlie street rights-of-way throughout the District (DCSEC 2006).



Specific natural gas transmission facilities within the project site have not been identified. However, natural gas facilities are known to be present adjacent to the project site, beginning at the intersection of Half and S Streets and continuing north through Half Street and Potomac Avenue (DCDGS 2013).

### **3.4.5 Communications and Data**

Verizon provides communications and data services via underground and overhead lines and equipment that it owns and maintains on and in the vicinity of the project site. A 12-way black plastic duct (BPD) line is located under S Street between Half and 1<sup>st</sup> Streets, and a nine-way BPD underlies 1<sup>st</sup> Street between S and T Streets. A 6-foot by 12-foot vault approximately two to three feet underground with manhole access is located at the southwest corner of the intersection of S and 1<sup>st</sup> Streets. A service area interface cabinet is also located at the southwest corner of S and 1<sup>st</sup> Streets. That cabinet provides service from the BPD to customers in Buzzard Point, including the former Coast Guard headquarters facility on V Street. Service extends from the cabinet to customers via overhead lines on S Street. Services from this cabinet extend about 300 feet north of S Street and to the south past T Street. Comcast and AT&T also use the Verizon facilities on and in the vicinity of the project site to provide communications and data services (M & M 2013a).

### 3.5 Transportation Systems

The transportation system that surrounds the DC United Stadium site is an evolving and multifaceted set of modes and corridors. It includes a traditional urban street grid, regional arterials, bridges, Metrobus service, Metrorail stations, private commuter bus service, sidewalks for pedestrians, and on and off-street bicycle facilities. As is the case in most urban areas, the system can become constrained, although the majority of the time the nature of the system allows neighborhood residents, commuters, regional travelers, and tourists the ability to travel fluidly through the system on several modes. The following chapter describes each portion of this network and their existing operations.

The transportation discussion and analysis contained in this document is one of three planned transportation documents assembled for the proposed soccer stadium. The other two include:

- A Transportation Management Plan (TMP) that guides the assumptions for patron travel characteristics of the proposed Stadium, including trip generation, traffic routing, and parking demand. The TMP also includes strategies to manage travel demand. A draft TMP has been prepared by Gorove/Slade for DC United, and it will serve as a source of many assumptions for this document.
- A Transportation Operations Plan (TOP) will be assembled closer to the Stadium's opening. The TOP (also known as a Traffic Operations and Parking Plan) will act as a game-day operations manual, containing a detailed list of operational measures that occur on game days. This document in conjunction with the TMP will form the strategic and analytical basis for the TOP.

In addition, the District recently completed a study of the new soccer stadium as part of the *SE/SW Special Events Study*. In order to maintain continuity and avoid duplication between the two studies, many aspects of the *Special Events Study* were considered during the scoping and completion of the transportation chapters of this EMS.

#### 3.5.1 Traffic Systems

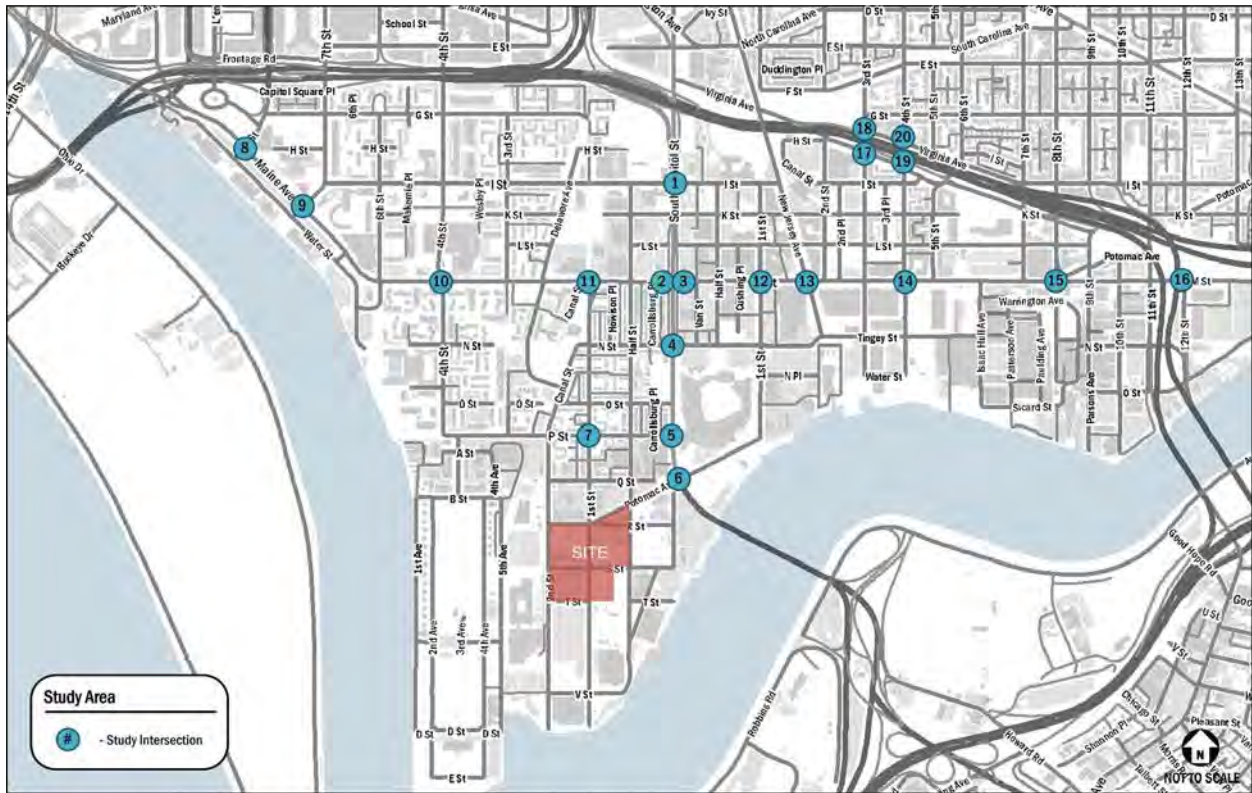
##### Description of Roadways

Regional connectivity near Buzzard Point is excellent. The proposed DC United Stadium is served by many regional roadways including the SE/SW Freeway (I-695), I-395, I-295, and Suitland Parkway. Arterials near the site include South Capitol Street, M Street SE/SW, P Street SW, 4<sup>th</sup> Street SW, and 1<sup>st</sup> Street SE. Major collector roadways include Potomac Avenue SE/SW, Delaware Avenue SW, Canal Road SW, 2<sup>nd</sup> Street SW, and V Street SW. Figure 3-53 shows the functional classifications of and the annual average daily traffic (AADT) on the roadways in the study area, as classified by DDOT.

**Study Area**

The intersections included in the capacity analyses are listed below. They were selected based on where expected negative impacts may occur, using available sources of data from DDOT, existing traffic volumes, anticipated parking locations, and expected game day travel patterns. Figure 3-52 shows the location of the study intersections. Schematics of these intersections, with a focus on operational characteristics, are contained in Appendix C.

1. South Capitol Street & I Street
2. South Capitol Street SB & M Street
3. South Capitol Street NB & M Street
4. South Capitol Street & N Street
5. South Capitol Street & P Street
6. South Capitol Street & Potomac Avenue
7. 1<sup>st</sup> Street & P Street, SW
8. Maine Avenue & 9<sup>th</sup> Street, SW
9. Maine Avenue & 7<sup>th</sup> Street, SW
10. M Street & 4<sup>th</sup> Street, SW
11. M Street & 1<sup>st</sup> Street, SW
12. M Street & 1<sup>st</sup> Street, SE
13. M Street & New Jersey Avenue, SE
14. M Street & 4<sup>th</sup> Street, SE
15. M Street & 8<sup>th</sup> Street, SE
16. M Street & 11<sup>th</sup> Street Bridge Ramp/12<sup>th</sup> Street, SE
17. 4<sup>th</sup> Street & Virginia Avenue EB, SE
18. 4<sup>th</sup> Street & Virginia Avenue WB, SE
19. 6<sup>th</sup> Street & Virginia Avenue EB, SE
20. 6<sup>th</sup> Street & Ramp from I-695, SE



**Figure 3-52: Study area**

### Time Period of Analysis

A typical traffic capacity analysis focuses on the single peak hour of traffic expected for the given system. To determine the Stadium's maximum impact, the weekday evening peak hour where entering traffic for an event overlaps with the PM peak hour of commuter traffic was analyzed. This time period was chosen based on the *SE/SW Special Events Study* which concluded that this time period led to the highest volumes on the traffic network. To maintain a conservative analysis, this analysis assumes that the peak hour of commuting traffic will coincide with peak patron arrival for a sold out game scenario.

### Analysis Methodology

Capacity analyses are typically performed using the *Highway Capacity Manual* (HCM) methodologies. For signalized and unsignalized intersections, the HCM calculates the delay experienced by drivers traveling through an intersection. This delay is associated with vehicles slowing in advance of an intersection, the time spent stopped at an intersection, the time spent as vehicles move up in the queue, and the time needed for vehicles to accelerate to the speed limit. Traffic delay also results from the interaction of vehicles, primarily in a state where the traffic volumes exceed the available capacity.

The results of these delay calculations is a computed average delay (seconds per vehicle) for each approach and a Level of Service (LOS) grade. LOS is based upon the traffic volume present in each lane on the roadway, the capacity of each lane at the intersection and the delay associated with each directional movement. The HCM defines six levels of service, ranging from A to F. LOS A represents the “best” operating conditions from a traveler’s perspective (free-flowing conditions and little-to-no delay), and LOS F represents the “worst”. Detailed LOS descriptions are contained in the Technical Attachments.

At signalized intersections, all approaches controlled by the traffic signal have a calculated average delay and associated LOS, and an overall average delay and LOS for the entire intersection are determined. At unsignalized intersections, the approaches controlled by a stop-sign have a calculated average delay and associated LOS. For all-way stop intersections, an overall average delay and LOS are also determined. For one- or two-way stop intersections, an average delay and LOS are also calculated for vehicles turning across a free-flowing approach, as the driver must yield to oncoming traffic. The major through movements and right-turns on free-flowing approaches at one- or two-way stop controlled intersections are assumed to operate with no delay.

In addition to the capacity analyses, a queuing analysis was performed at the study intersections. The 50th percentile and 95th percentile maximum queue lengths are shown for each lane group at the study area signalized intersections. The 50th percentile maximum queue is the maximum back of queue on a typical cycle. The 95th percentile queue is the maximum back of queue with 95th percentile traffic volumes. For unsignalized intersection, the 95th percentile queue is reported for each lane group (including free-flowing left turns and stop-controlled movements) based on the HCM calculations. The HCM does not give guidelines for calculating queues for an all-way stop-controlled intersection, so this information is not reported.

For this report, the analysis was performed using the *Synchro, Version 7* software package, applying HCM methodologies. As stated previously, the analysis time period will consist of the weekday stadium arrival period which overlaps with the commuter rush hour. The *Synchro* model used to complete this analysis was provided by DDOT. The traffic model was part of the *SE/SW Special Events Study’s* Existing Pre-Game Peak Hour Balanced turning moving counts and Synchro network and was used to allow for the greatest amount of continuity between the studies.

### **Existing Traffic Capacity Analysis**

Utilizing the Synchro model provided by DDOT, LOS and average delay was determined for each of the intersections in the study area. The results of the capacity analyses are shown in Table 3-15. Detailed worksheets of these calculations, in addition to the queueing analysis results for the study intersections, can be found in Appendix C.

Intersection	PM Peak Hour Capacity Analysis Results									
	Overall		Eastbound		Westbound		Northbound		Southbound	
South Capitol Street & I Street	31.2	C	92.5	F	63.4	E	18.2	B	20.4	C
South Capitol Street SB & M Street	30.0	C	42.3	D	2.7	A	--	--	42.3	D
South Capitol Street NB & M Street	21.7	C	3.0	A	36.2	D	52.6	D	42.3	D
South Capitol Street & N Street	67.8	E	--	--	70.8	E	7.4	A	89.0	F
South Capitol Street & P Street	26.3	C	160.4	F	--	--	1.9	A	18.9	B
South Capitol Street & Potomac Avenue	276.4	F	537.4	F	115.6	F	33.9	C	374.8	F
1st Street & P Street SW	20.7	C	25.0	C	8.5	A	10.9	B	9.4	A
Maine Avenue & 9th Street SW	86.7	F	23.5	C	9.3	A	34.3	C	248.7	F
Maine Avenue & 7th Street SW	22.7	C	13.2	B	27.9	C	37.7	D	37.7	D
M Street & 4th Street SW	69.4	E	39.9	D	26.8	C	213.6	F	44.6	D
M Street & 1st Street SW	23.9	C	29.0	C	6.4	A	31.9	C	88.5	F
M Street & 1st Street SE	13.2	B	16.9	B	2.8	A	16.4	B	22.5	C
M Street & New Jersey Avenue SE	16.6	B	9.3	A	22.2	C	22.0	C	22.9	C
M Street & 4th Street SE	11.5	B	7.2	A	10.0	A	19.7	B	20.7	C
M Street & 8th Street SE	12.1	B	8.7	A	0.6	A	--	--	55.8	E
M Street & 11th Street Bridge	43.3	D	31.5	C	12.0	B	57.5	E	--	--
4th Street & Virginia Avenue EB SE	--	--	21.5	C	--	--	--	--	1.4	A
4th Street & Virginia Avenue WB SE	62.7	E	--	--	5.0	A	--	--	227.3	F
6th Street & Ramp from I-695 SE	103.3	F	41.3	D	--	--	274.3	F	--	--
6th Street & Virginia Avenue WB SE	32.7	C	--	--	36.8	D	26.8	C	--	--

Table 3-15: Existing capacity analysis results



## Summary of Existing Capacity Concerns

Based on the capacity analysis results shown in Table 3-15, there are ten intersections in which an LOS E or F is observed during the PM peak hour. The majority of these intersections only have one or two approaches that operate at an unacceptable LOS; however, six of these intersections operate at an overall LOS E or F. A brief description of the ten intersections that operate at unacceptable conditions is listed below:

### South Capitol Street & I Street

The eastbound movement of this intersection operates at an LOS F and the westbound movement operates at an LOS E. This is primarily as a result of the high volume of eastbound and westbound right turning traffic in conjunction with high through volumes along South Capitol Street. Under existing conditions there is an exclusive right turn lane along the east and westbound approaches; however, during the PM peak hour when the amount of southbound traffic along South Capitol Street is at its highest, there are few opportunities for right turns on red. For the most part, right turning traffic must wait for the green to turn which causes queue lengths that exceeds the capacity.

### South Capitol Street & N Street

The overall intersection operates at an LOS E with the westbound approach operating at an LOS E and the southbound approach operating at an LOS F. Under existing conditions this intersection has a complicated geometry due to the on- and off-ramps that provide access to and from M Street. During the PM peak hour southbound traffic is particularly heavy and Excessive queues are realized along the southbound approach. The configuration of this intersection will also change as a result of the South Capitol Street Corridor Project.

### South Capitol Street & P Street

The eastbound approach of this intersection operates at an LOS F. Similar to I Street, P Street has many vehicles turning right during the PM peak hour. This combined with the high southbound volumes along South Capitol Street lead to little or no gaps for right turns on red. Thus most if not all vehicles can only turn right during the green phase resulting in queues along P Street that exceed capacity.

### South Capitol Street & Potomac Avenue

The overall intersection operates at an LOS F with the eastbound, northbound, and southbound approaches operating at an LOS F. Both South Capitol Street and Potomac Avenue are high volume roadways with three lanes at each approach. As South Capitol Street crosses Potomac Avenue it switches from a three lane roadway to a two lane roadway which causes excessive delay and queues for the southbound approach. This intersection will be converted to a traffic oval as part of the South Capitol Street Corridor Project to mitigate the excessive delays seen at this intersection. The traffic oval is expected to be constructed by 2019.

Maine Avenue & 9th Street SW

The overall intersection operates at an LOS F with the southbound approach operating at an LOS F. This is likely due to traffic coming from the 14<sup>th</sup> Street Bridges and exiting at 9<sup>th</sup> Street. Traffic coming from the 14<sup>th</sup> Street Bridges increases the volume along this section of 9<sup>th</sup> Street by about 50 percent. The southbound approach at 9<sup>th</sup> Street then becomes constrained by vehicles turning left onto Maine Avenue.

M Street & 4th Street SW

The overall intersection operates at an LOS E with the northbound approach operating at an LOS F. This is due to the high volume of northbound left turns. Although there is an exclusive northbound left turn lane, there is not enough time allocated to northbound traffic to accommodate left turning vehicles.

M Street & 1st Street SW

The southbound approach of this intersection operates at an LOS F. The northbound and southbound approaches of this intersection are slightly offset which requires a split phase between the two movements. Due to higher traffic volumes along the other approaches, not enough time is allocated to the southbound approach.

M Street & 11th Street Bridge Ramp/12th Street SE

The eastbound approach of this intersection operates at an LOS E. It is slightly above the threshold for a LOS E and could likely be improved through signal timing modifications.

4th Street & Virginia Avenue WB SE

The southbound approach of this intersection operates at an LOS F. Under existing conditions there is not enough time allocated to the southbound movement. More time could be allocated to the southbound movement without disrupting the westbound movement.

6th Street & Ramp from I-695 SE

The overall intersection operates at an LOS F with the northbound approach operating at an LOS F. This intersection is one of two intersections controlled under a single controller. Because of this there is less fluidity in regards to how the intersection is timed. Based on higher volumes along other approaches at the two intersections, the northbound approach is not given ample time and results in queues that exceed capacity.

Overall, the majority of capacity issues realized at the study intersections is due to the high southbound volumes along South Capitol Street and to a lesser extent, vehicles traveling along the 14<sup>th</sup> Street Bridges and exiting at 9<sup>th</sup> Street.

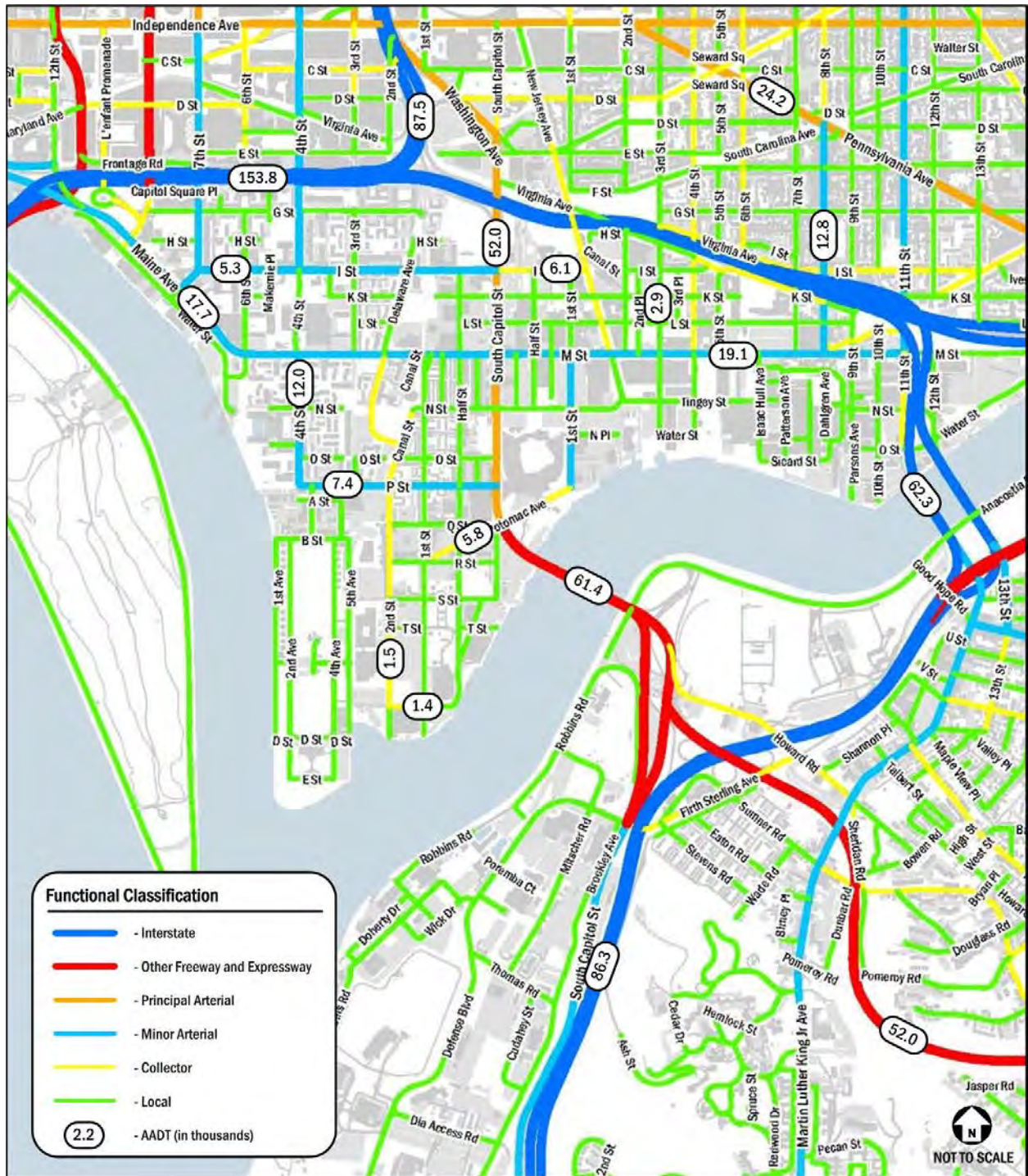


Figure 3-53: Functional classification and AADT

### 3.5.2 Parking

#### Off-Street Parking

A substantial amount of off-street parking is available near Buzzard Point. Figure 3-54 depicts existing parking facilities within walking distance of the proposed Stadium. These parking garages and lots are further broken down into those that are of reserved/private use, those expected to be unavailable by 2017, and those expected to serve the Stadium on game days. Nine of these locations are specifically allocated as Nationals parking lots. Several of the remaining parking lots are at office buildings.

Figure 3-55 shows the existing parking locations that would likely be available during the inaugural DC United season in 2017 in relation to walking time to and from the proposed Stadium. As shown, there are over 4,000 spaces within a 15-minute walk, with 1,300 of those spaces within a 10-minute walk.

#### On-Street Parking

The on-street parking supply in the vicinity of the Stadium consists of residential parking permit spaces, metered spaces, and unrestricted spaces. Metered and unrestricted spaces may also have time-based restrictions such as no parking during morning or evening peak periods and/or no parking on Nationals game days.

Figure 3-56 shows an inventory and breakdown of on-street parking near the proposed Stadium. The figure illustrates the predominant curbside restriction on the block; however, some blocks may have multiple curbside restrictions. As shown, a large portion of the on-street parking to the north of the site (between P Street and M Street) is designated as residential permit parking (RPP). Some of the blocks are allocated as general RPP and some are enhanced RPP; enhanced RPP does not have a 2-hour grace period for drivers without permits. Metered spaces are most prevalent east of South Capitol Street near the Nationals Park and recent multi-use developments as well as directly surrounding the proposed Stadium site along 1<sup>st</sup> and 2<sup>nd</sup> Street. Metered spaces east of South Capitol Street are typically restricted during Nationals game days. Fort McNair to the west provides a parking barrier as the whole area is private and gated off.

As shown in Table 3-16, there are approximately 1,733 off-street parking spaces. To limit the impacts to the surrounding residential area, parking will be restricted at RPP spaces as much as possible, and these spaces will not be available to game day patrons. Of the 429 metered spaces, approximately 6 are restricted during the PM peak hour, 23 during Nationals Games, and approximately 37 are part of the proposed Stadium footprint. Of the 333 unrestricted spaces, approximately 37 are restricted during the PM peak hour and 38 are part of the proposed Stadium footprint. The majority of the unrestricted parking, particularly the spaces located in Buzzard Point, do not have any signed restrictions. In

total, over 600 off-street parking spaces will be available for use on game days; the majority of which are within a 10 minute walk of the Stadium.

Curbside Restriction	Number of Parking Spaces	Spaces Available on Game Days
Metered	429	363
Residential Permit Parking	912	0
Unrestricted	333	258
Other	59	0
Total	1,733	621

**Table 3-16: Summary of on-street parking inventory**



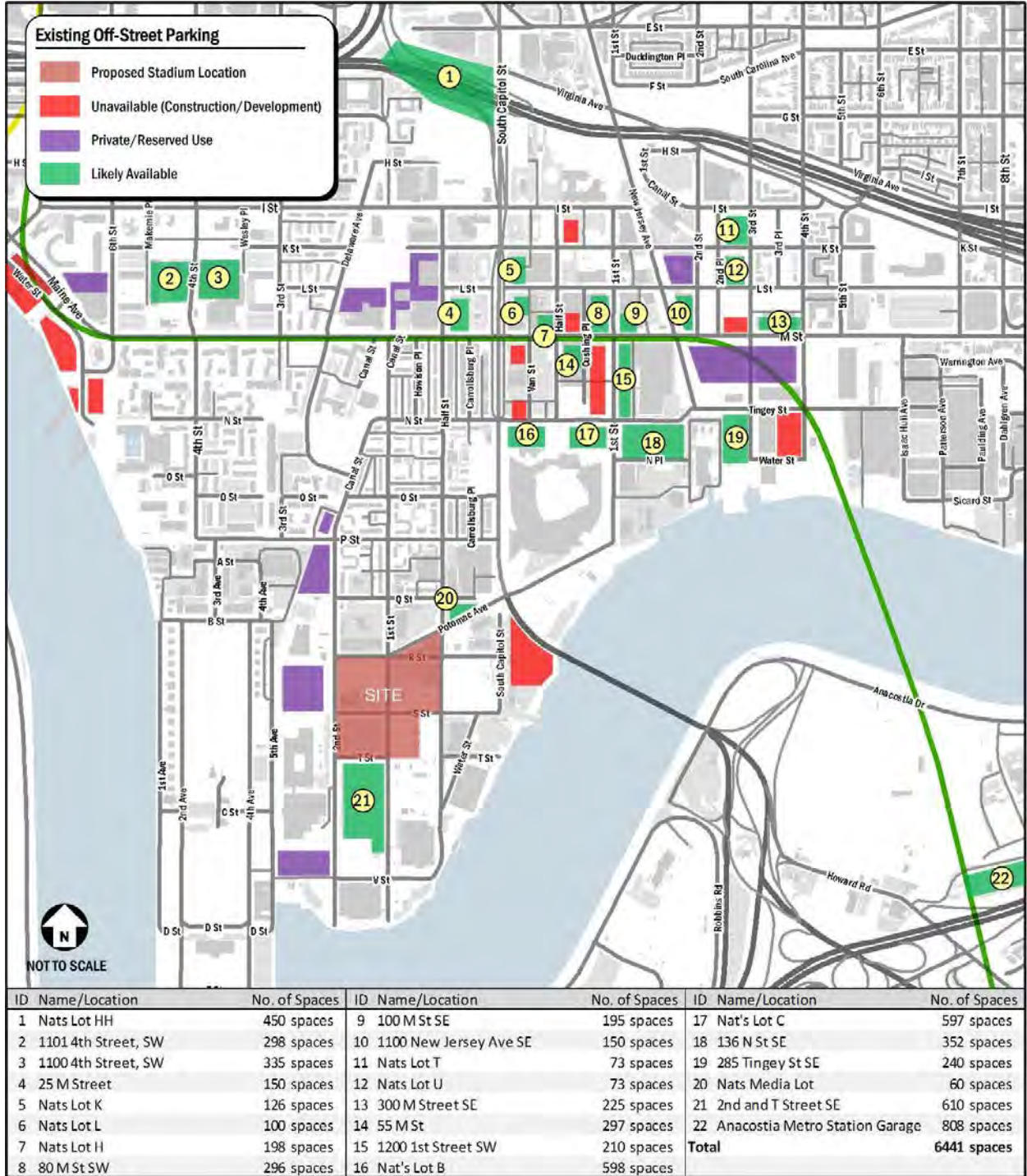


Figure 3-54: Existing off-street parking



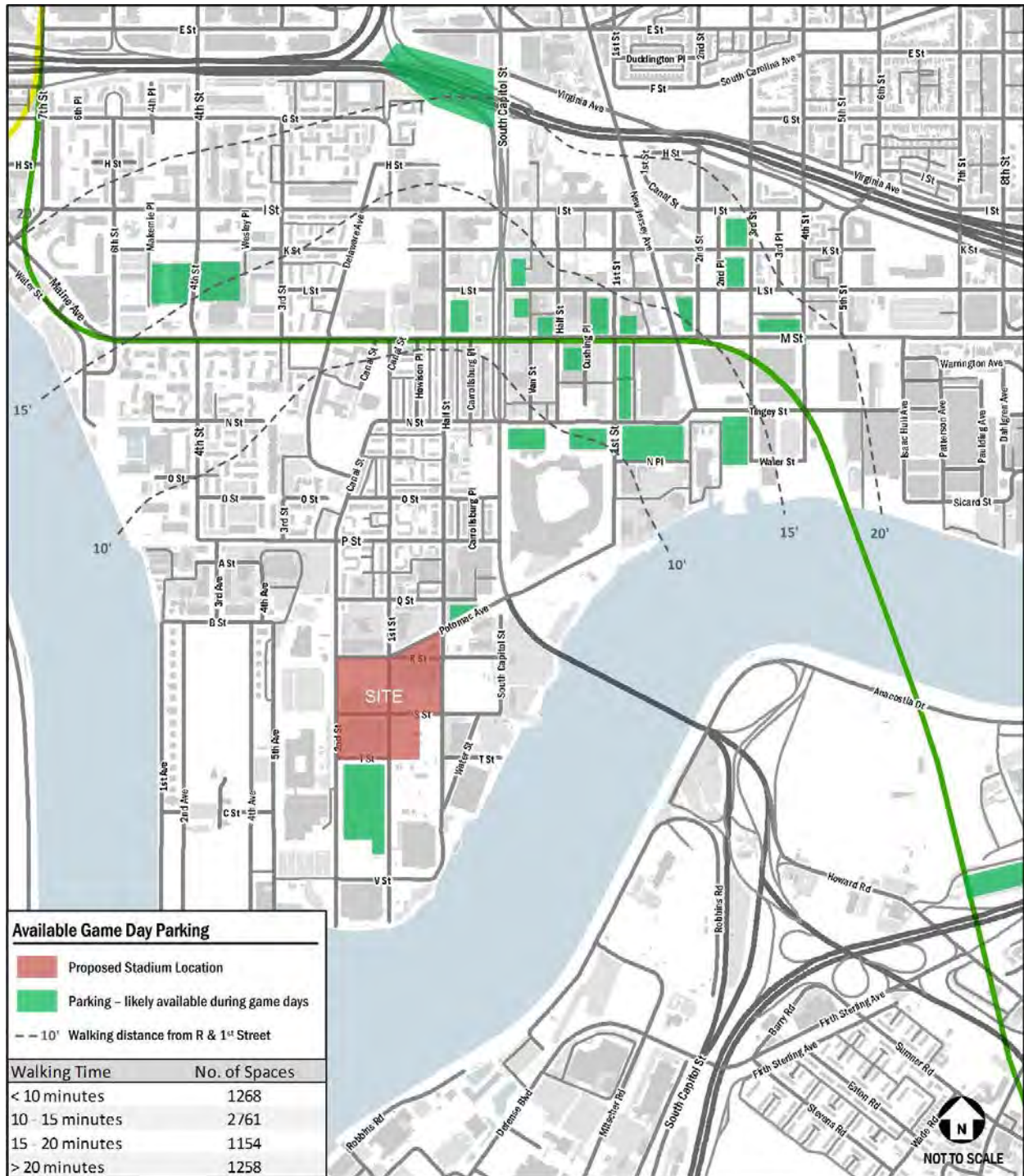


Figure 3-55: Available game day parking

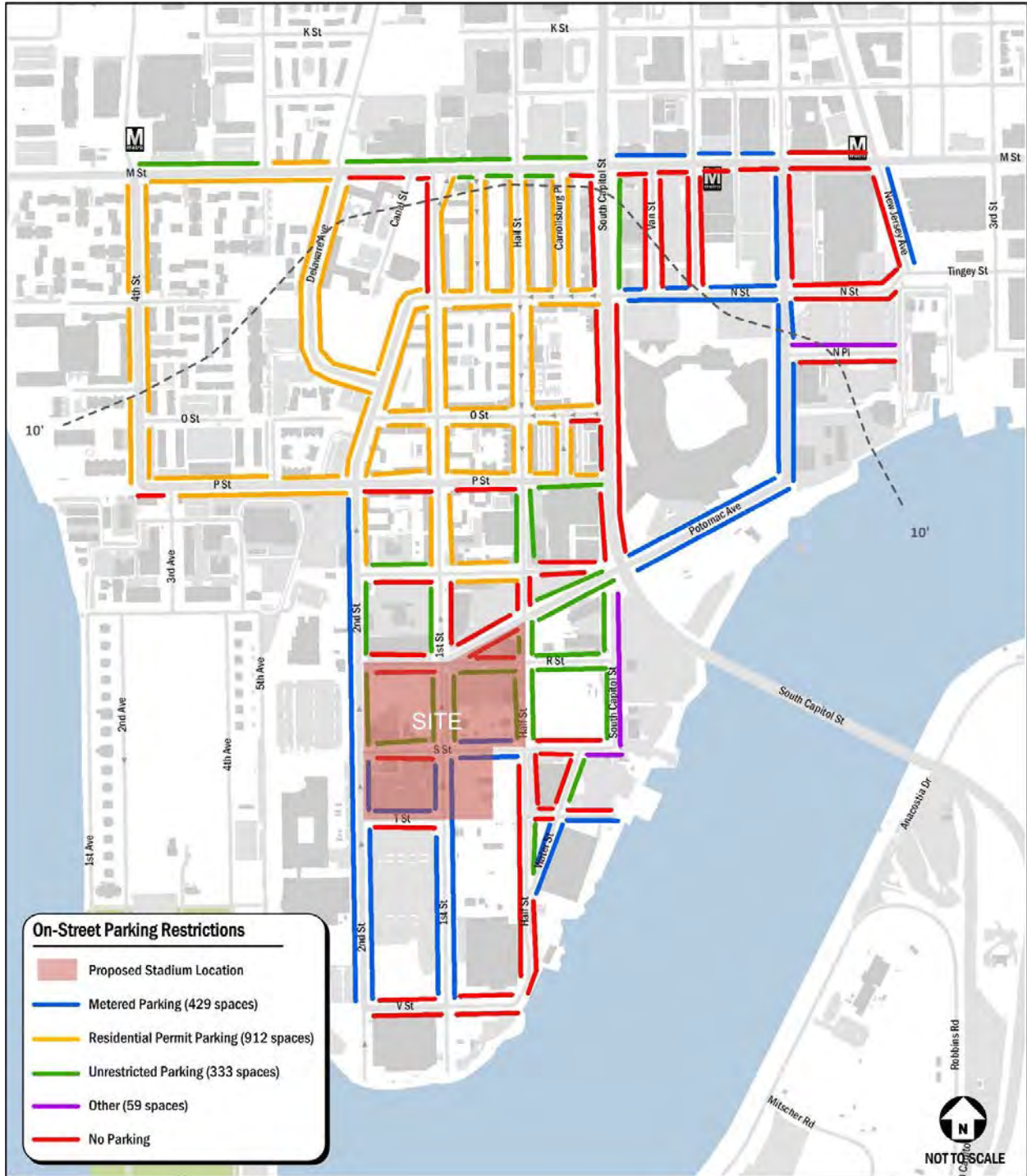


Figure 3-56: On-street parking restrictions

### 3.5.4 Public Transit System

The predominant transit service near the site is Metrorail, with both the Waterfront Station and Navy Yard Station within walking distance of the proposed Stadium location. There are also a few Metrobus routes that travel near the proposed site. The locations of the Metrorail stations and portals, as well as key Metrobus service points are shown in Figure 3-57. Future transit service, including the planned expansion of Circulator bus service and proposed streetcar service are addressed in Section 4.6.3

#### Existing Metrorail Service

Both the Waterfront Station and the Navy Yard Station are located approximately two thirds of a mile from the new Stadium and serve the Green Line. The Green Line connects the stadium with major downtown connections such as Chinatown/Gallery Place, as well as Fort Totten and Greenbelt, Maryland to the north and Branch Avenue Station in Maryland to the south. Although the site is only directly served by the Green Line, the L'Enfant Plaza Metro station is located one stop away from the Waterfront Metro station on the Green Line and provides transfers to the Orange, Blue, and Yellow Lines, which greatly improves the overall connectivity of site.

DC United games are typically scheduled on Wednesday nights, Friday nights, and on the weekends. On weekdays Metrorail service runs from 5 AM to midnight with typical headways of 10 to 15 minutes in the evenings. On Friday, Metrorail service is extended to 3 AM. Weekend service starts at 7 AM and ends at 3 AM on Saturday and midnight on Sunday with headways of 6 to 15 minutes. Soccer matches have a run time of two hours with little variance, thus there will be no concern of Metrorail service closing before the end of matches.

Although the Waterfront and Navy Yard Stations are approximately equidistant from the site, the Navy Yard Station is expected to be utilized on a greater basis due to its familiarity and association with the Nationals Park. The Half Street, SE portal of the Navy Yard Station has also undergone extensive renovations and improvements to handle large event transit traffic. These improvements moved the mezzanine pay area from inside the station to ground level and added several more fare gates, exit-fare vendors, and fare-card vendors. Due to the added facilities and modified layout, the Half Street, SE portal can now handle 15,000 persons per hour, as opposed to 5,000 persons per hour prior to the improvements.

It is also observed that residents of the DC metropolitan area are flexible when it comes to transit or driving options. As a result, residents who do not live near a Metrorail line have the option to use Park n' Ride, which allows users to park at many Metro stations on the outer edges of the system and take Metrorail into the city. Although most patrons do not live near a Park n' Ride facility on the Green Line, the new Stadium location has the

advantage of being near many major transfer stations, including the L'Enfant Plaza Metro station, making it easy to access the Stadium from anywhere along the Metrorail System.

### **Existing Metrorail Volumes**

The average entry and exit volume for stations near the Stadium site during the PM peak hour and average weekday time frames are provided in Table 3-17. The PM peak hour volumes are from May 14, 2014 and represent a typical weekday when neither DC United nor the Nationals have a home game. The average weekday volumes are an average of the entries and exits at each station for the entire month of May. These volumes are based on data provided by WMATA.



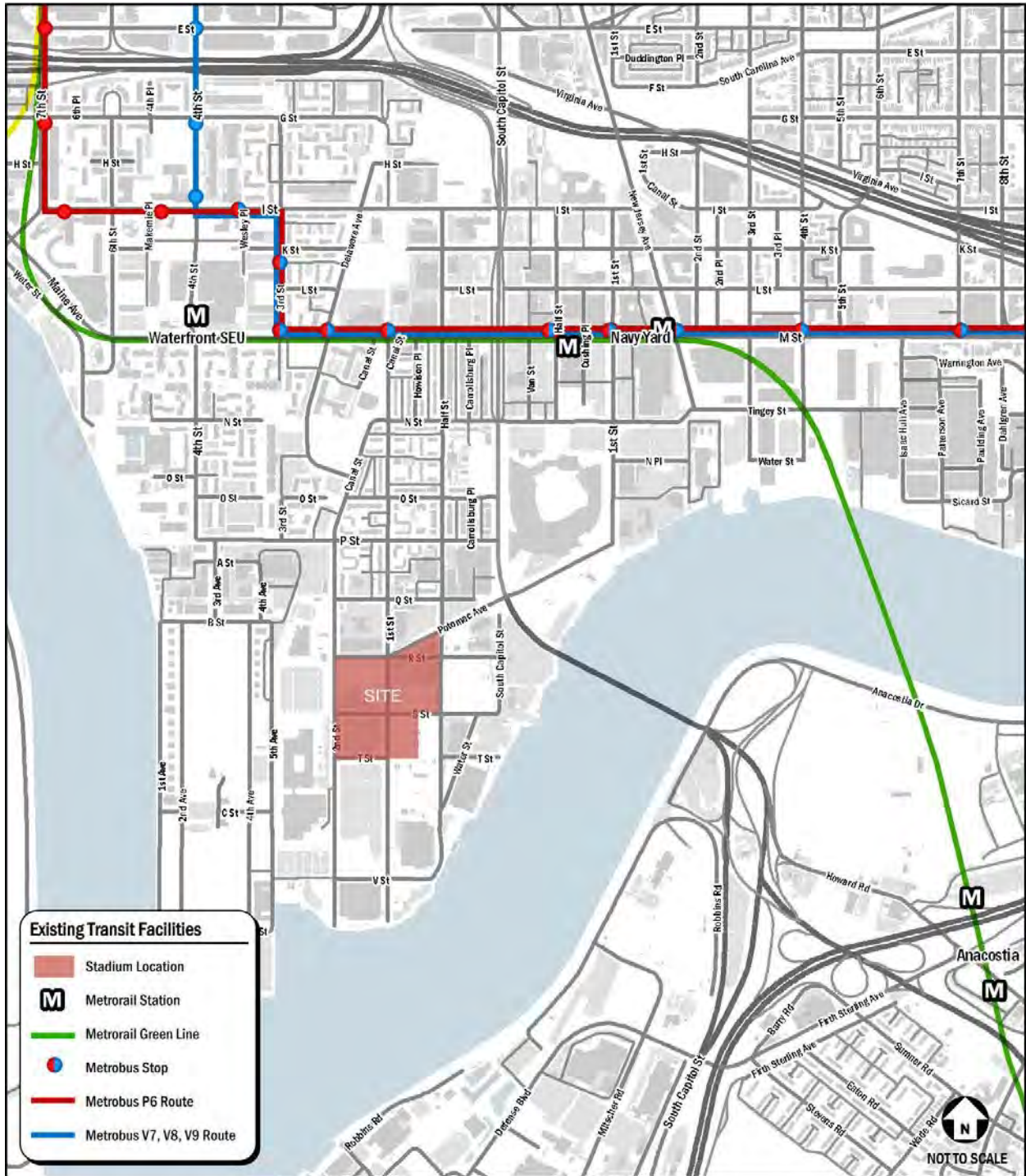


Figure 3-57: Existing transit facilities

Station	PM Peak Hour Typical Weekday			Average Weekday		
	Entries	Exits	Total	Entries	Exits	Total
Navy Yard (East)	1,077	260	1,337	5,409	5,667	11,076
Navy Yard (West)	252	116	368	5,105	5,130	10,235
Waterfront	468	469	937	4,024	3,921	7,945
Stadium-Armory (North)	137	276	413	2,083	1,969	4,052
Stadium-Armory (South)	96	113	209	939	886	1,825

**Table 3-17: Existing Metrorail ridership**

**Existing Metrorail Capacity**

There are two types of Metrorail capacity, (1) station capacity, or the amount of riders a station can process at one time through escalators, fare gates, etc., and (2) line capacity, or the amount of room on train cars available to riders.

This study evaluated the station capacity at the two stations expected to be impacted the most by Stadium patrons, Navy Yard and Waterfront, along with Stadium-Armory, to provide a comparison to existing operations at RFK Stadium. Station capacity is broken down into vertical capacity which primarily involves the elements that move riders between the platform and street level such as elevators, escalators, and stairways, and horizontal capacity which analyzes elements such as fare gates and farecard vendors. Station capacity was determined based on the following assumptions:

- Fare gates can process 1,800 people per hour;
- Escalators can process 5,000 people per hour; and
- A typical 5.5 foot wide stairway can process 1,800 people per minute (double width stairways can process 3,600 people per minute).

The existing station characteristics were provided by WMATA and the vertical and horizontal capacities were calculated. The station capacity, shown in Table 3-18, represents the lower of the two capacities, representing the maximum number of riders can be processed at the station per hour. Based on the station capacity and the volumes determined previously, a volume to capacity ratio was calculated to determine if any stations are over capacity under existing conditions. As shown, there is ample station capacity at each of the stations analyzed.



Station	PM Peak Hour Volume (riders/hour)	Station Capacity (riders/hour)	Volume to Capacity Ratio
Navy Yard (East Portal)			
<b>Peak Direction (Entering)</b>	1,077	5,600	0.19
<b>Off-Peak Direction (Exiting)</b>	260	3,000	0.09
<b>Total</b>	1,337	8,600	0.16
Navy Yard (West Portal)			
<b>Peak Direction (Entering)</b>	252	10,000	0.03
<b>Off-Peak Direction (Exiting)</b>	116	5,000	0.02
<b>Total</b>	368	15,000	0.02
Waterfront			
<b>Peak Direction (Entering)</b>	468	5,000	0.09
<b>Off-Peak Direction (Exiting)</b>	469	5,000	0.09
<b>Total</b>	937	10,000	0.09
Stadium-Armory (North Portal)			
<b>Peak Direction (Exiting)</b>	276	10,000	0.03
<b>Off-Peak Direction (Entering)</b>	137	5,000	0.03
<b>Total</b>	413	15,000	0.03
Stadium-Armory (South Portal)			
<b>Peak Direction (Exiting)</b>	113	5,000	0.02
<b>Off-Peak Direction (Entering)</b>	96	5,000	0.02
<b>Total</b>	209	10,000	0.02

**Table 3-18: Existing Metrorail station capacity analysis**

In addition, the line capacity of the Green Line entering and exiting the Navy Yard station was evaluated. The volumes entering Navy Yard were determined based on data provided by WMATA. These volumes were then compared to the “Special Event” capacity at Navy Yard to provide a base point for comparison during a game day situation. As shown, both directions are under the v/c threshold of 0.8 which is typical of rush hour conditions. Therefore, as shown in Table 3-19, both directions of the green line show the available capacity under existing conditions.

	Green Line	
	To L'Enfant	To Anacostia
<i>Volume (per hour)</i>		
<b>Volume entering Navy Yard station</b>	1,710	6,729
<b>Riders exiting trains</b>	56	320
<b>Riders boarding trains</b>	1,130	199
<b>Volume departing station</b>	2,784	6,608
<b>Peak Volume</b>	2,784	6,729
<i>“Special Event” Capacity (per hour)</i>		
<b>Cars per hour</b>	70	70
<b>Riders per Car</b>	155	155
<b>Total Capacity</b>	10,850	10,850
Volume/Capacity Ratio	0.26	0.62

**Table 3-19: Existing Metrorail line capacity analysis**

**Existing Metrobus Service**

Metrobus options that will be available during game days include the Metrobus P6 and the Metrobus V7, V8, V9 Routes. A few other routes travel in the vicinity of the proposed Stadium site; however, these routes either do not run during typical game times or they run along South Capitol Street and do not provide a stop location convenient to the Stadium. These routes travel along M Street within the vicinity of the Stadium, the nearest stop being approximately a half mile from the Stadium. The routes serving the area connect the site to the Metrorail system and with various locations throughout the downtown business core. Table 3-20 shows a summary of the bus route information for the routes that serve the Stadium on game days, including service hours and headway.

Route Number	Route Name	Service Hours*	Headway*
<b>P6</b>	Anacostia-Eckington Line	Weekdays: 5:00 a.m.-2:00 a.m.	15-30 minutes
<b>V7,8,9</b>	Minnesota Ave.-M Street Line	4:30 a.m.-1:30 a.m.	30 minutes

**Table 3-20: Metrobus route information**

### **3.5.5 Pedestrian Circulation**

#### Existing Pedestrian Facilities

The proposed DC United Stadium is served by a comprehensive network of pedestrian facilities. Pedestrian activity within the study area generally occurs along transit access routes, in the vicinity of transit stops, at commercial nodes along M Street, and, to a lesser extent, between residential neighborhoods and transit and commercial nodes. Many of the streets in the study area have adequate sidewalks, planted buffers between sidewalks and the curb, and on-street parking that provides an additional buffer between pedestrians and vehicular traffic. Figure 3-58 shows a summary of the existing pedestrian facilities in the study area.

Pedestrian access along South Capitol Street, Potomac Avenue SE, and other roadways bordering Nationals Park is excellent; wide sidewalks, crosswalks, curb-ramps, and other pedestrian-amenities are provided. Pedestrian facilities along the other roadways in the study area east of South Capitol Street and north of P Street SW are generally adequate.

While the pedestrian facilities near Nationals Park are excellent, those provided within Buzzard Point and near the Stadium are generally of lower quality. With the exception of the west side of 2<sup>nd</sup> Street, the majority of the roadways south of P Street have no sidewalks or crosswalks. North of P Street, within the residential neighborhood, the majority of roadways have sidewalks, crosswalks, and curb ramps. However, pedestrian routing will avoid cutting through the neighborhood. Additionally, it can be difficult and intimidating for pedestrians to cross South Capitol Street.

#### **Compliance with DDOT Standards**

A review of pedestrian facilities near the site shows that some areas have facilities that meet DDOT standards and provide a quality walking environment; however, the Buzzard Point neighborhood is extremely lacking in pedestrian facilities. Figure 3-59 shows a detailed inventory of the existing pedestrian infrastructure within the study area.

Most sidewalks near the ballpark and within the residential neighborhood north of P Street comply with these standards; however, sidewalks are largely nonexistent in the Buzzard Point neighborhood directly surrounding the site. Areas directly surrounding the site and those along primary pedestrian routes will have to be improved to create a more inviting pedestrian atmosphere around the proposed Stadium location. Sidewalk width and buffer requirements for the District are shown below in Table 3-21.



Street Type	Minimum Sidewalk Width	Minimum Buffer Width
<b>Residential (Low to Moderate Density)</b>	6 feet	4 feet (6 feet preferred for tree space)
<b>Residential (High Density)</b>	8 feet	4 feet (6 feet preferred for tree space)
<b>Commercial (non-downtown)</b>	10 feet	4 feet
<b>Downtown</b>	16 feet	6 feet

**Table 3-21: DDOT sidewalk standards**

As can be seen in Figure 3-59, most sidewalks near the ballpark and within the residential neighborhood north of P Street comply with these standards; however, sidewalks are largely nonexistent in the Buzzard Point neighborhood directly surrounding the site. Areas directly surrounding the site and those along primary pedestrian routes will have to be improved to create a more inviting pedestrian atmosphere around the proposed Stadium location.

ADA standards require that curb ramps be provided wherever an accessible route crosses a curb and must have a detectable warning. Curb ramps shared between two crosswalks are not desired. As shown in Figure 3-59 under existing conditions, most intersections east of North Capitol Street and along M Street provide crosswalks and curb ramps that are compliant with DDOT standards. The residential neighborhood has crosswalks in most areas; however, many of the curb ramps do not meet standards. Crosswalks and curb ramps are primarily nonexistent south of the residential areas. As stated above, the pedestrian facilities surrounding the Stadium and providing access to the Stadium would have to be improved as part of the development.



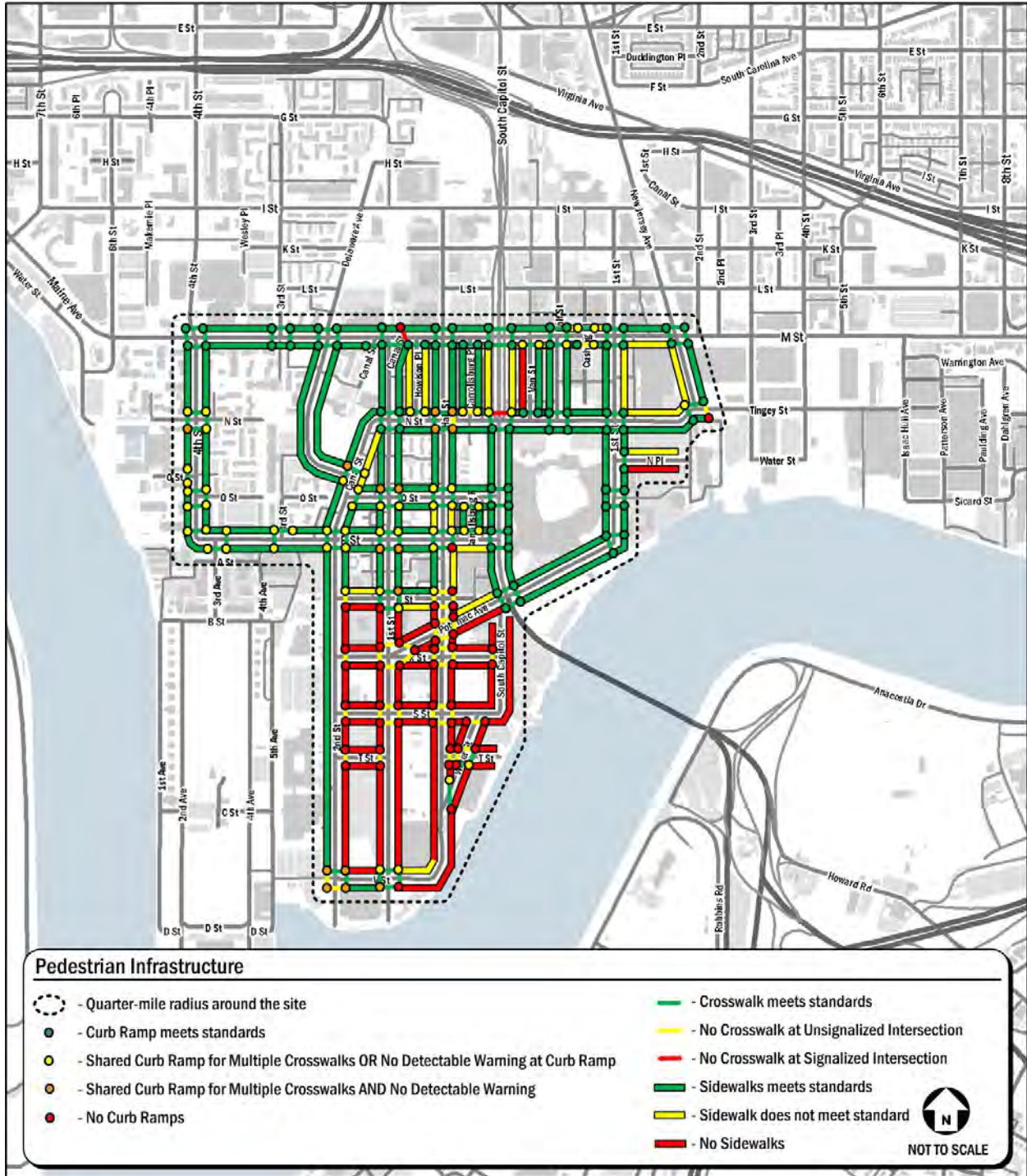


Figure 3-59: Pedestrian infrastructure



### 3.5.6 Bicycle

The cycling culture within the District has changed and progressed rapidly over the past several years. The overall bicycle mode share for commuters has increased from 2.0 percent in 2006 to 3.2 percent in 2011<sup>5</sup>, which is one of the largest jumps in the country. The increase in bike commuters has spurred an increased focus on upgrading and developing new bicycle infrastructure within the city including on and off-street facilities and the addition of the Capital Bikeshare program.

Bike lanes, separated cycle tracks, and multi-use trails have also been constructed all over the city. According to MoveDC's *Multimodal Long-Range Transportation Plan*, completed in May 2014, there are approximately 87 miles of signed bicycle routes within the District currently, with 57 miles of these having bicycle lanes (as of August 2013), 7.6 miles of protected cycle tracks (as of December 2013), and the remainder being sharrows or low-volume, low-speed roadways that provide good cycling conditions. In addition 2,000 bicycle racks have been installed across the city since 2005 to further improve the bicycle environment.

The areas of the southwest and southeast quadrants surrounding the potential Stadium site have seen a surge of bicycle facilities over the past several years. As of 2005, no dedicated bicycle facilities existed in this area, and now there are bicycle lanes on 4<sup>th</sup> Street SW, I Street SE/SW, 1<sup>st</sup> Street SE, and Potomac Avenue SE in addition to the multi-use trail that travels along the Anacostia River. Although not completely finished, the Anacostia Riverwalk Trail provides a very safe and enjoyable bicycle route near the site. Existing bicycle facilities are shown in Figure 3-60.

In addition to personal bike use, the Capital Bikeshare program has placed 300 bicycle share stations across Washington, DC, Arlington and Alexandria, VA, and most recently Montgomery County, MD with over 2,500 bicycles provided. Due to the lack of development in Buzzard Point, there are no Bikeshare stations in the direct vicinity of the proposed Stadium site. Under existing conditions the nearest Bikeshare station is near Nationals Park, approximately half a mile from the Stadium. An additional five Bikeshare stations are located within a mile of the Stadium, as shown in Figure 3-60. Thus, in order to make Bikeshare an attractive option for patrons, more Bikeshare stations would need to be added closer to the Stadium.

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<sup>5</sup> <https://www.census.gov/acs/www/>

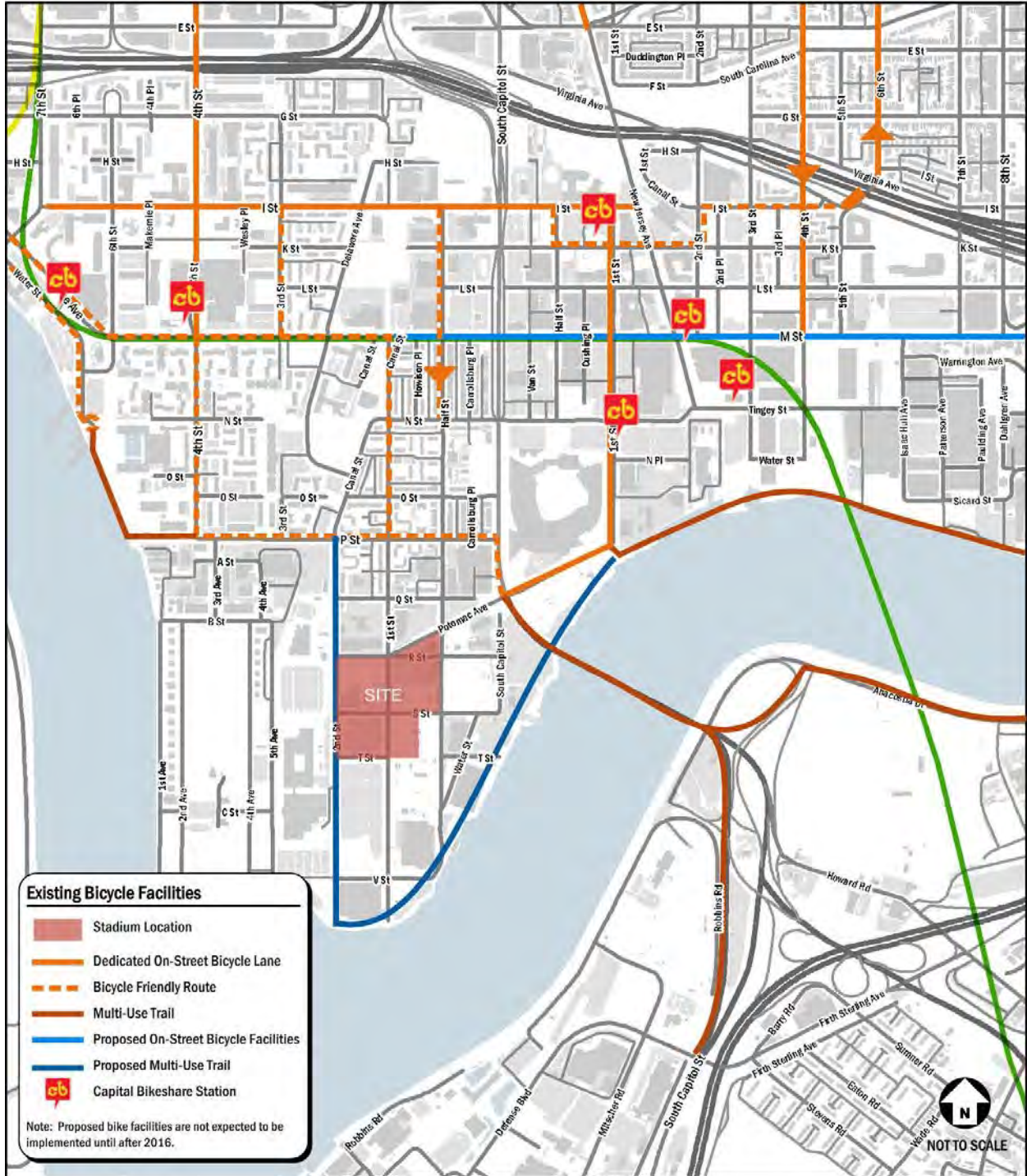


Figure 3-60: Existing bicycle facilities

## **3.6 Environmental Health**

### **3.6.1 Visitor Activity**

Current visitation to the project site is characterized predominantly by industrial activity, including the movement of trucks at the salvage facility and the Capital Bikeshare center. There is little pedestrian activity within the project site during the daytime. During Nationals baseball games, the existing parking lot at the site is made available for Nationals Park patrons. Visitor activity includes vehicle movement and parking, and pedestrian movement into and out of the stadium.

The larger study area surrounding the stadium site is dominated by traffic on South Capitol and P Streets, primarily during daytime hours. Surrounding the project site is industrial activity during the daytime, but little activity at night. Additional vehicular circulation is generated by Fort McNair and office buildings during the day. The residential areas to the north of P Street are characterized by residents coming and going, particularly during daytime hours. One nightclub operates in Buzzard Point; activity at this club is primarily during nighttime hours.

### **3.6.2 Noise**

For the purposes of conducting noise analysis for the establishment of a soccer stadium at Buzzard Point, (DDOT)'s policy for conducting traffic-related noise analysis (June 20, 2012) was used as the guideline for assessing potential noise impacts. Potential noise concerns as a result of the project would be associated with 1) temporary stadium construction activities and 2) vehicular traffic to and from the stadium during the game days.

#### **Noise Fundamentals and Analysis Methodology**

Noise is generally defined as unwanted sound. Sound is generated by pressure waves in the air. A number of factors affect sound (or noise) as it is perceived by the human ear. These include the actual level of the noise, the frequencies involved, the period of exposure to the noise, and changes or fluctuations in the noise levels during exposure. Levels of noise are measured in units called decibels (dB). The human ear cannot perceive all pitches or frequencies equally well and noise measurements are normally adjusted (weighted) to compensate for the human lack of sensitivity to both low-pitched and high-pitched sounds. The adjusted unit is known as the A-weighted decibel, or dBA. The A-weighted network de-emphasizes both very low- and very high-pitched sounds so measured noise levels correlate with the human perception of loudness.

Human response to changes in noise levels depends on a number of factors, including the quality of the sound, the magnitude of the changes, the time of day at which the changes take place, whether the noise is continuous or intermittent, and the individual's ability to

perceive the changes. Human ability to perceive changes in noise levels varies widely with the individual, as do responses to the perceived changes. Generally, changes in noise levels of less than three dBA are barely perceptible to most listeners and a ten dBA change is perceived as a doubling (or halving) of noise levels. These thresholds help to predict a person's probable perception of changes in noise levels.

The dBA noise metric describes a noise level at one point in time. However, very few noises are constant and noise levels most often vary and fluctuate. Therefore, measurement methods have been devised to describe variable noise over extended periods of time. One such method consists of describing fluctuating noise over time as if it were a steady, unchanging sound. This method involves the computation of a descriptor called the equivalent sound level (Leq). Leq describes the constant sound level that, in a given situation and time period (e.g., one-minute Leq, one-hour Leq, or 24-hour Leq) would convey the same sound energy as the actual, time-varying sound. The one-hour Leq, denoted as Leq(h), is an appropriate metric used for mobile source (e.g., traffic) and/or stationary source (e.g., stadium speaker and crowd) noise analyses.

### Mobile Sources

The methodology for predicting future on-road traffic noise levels assumes that existing noise levels are dominated by, and are a function of, existing traffic volumes. Changes in future noise levels can therefore be determined by the proportional increase in traffic on the adjacent roadway due to a project. For example, if the existing traffic volume at an intersection were 100 vehicles per hour (vph), and the future traffic volume increased by 50 vph to 150 vph, the noise levels would increase by approximately 1.8 decibels (dBA). For an increase of 100 vph (a doubling of traffic volume) for a total of 200 vehicles per hour, noise levels would increase by 3 dBA.

### Stationary Sources

The anticipated new stationary sources under the Proposed Action would be limited to the occasional crowd noise during the game time.

Noise from the proposed new stadium was predicted based on the measurement data and fundamental acoustical principle to assess potential stadium noise impacts on the community. The prediction could be made using the following acoustic formula:

$$L_1 = L_{ref} - 20 \cdot \log(d_1/d_{ref})$$

where:

$L_1$  is the predicted crowd noise level at a specific distance

$L_{ref}$  is the measured reference hourly equivalent noise level at a reference distance from source

$d_1$  is the distance from the source to the receiver

$d_{ref}$  is the distance from the source where the reference level is defined

### **Applicable Noise Regulations**

Although the proposed project is not a transportation project directly regulated by the DDOT *Noise Policy* (January, 2011), the *Noise Policy*-outlined procedures for assessing the noise impacts associated with the project can be applied given the potential traffic impacts as a result of the project. Therefore, the *Noise Policy*-established below substantial impact threshold was used as a measure of project noise impact significance.

- A substantial increase in predicted noise levels over existing noise levels occurs. An increase of 10 dBA Leq (h) or greater in noise levels is considered a substantial noise increase.

### **Existing Noise Conditions**

To support the noise analysis, existing noise levels were measured at selected noise-sensitive sites within the project neighborhood. These measured levels provided information on current noise conditions and any shielding effects affecting the propagation of sound from the roadways to nearby noise-sensitive land uses. These measurements were then used as the basis for determining the potential incremental noise in 2017 caused by the cumulative future development activities including the proposed project. These increments predicted were compared to the substantial noise impact threshold to determine noise impact significance.

Noise measurements were taken on August 19, 2014 during a game time period at the locations shown in Figure 3-61. The hourly short-term Leq (h) levels were measured at a total of six (6) noise receptor locations including five (5) sensitive receptors and one receptor immediately adjacent to the proposed stadium site (Figure 3-61) to document typical game time ambient background noise levels in the project area and provide the basis for a comparison with the noise levels when the stadium would operate in 2017. The game time short-term measurements are shown in Table 3-22.

During the measurements, traffic on local streets was observed to be the major contributor to ambient noise at these selected noise sensitive receptors. These measured levels during the game time period are not unexpected. Average neighborhood evening time noise level is around 60 dBA while low 70s occurs along the heavily travelled South Capitol Street.



In the same evening, the Leq (h) noise levels were also measured near the stadium at the Nationals Park when the baseball game was playing and they are summarized in Table 3-23. These measured levels were further conservatively used, representing the proposed stadium reference noise levels, to predict the noise impacts from the proposed stadium crowd noise, even though the proposed stadium is only half the capacity of Nationals Park.

Receptor	Address / Location	Time Period	Monitored Hourly Leq (dBA)
N1	1543 1st St. SW b/n Q St. SW & P St. SW	8-9 pm	60.3
N2	Q St. SW b/n 1st St. SW & Half St. SW	8-9 pm	57.2
N3	103 P St. SW b/n 2nd St. SW & 1st St. SW	7-8 pm	60.4
N4	2nd St. SW b/n S St. SW & R St. SW	7-8 pm	57.4
N5	20 St. SW b/n Carrollsburg Pl. SW & S Capitol St. SW	7-8 pm	71.5
N6	M St. SW & Half St. SW	7-8 pm	59.0

**Table 3-22: Measured ambient noise**

Receptor	Notes	Monitored Leq (dBA)	Distance from Noise Source (ft)
S1	Dominated by traffic with snippets of stadium noise in between: crowd, announcer, music, clapping chant	71.7	500
S2	Loudspeaker, announcements.	82.2	100
S3	At 1 <sup>st</sup> base gate. Most accurate spectrum with announcer, music, crowd cheers and chants. Announcer dominates.	73.0	500

**Table 3-23: Measured stadium noise at Nationals Park**

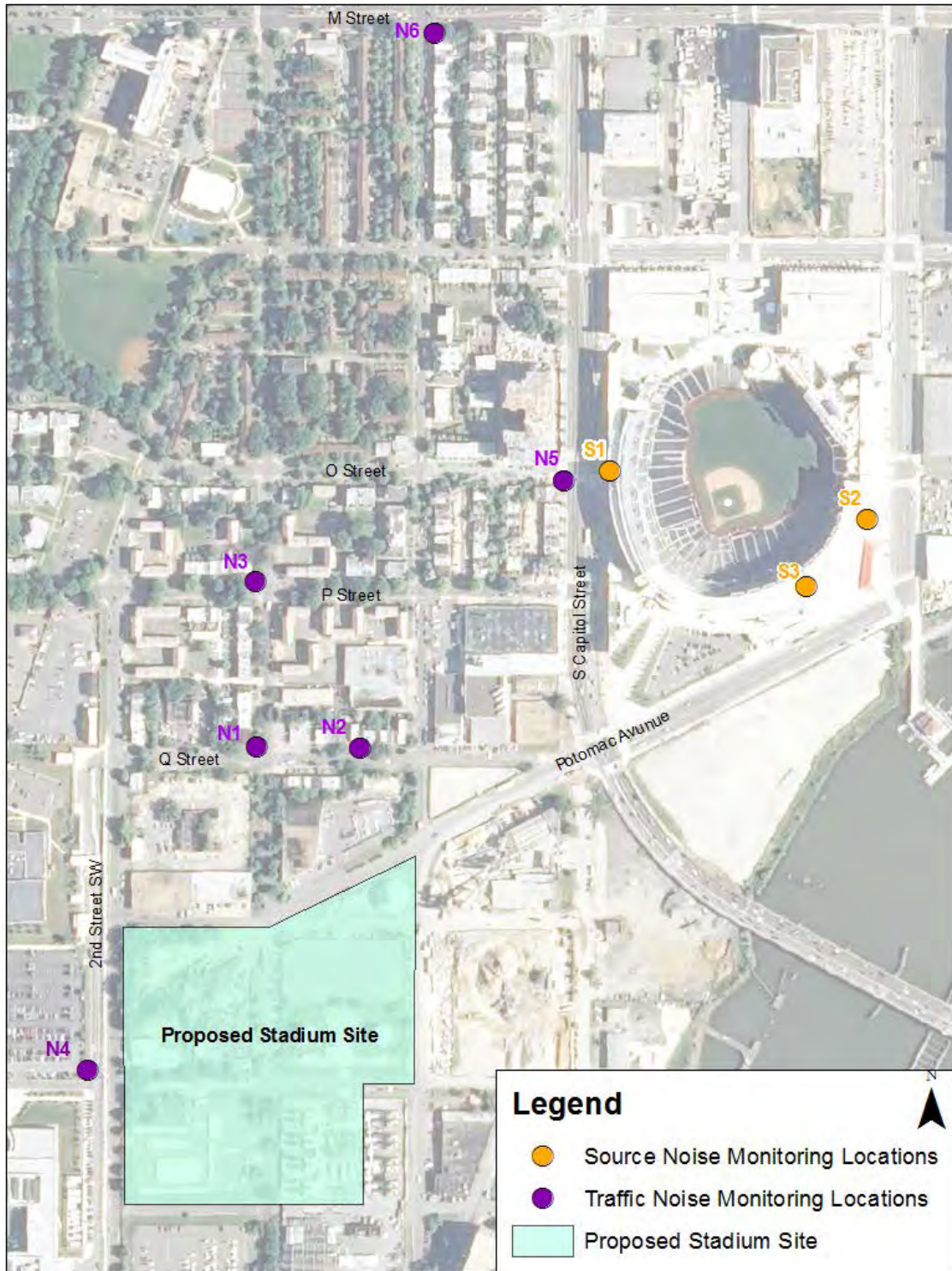


Figure 3-61: Ambient noise measurement sites

### **3.6.3 Lighting Conditions**

Outdoor lighting is provided in Washington, DC for visibility and security on roadways, parking lots, pedestrian pathways, and buildings. Dispersion of outdoor lighting sources into a surrounding area at night can be expressed as either light spill or glare. Light dispersion can occur directly from a light source, or indirectly from its reflection. Light dispersion is at its maximum intensity, and generally considered a nuisance, when measured in direct line-of-sight rather than indirectly reflected. The degree of a visual lighting impact is affected by a lighting source's contrast with the ambient lighting background, as seen by the viewer. Excessive or misdirected outdoor lighting results in light pollution.

#### **Light Spill**

Light spill can shine onto another property, and through windows, interrupting sleep and/or interfering with other light-sensitive activities including outdoor theatre performances or established evening vistas. Excessive vertical lighting typically occurs from streetlights, building security lights, and illuminated parking areas and buildings. The unnecessary glow from lighting sources collectively results in sky glow, which can make it difficult to see night sky objects such as stars.

#### **Light Glare**

Glare is the visibility-reducing effect that results from stray light in a visual scene. Glare can form a veil of luminance that reduces visual contrast and thus restricts the visibility of a target. Glare can distract pedestrians and motorists, creating a potential safety hazard. Glare can be temporarily blinding, when it causes pupils to close. For example, when driving from dark to excessively illuminated areas, vision can be impaired by glare as the pupils cannot dilate quickly enough to see in dark areas.

#### **Light Sources**

The necessary level of outdoor lighting is specific to a particular activity. Exceeding the lighting level for a specific activity wastes energy, contributes to light pollution, and may not be beneficial since human vision adjusts to changing light. In addition to excessive illumination, light pollution is exacerbated by unshielded or misaligned light fixtures, and/or inefficient lamp sources. Shielded and properly aligned light fixtures prevent the impacts of glare. The appropriate lamp type (e.g., metal halide, high-pressure sodium, mercury vapor) for a given lighting task is typically more effective and more energy efficient than increasing the amount of light.

Lighting intensity or luminance is typically measured in units of foot-candles. The luminance of typical light sources is identified in Table 3-24.

Light Source	Luminance (in foot-candles)
Full Moon	0.05-0.10
Urban Surface Parking Lot	0.25-2.00
Urban Street	0.25-3.00
Residential Street	0.00-0.25
Office/Classroom	30-75
Major League Baseball Ballpark	250-300
Sunlight	3,000-10,000

**Table 3-24: Lighting sources and levels**

### Lighting Regulations

Most municipalities have outdoor lighting standards for minimum light levels on street and parking areas for visibility and security, but typically do not have maximum light levels standards. Lighting for the downtown area of Washington, DC is regulated by the Downtown Streetscape Regulations; however, these regulations are limited to the downtown district north of the National Mall between the US Capitol Grounds and the White House.

### Site Lighting Conditions

Outdoor nighttime lighting in the area around the soccer stadium is a mix of street lighting and building security lighting. Within the area surrounding the site, lighting includes street lights along South Capitol, Half, 1<sup>st</sup> and 2<sup>nd</sup> Streets and Potomac Avenue. The street lights of Potomac Avenue and 2<sup>nd</sup> Streets provide predominant lighting of the vicinity of the project site. Some industrial areas along the Anacostia River are currently without lighting. Lighting is somewhat limited across the Anacostia River due to the extent of open space and park property.

To document the baseline outdoor nighttime light conditions of the site, light measurements were made in November 2014 between 5:30 and 6:30 p.m. at various locations on and surrounding the site. Light measurements ranged from 1 to 13 foot-candles depending upon the proximity to street lights (Figure 3-62). Measurements of approximately 13 foot-candles were observed at the intersection of Potomac Avenue and Half Street, where two relatively bright street lamps are co-located. Three intersections along S, R, and Q Streets had measurements between 7 and 9 foot-candles. Measurements of 1 to 2 foot-candles were measured on the minor residential streets west of South Capitol Street.

Because many street lights are primarily located at the roadway intersections, with lights missing on several of the streets within the proposed soccer stadium site and adjacent areas, existing light levels were inconsistent. If street lights were present in a standard



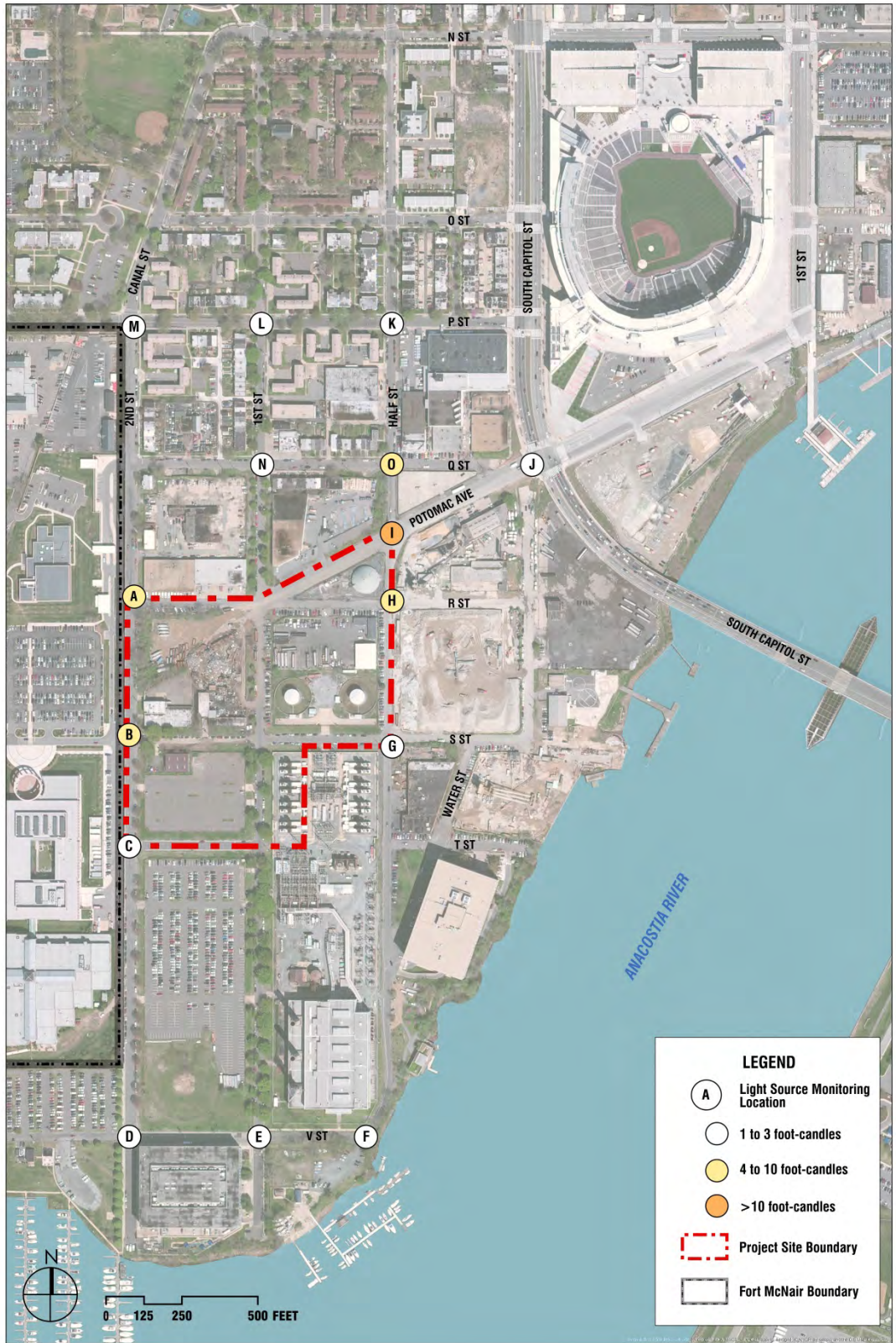


Figure 3-62: Light measurement location map

manner, typical light levels would likely range from approximately 0.25 to 3.00 foot-candles based on the number and location of street lamps. Lighting on the project site would likely be closer to the higher end of this range (approaching 3 foot-candles) due to the increase in the number of street lamps and intensity needed to illuminate streets with business and residential uses. Lighting on the residential streets would range from 0 to 1 foot-candles depending upon the number of street lamps provided.

### 3.6.4 Air Quality

This chapter describes the air quality aspects of the environment that have the potential to be affected by the proposed project. The air quality analysis for the proposed soccer stadium at Buzzard Point used the District Department of Transportation (DDOT)'s policy for conducting a project-level air quality analysis (DDOT, June 20, 2012) as the guideline for assessing potential air quality impacts. Potential air quality concerns as a result of the project would be associated with 1) temporary stadium construction activities and 2) vehicular traffic to and from the stadium during the game days.

#### **Affected Air Quality Environment**

##### Criteria Pollutants and National Ambient Air Quality Standards

The US Environmental Protection Agency (USEPA), under the requirements of the 1970 Clean Air Act (CAA) as amended in 1977 and 1990, has established primary and secondary National Ambient Air Quality Standards (NAAQS) for six contaminants, referred to as criteria pollutants (40 CFR 50) to protect public health and welfare. These criteria pollutants are: carbon monoxide (CO), nitrogen dioxide (NO<sub>2</sub>), ozone (O<sub>3</sub>), particulate matter 10 and 2.5 microns in size (PM<sub>10</sub> and PM<sub>2.5</sub>), lead (Pb), and sulfur dioxide (SO<sub>2</sub>). Table 3-25 shows the primary and secondary standards.

Areas where ambient concentrations of a criteria pollutant are below the corresponding NAAQS are designated as being in "attainment" for this pollutant. Areas where a criteria pollutant level exceeds the NAAQS are designated as being in "nonattainment." A maintenance area is one that has been re-designated from nonattainment status and has an approved maintenance plan under Section 175 of the CAA. Where insufficient data exist to determine an area's attainment status, it is designated unclassifiable or in attainment. O<sub>3</sub> nonattainment areas are categorized as marginal, moderate, serious, severe, or extreme. CO and PM<sub>10</sub> nonattainment areas are categorized as moderate or serious. The proposed action would take place in the District of Columbia, an area designated as:

- A moderate nonattainment area for O<sub>3</sub>.
- A moderate nonattainment area for PM<sub>2.5</sub>.
- A maintenance area for CO.



- An attainment area for all other criteria pollutants.

The CAA, as amended in 1990, mandates that states with nonattainment areas adopt State Implementation Plans (SIPs) that target the elimination or reduction of the severity and number of violations of the NAAQS. SIPs set forth policies to expeditiously achieve and maintain attainment of the NAAQS. The status of SIP development currently applicable to the Washington metropolitan nonattainment areas is summarized below:

Pollutant	Primary/Secondary	Averaging Time	Level	Form	
<b>Carbon Monoxide (CO)</b>	Primary	8-hour	9 ppm	Not to be exceeded more than once per year	
		1-hour	35 ppm		
<b>Lead (Pb)</b>	primary and secondary	Rolling 3-month average	0.15 µg/m <sup>3(1)</sup>	Not to be exceeded	
<b>Nitrogen Dioxide (NO<sub>2</sub>)</b>	primary	1-hour	100 ppb	98th percentile, averaged over 3 years	
	primary and secondary	Annual	53 ppb <sup>(2)</sup>	Annual mean	
<b>Ozone (O<sub>3</sub>)</b>	primary and secondary	8-hour	0.075 ppm <sup>(3)</sup>	Annual fourth-highest daily maximum 8-hr concentration, averaged over 3 years	
<b>Particle Pollution</b>	PM <sub>2.5</sub>	primary	Annual	12 µg/m <sup>3</sup>	Annual mean, averaged over 3 years
		secondary	Annual	15 µg/m <sup>3</sup>	Annual mean, averaged over 3 years
	PM <sub>10</sub>	primary and secondary	24-hour	35 µg/m <sup>3</sup>	98th percentile, averaged over 3 years
		primary and secondary	24-hour	150 µg/m <sup>3</sup>	Not to be exceeded more than once per year on average over 3 years
<b>Sulfur Dioxide (SO<sub>2</sub>)</b>	primary	1-hour	75 ppb <sup>(4)</sup>	99th percentile of 1-hour daily maximum concentrations, averaged over 3 years	
	secondary	3-hour	0.5 ppm	Not to be exceeded more than once per year	

**Table 3-25: National Ambient Air Quality Standards (NAAQS)**

Notes:

*(1) Final rule signed October 15, 2008. The 1978 lead standard (1.5 µg/m<sup>3</sup> as a quarterly average) remains in effect until one year after an area is designated for the 2008 standard, except that in areas designated nonattainment for the 1978, the 1978 standard remains in effect until implementation plans to attain or maintain the 2008 standard are approved.*

*(2) The official level of the annual NO<sub>2</sub> standard is 0.053 ppm, equal to 53 ppb, which is shown here for the purpose of clearer comparison to the 1-hour standard.*

*(3) Final rule signed March 12, 2008. The 1997 ozone standard (0.08 ppm, annual fourth-highest daily maximum 8-hour concentration, averaged over 3 years) and related implementation rules remain in place. In 1997, EPA revoked the 1-hour ozone standard (0.12 ppm, not to be exceeded more than once per year) in all areas, although some areas have continued obligations under that standard ("anti-backsliding"). The 1-hour ozone standard is attained when the expected number of days per calendar year with maximum hourly average concentrations above 0.12 ppm is less than or equal to 1.*

*(4) Final rule signed June 2, 2010. The 1971 annual and 24-hour SO<sub>2</sub> standards were revoked in that same rulemaking. However, these standards remain in effect until one year after an area is designated for the 2010 standard, except in areas designated nonattainment for the 1971 standards, where the 1971 standards remain in effect until implementation plans to attain or maintain the 2010 standard are approved.*

Source: <http://www.epa.gov/air/criteria.html>.

On July 4, 2014, a 2011 base year emissions inventory was submitted on behalf of Metropolitan Washington Air Quality Committee (MWAQC) as part of the region's State Implementation Plan (SIP) to meet the ozone NAAQS. This document contains a detailed explanation of the 2011 base year emissions inventory for stationary, area, nonroad, and mobile anthropogenic sources as well as biogenic sources in the Washington, DC-MD-VA ozone nonattainment area.

- On May 22, 2013, the District of Columbia, the State of Maryland, and the Commonwealth of Virginia requested that the USEPA redesignate the Washington DC-MD-VA PM<sub>2.5</sub> nonattainment area to attainment. At the same time, MWAQC submitted a Washington DC-MD-VA 1997 PM<sub>2.5</sub> Maintenance Plan.
- The metropolitan Washington area has been meeting federal standards for CO since March 1996. The CAA requires states to submit two 10-year maintenance plans demonstrating that the region will continue to maintain the CO standard. The first CO maintenance plan covered 10 years after redesignation, from 1996-2007. The region was required to revise the maintenance plan eight years after redesignation, in this case, March 2004. The revised CO maintenance plan covers the period from 2007 -2016. It demonstrates that, using current CO data and projections, the Washington metropolitan region will continue to meet this standard for that period.

Per DDOT's guidance, the air quality conformity determination must show that the individual project is consistent with the regional conformity determination and that

potential localized emissions impacts are addressed and are consistent with goals for air quality found in the SIP. State or local transportation agency is responsible for the project-level conformity determination. The analysis described in this document is for meeting the project-level conformity requirement through a hot spot analysis.

### Criteria Air Toxics

In addition to the criteria air pollutants for which NAAQS have been established, the USEPA regulates air toxics. Most air toxics originate from human-made sources, including on-road mobile sources, non-road mobile sources (e.g., airplanes), and stationary sources (e.g., dry cleaners, factories, or refineries). The CAA identifies 187 hazardous air pollutants (HAPs); the USEPA has identified 93 HAPs as mobile source air toxics (MSATs), of which seven are priority MSATs:

- Acrolein
- Benzene
- 1,3-butadiene
- Diesel particulate matter plus diesel exhaust organic gases (diesel PM)
- Formaldehyde
- Naphthalene
- Polycyclic organic matter (POM)

The MSATs are compounds emitted by highway-traveling vehicles and non-road equipment. Some toxic compounds are present in fuel and are emitted when the fuel evaporates or passes through the engine unburned. Other toxics are generated by the incomplete combustion of fuels or as secondary combustion products. Metal air toxics also result from engine wear or from impurities in oil or gasoline.

On February 3, 2006, FHWA and USEPA issued joint guidance for the assessment of MSATs in the NEPA process for highway projects. The FHWA subsequently released the updated guidance on air toxic analysis in NEPA documents on September 30, 2009 and December 6, 2012, respectively. According to the guidance a MSAT analysis is required as part of the NEPA analysis for a transportation project. The 2012 guidance reflects recent regulatory changes; addresses stakeholder requests to broaden the horizon years of emission trends performed with USEPA Motor Vehicle Emissions Simulator (MOVES) model; and updates stakeholders on the status of scientific research on air toxics.

### 3.6.5 Hazardous Materials

Hazardous materials are defined by 49 Code of Federal Regulations [CFR 171.8] as “hazardous substances, hazardous wastes, marine pollutants, elevated temperature materials, materials designated as hazardous in the Hazardous Materials Table (49 CFR 172.101), and materials that meet the defining criteria for hazard classes and divisions” in 49 CFR 173. Hazardous wastes are defined by the Resource Conservation and Recovery Act (RCRA) at 42 U.S.C. §6903(5), as amended by the Hazardous and Solid Waste Amendments, as “a solid waste, or combination of solid wastes, which because of its quantity, concentration, or physical, chemical, or infectious characteristics may (A) cause, or significantly contribute to an increase in mortality or an increase in serious irreversible, or incapacitating reversible, illness; or (B) pose a substantial present or potential hazard to human health or the environment when improperly treated, stored, transported, or disposed of, or otherwise managed.” Special hazards are those substances that might pose a risk to human health but are not regulated as contaminants under the hazardous wastes statutes. Special hazards include asbestos-containing material (ACM), lead-based paint (LBP), and polychlorinated biphenyls (PCB).

In addition to threatening human health and well-being, the improper release of or exposure to hazardous materials and wastes may also threaten wildlife, plants, fish, and their habitats, soil systems, and water resources. Localized conditions such as soil, topography, water resources, and climate may affect the extent of contamination from or exposure to hazardous substances.

#### CERCLIS Sites

No sites listed in the United States Environmental Protection Agency’s (USEPA’s) Comprehensive Environmental Response, Compensation, and Liability Information System (CERCLIS), including National Priorities List (NPL) and Superfund sites, were identified within the project site. However, three properties within the project site are listed as RCRA generators and State and Tribal Brownfield Sites. Those sites are described as follows (Hayley & Aldrich 2014b):

- Under RCRA, the salvage yard located on Square 0605, Lot 0802 (Figure 3-63) is listed as a Conditionally Exempt Small Quantity Generator for storing ignitable hazardous wastes as well as cadmium, lead, benzene, methyl ethyl ketone (MEK), tetrachloroethylene (PERC), and trichloroethylene (TCE).
- An entry located on Square 0661, Lot 0805 is listed as a State and Tribal Brownfields Site. No additional information was provided.
- An entry on Square 0607, Lot 0013 is listed in the brownfields database. No additional information was provided.

### **Super Salvage, Inc. Stormwater Discharge Compliance**

Super Salvage, Inc. (Super Salvage) is centrally located within the site of the proposed soccer stadium on Square 0605, Lot 0802 at 1711 1st Street, SW. The business occupies slightly more than 1 acre and has operated in that location since 1954 (USEPA 2013c). The salvage yard also uses a portion of Square 0603, Lot 0800 and the adjacent transportation right-of-way (closed to traffic), both owned by the District and totaling somewhat less than 1 acre, for its operations (USEPA 2013d) (it is unclear if the business has obtained formal permission from the District for the use of this additional property). Super Salvage is an employee-owned business that specializes in sorting, processing, and recycling copper, brass, aluminum, cast iron, steel, appliances, chillers and condensers (Super Salvage, Inc. 2013).

On February 20, 2013 the Super Salvage site was inspected by representatives of USEPA's Region 3 office to evaluate the facility's compliance with the 2008 USEPA Multi-Sector General Permit (MSGP) for Stormwater Discharges Associated with Industrial Activity. According to a Super Salvage representative interviewed during the inspection, the business did not submit a Notice of Intent (NOI) for Storm Water Discharges Associated with Industrial Activity under the National Pollution Discharge Elimination System (NPDES) MSGP and did not have coverage under the 2008 USEPA MSGP for Stormwater Discharges Associated with Industrial Activity. In addition, the facility did not obtain a "No Exposure Exclusion," has never developed a Storm Water Pollution Prevention Plan (SWPPP) or a Spill Prevention, Control and Countermeasures Plan (SPCC), and does not conduct formal self-inspections (USEPA 2013d).

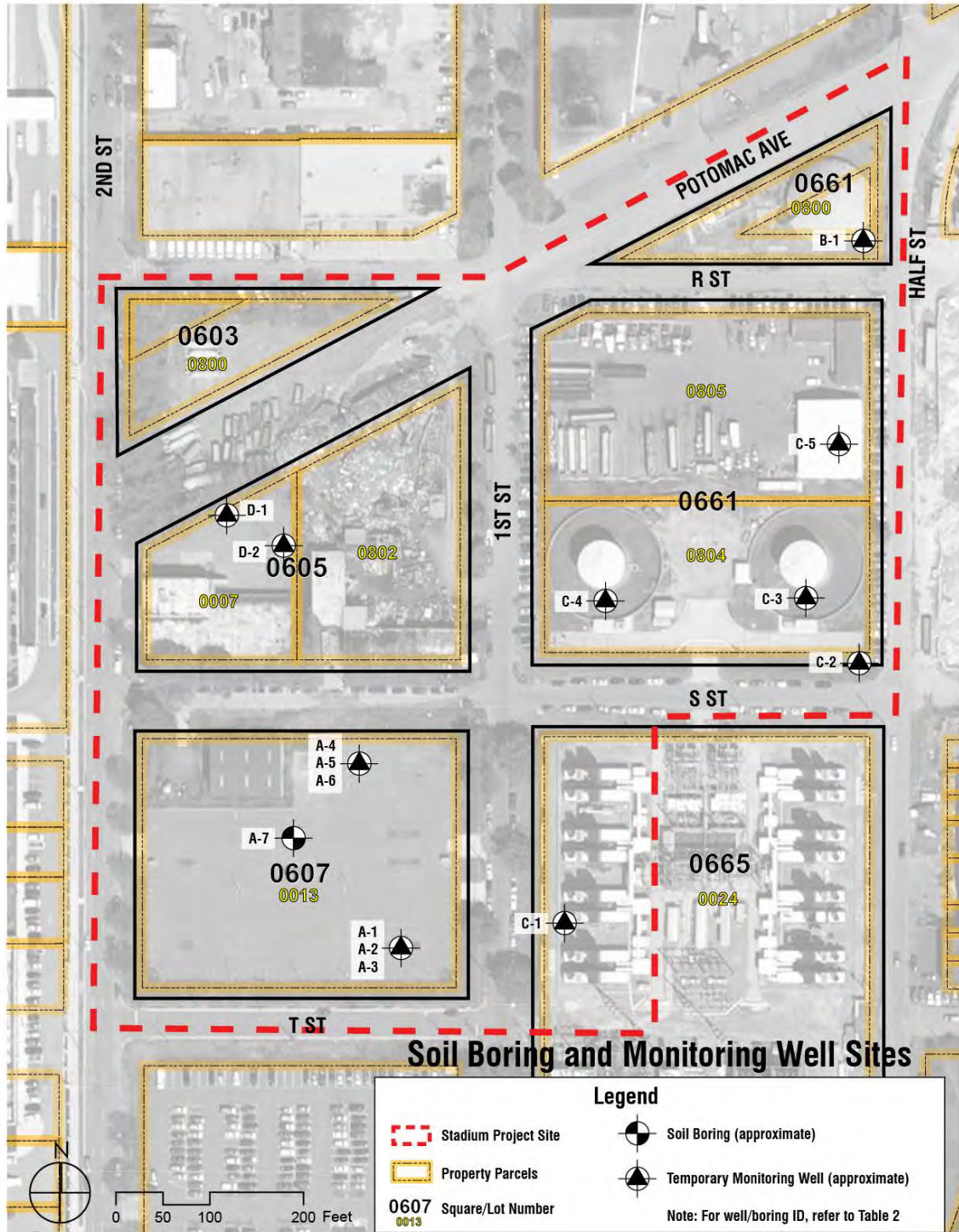
The USEPA contends that Super Salvage is considered to be engaging in "industrial activities" as defined in 40 Code of Federal Regulations (CFR) 122.26(b)(14) and is therefore subject to a NPDES permit for stormwater discharges associated with industrial activities (USEPA 2013d). It is the assertion of Super Salvage that it does not need to obtain an NPDES permit because the facility was upgraded about 15 years ago in such a way that stormwater is retained on-site. Prior to that time Super Salvage submitted annual stormwater reports to the District of Columbia (USEPA 2013c).

During the site inspection, the USEPA inspectors observed piles of scrap, oil drums, other containers, and equipment exposed to the weather, as well as ground staining and spilled substances with no active cleanup or containment. Above-ground storage tanks totaling approximately 1,320 gallons of capacity with no secondary containment structures were observed on the site. Two stormwater ponds, one somewhat larger than the other, were observed during the inspection. The larger pond held a substantial volume of water with an oily sheen on the surface, and it could not be determined where the pond ultimately drains to (USEPA 2013d).



Based on the information obtained and conditions observed during the inspection, USEPA Region 3's NPDES Enforcement Branch contacted the USEPA Region 3 Office of Enforcement, Compliance and Environmental Justice (OECEJ) and recommended that a multi-media investigation be conducted at the Super Salvage site. OECEJ inspectors visited the site on May 28 and 29, 2013, observed similar conditions to those described above, and collected samples of various substances throughout the site (USEPA 2013c).

Following the site inspections and an evaluation of their findings, USEPA OECEJ determined that it had grounds to bring an enforcement action against Super Salvage to bring it into compliance with applicable NPDES permit coverage. USEPA informed the District government of its pending action against Super Salvage because the agency is aware that the property comprises a portion of the site of the proposed soccer stadium and does not wish to disrupt or interfere with negotiations for the District's acquisition of the property. As of this writing, the District has requested that USEPA postpone its enforcement action so that the District may continue negotiations with Super Salvage to acquire the property. If and when the District acquires the Super Salvage property it is assumed that the District would not be subject to enforcement action by the USEPA, provided that the site is remediated in a reasonable period of time following its acquisition by the District.



**Figure 3-63: Soil boring and monitoring well sites**

Source: Hayley & Aldrich, Google, AECOM

## Soil and Groundwater Sampling at the Project Site

Phase I Environmental Site Assessments (ESAs) have been prepared for, and limited Phase II subsurface sampling of soil and groundwater has been conducted since late 2013 on multiple parcels comprising the project site. The samples collected are not adequate to define the lateral or vertical extents of impacts from hazardous constituents, nor do they define the magnitude of impacts or the origins of the substances. However, the sampling results may be used to evaluate current conditions on the parcels and provide a general profile of potential impacts.

The parcels where sampling has occurred and the approximate locations of the sampling points are illustrated in Figure 3-63. The findings of the Phase I and Phase II studies are summarized in Table 3-27 and further discussed in the following paragraphs.

### Square 0607, Lot 0013

The parcel is located in the southwest corner of the project site and is bounded by S Street to the north, 1st Street to the east, T Street to the south, and 2nd Street to the west. A paved surface parking lot covers the majority of the parcel, and a single-story, approximately 4,000-square foot metal building is located in its northwest corner. Automobiles and motorcycles are stored in the building (Haley & Aldrich 2014c).

Subsurface sampling conducted on the parcel yielded multiple detections of constituents—such as total petroleum hydrocarbons–diesel range organics (TPH-DRO), benzo(a)pyrene, polycyclic aromatic hydrocarbons (PAH), arsenic, and chromium—that exceeded regulatory thresholds set by the DC Municipal Regulations, DC Risk-Based Corrective Action Screening Levels for construction workers, and/or USEPA Region III Risk-Based Screening Levels for residential soil. The exceedances were minor and not uncommon for urban fill soils such as those that underlie the parcel. Based on the relatively low concentrations detected, additional regulatory action for the site is unlikely (Haley & Aldrich 2014c).

A groundwater sample taken in the southeast corner of the site indicated contamination associated with chlorinated solvents, including relatively low concentrations of trichloroethylene (TCE) and vinyl chloride (VC). The extent of impacts could not be determined. However, those substances were not detected in groundwater samples collected in the vicinity for an unrelated study conducted in 2005 (Hayley & Aldrich 2013). This suggests that the extent of TCE and VC contamination may be limited to the southeast corner of the parcel.

Heavy hydrocarbon staining was identified near the floor drains within the storage building. It could not be determined if the source of the stains had migrated into the floor

drains; where the floor drains ultimately discharge; or if the source of the staining had penetrated the concrete floor through cracks and migrated to the subsurface.

#### Square 0661, Lot 0800

This triangular parcel forms the northeastern corner of the project site and is bounded by Potomac Avenue on the north, Half Street on the east, and R Street on the south. The property is owned by the District Department of Transportation (DDOT) and is used for storing sand and chemicals that are applied to roadways during weather emergencies. The parcel is entirely paved and fenced. A salt storage dome is located on the easternmost side of the property and small above ground storage tanks (ASTs) are located along its northern perimeter.

As shown in Table 3-27, concentrations of constituents detected in soil samples recovered on the parcel were below applicable regulatory thresholds. No groundwater was recovered from the temporary monitoring well installed on the parcel. Based on the activities currently occurring on the parcel, additional regulatory action is unlikely under existing conditions (Hayley & Aldrich 2014a).

#### Square 0665, Lot 0024; Square 0661 Lot 0804; Square 0661 Lot 0805

Collectively, these parcels comprise the majority of the project site's eastern half and are bounded by R Street to the north, Half Street to the east, T Street to the south, and 1<sup>st</sup> Street to the west. Square 0661, Lot 0805 is the northernmost parcel of the three; it is almost entirely paved and used as a parking lot. The middle parcel, Square 0661, Lot 0804 is vacant but was formerly the site of two petroleum ASTs. Square 0665, Lot 0024, which comprises a portion of the PEPCO electrical substation in Buzzard Point, is entirely fenced and contains equipment associated with the substation.

With one exception, concentrations of constituents detected in soil and groundwater samples recovered on the parcels exceeded applicable regulatory thresholds established by the DC Municipal Regulations and/or USEPA regional screening levels (RSLs) for residential soil and/or tap water (Table 3-27) (Hayley & Aldrich 2014b). Constituents exceeding regulatory levels included benzene, naphthalene, ethylbenzene, TPH-DRO, and total petroleum hydrocarbons-gasoline range organics (TPH-GRO). Petroleum-like odors were detected at the sampling points in the vicinity of the ASTs that formerly stood on Square 0661, Lot 0805 (GTW-661-804-2 and GTW-661-804-3; see Figure 3-63). Further investigation of the parcels should be conducted to determine the extent of soil and groundwater impacts, and to refine possible material management options and associated costs.

#### Square 0605, Lot 0007

This parcel forms the northwest corner of the project site and is bounded by the Potomac Avenue right-of-way and Square 0603, Lot 0800 (both occupied by Super Salvage), Super

Salvage's main property to the east, S Street to the south, and 2<sup>nd</sup> Street to the west. The southern portion of the parcel is occupied by a building with warehouse and maintenance space on the first floor and offices on the second level. An asphalt-paved parking area covers the northern portion of the parcel. The building and parking area are surrounded by a concrete wall to the south and west and by metal fencing to the north and east. The building and adjacent parking area are used by the Capital Bikeshare program for maintenance, storage and administrative space (Hayley & Aldrich 2014d).

As summarized in Table 3-27, concentrations of constituents detected in soil and groundwater samples collected on the east side of the property exceeded applicable regulatory thresholds established by the DC Tier 1 Surface and Groundwater Standards and/or USEPA residential soil RSLs for PAHs, arsenic, and TPH-DRO. In addition, free-phase oil was observed in groundwater sampled at this location. No exceedances of applicable thresholds were detected in soil and groundwater samples recovered on the northern side of the parcel. Based on the sampling results, additional regulatory action may be required under current conditions to remediate contamination on the parcel (Hayley & Aldrich 2014d).

### **Storage Tanks**

Multiple ASTs, underground storage tanks (USTs), and leaking underground storage tanks (LUSTs) are present within the boundaries of the project site. Information pertaining to them is presented in Table 3-26 (ASTs and USTs that have been removed in the past are not included).

### **Fertilizers, Pesticides and Rodenticides**

The types and quantities of fertilizers, pesticides and rodenticides that are stored and/or used on the parcels comprising the project site are unknown (these substances were not discussed in the Draft Phase I ESA). If such products are present on the site, it is likely that they are stored and applied in relatively small quantities.

Parcel ID	AST/UST/LUST	Contents/Capacity (gallons)	Status
<b>Square 0605, Lot 0802</b>	AST	Hydraulic oil/300	In use
	AST	Motor oil/500	In use
	AST	Filters and oil/unknown	In use
	AST	Diesel/500	In use
	AST	Diesel/500	In use
<b>Square 0661, Lot 0800</b>	AST	Magnesium chloride/unknown	In use
	AST	Magnesium chloride/unknown	In use
	AST	Magnesium chloride/unknown	In use
<b>Square 0607, Lot 0013</b>	LUST (case no. 93094 <sup>1</sup> )	Gasoline/20,000	Closed
<b>Square 0605, Lot 0007</b>	LUST (case no. 92076 <sup>1</sup> )	Gasoline/3,500	Closed
<b>Square 0605, Lot 0802</b>	LUST (case no. 96030 <sup>1</sup> )	Gasoline/20,000	Closed
<b>Square 0665, Lot 0024 and Square 0661, Lot 0804</b>	Four LUSTs	Diesel/6,000 (two) Contents/capacity of other two LUSTs unknown	Three LUSTs are listed as Closed, one is listed as Open
<b>Notes:</b>			
1. Refers to case numbers assigned by the District Department of the Environment, Underground Storage Tank Branch.			
Source: Hayley & Aldrich 2013			

**Table 3-26: Project site storage tanks**

**Asbestos Containing Material, Lead-based Paint, and Polychlorinated Biphenyls**

Asbestos Containing Material

Asbestos is a group of naturally occurring minerals that separate into fibers. Inhalation of asbestos fibers has been linked to cancer and other diseases in humans. Asbestos has been used in a variety of building construction materials for insulation and as a fire retardant because of its fiber strength and heat resistance. Asbestos has also been used in a wide range of manufactured goods, mostly in building materials (roofing shingles, ceiling and floor tiles, paper products, and asbestos cement products), friction products (automobile clutch, brake, and transmission parts), heat-resistant fabrics, packaging, gaskets, and coatings. The use of asbestos in certain products is banned under the Toxic Substances Control Act, the Clean Air Act, and the Consumer Product Safety Act; however, most uses of asbestos are not banned, and the substance is found in many commonly-available products throughout the United States (USEPA 2013a).

The presence of asbestos containing materials (ACM) was not addressed in a Phase I ESA that evaluated the project site (Hayley & Aldrich 2013). However, based on their apparent age and use, buildings and structures on the project site have the potential to contain asbestos.



### Lead-based Paint

The manufacture and use of lead-based paint (LBP) was banned in the United States in 1978. Through prolonged exposure, lead can accumulate in the human body and have harmful effects on the nervous, cardiovascular, excretory, and reproductive systems (USEPA 2013b).

The presence of lead was not addressed in a Phase I ESA that evaluated the project site (Hayley & Aldrich 2013). The year of construction of buildings and structures on the project site is unknown; however, those determined to be built prior to 1978 would have the potential to contain lead.

### Polychlorinated Biphenyls

Polychlorinated biphenyls (PCB) were historically used in electrical equipment, primarily capacitors and transformers, because they are electrically nonconductive and stable at high temperatures. PCBs persist in the environment, accumulate in organisms, and concentrate in the food chain. The disposal of PCBs is regulated under the Toxic Substances Control Act, which banned the manufacture and distribution of PCBs in 1979. By Federal definition, PCB equipment contains 500 parts per million (ppm) or more of PCBs, whereas PCB-contaminated equipment contains PCB concentrations of more than 50 ppm but less than 500 ppm. USEPA regulates the removal and disposal of all sources of PCBs containing 50 ppm of PCBs or more.

Square 0665, Lot 0024 is operated as an electrical substation. According to historical aerial photos, the facility was built in the 1960s. Therefore, there is a potential for materials containing PCBs to be present on this parcel (Hayley & Aldrich 2014b).

### **Surrounding Area**

Multiple sites listed as small quantity generators or brownfield sites are located within a 0.25 mile radius of the project site. Most were described as not having the potential to impact the project site. Nearby sites that were identified as having the potential to impact the project site are described as follows (Hayley & Aldrich 2013):

- A site is located approximately 50 feet east of the project site and is listed as case number 95015 in the LUST database maintained by the DDOE's Underground Tank Branch. A release from a UST on the property in 1994 reportedly impacted soil and groundwater. The status of the release is listed as Open.
- An April 2013 release of heating oil, gasoline, and diesel from a LUST on a property approximately 300 feet northeast of the project site reportedly impacted soil and groundwater. The release is recorded as case number 2013006 and is listed as Open.

- A March 2013 release of heating oil, gasoline or diesel from a LUST on a parcel approximately 300 feet northeast of the project site reportedly impacted soil and groundwater. The release is recorded as case number 2013005 and is listed as Open.
- A September 1987 release of gasoline/heating oil from a LUST on a site adjacent to the eastern side of the project site reportedly impacted soil and groundwater. The release is recorded as case number 87012 and is listed as Open

**Table 3-27: Summary of soil and groundwater sampling activities on project site**

Date	Location	Well/ Boring ID	Media	Depth <sup>1</sup>	Substance Detected	Concentration	Screening Criteria	Notes/Comments
12/2012	Sq. 0607 Lot 0013	A-1	GW	23.5	MTBE	54 µg/L	NP	Samples collected in SE corner of site in vicinity of a former 20,000-gallon UST
					Acetone	115 µg/L	NP	
		A-2	GW	36	TPH-GRO	2.1 mg/L	NP	
					Benzene	10.2 µg/L	NP	
					MTBE	38 µg/L	NP	
					TCE	43.9 µg/L	NP	
		A-3	Soil	10-15	Arsenic	7.1 mg/kg	Exceeds EPA Region III Risk-based Screening Levels for Residential Soil	Sample collected in SE corner of site in vicinity of a former 20,000-gallon UST
					Chromium	18.2 mg/kg	Exceeds EPA Region III Risk-based Screening Levels for Residential Soil	Sample collected in SE corner of site in vicinity of a former 20,000-gallon UST
		A-4	GW	15	Acetone	79 µg/L	NP	--
		A-5	GW	34.7	Acetone	625 µg/L	NP	--
		A-6	Soil	5-10	TPH-DRO	119 mg/kg	Exceeds DC Tier 0 Soil Standard for TPH (100 mg/kg)	--
					Benzo(a)pyrene	8.67 mg/kg	Exceeds DC Risk-based Corrective Action (DCRBCA) Screening Levels for Construction Worker Exposure (5.92 mg/kg)	
					PAH	NP	Exceeds EPA Region III Risk-based Screening Levels for Residential Soil	
					Arsenic	4.8 mg/kg	Exceeds EPA Region III Risk-based Screening Levels for Residential Soil	
Chromium	10.3 mg/kg				Exceeds EPA Region III Risk-based Screening Levels for Residential Soil			
A-7	Soil	NP	TPH-DRO	184 mg/kg	Exceeds DC Tier 0 Soil Standard for TPH of 100 mg/kg	Sample depth was shallow—taken from beneath asphalt in parking lot		
June 2014	Sq. 0661 Lot 0800	B-1	Soil GW	15-20	NA	NA	NA	Concentrations of substances detected in soil and groundwater samples recovered from this well

Date	Location	Well/ Boring ID	Media	Depth <sup>1</sup>	Substance Detected	Concentration	Screening Criteria	Notes/Comments
								were below applicable regulatory thresholds.
<b>June-July 2014</b>	Sq. 0665 Lot 0024	C-1	NA	NA	NA	NA	NA	Concentrations of substances detected in soil and groundwater samples recovered from this well were below applicable regulatory thresholds.
		Sq. 0661 Lot 0804	C-2	GW	20-25	Benzene	0.0344 mg/L	Exceeds DCMR Tier 1 Surface and Groundwater Standard Exceeds EPA Maximum Contaminant Level for Drinking Water (0.005 mg/L) Exceeds EPA tap water RSL (0.00045 mg/L)
			GW	20-25	Naphthalene	0.0014 mg/L	Exceeds EPA RSL of 0.00017 mg/L	--
		C-3	Soil	10-15	TPH-DRO	483 mg/kg	Exceeds DCMR Tier 0 Soil Standards (100 mg/kg)	Sample collected in proximity to the former ASTs beneath Square 0661, Lot 0804. Petroleum-like odors were detected at this sample location during sample collection.
		C-4	Soil	20-25	TPH-DRO	1,260 mg/kg	Exceeds DCMR Tier 0 Soil Standards (100 mg/kg)	Sample collected in proximity to the former ASTs beneath Square 0661, Lot 0804. Petroleum-like odors were detected at this sample location during sample collection.
			Soil	20-25	TPH-GRO	511 mg/kg	Exceeds DCMR Tier 0 Soil Standards (100 mg/kg)	Sample collected in proximity to the former ASTs beneath Square 0661, Lot 0804. Petroleum-like odors were detected at this sample location during sample collection.
			GW	20-25	Benzene	0.0082 mg/L	Exceeds DCMR Tier 1	--

Date	Location	Well/ Boring ID	Media	Depth <sup>1</sup>	Substance Detected	Concentration	Screening Criteria	Notes/Comments
							Surface and Groundwater Standard Exceeds EPA Maximum Contaminant Level for Drinking Water (0.005 mg/L) Exceeds EPA tap water RSL (0.00045 mg/L)	
			GW	20-25	Ethylbenzene	0.0122 mg/L	Exceeds EPA RSL for tap water (0.0015 mg/L)	--
			GW	20-25	Naphthalene	0.0674 mg/L	Exceeds EPA RSL of 0.00017 mg/L	--
			GW	20-25	TPH-GRO	3.0 mg/L	Exceeds EPA RSL for tap water for TPH low aromatics (benzene) (0.033 mg/L)	--
			GW	20-25	TPH-DRO	3.0 mg/L	Exceeds EPA RSL for tap water for TPH medium aromatics (naphthalene) (0.005 mg/L)	--
	Sq. 0661 Lot 0805	C-5	Soil	0-2	TPH-DRO	38.3 mg/kg	Exceeds EPA RSL for Residential Soil (0.61 mg/kg)	Composite soil sample
<b>June-July 2014</b>	Sq. 0605 Lot 0007	D-1	Soil, GW	NA	NA	NA	NA	Concentrations of substances detected in soil and groundwater samples recovered from this well were below applicable regulatory thresholds.
		D-2	Soil	29	PAH [benzo(a)anthracene, benzo(a)pyrene, benzo(b)fluoranthene, indeno(1,2,3-cd)pyrene]	NP	Exceeds EPA RSL for residential soil	--
				29	Arsenic	8.2 mg/kg	Exceeds EPA RSL for residential soil	--

Date	Location	Well/ Boring ID	Media	Depth <sup>1</sup>	Substance Detected	Concentration	Screening Criteria	Notes/Comments
			GW	7.6- 20.9	Free-phase oil	NA	NA	Visual observation
					TPH-DRO	24.6 mg/L	Exceeds DC Tier 1 Surface and Groundwater Standards	--
<p><b>Notes: Depth given in feet below ground surface (bgs)</b></p> <p><b>µg/L = Micrograms per Liter (parts per billion)</b>  <b>GW = Groundwater</b>  <b>mg/kg = milligrams per kilogram (parts per million)</b>  <b>MTBE = Methyl Tertiary Butyl Ether</b>  <b>NA = Not Available or Not Applicable</b>  <b>NP = Not Provided</b>  <b>PAH = Polycyclic Aromatic Hydrocarbons</b>  <b>RSL = Regional Screening Level</b>  <b>TCE = Trichloroethylene</b>  <b>TPH-DRO = Total Petroleum Hydrocarbons - Diesel Range Organics</b>  <b>TPH-GRO = Total Petroleum Hydrocarbons - Gasoline Range Organics</b></p> <p><b>Source: Hayley &amp; Aldrich 2014a; Hayley &amp; Aldrich 2014b; Hayley &amp; Aldrich 2014c</b></p>								



### 3.7 Sustainability

*Sustainability* is defined according to the Washington DC Sustainability Plan as an approach to “...meeting our economic, social, and environmental needs while ensuring that future generations will also be able to meet their own needs.” Managing risks from finite resources and climate change impacts are at the core of a sustainability assessment. According to the DC Plan (DCOP, DDOE 2012), this sustainability commitment in DC includes:

- protection from the negative impacts of climate change that may damage life and property;
- more efficient resource use to reduce costs for energy, clean water, and other utilities;

Please note that for additional understanding of relevant land use, water resource, and transportation related policies which might affect the proposed project’s sustainability, see 3.1.1, 3.3.2, and 3.5 of this EMS.

The 14 acre site, located within an industrial neighborhood, currently consists of a parking lot, a salt dome and a bicycle storage and maintenance facility for Capitol Bikeshare. Impervious surfaces make up approximately 48% of the site, covered by structures, parking lots, roads and impervious landscape. Currently, the energy use at the site is limited to the light industrial operations of the businesses, although some energy is used by lighting of the parking lots. On average, light industrial uses consume approximately 10 kilowatt hours per square foot per year, or approximately 1,210,000 kwh/per for the structures on the site (MGE 2012). Similarly, light industrial uses consume approximately two gallons per square foot per day depending on the type of industrial activity, or approximately 242,000 gallons of water for the site per day (USEPA 2012). Super Salvage operates as an industrial recycling facility, re-distributing and recycling steel and other materials.

#### 3.7.1 Existing Conditions of Current DC United Operations at RFK Stadium

DC United currently operates at RFK stadium located in Washington, DC. The sustainability characteristics of RFK stadium are provided here for comparative purposes for the proposed stadium.

RFK was constructed in 1960-1961 and designed to accommodate approximately 45,000 people, while configured for approximately 46,000 seats. In addition to the approximately 400,500 square foot structure, the overall site contains approximately 200,000 square feet of impervious parking surface. RFK consumed approximately 16 kwh per sq. ft. based on

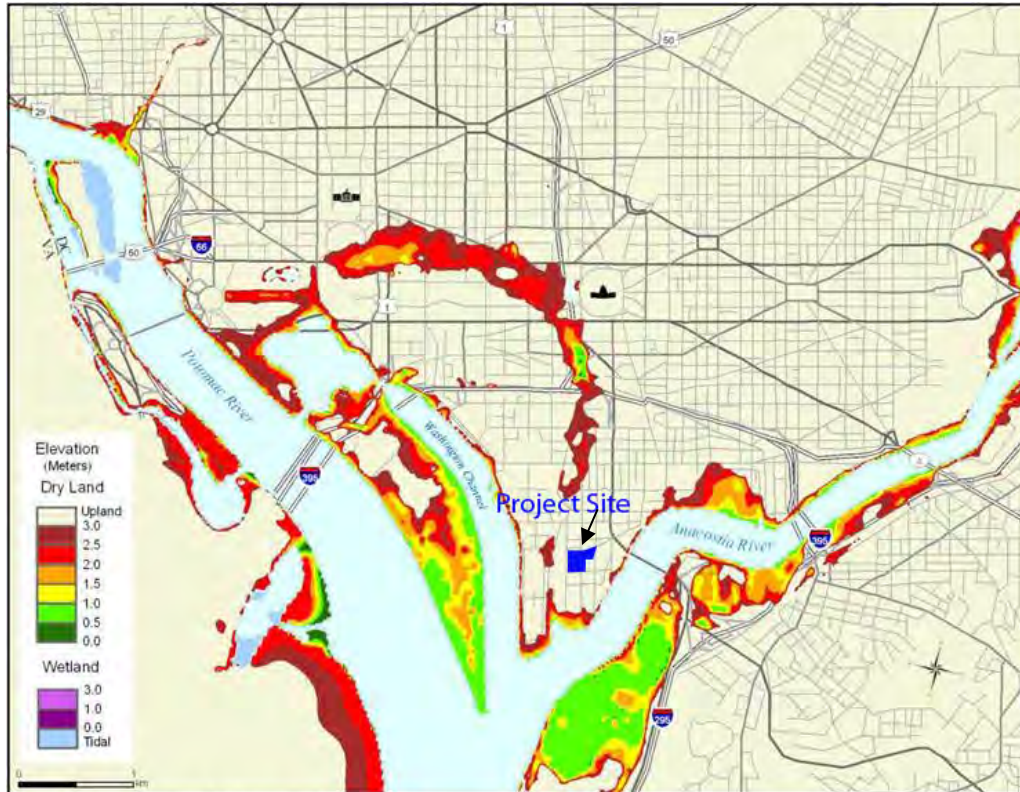
monthly electricity metering over the course of one year<sup>6</sup>. It is assumed that the majority of this electricity is used to power field lighting, concourse and parking lot lighting, concession operations and HVAC for enclosed stadium spaces. Since stadiums can consume approximately 5 gallons of water per attendee per event, it can be assumed that a sold-out RFK stadium with seating for a 46,000 person event might consume approximately 230,000 gallons of water in one day (NCDENR).

### **3.7.2 Climate Change**

DC is prone to river flooding from significant storm events such as Hurricane Isabel's strong winds and storm surge, which flooded the Washington Navy Yard and elevated the Potomac 11.3 feet above normal at the Wisconsin Avenue flood gauge in Georgetown (Ambrose 2013). While predictions of sea level rise for Washington DC, ranging from .1m to 5.0m suggest that the site itself would not likely be threatened, the nearby shoreline of Buzzard's Point falls within this elevation range and would likely be threatened (see Figure 3-64) (Wilcox 2012).

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<sup>6</sup> PEPCO, Nov 2012 utility bill provided to AECOM by Events DC on March 6, 2014



#### Elevations of Land Close to Sea Level

Elevations are above spring high water, which is the average high tide during new and full moons, and approximately the inland boundary of tidal wetlands. This map is a general graphical representation of elevations in the area depicted, not designed to estimate the precise elevations at specific locations. Due to the use of a variety of data sources, actual elevations at specific locations may be 50 cm above or below the elevation shown for Washington, but 150 cm for Maryland and Virginia. Source: J.G. Titus and J Wang. 2008. "Maps of Lands Close to Sea Level along the Mid-Atlantic Coast". US Environmental Protection Agency.

#### Figure 3-64: Elevations of land close to sea level

Source: *Civil Engineering Magazine of the American Society of Civil Engineers (Wilcox 2012)*

Other physical climate changes to the region are projected to include rising temperature and increases in both heavy downpours and the extent of drought, which could increase erosion and flooding in coastal and low lying areas (Titus and Hudgens 2010).

Efficient consumption and processing of materials and resources is another area specifically addressed by Sustainable DC with goals calling for obtaining 25% of local food within a 100 mile radius and increasing recycling by diverting 80% of waste from landfill through recycling, composting and conversion. The waste reduction goals include banning Styrofoam and non-recyclable plastic containers from food outlets and encouraging retailers and suppliers to find alternative, affordable and environmentally-preferable packaging materials (DCOP, DDOE 2012).

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