

LANDOVER EARTH RESOURCES AFFECTED ENVIRONMENT OVERVIEW

- The topography of the site slopes downward to the north with an elevation of approximately 180 feet AMSL along the southern-most boundary by Landover Road to approximately 100 feet AMSL along Evarts Street to the north.
- The Landover site is classified as typical of the Upper Cretaceous Age Brightseat-Severn Formation as detailed in the Geologic Map of Prince George’s County, Maryland.
- USDA-NRCS has identified six major soil associations within the Landover site, including Urban Land-Russet-Christiana Complex, Urban Land-Adelphia Complex, Urban Land-Collington West, Adelphia-Holmdel-Urban Land Complex, Christiana-Downer-Urban Land Complex, and Collington-Wist-Urban Land Complex.

FACIES

A body of rock with specified characteristics.

AMSL

Above mean sea level (AMSL) is the average level for the surface of one or more of Earth’s oceans from which heights such as elevations may be measured.

PHYSIOGRAPHIC PROVINCE

A geographic region with a characteristic geomorphology and often specific subsurface rock type or structural elements.



Example of manmade grades remaining from construction and demolition of Landover Mall

6.1 Affected Environment

The following sections describe the Affected Environment for the Landover site and associated study areas at each resource topic evaluated in this Environmental Impact Statement (EIS).

6.1.1 Earth Resources

The following sections describe the affected environment for earth resources for the Landover site. Earth resources encompass geology, topography, and soils.

6.1.1.1 Geology and Topography

The topography of the site slopes downward slightly to the north with an elevation of approximately 180 feet above mean sea level (AMSL) along the southern-most boundary by Landover Road to approximately 100 feet AMSL along Evarts Street to the north, as shown in figure 6-2. Localized moderate to steep slopes, associated with regrading that occurred to accommodate the construction and operation of the Landover Mall, are located along the remaining foundation of the demolished mall buildings. Demolition debris exists in piles throughout the site and further contribute to variations in topography on this site.

The geology of the Landover site is typical of the Upper Cretaceous Age Brightseat-Severn Formation as detailed in the Geologic Map of Prince George's County, Maryland. Minerals within this formation consist of gray to medium gray, poorly sorted fine-grained sand that directly underlies on-site soils. The base of the Brightseat-Severn Formation may contain localized clusters of small pebbles, phosphorous clasts, and fossilized shark teeth. The Brightseat-Severn Formation is estimated to be approximately 50 feet thick in the vicinity of the site and directly overlies the sand and gravel facies of the Potomac Group (Glaser 2003). The Potomac Group is Lower Cretaceous in age and consists of the undifferentiated Patapsco, Arundel, and Patuxent Formations. In the vicinity of the site, the Potomac Group is composed of white to yellow-brown interbedded quartz sand and silty clay lenses. The Potomac Group is estimated to be more than 200 feet thick for areas underlying the site (Glaser 2003). General geological attributes, including attributes of the Atlantic Coastal Plain physiographic province are described in sections 5.1.1. Figure 6-3 illustrates the location of the Landover site within the Coastal Plain Physiographic Province, and figure 6-4 illustrates the geology of the Landover site and its environs.

Figure 6-2: Landover Topography

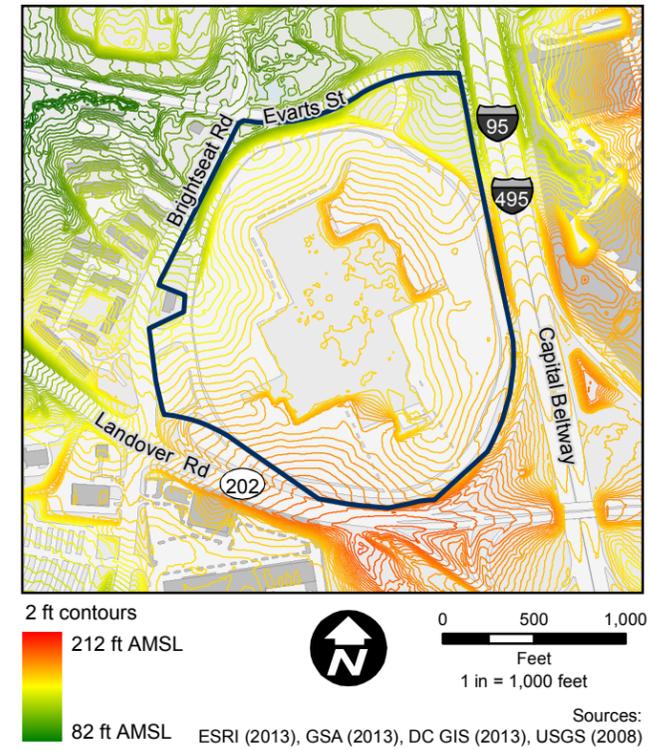


Figure 6-3: Physiographic Provinces of the National Capital Region

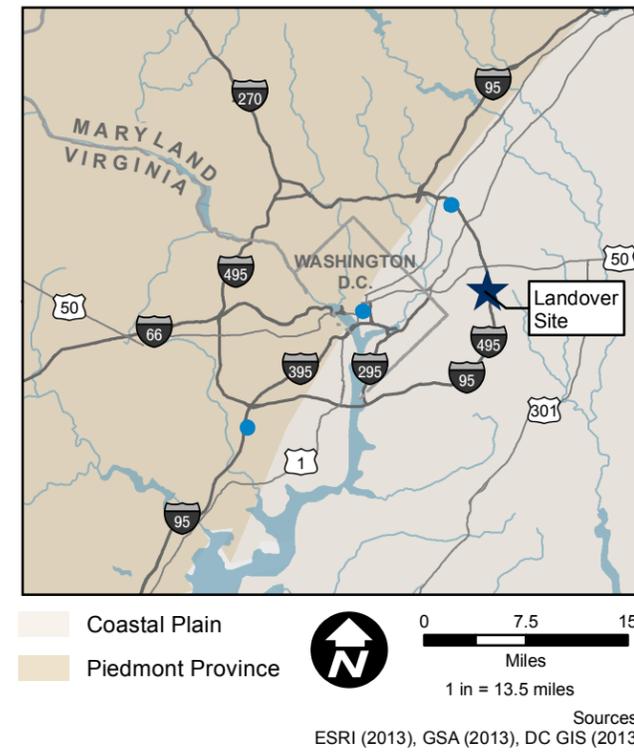
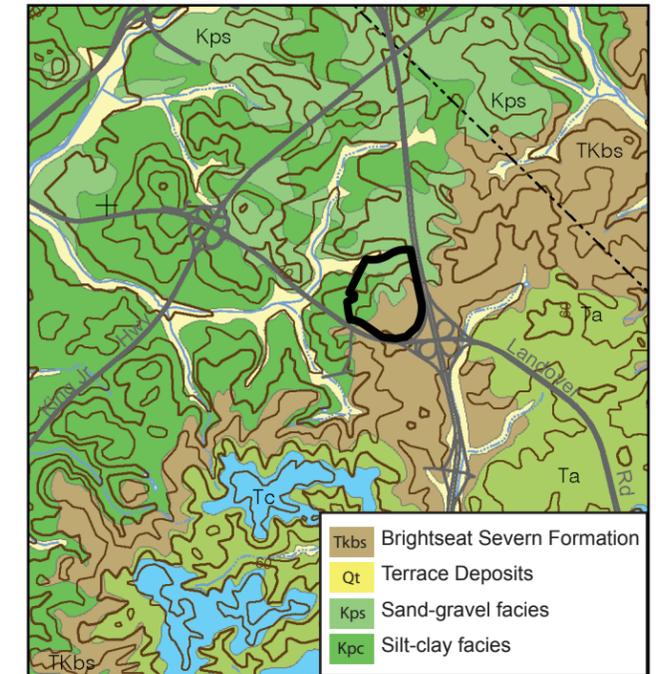


Figure 6-4: Landover Geology Overview



The potential of erosion for soil types is demonstrated using the **erosion K factor**, which indicates the susceptibility of a soil to erosion by water. K values range from 0.02 to 0.69. All other factors being equal, the higher the value, the more susceptible the soil is to erosion by water.

Table 6-1: Landover Site Soil Characteristics

Soil Type	Acres within Site	Slopes (percent)	Water Erosion Factor (K factor)	Wind Erosion Factor	Building potential	Drainage and flooding potential	Hydric
Urban land-Russet-Christiana complex	29	0 - 5	N/A	N/A	N/A	Moderately well-drained and nearly zero flooding potential	No
Urban land-Adelphia complex	17	0 - 5	N/A	N/A	N/A	Moderately well-drained and nearly zero flooding potential	Yes
Urban land-Collington-Wist complex	27	0 - 5	N/A	N/A	N/A	Well-drained and nearly zero flooding potential	No
Adelphia-Holmdel-Urban land complex	6	0 - 5	0.37	3	Very limited	Moderately well-drained and nearly zero flooding potential	No
Christiana-Downer-Urban land complex	1	5 - 15	0.49	6	Very limited	Moderately well-drained and nearly zero flooding potential	No
Collington-Wist-Urban land complex	4	5 - 15	0.20	3	Very limited	Well-drained and nearly zero flooding potential	No

6.1.1.2 Soils

The United States Department of Agriculture (USDA) Natural Resource Conservation Service (NRCS) have identified six major soil associations within the Landover site, as shown in table 6-1 and figure 6-5. The vast majority of the site has been previously developed and 90 percent of the site is currently impervious surfaces. Each of the site soil associations include an urban land component, meaning the soils have been or are currently altered by development. None of the soils identified at the site are considered highly erodible soils nor are any of the soils considered to be prime farmland (USDA 2015a). The potential of erosion for soil types is demonstrated using the erosion K factor, which indicates the susceptibility of a soil to erosion by water. K values range from 0.02 to 0.69. All other factors being equal, the higher the value, the more susceptible the soil is to erosion by water. Susceptibility of soils to wind erosion is detailed using a wind erodibility group rating system, in which soils are assigned to a number ranging from 1 to 8, with soils assigned to group 1 having the greatest susceptibility to wind erosion and those in group 8 being the least susceptible. From west to east, soil associations are as follows:

Urban Land-Russet-Christiana Complex

The Urban Land-Russet-Christiana Complex is located along the western site boundary and central portion of the site and comprises 36 percent of the site. This soil complex consists primarily of fine sandy loam and sandy clay loam and is typically located along interstream divides and swales, with slopes ranging from 0 to 5 percent. This soil association is deep, moderately well drained, and has nearly a zero percent chance of flooding, with flooding occurring on these soils less than once in 500 years. These soils have not been rated for building potential due to the high composition of urban land and associated alterations in them. Similarly, this soil has not been given a K factor or a wind erosion rating (USDA 1967, 2015a).

Urban Land-Adelphia Complex

The Urban Land-Adelphia Complex is located along the southwestern boundary and center portion of the site and comprises 20 percent of the site. This soil complex consists primarily of silt loam to fine sandy loam and is typically located along swales and drainage ways. Its slopes range from 0 to 5 percent. This soil association is deep, moderately well drained, and has nearly a zero percent chance of flooding, similar to the Urban-Land-Russet-Christiana Complex. These soils have not been rated for building potential as a result of the high composition of urban land and associated alterations in them. Similarly, this soil has not been given a K factor or a wind erosion rating (USDA 2015a). However, this soil complex meets the criteria of hydric soils, which may indicate the presence of wetlands in the past.

Urban Land-Collington-Wist Complex

The Urban Land-Collington-Wist Complex is located at the center of the site and along the southern/southeastern site boundary and comprises 32 percent of the site. This soil complex consists primarily of fine sandy loam and sandy clay loam and is typically located along interstream divides and interfluves, with slopes ranging from 0 to 5 percent. This soil association is deep, well drained, and has nearly a zero percent chance of flooding. These soils have not been rated for building potential as a result of the high composition of urban land and associated alterations in them. Similarly, this soil has not been given a K factor or a wind erosion rating (USDA 2015a).

Adelphia-Holmdel-Urban Land Complex

The Adelphia-Holmdel-Urban Land Complex is located in the northeast portion of the site and comprises 7.5 percent of the site. This soil complex consists primarily of fine sandy loam and sandy clay loam and is typically located in depressions, interfluves, swales, and drainage ways, with a slope ranging from 0 to 5 percent. This soil association is deep, somewhat poorly drained, and has nearly a zero percent chance of flooding. These soils have a limited building potential due primarily to the shallowness of the saturated zone. This soil type has a K factor of 0.37 and a wind erosion rating of 3 (USDA 2015a).

Christiana-Downer-Urban Land Complex

The Christiana-Downer-Urban Land Complex is located along the northeastern boundary of the site and comprises less than 1 percent of the site. This soil complex consists primarily of silt loam and clay loam and is located in interfluves, hillslopes, and swales. Its slopes range from 5 to 15 percent. This soil association is deep, moderately well drained, and has nearly a zero percent chance of flooding. These soils have a very limited building potential based on their slope and have a K factor of 0.49 and a wind erosion rating of 6 (USDA 2015a).

Collington-Wist-Urban Land Complex

The Collington-Wist-Urban Land Complex is located along the eastern and southeastern boundary of the site and comprises 5 percent of the site. This soil complex consists primarily of fine sandy loam and clay loam and is located in interfluves and interstream divides, with slopes ranging from 5 to 15 percent. This soil association is deep, well drained, and has nearly a zero percent chance of flooding. These soils have a very limited building potential based on their slope and have a K factor of 0.20 and a wind erosion rating of 3 (USDA 2015a).

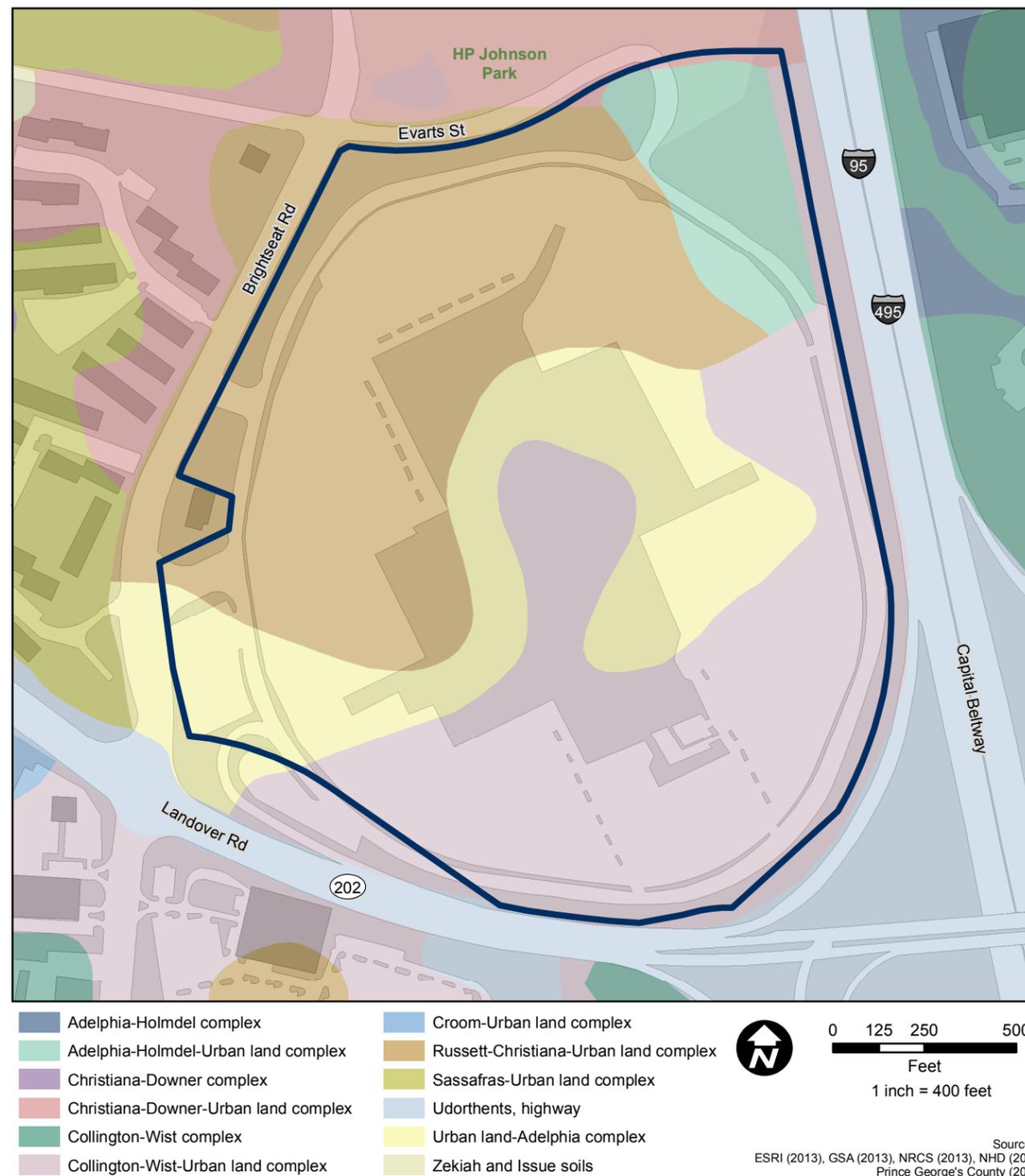
INTERFLUVE

A narrow, elongated, and plateau-like or ridge-like landform between two valleys, or high ground between two rivers in the same drainage system.

LOAM

A fertile soil of clay and sand containing humus.

Figure 6-5: Landover Soil Map

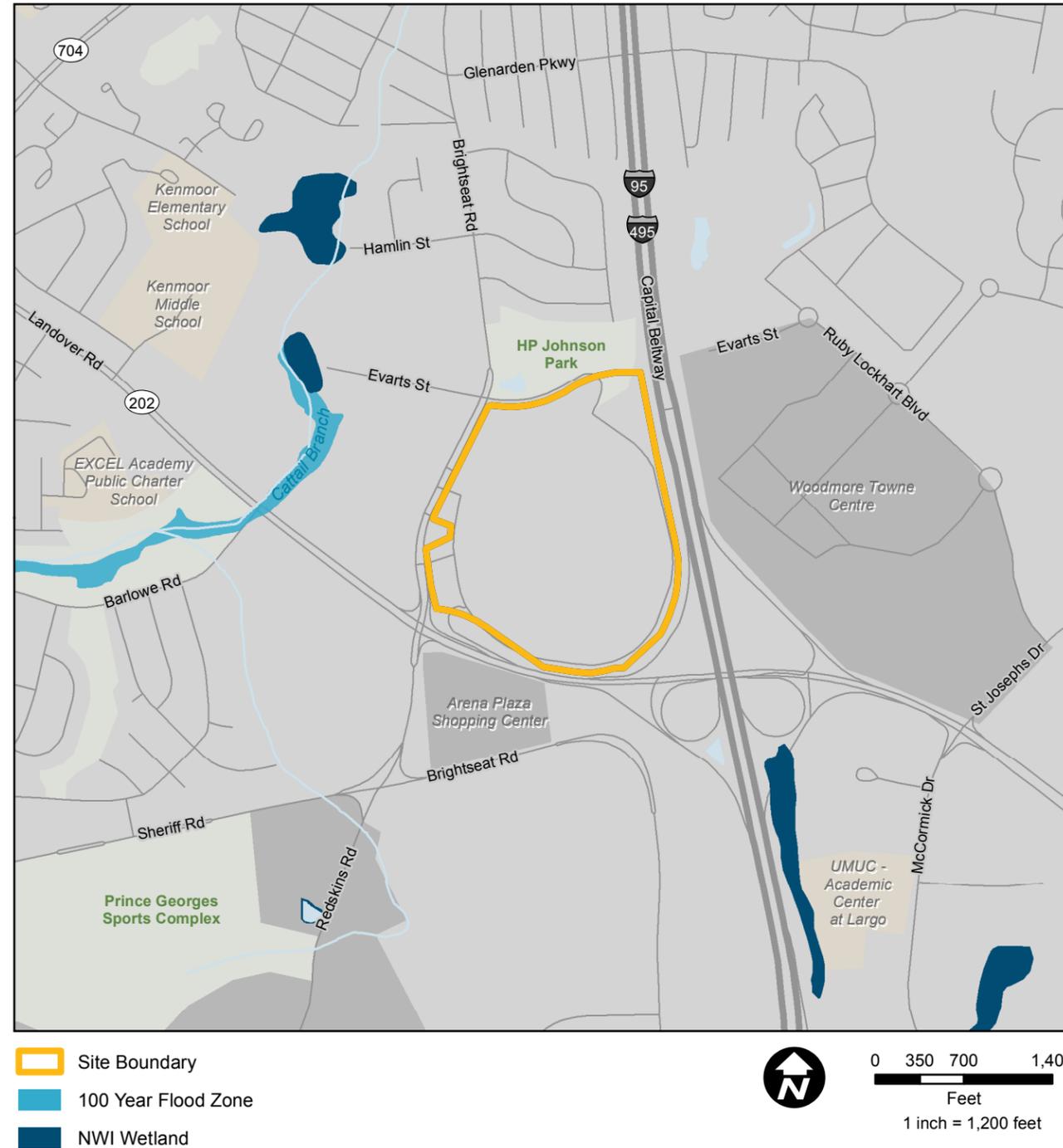


Sources:
ESRI (2013), GSA (2013), NRCS (2013), NHD (2013)
Prince George's County (2013)

**LANDOVER WATER RESOURCES
AFFECTED ENVIRONMENT
OVERVIEW**

- The Landover site is located within the Lower Anacostia River watershed and the larger Chesapeake Bay watershed; however, there are no surface waters within the site. Therefore, the hydrology of the site is composed of stormwater runoff rather than natural surface waters.
- There are no floodplains within the site; however, a small buffer surrounding Cattail Branch to the west is classified as flood zone AE.
- There are no wetlands at the Landover site.

Figure 6-6: Landover Water Resources Map



Sources:
ESRI (2013), GSA (2013), FEMA (2013), NHD (2013)
Prince George's County (2013)

6.1.2 Water Resources

The following sections describe the affected environment for water resources for the Landover site. Water resources encompass surface water, groundwater, hydrology, wetlands, and floodplains.

6.1.2.1 Surface Water

The Landover site is located primarily within the subwatershed of the Lower Anacostia River, which is a tributary of the mainstem Anacostia River and the Potomac River. A small eastern portion of the site is in the Southwest Branch of the Western Branch Patuxent River subwatershed. Both subwatersheds are part of the larger Chesapeake Bay watershed. No surface water bodies or streams exist on the site, as shown in figure 6-6. There are multiple small perennial ponds near the site. The largest water body near the site is Northampton Lake, located 2.8 miles to the southeast. The nearest surface water to the site is Cattail Branch, an intermittent/perennial tributary of Beaverdam Creek, located approximately 1,200 feet to the west across Brightseat Road. Beaverdam Creek flows into the Anacostia River, which ultimately discharges into the Potomac River. As previously described in sections 4.1.2 and 5.1.2, the Potomac and Anacostia Rivers are impaired due to multiple pollutants.

6.1.2.2 Hydrology

The Landover site consists of a large amount of impervious surface with no natural surface waters; therefore, the hydrology of the site is composed primarily of stormwater runoff. During the operation of Landover Mall, the site had an extensive stormwater collection system. Stormwater was discharged off-site through numerous storm sewers located throughout the paved areas. While the underground infrastructure remains, it is not actively used. Therefore, stormwater follows topography and drains into neighboring storm sewers. The site lies within the area of the Landover Gateway Sector Plan of 2009 (M-NCPPC 2009). The plan addresses the management of stormwater quality and quantity to improve water quality in the local area watersheds. One element of the plan suggests the protection and improvement of green infrastructure within the study area of the plan, including around the site, especially Cattail Branch. Additional recommendations include placing a priority on stormwater filtration throughout the area and the restoration and enhancement of water quality, including the implementation of stormwater best management practices (BMPs).

6.1.2.3 Groundwater

Groundwater in the region of the site is contained generally within semi-consolidated sand or gravel aquifers of the North Atlantic Coastal Plain aquifer system (USGS 2003). Aquifers within Prince George's County include Aquia, Magothy, Patapsco, and Patuxent (Richardson 1976; Maryland Geological Survey 2014). Based on a review of local topography and surface water bodies, shallow groundwater is anticipated to be encountered at approximately 30 feet below ground surface, and is expected to flow southwest towards Cattail Branch under natural conditions. Groundwater flow direction may vary based on pumping, dewatering, underground utilities, and seasonal fluctuation (GSA 2014d). Groundwater monitoring wells located approximately 3.5 to 8 miles from the site recorded water levels within the local aquifers ranging from approximately 15 feet to 181 feet below the surface (USGS n.d.).

Surface water withdrawals provide the majority of the water supply for Prince George's County; however, some smaller water systems in the southern part of the county use groundwater (MDE 2005; MWCOG n.d.). In the region, groundwater resources also can provide emergency backup water supplies for hospitals, government facilities, and embassies (USGS 2010).

A Phase I Environmental Site Assessment was performed at the site in October 2014 (GSA 2014d). No groundwater contamination was observed at the time; however, historical operations by several former tenants, including a dry cleaner, manufactured gas plant, and auto repair shop may have previously adversely impacted groundwater. Additionally, the Phase I Environmental Site Assessment documented evidence of underground storage tanks as well as a sewage treatment plant north of Everts Street that was likely installed at the time the mall was constructed and demolished sometime between 1980 and 1992, which may have impacted the groundwater.

6.1.2.4 Wetlands

According to the National Wetlands Inventory (NWI), no wetlands are located on the site (USFWS 2015b). Freshwater forested, scrub/shrub, and emergent wetlands that are seasonally flooded are located along Cattail Branch southwest of the site. Freshwater forested and scrub/shrub wetlands are located along manmade drainage ditches associated with I-495, located approximately 1,700 feet southeast of the site.

6.1.2.5 Floodplains

According to both the preliminary revised Flood Insurance Study and the effective Flood Insurance Rate Map (FIRM) for Prince George's County, there are no floodplains within the Landover site boundaries (FEMA 1996, 2013a). The closest floodplain is located to the west and is associated with Cattail Branch as shown in figure 6-6. This is classified as flood zone A and described as "areas subject to inundation by the 1-percent-annual-chance flood event"; however, there are no base flood elevations for this floodplain (FEMA 2014a).

FLOOD INSURANCE RATE MAP (FIRM)

A map created by the National Flood Insurance Program for floodplain management and insurance purposes that shows base flood elevations, flood zones, and floodplain boundaries.

FLOODPLAIN DEFINITIONS

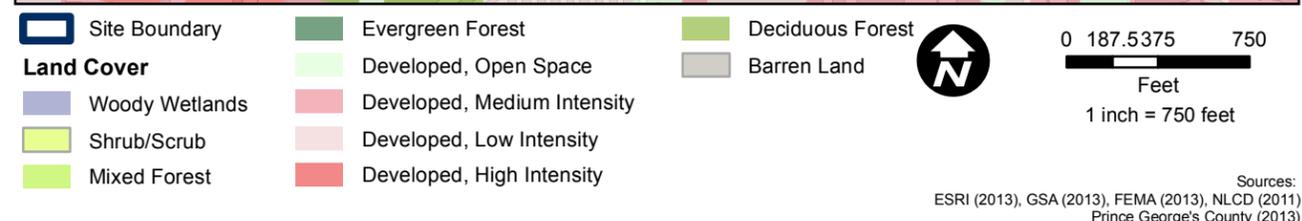
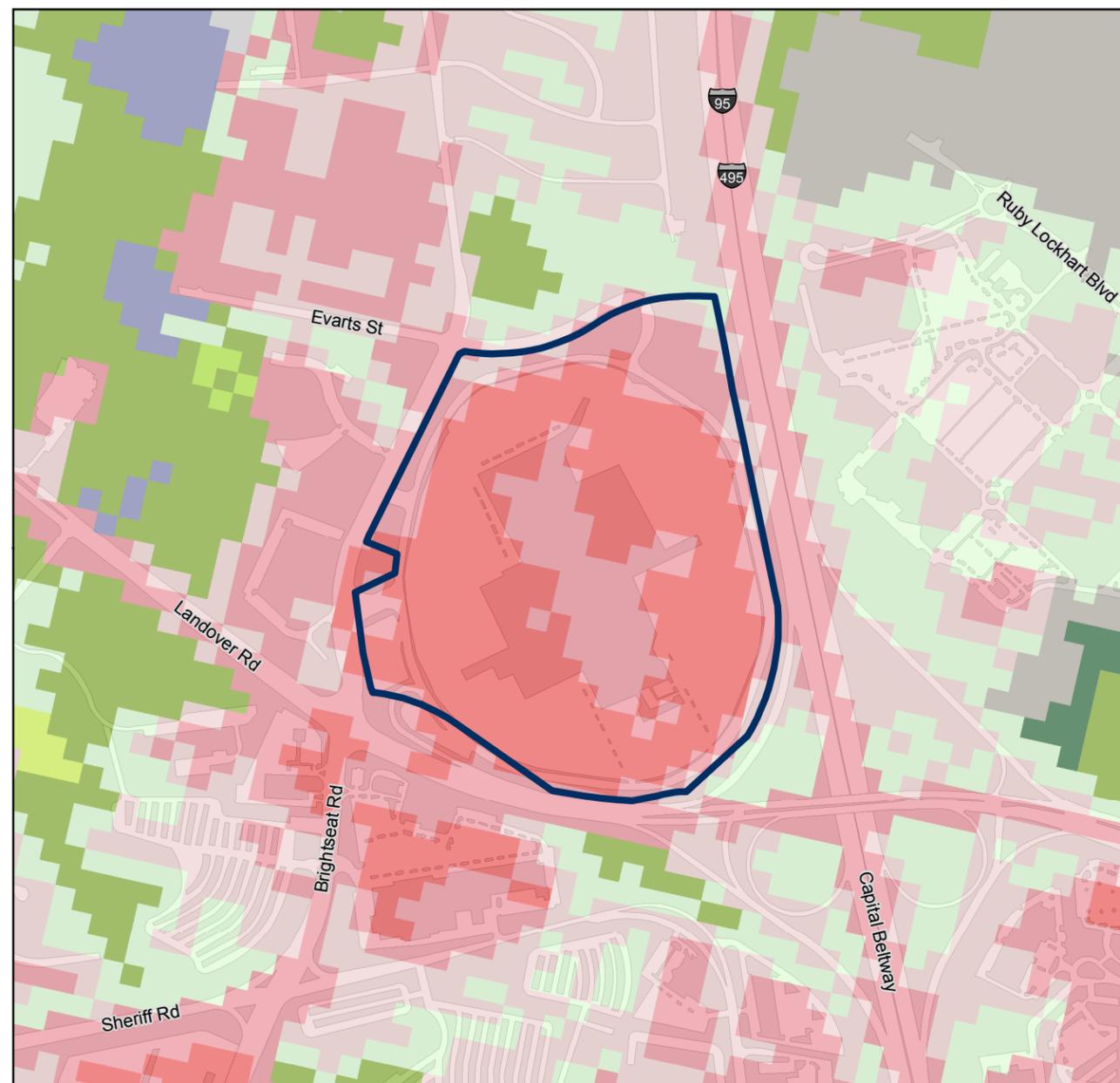
100-year flood - A flood event that has a 1% probability of occurring in any given year.

500-year flood - A flood event that has a 0.2% probability of occurring in any given year.

PHASE I ENVIRONMENTAL SITE ASSESSMENT (ESA)

A report that identifies potential or existing environmental contamination liabilities for real estate.

Figure 6-7: Land Cover Classes for the Landover Site



LANDOVER BIOLOGICAL RESOURCES AFFECTED ENVIRONMENT OVERVIEW

- The Landover site is a previously developed site with minimal vegetation, the vegetation that does occur on the site consists of strips of woodland along the perimeter; trees on parking islands of the former Sears department store; and some grasses, weeds, and shrubs.
- There is no surface water, and therefore no aquatic habitats on the site to support aquatic species.
- The Landover site lacks many terrestrial species because there is inadequate vegetation present on the site. However, those species that do exist on or adjacent to the site include Virginia opossum, eastern cottontail, coyote, eastern chipmunk, squirrel, raccoon, and species of bat.

6.1.3 Biological Resources

The following sections describe the affected environment for biological resources for the Landover site. Biological resources include vegetation, aquatic plant and animal species, terrestrial plant and animal species, and special status species.

6.1.3.1 Vegetation

The Landover site is a previously developed site, with minimal vegetation. The vegetation that is present on the site consists of strips of woodland along the perimeter and trees on parking islands of the former Sears department store. There are woodlands in proximity to the site, and a wooded stream valley (Cattail Branch) approximately 1,000 feet to the west of the site. As illustrated in figure 6-7, the mapped National Land Cover Database (NLCD) land cover class for the site is low to medium intensity developed (USGS 2011). This land cover class is defined by the U.S. Environmental Protection Agency (USEPA) (2001) as impervious surfaces accounting for 20 to 79 percent of the total cover, and includes former and existing developments.

6.1.3.2 Aquatic Species

There are no surface water bodies located on the Landover site. As a result, no aquatic habitats are present on-site.