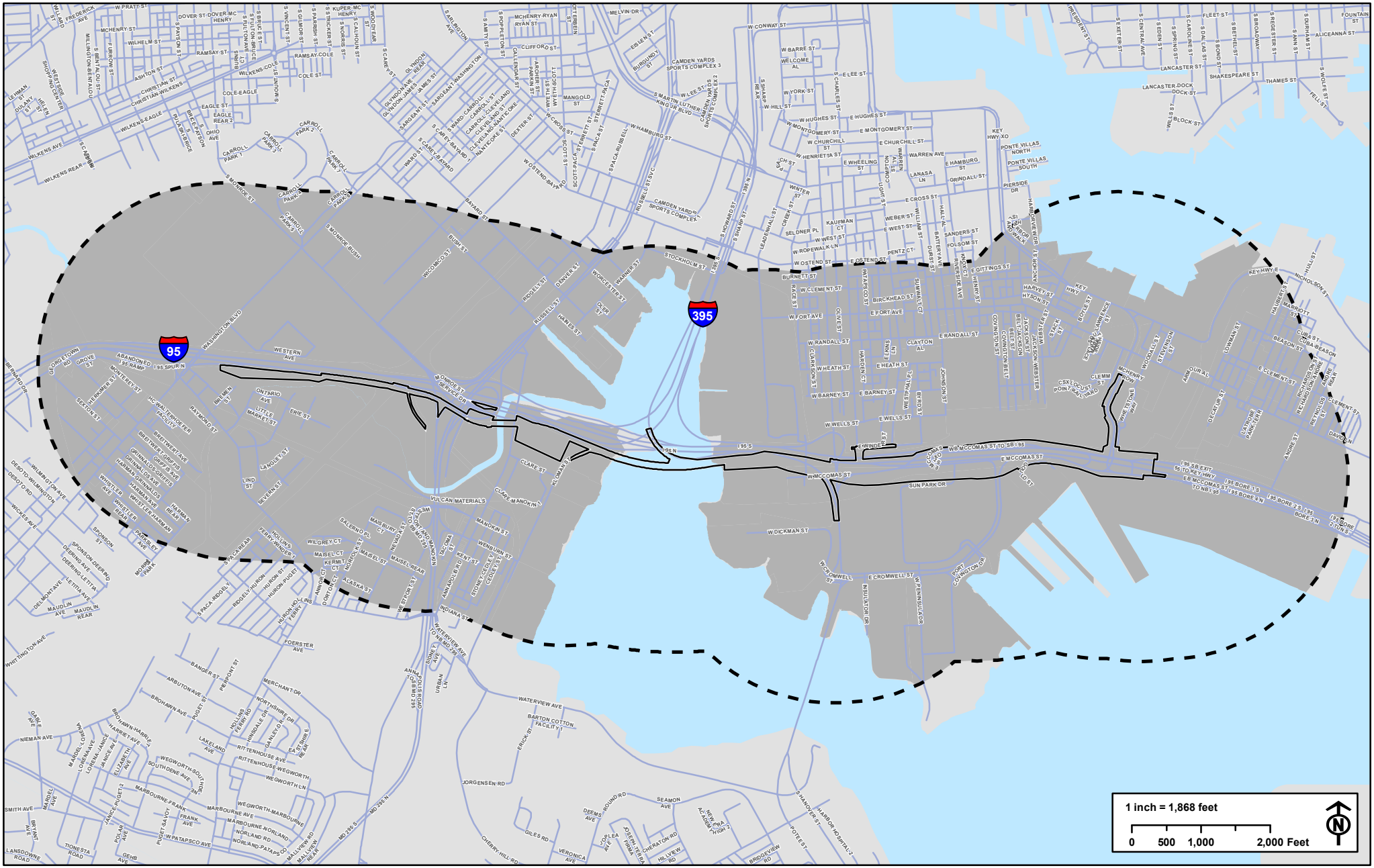
3.0 AFFECTED ENVIRONMENT AND ENVIRONMENTAL CONSEQUENCES

This chapter summarizes the findings of the environmental analyses performed to determine the potential for adverse impacts in the following categories: transportation, land use, socio-economics, neighborhoods, community facilities, parks, environmental justice, visual character, noise, air quality, natural resources, cultural resources, contaminated materials, utilities, indirect & cumulative effects, and construction effects. Construction impacts for each resource are considered in the construction effects section. With the exception of the utilities and construction effects sections, each is a summary of a detailed technical report included as an appendix to this EA.

Each section is generally organized in four parts: regulatory context & methodology, existing & future conditions, probable consequences, and potential mitigation measures. Where the potential for adverse impacts is identified and mitigation measures are feasible, such measures are discussed.

Only the No Build and Recommended Preferred Alternative are discussed in this chapter. During the alternatives analysis, the various options for each project element were analyzed to determine how they perform in the travel demand forecasting/traffic modeling. Any option that did not move vehicles efficiently, or that was projected to have a negative impact on I-95 was immediately removed from consideration. MDTA, BCDOT and FHWA agreed that should two options for a particular element perform equally well, then potential environmental impacts would be used to decide between them. The findings indicated that for each project element one option was clearly outperforming the others. These high performing options were combined to create the Recommended Preferred Alternative analyzed in this EA. Please refer to Chapter 2, “Proposed Project and Alternatives Considered” for a description of the Recommended Preferred Alternative and to Appendix A, “Alternatives Development Technical Report” and Appendix B, “Traffic Analysis Technical Report” for a detailed description of the alternatives analysis process.

The study area, as shown on Figure 3-1, is generally a half-mile buffer around the Recommended Preferred Alternative’s construction limit of disturbance (LOD). In instances where the study area for a particular resource differs, it is described in the appropriate section of this chapter. The study area includes 14 census tracts around the project site.



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DEPARTMENT OF TRANSPORTATION
BALTIMORE CITY

Maryland Transportation Authority

Construction LOD

1/2-Mile Study Area

Source: STV (2017) from Baltimore City Planning Department GIS data (2014)

I-95 ACCESS IMPROVEMENTS
FIGURE 3-1

STUDY AREA

MARYLAND TRANSPORTATION AUTHORITY

BALTIMORE CITY DOT

3.1 TRANSPORTATION

In support of the economic development and land use changes enabled by the City's zoning for Port Covington, the I-95 Access Improvements Project will address the increased transportation demand projected for Port Covington and, in particular, the projected increase in traffic on I-95, the inadequacy of existing capacity and roadway geometry to better accommodate projected traffic demands (without additional through lanes on I-95), and the limited multimodal connections around and across I-95 in the vicinity of Port Covington.

This section summarizes the detailed information presented in Appendix B, "Traffic Analysis Technical Report", and includes a description of the existing and planned transportation systems, services, and facilities in the I-95 Access Improvements Project study area. The future analyses compare the No Build Alternative and the Recommended Preferred Alternative to determine whether the Recommended Preferred Alternative would result in adverse effects to traffic or transit; mitigation strategies to address adverse effects are also presented, together with strategies to minimize unavoidable effects.

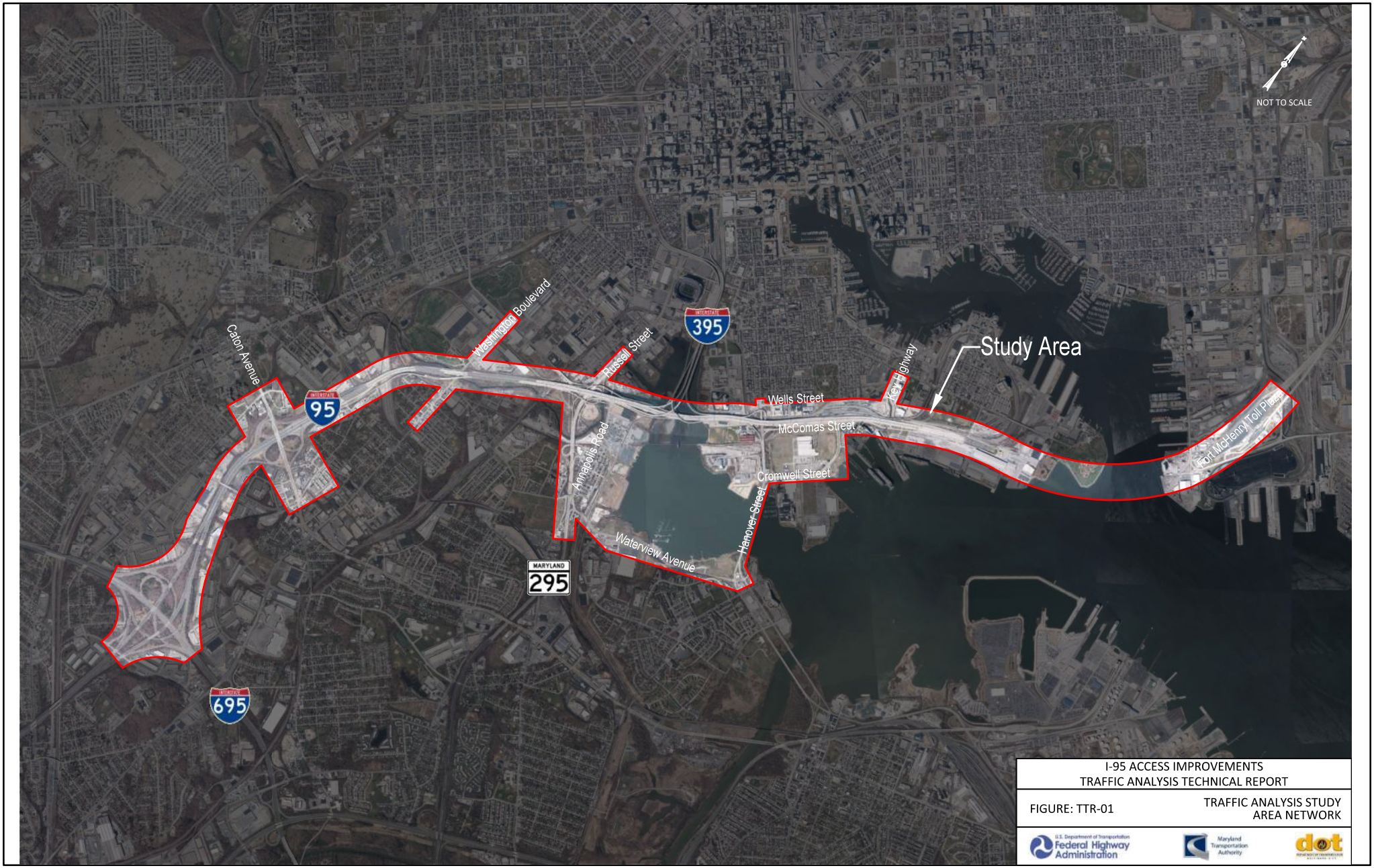
3.1.1 Regulatory Context and Methodology

I-95 is part of the Interstate Highway System in Baltimore City and is owned, operated, and maintained by MDTA. The BCDOT is responsible for other arterial and collector roadways in the study area, such as Hanover Street, Key Highway, and McComas Street. The FHWA has authority over modifications to access points on the Interstate Highway System. *Section 111(a) of Title 23, United States Code*, provides that State Departments of Transportation may not add any points of access to, or exits from, the Interstate Highway System without prior approval of the US Department of Transportation (USDOT) Secretary of Transportation. The Secretary has delegated this authority to FHWA, pursuant to *Title 23, Code of Federal Regulations, Paragraph 1.48(b)(10)*. To implement this authority, FHWA published the *Policy on Access to the Interstate System*[3]. Approval of any proposed modification to interstate access constitutes a federal action subject to review under the NEPA.

MDTA completed an Interchange Access Point Approval (IAPA) report, currently under review by FHWA, detailing the traffic operations analysis conducted for this project; please refer to Appendix B, "Traffic Analysis Technical Report" for detailed descriptions of the study area limits, years of analysis, methodology for travel demand forecasting and modeling, scenario development, and, operational parameters, as well as the analysis results for the No Build and Recommended Preferred Alternatives.

The traffic analysis study area includes I-95 and all interchanges from the I-695 interchange to the Fort McHenry Tunnel Toll Plaza, and shown on Figure 3-2. Traffic analyses of the Existing Conditions 2016, the No Build Alternative 2040, and the Recommended Preferred Alternative 2040 were used to assess and compare travel conditions. The AM and PM peak hour traffic data along I-95 were provided by MDTA. Street traffic volumes were collected for AM and PM peak periods and reviewed to determine the highest AM and PM one-hour periods.

[3] Policy on Access to the Interstate System (Originally published in October 1990 and subsequently updated in 1998, 2009, and 2017.



dot DEPARTMENT OF TRANSPORTATION BALTIMORE CITY

Maryland Transportation Authority

I-95 ACCESS IMPROVEMENTS
FIGURE 3-2

TRAFFIC ANALYSIS STUDY AREA

MARYLAND TRANSPORTATION AUTHORITY

BALTIMORE CITY DOT

Peak hours Level of Service (LOS) analyses were conducted for all freeway segments and signalized and unsignalized intersections within the traffic analysis study area. LOS, as defined by the Highway Capacity Manual, is a quantitative stratification of a performance measure or measures that represents quality of service, measured on an A thru F scale, with LOS A representing the best operating conditions from the traveler's perspective and LOS F representing the worst. In Baltimore City, a facility operating at or better than LOS D is considered acceptable. However, LOS E may be considered acceptable due to the constraints of an urban environment.

In order to determine roadway system improvement needs, Highway Capacity Software (HCS), Synchro, and VISSIM were utilized to model traffic operations under the Existing Condition 2016, the No Build Alternative 2040, and the Recommended Preferred Alternative 2040 conditions. Descriptions of how each was used are shown in Table 3-1.

Table 3-1: Traffic Modeling Software

Software	Description
HCS (Highway Capacity Software)	• HCS was used to evaluate freeway, weaving, and ramp operations, as well as to determine freeway travel speeds. • This software program uses methodologies defined in the Highway Capacity Manual (HCM). • HCS is a tool that calculates measures of effectiveness at a given point along a freeway without accounting for upstream and downstream effects
Synchro	• Synchro software was used to assess traffic operations at signalized and unsignalized street intersections and corridors. • The analysis utilizes signalized and stop-controlled intersection methodologies from the HCM.
VISSIM	• VISSIM was used to evaluate freeway operations and travel times for segments within the study area. • VISSIM simulates traffic operations on freeway segments and provides traffic operational data, such as vehicle delay, density, travel speeds, travel times, and queuing at ramp terminals on freeway networks. It also accounts for upstream and downstream effects. • This software is a microscopic model that simulates multimodal traffic flows, including cars, trucks, buses, bicyclists, and pedestrians, and also simulates individual vehicle interaction throughout the transportation network.

These three software programs were used for the I-95 Access Improvements Project in conjunction with long-range travel forecasts using Baltimore Metropolitan Council's (BMC) Regional Travel Demand Model, to form a comparison between the No Build and Recommended Preferred Alternatives. These varying methodologies and analysis results are discussed within Appendix B, "Traffic Analysis Technical Report." Numerous analyses were performed for the following components of the roadway system to identify key traffic information for detailed engineering purposes:

- Freeway Section Analyses
- Ramp Junction Analyses
- Weaving Segment Analyses
- Intersection Analyses

3.1.2 Existing and Future Conditions

This section describes the existing and future roadways, transit, bicycle and pedestrian facilities, and parking conditions within the study area. The Port Covington peninsula is surrounded on three sides by the Middle Branch of the Patapsco River, with I-95 running on structure along the northern boundary. Transportation access to the peninsula is currently provided by north-south connections via Hanover Street and Key Highway; east-west access is provided via I-95 and McComas Street.

Roadways

The study area includes numerous major roadways where considerable amounts of traffic flow to and from Baltimore. There are three major interstates/freeways located within the traffic analysis study area, providing critical connections to and from Baltimore City. Local Roadway networks are comprised of north/south and east/west minor arterial and urban collector roads immediately adjacent to the Port Covington peninsula. Portions of Hanover Street, McComas Street, and Key Highway are also included in the traffic analysis study area due to the changes proposed to the I-95 ramps in Port Covington which connect to these streets. In addition, terminal intersections for the Washington Boulevard and Canton Avenue freeway ramps are included. More detailed descriptions of these roadways are provided in Table 3-2.

Table 3-2: Roadway Segments within the Study Area

Name	Federal Highway Functional Classification	Travel Direction	Number of Through Lanes/ Median Type	Description
I-95	Principal Arterial: Freeway/Expressway (Interstate)	North – South	6-8 Lanes / Divided	Connects Maine to Florida, through Baltimore City
I-395	Principal Arterial: Freeway/Expressway (Interstate)	North – South	4-6 Lanes / Divided	Connects I-95 to Downtown Baltimore City
MD 295 / Russell Street	Principal Arterial: Freeway/Expressway	North – South	6 Lanes / Divided	Connects Washington D.C. to Baltimore City
Hanover Street (MD 2)	Principal Arterial: Other Principal Arterial	North – South	4-7 Lanes / Undivided and Curbed Median	Connects Cherry Hill to Baltimore City, through Port Covington
Key Highway	Minor Arterial	North – South	4 Lanes	Connects I-95 via McComas Street to Baltimore City
McComas Street	Minor Arterial	East – West	2-5 Lanes / Divided	Connects Hanover Street and Key Highway to adjacent neighborhoods
Cromwell Street	Urban Collector	East – West	4-6 Lanes / Divided	Connects Hanover Street to Eastbound McComas Street in Port Covington
Wells Street	Minor Arterial	East – West	2 Lanes / Undivided	Connects residential streets within the Federal Hill neighborhood

As noted in Chapter 2, "Proposed Project and Alternatives Considered", the No Build Alternative assumes the full Port Covington development, as approved by Baltimore City, is in place but without any of the improvements under consideration in this project. The existing I-95 on- and off- ramps would remain as they are today. The No Build Alternative includes modifications to Hanover Street approved as part of the Port Covington Master Plan, including modifying the existing grade of Hanover Street, particularly south of the I-95 NB exit ramp to Hanover Street SB. Hanover Street would be widened to six lanes, and a median and turn lanes would be constructed along the corridor. Additional street intersections are also included along Hanover Street and McComas Street as part of the Port Covington Master Plan.

The Recommended Preferred Alternative includes several roadway changes to accommodate the anticipated increase in traffic associated with the Port Covington development. These are very briefly outlined below and are discussed in greater detail in Chapter 2, "Proposed Project and Alternatives Considered" and Appendix A, "Alternatives Development Technical Report."

Improvements to I-95 NB:

- A new off-ramp at MD 295/Russell Street running parallel to I-95 NB
- A new spur ramp from I-395 SB to connect with McComas Street
- Removal of existing exit ramp to Hanover Street
- Realignment and widening of the exit ramp at McComas Street leading to Key Highway
- A new on-ramp from McComas Street to I-95 NB

Improvements to I-95 SB:

- A new exit ramp to McComas Street immediately north of the existing on-ramp from McComas Street
- A new on-ramp from McComas Street WB

Modifications to local streets:

- Hanover Street – reconstruction to accommodate new grading for the redevelopment
- Key Highway – widening to six lanes between McComas Street and McHenry Row
- McComas Street – conversion to a two-way boulevard with a wide median to accommodate possible future light rail

Transit

Public transportation within the study area includes the MARC Train (Camden Line), Maryland Transit Administration (MTA) Light Rail, MTA Commuter Bus, MTA LocalLink Bus, MTA Express BusLink, Charm City Circulator, and Baltimore Water Taxi. Further detail on these transit modes follows. They are shown on Figure 3-2.

MARC

The Camden Line of the MARC Train Service runs through the study area and connects Baltimore to Washington D.C. with terminus points at Camden and Union Stations, respectively[4]. The Camden Line of the MARC Train Service runs only on weekdays. Though the train travels through the study area, there are no stations within its boundary. The Camden Station is located immediately to the north and St. Denis Station to the south. There are no known future MARC improvement projects in the study area.

MTA Light Rail

The MTA operates light rail service within Baltimore City, connecting Hunt Valley to Baltimore-Washington International (BWI) Thurgood Marshall Airport and Hunt Valley/Timonium to Cromwell Station/Glen Burnie[2]. These lines run on the same set of tracks through the study area. The Westport light rail station, to the south of I-95, is the only station within the study area.

MTA Bus

The MTA Bus services within the study area includes the MTA Commuter Bus and the MTA BaltimoreLink's: LocalLink Bus, Express BusLink, and CityLink services. These four bus systems account for 20 different bus lines and approximately 60 bus stops within the study area[2]. The BaltimoreLink services launched during the summer of 2017. There are no known future MTA Bus improvement projects in the study area.

Charm City Circulator

The Charm City Circulator's Purple and Banner Lines have stops within the study area. The Purple Line terminates in Federal Hill and the Banner Line terminates at Fort McHenry. Neither line crosses I-95 onto the Port Covington peninsula. There are no known future Charm City Circulator improvement projects in the study area.

Water Taxi

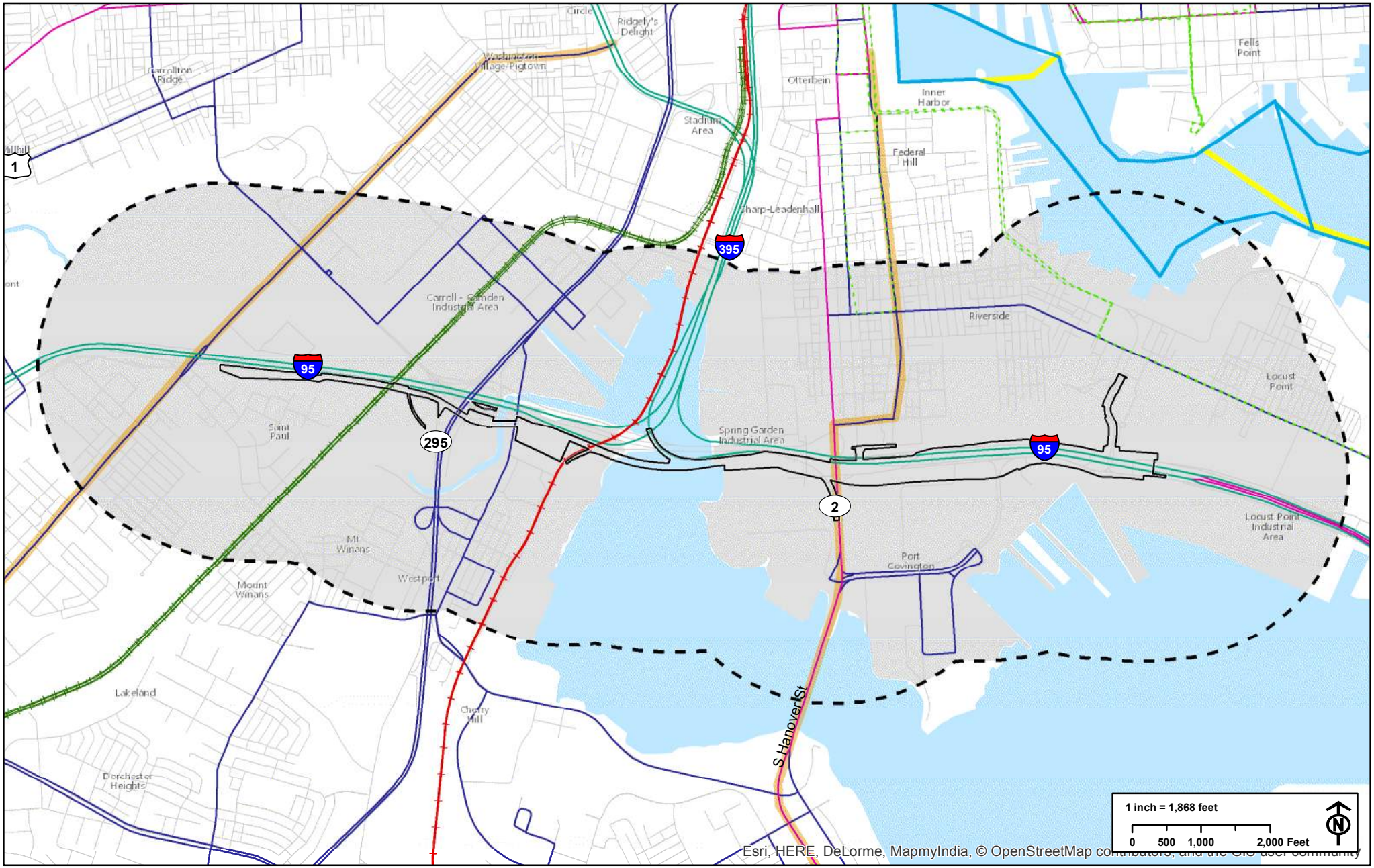
The Baltimore Water Taxi operates within the study area and runs seven days a week[5]. One landing, Landing 9: Anthem House is located within the study area. The Anthem House Landing is accessed by both the Baltimore Water Taxi's Yellow and Green Lines connecting with Federal Hill and Locust Point. There are no known future water taxi service improvement projects in the study area.

Future Mass Transit

The median of the new McComas Street will be designed to accommodate a future mass transit corridor between Westport and Port Covington. Federal and state funding remain uncommitted at this time.

[4] https://mta.maryland.gov/

[5] http://www.baltimorewatertaxi.com/stops-schedules-routes



Construction LOD
1/2-Mile Study Area
Light Rail Lines
MARC Train Lines
Charm City Circulator Routes
Baltimore Water Taxi Route
Harbor Connector Route
MTA Bus - Express Bus Link
MTA Bus - Local Link
MTA Commuter Bus
MTA Bus - CityLink Route

I-95 ACCESS IMPROVEMENTS
FIGURE 3-3

TRANSIT

MARYLAND TRANSPORTATION AUTHORITY

BALTIMORE CITY DOT

Bicycle and Pedestrian

Sidewalks exist along some sections of Hanover Street, McComas Street, and Key Highway within the study area. However, there are currently no continuous pedestrian or bicycle facilities connecting the Port Covington peninsula to the neighborhoods to the north primarily because of the barriers created by the elevated I-95 freeway and the CSX rail facilities just north of the I-95 viaduct.

According to the Baltimore City Bike Master Plan (2015), there are numerous bicycle routes in the area. The plan identifies existing and proposed bike network facilities based on four facility types:

- Main Routes (Bike lanes, Buffered Bike Lanes, and Cycletracks);
- Minor Routes (Sharrows, Shared Bus/Bike Lane, Signed Routes, and Contraflows);
- Neighborhood Routes (Bike Boulevards, and Bike Cut-Throughs); and
- Trails (Off-road Trails and Sidepaths).

Portions of the Gwynns Falls Trail are located near Middle Branch Park to the south and west, outside of the project vicinity. Within the study area, there is only one Main Route on Fort Avenue, with the remaining Minor Routes connecting the Inner Harbor to Fort McHenry. The majority of routes are unsigned where cyclists share the city streets with motorists.

Although no designated bike routes exist on the Port Covington peninsula currently, the Baltimore City *Bike Master Plan*[6] and the Port Covington redevelopment have planned connection routes to Port Covington and trails through much of the peninsula. In addition as part of the Recommended Preferred Alternative, a new pedestrian and bicycle path will be provided, located under I-95, connecting Port Covington at McComas Street to South Baltimore at Light Street. Additional shared use paths and sidewalks will be provided along McComas Street and Key Highway, to further improve multimodal connections to Port Covington.

Parking

On-street parking is permitted along portions of local streets including Key Highway and Wells Street, north of the study area. The remaining parking is in privately-owned surface parking lots and permit-only on-street parking for residents, located throughout the study area.

3.1.3 Probable Consequences

Roadway capacity and traffic operations analyses were conducted for the freeway sections, ramp junctions, weaving segments, and intersections within the study area. The evaluation of freeway operations confirm that the Recommended Preferred Alternative improves the overall mobility (ease of movement) along the interstate when compared to the No Build condition. The evaluation of street intersections confirms that the majority operate at improved or similar levels of service under the Recommended Preferred Alternative when compared to the No Build Alternative. For the detailed findings of these analyses, please refer to Appendix B, “Traffic Analysis Technical Report.”

[6] https://transportation.baltimorecity.gov/bicycle-plan

Freeway traffic patterns in the study area are expected to change between the No Build and Recommended Preferred Alternative resulting from the removal of the I-95 NB exit ramp to Hanover Street and the construction of three new ramps to facilitate access to and from the Port Covington peninsula. Traffic was reassigned throughout the surface street grid to account for the proposed changes to the freeway and ramp terminals. Additionally, changes to Hanover Street, Key Highway and McComas Street in the Build condition improve vehicular mobility for local streets and support multimodal connections when compared to the Existing or No Build conditions.

Freeway Operations

To determine the probable consequences of the Recommended Preferred Alternative due to the change in traffic patterns for I-95, traffic analyses were conducted for the freeway sections, ramp junction points, and weaving segments along I-95 between I-695 and the Fort McHenry Tunnel Toll Plaza. The analyses were performed using Highway Capacity Software (HCS) and VISSIM, as described in Section 3.1.1. The VISSIM analysis provided a microscopic level of traffic operations on the freeway and accounted for upstream and downstream operational effects. The evaluation of measures of effectiveness such as vehicular throughput confirm that the proposed modifications under the Recommended Preferred Alternative improve the overall mobility of the interstate when compared to the No Build Alternative. It should be noted that capacity improvements are currently underway along the inner loop of I-695, and these improvements will likely reduce congestion along I-95 SB approaching the I-695 off-ramp for both the Recommended Preferred and No Build Alternatives.

Intersection Operations

To determine the probable consequences of the Recommended Preferred Alternative due to the change in traffic patterns for street intersections, traffic analysis at select intersections within the study area was performed in Synchro utilizing HCM methodologies. The majority of intersections operate at improved or similar levels of service under the Recommended Preferred Alternative when compared to the No Build Alternative. The HCM LOS results show a significant reduction in delays along Hanover Street and McComas Street in 2040 with the Recommended Preferred Alternative when compared to the 2040 No Build Alternative. Signal timing and lane use at street intersections was optimized to minimize queue spillbacks onto the interstate.

Transit, Bicycle and Pedestrian, and Parking

The No Build Alternative, which includes the full build-out of the Port Covington Master Plan, would result in some increase in services and facilities, but only as part of the proposed development and only within the Master Planned street grid. It does not provide for additional services or facilities to accommodate travel into or out of the peninsula.

The Recommended Preferred Alternative is not anticipated to result in any permanent adverse effects on the transit, bicycle and pedestrian, and/or parking facilities within the study area. Full build out of the Port Covington Master Plan and other private development could potentially result in the need for additional facilities within the study area.

The Recommended Preferred Alternative provides space for expanded light rail service as part of the widening and relocation of McComas Street. In addition, it includes pedestrian and bicycle connections

to Federal Hill and Locust Point on the north side of I-95 and CSX. These improvements, along with the potential light rail spur, would provide more and better service to the study area. No adverse effects on the MARC train, Light Rail, or Water Taxi services are anticipated. Potential temporary effects on local bus services during the construction of a transportation project could include the narrowing of roadway travel lanes, temporary lane closures (limited, when possible, to off-peak or nighttime periods when traffic volumes are low), roadway speed reductions, shifting or consolidation of bus stop locations, or short-term detours.

Bicycle and pedestrian safety, connectivity, and mobility within Port Covington and the South Baltimore communities would be improved by the construction of the Recommended Preferred Alternative. However, construction of the Recommended Preferred Alternative could temporarily affect bicycle and pedestrian facilities and activities, and may include temporary sidewalk and trail route detours.

Vehicle parking spaces could be lost or temporarily unavailable during a portion of the construction phase. These spaces would be available or relocated after construction is complete.

3.1.4 Potential Mitigation Measures

There are no permanent adverse effects to traffic or transit anticipated for the Recommended Preferred Alternative, and therefore no permanent mitigation would be required. For major projects with complex geometry, it is essential to consider maintenance of traffic during the planning phase to ensure minimization and mitigation of temporary transportation effects, including considerations such as detours, temporary roadways and/or expanded limits of disturbance to accommodate the traffic demand during construction. A Transportation Management Plan (TMP) will be developed detailing mitigation for these temporary construction effects on traffic. The Plan will be coordinated with government agencies, local and regional transit providers, emergency service providers, and the public. The TMP will address detours and temporary connections to maintain continuity of roadways and bicycle and pedestrian facilities during the construction period. Pedestrian movements would be maintained to the extent reasonably feasible during construction, as would pedestrian access to adjacent properties. Where it is not possible to maintain existing movements, alternate routing with appropriate signage would be designated.

3.2 LAND USE

This section provides an overview of the Port Covington Master Plan, existing and future land uses, future land uses in the study area, and Smart Growth initiatives. The discussion of probable consequences focuses on the Recommended Preferred Alternative's potential effects on land use by comparing it to the No Build conditions, and evaluates the consistency of the Recommended Preferred Alternative with area master plans and the Smart Growth Act of 1997.

3.2.1 Regulatory Context and Methodology

Baltimore City's comprehensive planning and zoning processes establish land use designations; the City's GIS data (2014) were relied on for information describing existing land uses in the study area. The project is located entirely within Baltimore City and is within the South and Southwest Planning Districts, as

identified by the City's Department of Planning. The 1997 Smart Growth Act is summarized; followed by two recent master plans that are most applicable to the Recommended Preferred Alternative and the study area:

- **Smart Growth Act (1997)**: Concepts of "smart growth" were enacted into law in 1997 and build upon the *Economic Growth, Resource Protection, and Planning Act of 1992* (Chapter 759, Acts of 1997; Chapter 437, Acts of 1992). Through Smart Growth, Maryland is committed to limiting sprawl development by revitalizing older neighborhoods and redirecting growth to already developed areas, thereby saving the State's farmland, open spaces, and natural resources. State funds target projects in Priority Funding Areas (PFA), those locations approved for growth and redevelopment. The entire project is located in a designated PFA, and therefore is consistent with the Smart Growth Act of 1997. The Recommended Preferred Alternative would also support Smart Growth initiatives by improving access to higher density redevelopment.

- **South Baltimore Gateway Master Plan[7] (2015)**: The Plan offers a 20-year vision for the South Baltimore Gateway Area, which includes the communities, business areas, and open spaces ringing the Middle Branch of the Patapsco River and provides detailed recommendations for short-, medium-, and long-term actions. One of the goals of the South Baltimore Gateway Master Plan is to foster economic growth in more than a dozen neighborhoods in South Baltimore, including Port Covington. The Baltimore City Planning Commission adopted the plan on October 29, 2015. The Recommended Preferred Alternative is compatible with the goals for redevelopment of Port Covington which is included in the Plan.

- **Port Covington Master Plan[8] (2016)**: Proposes to redevelop approximately 260 acres of underutilized industrial land into a mixed-use community on the Port Covington peninsula. The Baltimore City Planning Commission approved the Port Covington Master Plan in June 2016. Land use approvals were granted by the Baltimore City Council in December 2016, and the redevelopment of Port Covington is underway.

Other neighborhood plans that have been prepared by the City's Planning Department[9] for portions of the study area and the surrounding area include:

- Carroll Camden Urban Renewal (2012)
- Middle Branch Transportation Plan (2011)
- Middle Branch Master Plan (2007)
- Cherry Hill Master Plan (2008)
- Westport Mount Winans Lakeland Master Plan (2005)
- Sharp-Leadenhall Master Plan (2004)
- Locust Point Comprehensive Plan (2004)

These plans recommend strategies for economic development and to support revitalization, encourage redevelopment of underutilized industrial properties, increase mobility for residents and visitors, and promote sustainability, environmental protection, and social equity. In addition, the Carroll Camden

[7] http://www.southbaltimoregatewaymasterplan.com/

[8] http://planning.baltimorecity.gov/sites/default/files/PORT%20COVINGTON%20MASTER%20PLAN%20061616%20v11%206.22.16.pdf

[9] https://planning.baltimorecity.gov/master-plans

Urban Renewal, Locust Point Comprehensive Plan, Middle Branch Master Plan and Transportation Plan, and Westport Mount Winans Lakeland Master Plan recommend improving access to Baltimore's waterfront. The Middle Branch Transportation Plan proposes traditional traffic and roadway improvements, as well as solutions that will make the Middle Branch neighborhoods more pedestrian-, bicycle-, and transit-friendly.

3.2.2 Existing and Future Conditions

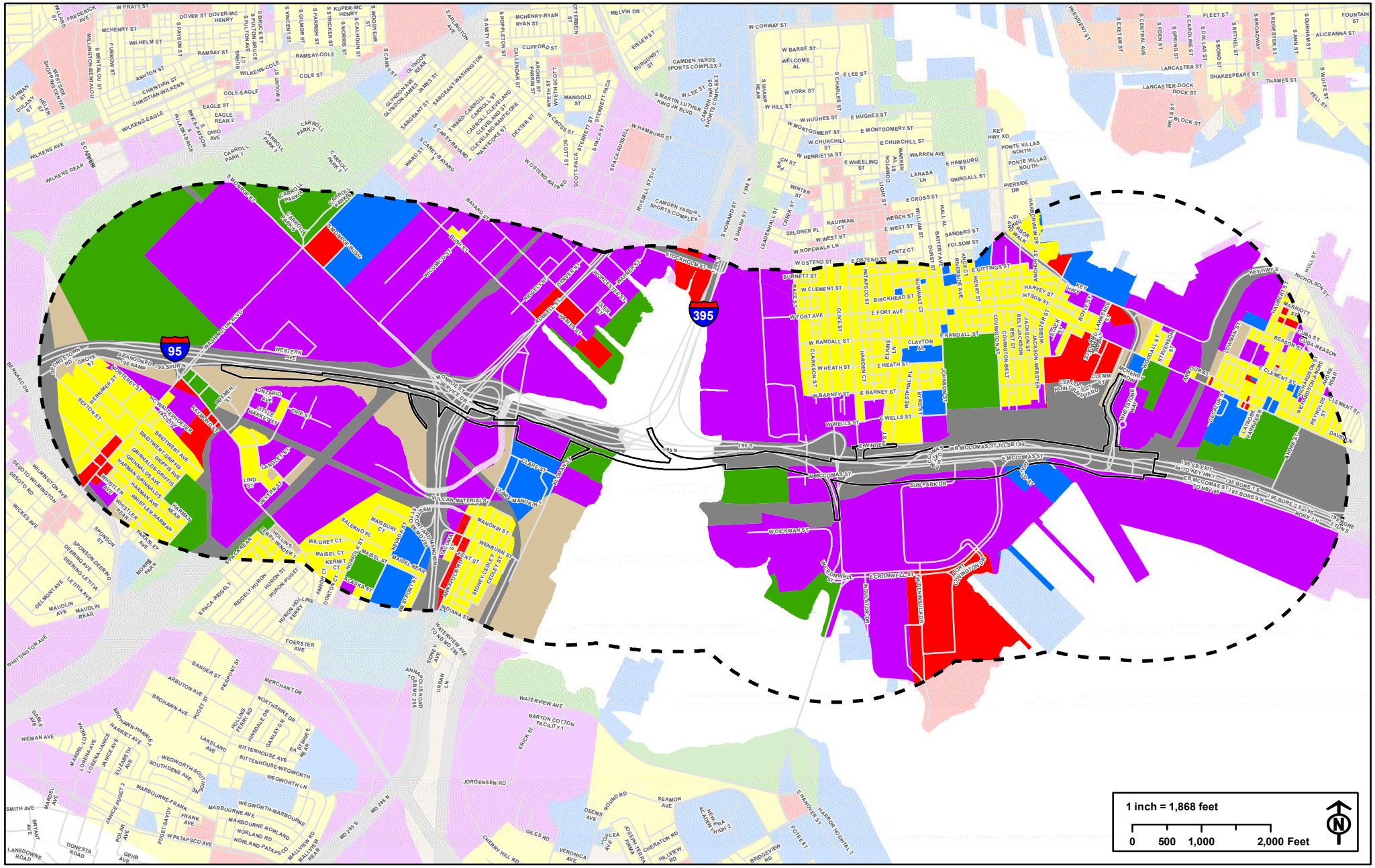
According to the City's 2014 GIS data, existing land uses in the study area include industrial, residential, transportation and parking, natural areas/parks/recreation, institutional (educational facilities, places of worship), commercial areas (retail, office space), barren land, and cemetery uses.

The primary land use within the study area is industrial (41.0 percent). Most industrial uses are immediately adjacent to I-95 and the Middle Branch waterfront. Residential, transportation and parking uses make up 16.8 percent and 15.8 percent, respectively. Together, these three land uses account for 73.7 percent of the total study area. The remaining land uses include natural areas/parks/recreation (9.5 percent), institutional (6.8 percent), commercial (5.5 percent), and undeveloped land (4.4 percent). Land uses in the study area are shown on Figure 3-4.

The Port Covington Master Plan proposes to redevelop approximately 260 acres of under-utilized industrial brownfields. As currently planned, the revitalization of the Port Covington site will increase population density on the peninsula, which will generate a demand for infrastructure improvements. The proposed redevelopment is currently underway and includes the following:

- Relocation of the Under Armour World headquarters (roughly 3 million square feet and 11,000 employees anticipated by 2040);
- Approximately 1.5 million square feet of office space (in addition to the Under Armour World headquarters);
- Approximately 500,000 square feet of industrial/light manufacturing space;
- Approximately 1.5 million square feet of destination, attraction, entertainment and specialty retail establishments;
- Over 7,500 residential units, including rental and for-sale properties;
- 200+ hotel rooms;
- Civic and cultural uses including 40+ acres of public parks and other civic and cultural uses.

The public infrastructure currently in and around the peninsula cannot efficiently support the significant economic growth expected from the new development.



Construction LOD
1/2-Mile Study Area
Residential
Residential/Commercial Mixed Use
Commercial
Industrial
Natural Area/Parks/Recreation
Institutional Facility
Cemetery
Transportation & Parking
Undeveloped

Source: STV (2017) from Baltimore City Planning Department GIS data (2014)

I-95 ACCESS IMPROVEMENTS
FIGURE 3 - 4

EXISTING LAND USE

MARYLAND TRANSPORTATION AUTHORITY

BALTIMORE CITY DOT

3.2.3 Probable Consequences

The Port Covington Master Plan and other adjacent community master plans will dictate future development in the study area. The No Build Alternative may slow the pace of this development due to inadequate infrastructure. Consequently, the goals of the current plans would not be realized under the No Build scenario as the existing infrastructure is not adequate to handle the anticipated increase in transportation demand once the new development is fully built. Also, the No Build Alternative would not provide the transportation network connectivity to support this type of growth, thereby allowing increased strain on the already congested transportation network.

The Recommended Preferred Alternative addresses forecasted increased transportation demand on I-95 and the surrounding transportation network by minimizing effects on mobility and safety, as well as enhancing multi-modal connections to the Port Covington peninsula, as outlined in the project's Purpose and Need. Addressing the constrained connections, mitigating the forecasted congestion issues, accommodating the projected increased traffic volumes, and providing local and regional access to new job opportunities and amenities, is consistent with the goals of the local area master plans. Connections between Port Covington and other parts of Baltimore, particularly the surrounding neighborhoods of South Baltimore and Riverside, are constrained by the elevated portion of I-95.

The implementation of the Recommended Preferred Alternative would result in a combined total of 13.2 acres of right-of-way acquisitions, all from industrial use properties. Partial acquisitions account for 7.0 acres, while the total acquisition of the industrial property at 1915 Annapolis Road is an additional 6.2 acres. This acquisition would displace three industrial tenants: the Howard Uniform Company, Systems Furniture Installation, and the Annapolis Road Library Operations Center (ARLOC). The partial acquisitions would not constitute notable changes in land use, as the overall use of the respective properties would not be affected by the acquisition. The full acquisition and displacement, though representing a change in land use for an entire property, would not in itself, represent a substantial change to the overall land use pattern in the study area; moreover, the change in land use would be limited to that property and therefore not be expected to affect the uses of neighboring properties. Further information on these acquisitions is included within Appendix C, "Socio-Economic Technical Report."

3.2.4 Potential Mitigation Measures

Property acquisition activities, including relocations, will be performed in accordance with the Uniform Relocation Assistance and Real Property Acquisition Policies Act of 1970 (Uniform Act), as amended and all applicable Maryland State laws that establish the process through which MDTA may acquire real property through a negotiated purchase or through condemnation.

Displaced persons and businesses within the area needed for the Project may be eligible for benefits under Maryland's Relocation Assistance Program. Benefits could include advisory services, moving and reestablishment costs, and other payments and services as provided by law.

All activities related to acquisitions and displacements would be conducted in conformance with the following:

- *Uniform Relocation and Real Property Acquisitions Policies Act of 1970* (42 United States Code [USC] 4601), as amended (the Uniform Act), and Public Law 105-117. These statutes mandate that

certain relocation services and payments be made available to eligible residents, businesses, and nonprofit organizations displaced as a direct result of projects undertaken by a federal agency or with federal financial assistance. The Uniform Act provides for uniform and equitable treatment for persons displaced from their homes and businesses, and it establishes uniform and equitable land acquisition policies.

- *The Real Property Article of the Annotated Code of Maryland*, Title 2, Section 2-112 and Titles 12, Subtitle 2, Sections 12-201 to 12-212 govern relocation and assistance for displacements associated with state actions.

3.3 SOCIO-ECONOMICS, NEIGHBORHOODS AND ENVIRONMENTAL JUSTICE

This section summarizes the existing demographics, neighborhoods, community facilities and services surrounding the study area and discusses any impacts to those resources that may occur. A discussion of the likelihood that the Recommended Preferred Alternative would have a disproportionate adverse effect on Environmental Justice Populations is also included. Please refer to Appendix C, "Socio-Economic Technical Report," for more details.

3.3.1 Regulatory Context and Methodology

Executive Order 12898 – *Federal Actions to Address Environmental Justice in Minority and Low-Income Populations* requires all Federal agencies to "develop an agency-wide environmental justice strategy and identifies and addresses disproportionately high and adverse human health or environmental effects of its programs, policies, and activities on minority populations and low-income populations." Accompanying that Executive Order was a Presidential Memorandum stating, in part, "In accordance with Title VI of the Civil Rights Act of 1964, as amended, each Federal agency shall ensure that all programs or activities receiving Federal financial assistance that affect human health or the environment do not directly, or through contractual or other arrangements, use criteria, methods, or practices that discriminate on the basis of race, color, or national origin." The United States Department of Transportation (USDOT) and the Federal Highway Administration (FHWA) policies on environmental justice are included in USDOT Order 5610.2(a), Final DOT Environmental Justice Order (USDOT 2012) and in FHWA Order 6640.23A *Actions to Address Environmental Justice in Minority Populations and Low-Income Populations* (FHWA 2012). FHWA's Title VI program is outlined in 23 CFR 200.

The strategies developed under Executive Order 12898 and the USDOT and FHWA policies on environmental justice are intended to ensure that there is no discrimination based on race, color, or national origin; that communities are provided the opportunity to provide input on the planning and design of a project, as well as potential effects and mitigation measures; and that any disproportionately high and adverse effects on minority or low-income populations are appropriately addressed.

Definitions of "Minority" and "Low-Income"

Executive Order 12898 does not define the terms "minority" or "low-income", but the terms have been defined in the USDOT and FHWA orders on environmental justice. The USDOT and FHWA orders provide the following definitions, which have been used in this analysis:

- Minority Individual – The US Census Bureau classifies a minority individual as belonging to one of the following groups: American Indian or Alaskan native, Asian American, Native Hawaiian or Other Pacific Islander, Black (not of Hispanic Origin), and Hispanic or Latino.
- Minority Populations – Any readily identifiable groups of minority persons who live in geographic proximity, and if circumstances warrant, geographically dispersed/transient persons (such as migrant workers or Native Americans) who would be similarly affected by a proposed FHWA program, policy or activity.
- Low-Income Individual – A person whose household income is at or below the US Department of Health and Human Services poverty guidelines.
- Low-Income Population – Any readily identifiable group of low-income persons who live in geographic proximity, and, if circumstances warrant, geographically dispersed/transient persons (such as migrant workers or Native Americans) who would be similarly affect be a proposed USDOT program, policy, or activity.

Identifying Minority and Low-Income Populations in the Project Study Area

As a tool for evaluating the proportionality of impacts and benefits, this analysis identifies "EJ areas" and "non-EJ areas" within the study area. An "EJ area" was defined to include any census block group in which the minority or low-income population meets either of the following threshold:

- the minority or low-income population in the Census Block Group exceeds 50%, or
- the percentage of a minority or low-income population in the affected area is "meaningfully greater" than the percentage of minority population in the general population.

Typically "meaningfully greater" is defined to mean a Census Block Group in which the percentage of minority or low-income residents was at least 10 percentage points more than the corresponding percentage in the surrounding jurisdiction (Baltimore City) within the study area. In this case Baltimore City's overall composition of minority populations is 72 %, as such all areas 50% or greater were identified as EJ areas under the minority threshold criteria.

The use of thresholds for identifying EJ areas was based on the Council of Environmental Quality (CEQ) guidance document, Environmental Justice Guidance under the National Environmental Policy Act (NEPA) (CEQ 1997). This EJ analysis follows the same methodology.

Data Sources

- Minority Populations: the US Census 2010 Block Group level data provided the basis for establishing the location of minority populations in the study area.
- Low-Income Populations: income data was obtained from the American Community Survey (ACS) 2015 five-year estimate at the Census Block Group level.
- Other data sources that were used to confirm the location of minority and low-income populations included information and data from the National Center for Educational Statistics (NCES), government assisted housing programs, field visits, and community meetings within the study area.

3.3.2 Existing and Future Conditions

Population and Demographics

The US Census American Community Survey 2015 data indicated that the total population of the study area was 21,799 individuals. Of these, 4,181 individuals (19.2%) were identified as Black or African American; 15,154 individuals (69.5%) identified as White, and the remaining 2,464 (11.3%) as either American Indian, Alaskan Native, Asian, Pacific Islander, Hispanic, Other, or Two or more races. Table 3-3 shows the population breakdown, by race, within the study area.

Table 3-3: Census Population by Race

Category	Maryland	Baltimore City	Study Area
Total Population	5,773,552	622,454	21,799
White Alone [1]	3,157,958 *(54.7%)*	174,785 *(28.0%)*	15,154 *(69.5%)*
Black Alone [1]	1,674,229 *(29.0%)*	387,565 *(62.3%)*	4,181 *(19.2%)*
Asian Alone [1]	316,694 *(5.5%)*	15,979 *(2.5%)*	833 *(3.8%)*
Other Alone [1,2]	28,199 *(0.5%)*	3,552 *(0.6%)*	36 *(0.2%)*
2 or more races Alone [1]	125,840 *(2.2%)*	12,081 *(1.9%)*	361 *(1.7%)*
Total Hispanic [3]	470,632 *(8.2%)*	28,492 *(4.57%)*	1,234 *(5.6%)*
Total Minority	**2,615,594 *(45.3%)***	**447,699 *(72.0%)***	**6,645 *(30.5%)***
Low-Income Persons [4,5]	**476,732 *(8.3%)***	**125,697 *(21.0%)***	**3,038 *(14.0%)***

[1]These categories do not include Hispanic or Latino individuals
[2]Other includes American Indian/Alaskan Native, Native Hawaiian and Other Pacific Islander and some other race alone
[3]Hispanic can be any race
[4]Poverty status is determined for all people except institutionalized people. People in military group quarters, people in college dormitories, and unrelated individuals under 15 years old (American Fact Finder, http://factfinder.census.gov)
[5]Poverty data from the 2010 U.S. Census was unavailable, thus current poverty status data has been derived from the 2015 American Community Survey (ACS), 5-Year Estimate. Please note that ACS data has a margin of error and does not cover 100 percent of the geographies used for this report.

Table 3-4 provides a comparison of the income and poverty levels within Baltimore City and the Study Area. The median household income for the Study Area is $67,865. An estimated 14% of people in the socio-economic study area are considered to be below the poverty level compared to 21% in Baltimore City.

Table 3-4: Income and Poverty Levels

Category	Baltimore City	Study Area
Median Household Income	$42,241	$67,865
Per Capita Income	$25,707	$46,848
Persons Below Poverty Level - Total	125,697	3,038
Percentage of Persons Below Poverty Level	21%	14%

Source: US Census 2010, American Community Survey 5-Year Estimate 2015

Table 3-5 provides information on the housing value and home ownership rate of housing units within the Study Area and Baltimore City. There are 11,391 existing housing units within the Study Area. In 2015, approximately 84.7% of the housing units in the Study Area were occupied, 15.3% were vacant. Of the occupied units, 63.0% were owner occupied, while 37.0% were rented.

Table 3-5: Housing Value/Home Ownership Rate

Geographic Area/Neighborhood	Housing Units	Occupied Housing Units	Owner Occupied Housing Units (%)	Average People / Occupied Housing Units
Baltimore City	296,727	242,268	47.1%	2.6
Study Area	11,391	9,648	63.0%	2.3

Source: US Census 2010, American Community Survey 5-Year Estimate 2015

Table 3-6 provides the estimated census population increase in the study area, compared to the population increase in Baltimore City and Maryland. The population increase within Baltimore City is projected to increase 6.1% from 2010-2040. Projections at the sub-city, census tract or block group level are not available for the SETR study area. To project the study area population in 2040 the population growth forecast for Baltimore City was applied.

Table 3-6: Census Population Increase

Geographic Area/Neighborhood	2010 Population	2040 Population	Percentage Increase between 2010-2040
Maryland	5,773,552	6,889,700	19.3%
Baltimore City	620,961	659,100	6.1%
Study Area	22,048	23,402	6.1%

Source: US Census 2010, American Community Survey 5-Year Estimate 2015

Neighborhoods

Figure 3-5 shows the neighborhoods in and adjacent to the study area. Neighborhood data was gathered by reviewing information from Baltimore Neighborhood Indicators Alliance, BCDOT plans, and field surveys[10,11]. Most of the neighborhoods within the study area are primarily residential and contain various community facilities. There are also three industrial/commercial areas (Locust Point Industrial Area, Spring Garden Industrial Area, and Port Covington) that either have no, or very few, residential units. These areas mainly consist of a cruise line terminal, railways, warehouses, and merchandise piers. Some of the neighborhoods were combined when providing statistical information and a brief description of the specific area. Neighborhood demographic profiles and community facilities are described in further detail below.

Carroll Park
The Carroll Park neighborhood includes athletic fields, a neighborhood playground, skateboard park, and a golf course. Carroll Park and Mount Clare Museum House, the oldest colonial structure in Baltimore City and a National Historic Landmark are located in the neighborhood. Housing stock in Carroll Park primarily consists of rowhomes, duplexes and apartments.

Carroll-Camden Industrial Area
The Carroll-Camden Industrial Area neighborhood is located northwest of the Port Covington peninsula. It primarily features warehouses, businesses and live/work spaces in addition to lofts, apartments and condominiums.

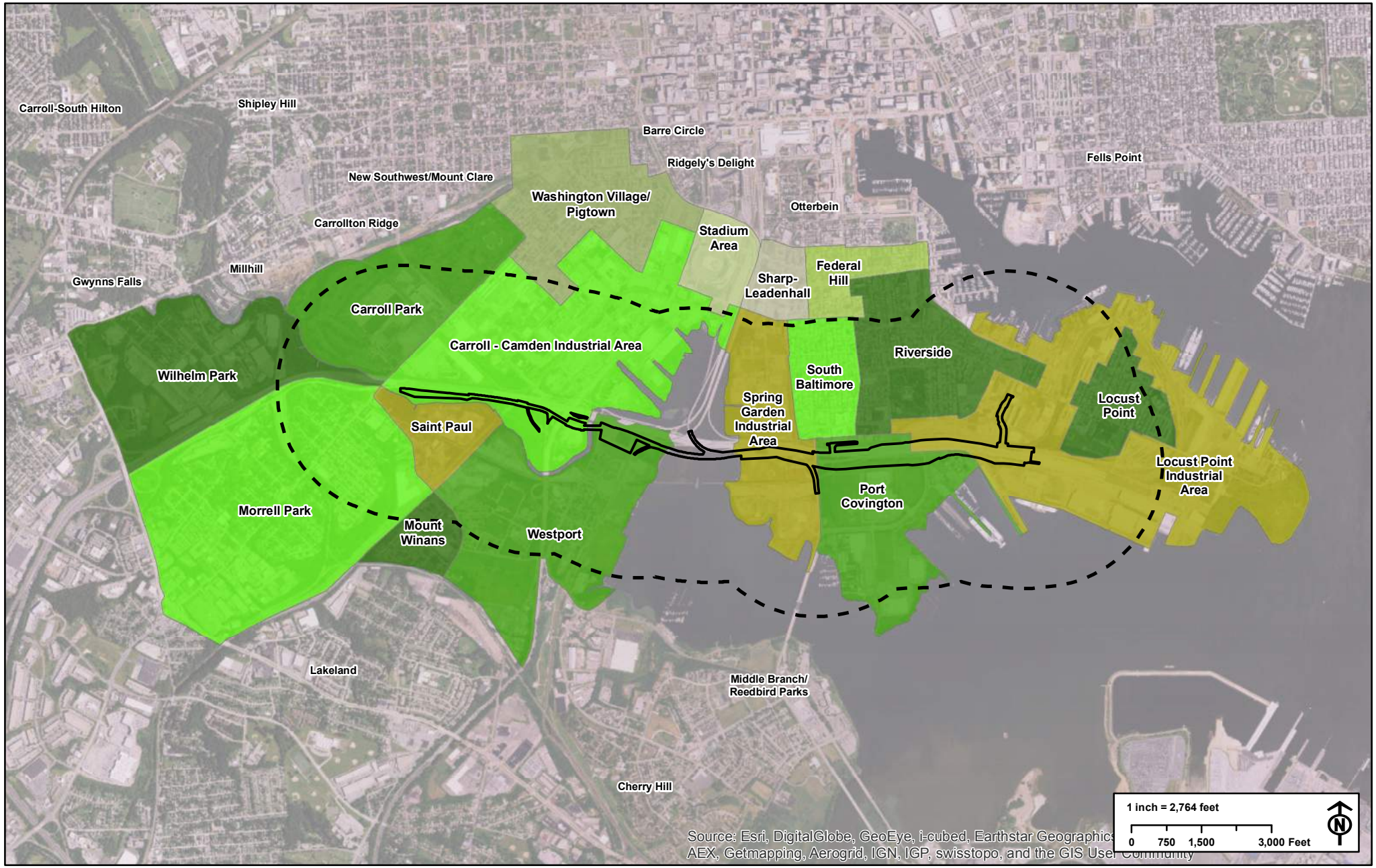
Locust Point/Locust Point Industrial Area/Port Covington
The Locust Point neighborhood is located at the end of a peninsula and is surrounded by the Locus Point Industrial Area. Housing stock includes high tech home/office units, luxury urban high rises, and row houses. Latrobe Park includes a dog park, playground, basketball courts, tennis courts, baseball/soccer field, and a recreation center. Currently the Port Covington neighborhood consists of seven rowhomes that function as extended business space and residential units.

Morrell Park
The Morrell Park neighborhood is divided by Washington Boulevard, a main transportation route. Housing consists mostly of attached rowhomes, duplexes and detached homes.

Riverside
The Riverside neighborhood is located between Federal Hill and Locust Point. Leone Riverside Park is located in the Riverside neighborhood and includes baseball fields, basketball courts, a playground, public pool, and a pavilion space. Various social leagues also actively use the park to host their games. The housing stock is primarily comprised of rowhomes and small single-family homes.

Saint Paul
The Saint Paul neighborhood is the smallest neighborhood in the study area. The housing stock is primarily comprised of rowhomes, single-family homes and apartments.

[10] Baltimore Neighborhood Indicators Alliance http://bniajfi.org/
[11] Live Baltimore https://livebaltimore.com/neighborhoods/



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Maryland
Transportatior
Authority

Construction LOD
1/2-Mile Radius

I-95 ACCESS IMPROVEMENTS
FIGURE 3 - 5

NEIGHBORHOODS

MARYLAND TRANSPORTATION AUTHORITY

BALTIMORE CITY DOT

South Baltimore
The South Baltimore neighborhood is located just south of Federal Hill and beside Riverside. The housing stock is primarily rowhomes, apartments and condominiums. Community facilities include a public library on Light Street, Heath Street Park, a recreation center, and a public pool at Riverside Park.

Spring Garden Industrial
The Spring Garden Industrial Area is entirely industrial with the exception of one newly built complex of high-end row houses located in the neighborhood's northeast corner. Swann Park is located in this neighborhood and features ball fields and open parkland.

Westport/Mount Winans
The Mount Winans/Westport neighborhoods are located off Interstate 95/295, and overlook the Middle Branch Patapsco River waterfront. Housing consists mostly of row homes and apartments.

Wilhelm Park
Wilhelm Park consists primarily of business parks, except for a few rowhomes and single-family homes in the northeast section. Seton Keough High School (one of the city's all-girls Catholic high schools) is also located within the neighborhood in addition to Babe Ruth Park Field at the former Cardinal Gibbons school complex.

Community Facilities

Community facilities located in the study area consist of police, fire, and emergency services, education facilities, health care facilities, places of worship, post offices, parks and recreation areas, and transportation services. Two libraries and one post office are also located within the study area. There are no hospitals or long-term care/assisted living facilities located with the study area. However, MedStar Harbor Hospital is located approximately one mile south in the Cherry Hill neighborhood.

Park and recreational properties located within 500 feet of the Recommended Preferred Alternative include: Maisel Street Park, Gwynns Falls Trail, and Swann Park. Each is described below.

Maisel Street Park is located south of I-95, between Gwynns Falls and the existing railroad tracks, and adjacent to the intersection of US 1/Washington Boulevard and Hollins Ferry Road. The park consists of an open area of 5.7 acres with some tree cover and no park amenities. No plans for capital improvements or other changes to this park are planned, therefore, the conditions of the park in the future would resemble existing conditions.

The **Gwynns Falls Trail** currently spans 22 continuous miles, offering a hiking and biking venue with access to a scenic, historic greenway stream valley (Baltimore City, 2017; Gwynns Falls Trail, 2017). From the Inner Harbor, the trail extends west to the edge of Baltimore City and south along the Middle Branch to the Patapsco River. Approximately 200 feet of the existing Gwynns Falls Trail along Annapolis Road crosses below the I-95 overpass, of which approximately 150 feet are within the Recommended Preferred Alternative's LOD.

Swann Park is located at the western terminus of McComas Street, east of the Middle Branch, and south of I-95. Baltimore City Department of Recreation and Parks owns and operates the park. The park encompasses approximately 11 acres and contains ball fields, walking paths, and an equipment shed. The northern section of Swann Park is located within the Recommended Preferred Alternative's LOD.

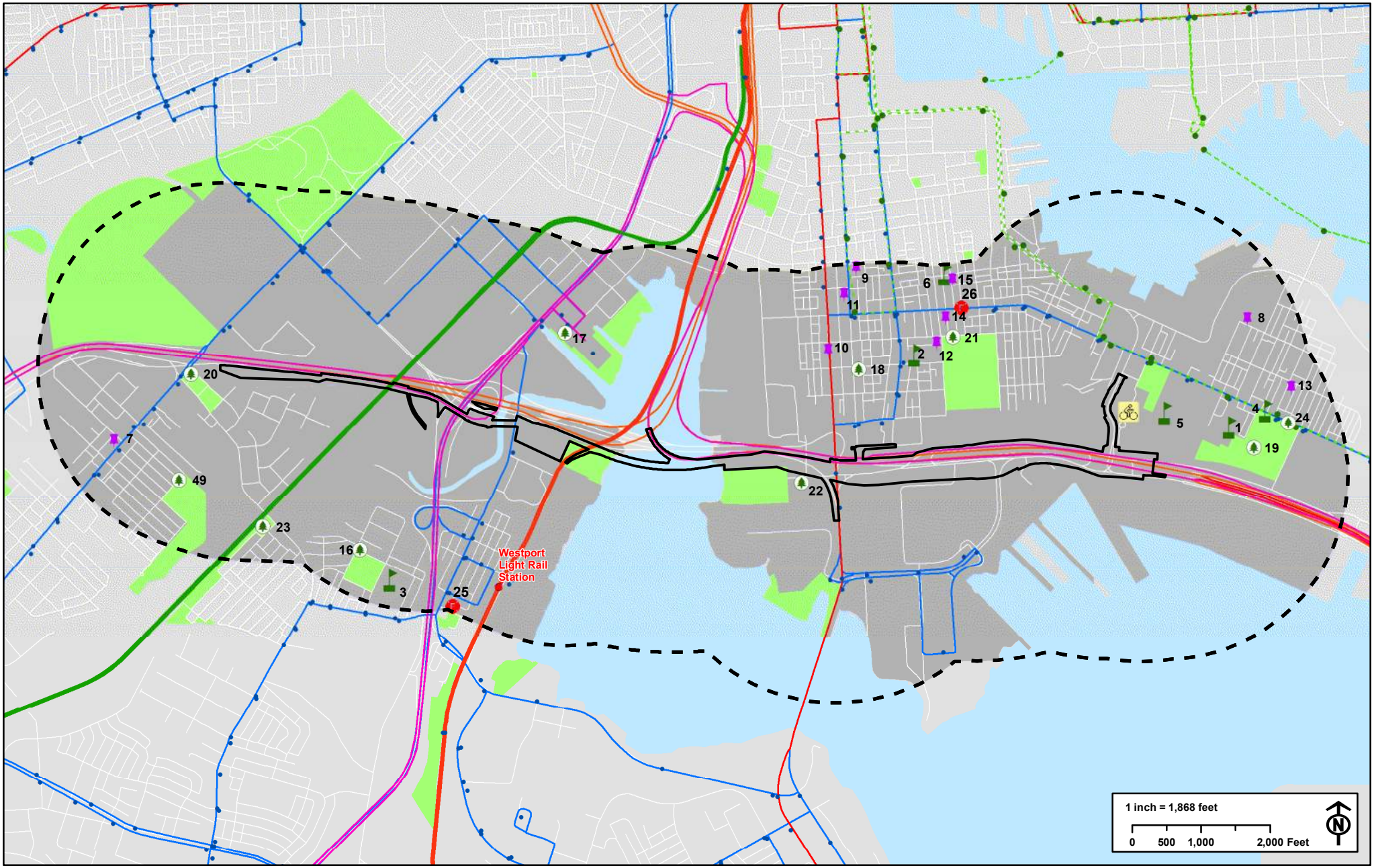
According to the 2016 *Port Covington Master Plan*, Swann Park would be moved south of its current location in 2027; then, the existing location would be removed. Relocated Swann Park, or a newly named park, would be approximately 26 acres and would include sports fields, recreational facilities, and shorefront greenspace.

The locations of community facilities in the study area were identified and are presented, by type, in Table 3-7 and are shown on Figure 3-6. The locations of parkland and recreational resources are shown in Figure 3-7.

Table 3-7: Community Facilities

Number on Figure	Facility Name	Neighborhood	Address
Schools			
1	Francis Scott Key Elementary/Middle	Locust Point	1425 E Fort Avenue
2	Thomas Johnson Elementary/Middle	Riverside	100 E Heath Street
3	Westport Academy Elementary/Middle	Westport	2401 Nevada Street
4	Baltimore Montessori School	Locust Point	1530 E Fort Avenue
5	Kiddie Academy of Locust Point	Locust Point	1215 E Fort Avenue
6	St. Ignatius Loyola Academy	Riverside	300 Gittings Street
Places of Worship			
7	Evangelical Bible Church	Morrell Park	2444 Washington Boulevard
8	Christ United Church Of Christ	Locust Point	1308 Beason Street
9	Church Of Advent Church Of Federal Hill	South Baltimore	1301 S Charles Street
10	Inner Harbor Church Of God	South Baltimore	1632 S Hanover Street
11	Grace United Church of Christ	South Baltimore	1404 S Charles Street
12	Riverside Baptist Church	Riverside	1602 Johnson Street
13	Church of Redemption	Locust Point	1401 Towson Street
14	Salem Evangelical Lutheran Church	Riverside	1530 Battery Avenue
15	St. Mary Star of the Sea	Riverside	1400 Riverside Avenue
Park and Recreation Facilities			
16	Florence Cummings Park	Westport	2501 Maisel Street
17	Gwynns Falls Trail South	Westport	2100 Haines Street

Number on Figure	Facility Name	Neighborhood	Address
18	Heath Street Park	South Baltimore	1701 Charles Street
19	Latrobe Park	Locust Point	1529 Fort Avenue
20	Maisel St. Park	Saint Paul	1900 Maisel Street
21	Riverside Park	Riverside	301 Randall Street
22	Swann Park	Spring Garden Industrial Area	201 McComas Street
23	Hollins Ferry and B&O Park	Mount Winans	2300 Hollins Ferry Road
24	Locust Point Recreation Center	Locust Point	1627 E Fort Avenue
Fire Stations			
25	BCFD 58 Westport	Westport	2524 Annapolis Road
26	BCFD 26 Riverside/Locust Point	Locust Point	1001 E Fort Avenue



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- Construction LOD
- 1/2-Mile Study Area
- Schools
- Religious Facilities
- Parks
- Fire Station
- Light Rail Stops
- Charm City Circulator Stops
- MTA Bus Stops
- Natural Area/Parks/Recreation
- Light Rail Lines
- MARC Train Lines
- Charm City Circulator Routes

Bus Route Type

- Intercity Bus - MD Travel Link
- MTA Bus - Express Bus
- MTA Bus - Local Bus
- MTA Bus - Quick Bus
- MTA Commuter Bus

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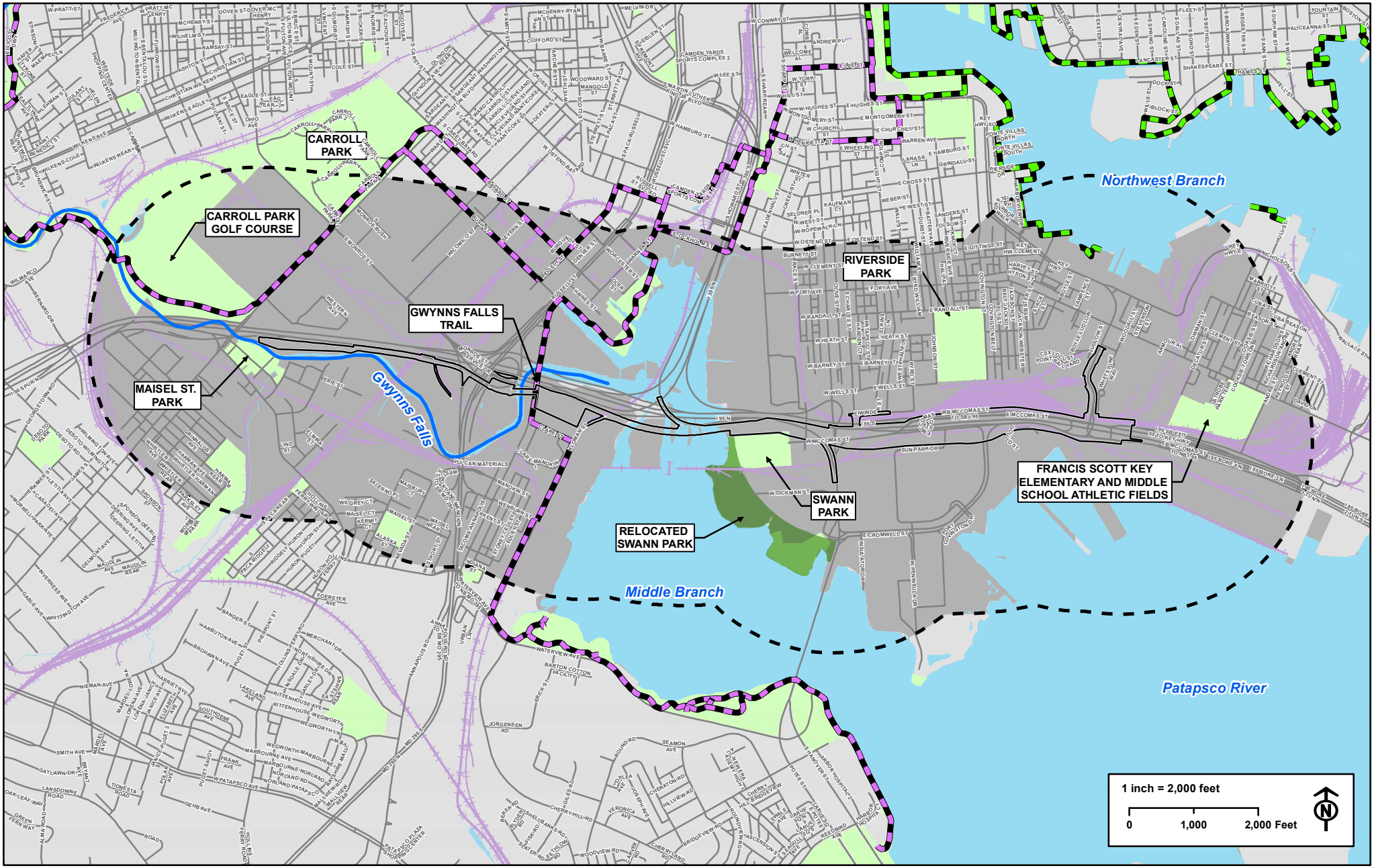
FIGURE 3-6

COMMUNITY FACILITIES & SERVICES

MARYLAND TRANSPORTATION AUTHORITY

BALTIMORE CITY DOT



Construction LOD
1/2-Mile Study
GWYNNS FALLS TRAIL
MULTI-USE TRAIL
RAILROAD
WATERWAY
CITY PARK
RELOCATED SWANN PARK

I-95 ACCESS IMPROVEMENTS

FIGURE 3 - 7

PARKLAND AND RECREATIONAL RESOURCES

MARYLAND TRANSPORTATION AUTHORITY

CITY OF BALTIMORE

Regional Employment Characteristics

Baltimore City's employment levels steadily regressed from the 1970s through the first decade of the new millennium; however, the number of jobs in the City increased by 5.1% between 2010 and 2015 (an average of 0.85% per year) and is expected to increase an additional 8.8% between 2015 and 2040 (an average of 0.35% per year). Comparatively, the number of jobs in Maryland increased by 6.2% from 2010 to 2015 (an average of 1% per year) and is expected to increase an additional 17.3% by 2040 (an average of 0.7% per year). Table 3-8 provides further detail on the number of jobs and their growth trends for both the City and State.

Table 3-8: Regional Employment and Growth

Area	Year (number of jobs)				Percentage Change		
	2000	2010	2015	2040	2000-2010	2010-2015	2015-2040
Baltimore City	446,406	381,313	400,600	435,700	↓ 14.6%	↑ 5.1%	↑ 8.8%
Maryland	3,065,202	3,344,652	3,552,000	4,167,000	↑ 9.1%	↑ 6.2%	↑ 17.3%

Source: Projections from 2015 to 2040 prepared by the Maryland Department of Planning, January 2015

The median household income for Baltimore City was $42,241 in 2015, while it was $67,865 (37% higher) within the study area for that same period. The study area median household income more closely resembles the statewide median household income, $74,551. Property taxes and income taxes are the City's major sources of income with property taxes accounting for 49% of total revenue, and income taxes providing 19%, according to the FY 2018 Baltimore City Preliminary Budget Plan[12]. The real and personal property tax rates are proposed to be maintained at $2.248 and $5.62 per $100 of assessed value respectively.

Environmental Justice

The study area considered for the EJ analysis includes all or parts of 23 Census Block Groups (all within Baltimore City). The total population in the study area is 21,799 persons, with 6,645 of these persons (30.5%) identifying themselves as minorities and 3,038 persons (14.0%) meeting the definition of low-income. Environmental Justice Populations within the study area are shown on Figure 3-8.

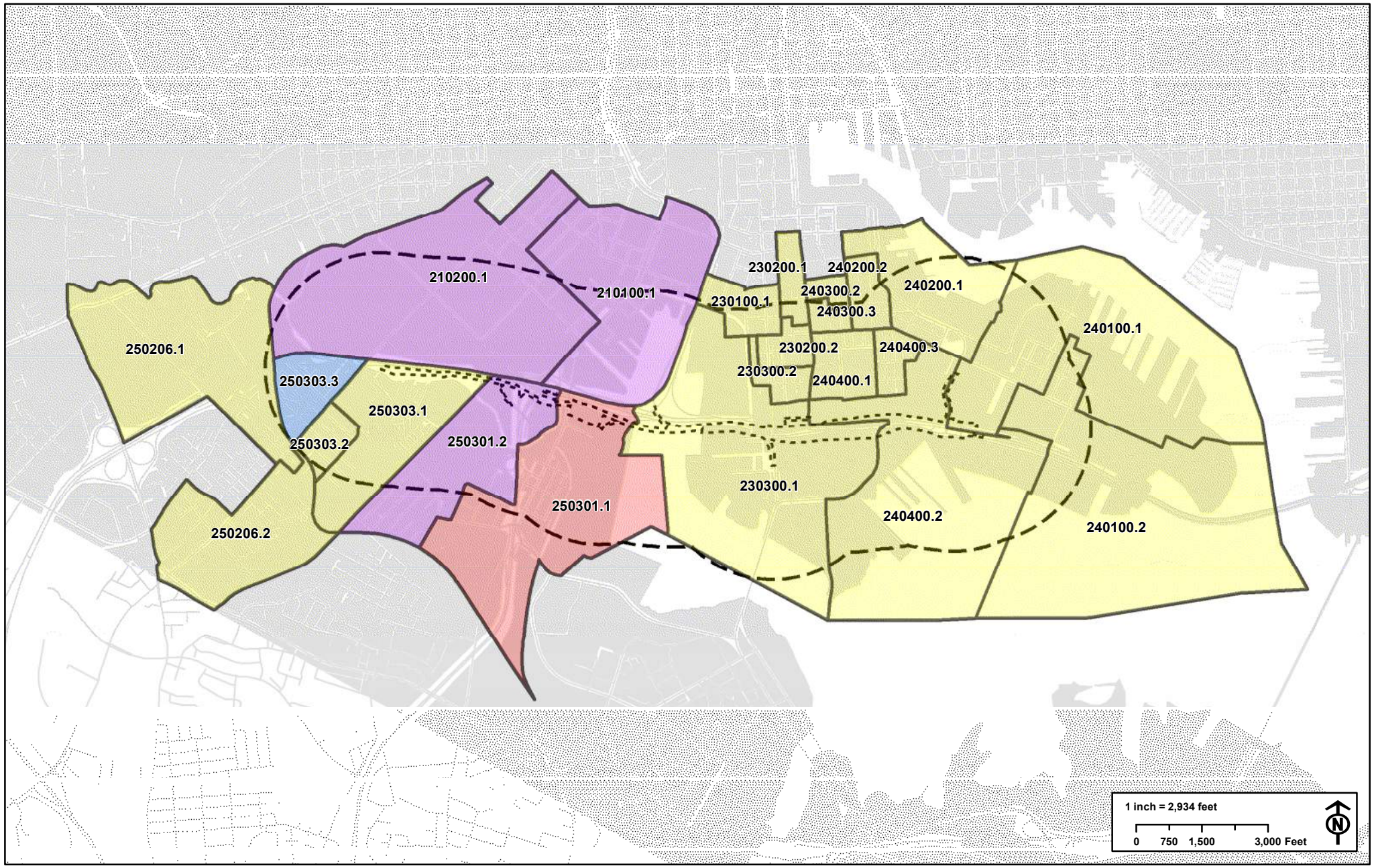
The Census data revealed that the study area contained a percentage of minority persons (30.5%) which is lower than the Citywide average of 72%. The State of Maryland minority population is 45.3%.

The Census Block Groups contained a percentage of low-income persons (14%) that is lower than the Citywide average (21%).

Of the 23 census block groups in the study area, four Census Block Groups contain minority populations of 50% or more (210100.1, 210200.1, 250301.1, 250301.2) and no Census Block Groups contain low-income populations of 50% or more. Figure 3-8 and Table 3-9 below present the Census Block Groups that meet or exceed the EJ thresholds. Five out of 23 Census Block Groups (21.7%) were identified as minority

[12] City of Baltimore (2017). Fiscal 2018 Preliminary Budget Plan.

and /or low-income areas using the 50% threshold or the “meaningfully greater” threshold criteria for presence of a low-income population. These locations were considered EJ areas for the purposes of the EJ impact analysis presented in Section 3.3.3.



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Maryland Transportation Authority

Construction LOD

Alignment Half-Mile Buffer

Environmental Justice Thresholds

- Meets Minority Poverty Thresholds
- Meets Minority Threshold
- Meets Poverty Threshold
- Does Not Meet Threshold Levels

I-95 ACCESS IMPROVEMENTS
FIGURE 3 - 8

ENVIRONMENTAL JUSTICE POPULATIONS

MARYLAND TRANSPORTATION AUTHORITY

BALTIMORE CITY DOT

Table 3-9: Study Area Census Block Groups that Meet Environmental Justice Category Definitions

Census Block Group	Total	White	% White	Black/ African American	% Black/ African American	Asian	% Asian	Other	% Other	Two or More Races	% Two or More Races	Hispanic	% Hispanic	Total Minority	% Total Minority	EJ Category Minority	Total Low-income %	EJ Category Low Income
210100.1	941	280	29.7%	608	64.6%	9	0.95%	0	0%	5	0.53%	39	4.14%	661	70%	**YES**	32.94%	**YES**
210200.1	841	353	41.9%	428	50.8%	0	0%	0	0%	9	1.07%	51	6.06%	488	58%	**YES**	35.08%	**YES**
230100.1	909	694	76.3%	45	4.95%	90	9.9%	0	0%	37	4.07%	43	4.73%	215	24%	NO	8.58%	NO
230200.1	972	688	70.7%	143	14.7%	35	3.6%	0	0%	17	1.7%	89	9.15%	284	29%	NO	2.78%	NO
230200.2	1,169	1,025	87.6%	4	0.34%	26	2.2%	0	0%	40	3.42%	74	6.33%	144	12%	NO	11.3%	NO
230300.1	141	109	77.3%	7	4.96%	25	17.73%	0	0%	0	0%	0	0%	32	23%	NO	6.38%	NO
230300.2	981	894	91.1%	36	3.66%	5	0.50%	0	0%	4	0.4%	42	4.28%	87	9%	NO	10.66%	NO
240100.1	2,133	1,907	89.4%	56	2.62%	45	2.1%	8	0.37%	18	0.84%	99	4.64%	226	11%	NO	4.97%	NO
240100.2	912	868	95.17%	0	0%	8	0.87%	0	0%	7	0.76%	29	3.17%	44	5%	NO	5.92%	NO
240200.1	2,171	1,772	81.6%	90	4.14%	147	6.77%	0	0%	77	3.54%	85	3.91%	399	18%	NO	3.87%	NO
240200.2	825	753	91.27%	33	4.0%	13	1.57%	0	0%	16	1.93%	10	1.21%	72	9%	NO	1.7%	NO
240300.2	602	454	75.4%	41	6.81%	54	8.97%	24	3.98%	0	0%	29	4.81%	148	25%	NO	24.09%	NO
240300.3	582	502	86.25%	10	1.7%	59	10.1%	0	0%	10	1.71%	1	0.17%	80	14%	NO	2.41%	NO
240400.1	1,081	927	85.75%	40	3.7%	31	2.86%	0	0%	8	0.74%	75	6.93%	154	14%	NO	6.01%	NO
240400.2	468	343	73.29%	0	0%	32	6.83%	0	0%	0	0%	93	19.8%	125	27%	NO	11.11%	NO
240400.3	1,381	1,179	85.37%	34	2.46%	92	6.66%	0	0%	58	4.19%	18	1.3%	202	15%	NO	1.38%	NO
250206.1	332	258	77.7%	53	15.9%	0	0%	0	0%	0	0%	21	6.32%	74	22%	NO	19.28%	NO
250206.2	788	690	87.56%	15	1.9%	25	3.17%	0	0%	13	1.64%	45	5.71%	98	12%	NO	11.42%	NO
250301.1	695	149	21.4%	519	74.67%	0	0%	0	0%	3	0.43%	24	3.45%	546	79%	**YES**	11.65%	NO
250301.2	1,749	11	0.62%	1,599	91.4%	0	0%	4	0.2%	0	0%	135	7.71%	1738	99%	**YES**	39.68%	**YES**
250303.1	580	464	80%	83	14.3%	19	3.27%	0	0%	0	0%	14	2.41%	116	20%	NO	25.53%	NO
250303.2	871	465	53.38%	43	4.93%	113	12.97%	0	0%	39	4.4%	211	24.22%	406	47%	NO	29.51%	NO
250303.3	675	369	54.6%	294	43.5%	5	0.74%	0	0%	0	0%	7	1.03%	306	45%	NO	31.85%	**YES**

3.3.3 Probable Consequences

Neighborhoods and Community Facilities

Potential effects to community and neighborhood cohesion are assessed by determining the likelihood of disruption in the interaction among people and groups within a community, the use of community facilities and residential stability resulting from the construction and operation of a project. These impacts may occur because of a physical barrier, substantial change in land use, displacements, or other attendant project effects. No residential acquisitions are associated with the No Build or Recommended Preferred Alternative. The No Build and Recommended Preferred Alternative would not impede interactions between residents or neighborhood cohesiveness. Transit dependent populations within the study area would maintain access to transit routes throughout the study area. However, delays in emergency response services could be impacted by traffic congestion under the No Build Alternative. Delays in service are not anticipated under the Recommended Preferred Alternative due to the implementation of improved signalization, enhanced ramp configurations and moderate improvement in LOS. In general, the introduction of the project would not affect the interactions among residents and their community facilities and services.

Potential effects to community facilities and services are assessed by determining if there are property impacts or changes to access or parking that would affect them. No long-term effects to operation and function of community facilities and services are anticipated. The No Build Alternative and Recommended Preferred Alternative are not anticipated to result in any permanent impacts to transit, bike and pedestrian, and/or water taxi routes/facilities within the study area.

Temporary effects to the use of the Gwynns Falls Trail during construction would be avoided to the greatest extent practicable, or otherwise would be temporary and intermittent if they were to occur; therefore, these effects would not be significant. Following construction, the Recommended Preferred Alternative would resemble the current conditions of the I-95 structure near the Gwynns Falls Trail, and it would not alter the Gwynns Falls Trail or otherwise affect its use. Therefore, the Recommended Preferred Alternative would not have a permanent impact to the Gwynns Falls Trail segment.

The Recommended Preferred Alternative would pass through the northern portion of the current location of Swann Park. If Swann Park remains open and in use, construction of the realignment of McComas Street and the ramp spur from I-395 Southbound to McComas Street would require approximately 3.7 acres. An adverse impact would occur, as the park would be unusable both during and following the construction of the Recommended Preferred Alternative. The Recommended Preferred Alternative would result in permanent piers in the northern end of existing Swann Park. A portion of the park would also be converted to transportation land use for the realignment of McComas Street. If Swann Park is not relocated prior to the construction of the Recommended Preferred Alternative, there would be a significant, adverse impact to the existing Swann Park. However, the significant impact to the existing Swann Park would conclude once the Relocated Swann Park is operational. More detailed discussion regarding effects to Parks is located in Chapter 4, Section 4(f) analysis.

The Recommended Preferred Alternative includes the construction of a new pedestrian and bicycle path to connect Port Covington to south Baltimore neighborhoods under I-95. This new path is not considered under the No Build Alternative. This addition is considered a benefit to community. Construction of the Recommended Preferred Alternative could temporarily affect bicycle and pedestrian facilities and

activities, and may include temporary sidewalk and trail route detours. Overhead protection measures or detours would be employed, if necessary, to guard from overhead construction or temporary trail closures. Proper signage would be installed to address safety.

Probable Economic Consequences
The following section addresses the potential economic effects resulting from the No Build and Recommended Preferred Alternatives.

Regional Business Activities
The No Build Alternative would not mitigate the future increases in traffic and therefore could result in increased commute times on I-95 or the local roadway system. The resulting decrease in mobility would not support the regional economic growth anticipated with the expected population and employment growth and planned development.

Transportation benefits associated with the Recommended Preferred Alternative include reduced travel time and more efficient mobility within the region. Businesses would benefit from the improved transportation system's ability to accommodate projected increases in traffic.

No negative, long-term regional economic impacts are expected as a result of the proposed improvements. The Recommended Preferred Alternative would not alter access to any large regional employers or employment centers. MDTA and BCDOT anticipate that mobility improvements gained from the Recommended Preferred Alternative would support the region's planned economic activities.

Local Businesses and Employment
The No Build Alternative would not require any business displacements within the study area and would not result in any access changes to existing businesses. However, increased levels of traffic congestion associated with the build out of the Port Covington redevelopment would decrease mobility throughout the study area, and may eventually have a negative impact on those existing businesses. The No Build Alternative would not mitigate the increased traffic.

The displacement of the three businesses, Howard Uniform Company, Systems Furniture Instillation Company, and ARLOC, would reduce current employment in the study area, by approximately 38 employees. The Recommended Preferred Alternative would also include partial property acquisition from commercial and industrial properties, but the function of those properties is not expected to be altered. The Port Covington Master Plan includes, 1.5 million square feet of destination, attraction, entertainment, and specialty retail space; 1.5 million square feet of office space; and 500,000 square feet of industrial/light manufacturing space, which will increase employment on the peninsula. The Recommended Preferred Alternative will provide better access and mobility to those new jobs, as compared to the No Build Alternative.

Tax Base
The No Build Alternative includes the approved Port Covington redevelopment and would not directly impact properties that contribute to the tax base. The No Build Alternative would not mitigate future increases in traffic which may limit increases to tax base from additional future development/redevelopment opportunities in the area.

The Recommended Preferred Alternative would temporarily affect tax revenue because, current tax-generating properties are directly affected, since they will be acquired for right-of-way. The total

displacement of the Howard Uniform Company, Systems Furniture Instillation Company, and ARLOC, would temporarily reduce tax revenue in the study area. However, the Recommended Preferred Alternative supports the already approved Port Covington redevelopment that would increase the City's future tax base.

Potential Effects on Environmental Justice Populations

Eighteen of the 23 census block groups (78.3%) – located in Saint Paul, Morrell Park, Spring Garden Industrial Area, South Baltimore, Riverside, Locust Point, Locust Point Industrial Area, and Port Covington did not meet the criteria for an "EJ area" based on the threshold calculations. However, these areas were reviewed for the presence of minority and low-income populations as defined by USDOT and FHWA to determine approximate locations and to consider potential effects. The Locust Point Industrial Area and Port Covington areas were determined not to have residential dwellings within the analysis area. Potential impacts to EJ populations located in the five "EJ" areas (Carroll Park, Carroll Park Industrial Area, Mount Winans, Westport and Wilhelm Park) are discussed as applicable in the environmental consequences section. As used in this section, the term "non-EJ" does not imply the absence of EJ populations living in that area. The distinction between EJ areas and non-EJ areas is used in this analysis as one tool for assessing the potential for disproportionate impacts on EJ populations from the project.

The analysis presented in this section uses a conservative approach to determine potential effects to EJ populations. The analysis is based upon potential effects as identified for the following disciplines in addition to the consideration of direct effects occurring within ½- mile of the LOD and full study area as appropriate:

- Property Acquisitions
- Community and Neighborhood Cohesion and Isolation
- Transportation
- Visual Character
- Community Facilities and Services
- Air Quality
- Noise
- Contaminated Materials

Effects from Property Acquisition

Property impacts are assessed by determining if a transportation improvement requires the purchase of land outside of existing public right-of-way or includes easement on the property. Any property that is acquired in full, or a property whose access is eliminated as a result of the construction or operation of a project is considered a displacement. The No Build Alternative would not require infrastructure investment therefore no business displacements or property acquisitions would be realized. The Recommended Preferred Alternative would require no property acquisitions that result in residential displacements. A total of one displacement and six partial property acquisitions totaling 13.16 acres are required. Of the six partial acquisitions required, two properties are located in EJ areas. These two partial acquisitions account for less than an acre of land and do not impact business operations or structural components of a business. The affected properties are within or immediately adjacent to transportation rights-of-way.

During the acquisition process impacts to minority business owners would be determined and addressed. Property acquisition activities would be performed in accordance with the USDOT Uniform Relocation Assistance and Real Property Acquisition Policies Act of 1970 (Uniform Act) as amended and all applicable Maryland State laws that establish the process through which MDTA may acquire real property through a negotiated purchase or through condemnation.

Effects on Community and Neighborhood Cohesion and Isolation

Impacts associated with residential displacements, the acquisition of neighborhood gathering and meeting spaces, loss of physical access to neighbors and overall social connectivity as well as the cumulative effects of physical and psychological division of neighborhoods inform the assessment of potential effects to neighborhood cohesion and the creation of isolation to EJ populations. The No Build Alternative would not change the day to day connectivity of in neighborhood quality of life and interpersonal relationships. The Recommended Preferred Alternative would not result in adverse effects to community cohesion or cause isolation. Under the build year condition, access to planned development in the Port Covington peninsula would be improved through two key elements, construction of the bicycle and pedestrian and an enhanced transportation network via new ramps and an improved grid network. As a result, the Recommended Preferred Alternative would improve existing community cohesion and encourage more pedestrian and bicycle travel in the study area. In addition, the transportation network under the Recommended Preferred Alternative would support the redevelopment efforts now occurring in the study area neighborhoods, including new housing (market rate and affordable), commercial development (employment and retail) and recreational opportunities. The increased access to entertainment, recreation spaces and adjacent neighborhoods within and beyond the study area is consistent with the community revitalization and economic development goal expressed in the master plans for several EJ areas and are considered a benefit to neighborhoods to the west and south of the study area.

Effects on Transportation

In general, the overall transportation improvements and specific traffic effects of the Recommended Preferred Alternative as compared to the No Build Alternative is positive. The Recommended Preferred Alternative would facilitate vehicle operations at similar or improved LOS for the majority of intersections in the study area. There are no permanent impacts to existing transit or water taxi routes as a result of implementation of the project. Transit dependent populations within the study area would maintain access to transit routes throughout the study area. The transit services as described in Section 2.5.4, provide a variety of options to transit dependent populations living and working in, near or surrounding the study area. The Recommended Preferred Alternative includes the construction of a new bicycle and pedestrian path under I-95 to connect Port Covington to south Baltimore neighborhoods. The path would provide improved bicycle and pedestrian facilities would also enhance connection to EJ neighborhoods north and south of study area. Additional development by private entities could potentially result in the need for expanded transportation facilities within the study area in the future. However, these private development improvements would follow the Baltimore City process for addressing traffic impacts. The Recommended Preferred Alternative would not adversely impact EJ populations in the study area.

Effects in Neighborhood Visual Character

Twelve viewsheds were selected to determine the potential for impacts to visual character. None of the viewsheds within the study area are located in EJ areas. It is important to note that neither the No Build nor the Recommended Preferred Alternative are anticipated to have adverse effects on the visual character of the study area, therefore no disproportionate impacts to environmental justice populations are anticipated.

Effects on Community Facilities and Services
The Recommended Preferred Alternative would not displace any community facilities. All major routes providing access to these community facilities and service locations or routes would remain open after the completion of the project.

Effects on Air Quality
The predicted differences in air quality between the No Build Alternative and the Recommended Preferred Alternative are not significant. In addition, The Recommended Preferred Alternative is not predicted to increase emissions when compared to the No Build Alternative, nor cause or exacerbate a violation of the National Ambient Air Quality Standards (NAAQS); this takes into account the pollutants for which the area is in moderate nonattainment or maintenance including ozone and its precursor molecules, fine particulate matter (PM 2.5), and carbon monoxide. The project is not expected to measurably increase MSAT or greenhouse gas emissions over the No Build Alternative. No long-term mitigation measures are proposed.

As the project's construction is not anticipated to last more than five years in any location, construction impacts are considered to be temporary and would be limited to fugitive dust and mobile-source emissions. State and local regulations regarding dust control and other air quality emission reduction controls would be followed, short-term mitigations measures such as watering construction areas and tarping materials during dry or windy periods to prevent fugitive dust from entering the air. Overall, the project is not expected to result in impacts to EJ populations.

Effects on Noise
Detailed noise analyses, including traffic noise-level projections, were performed for the project. The results of the noise analysis are present in Section 3.5. The project was divided into eight Noise Sensitive Areas (NSAs) to assess and report potential effects. One of the eight NSAs is located in an EJ area. Noise modeling was completed for Existing (2016) and Future Build (2040) conditions. It was determined that local traffic is the primary source of noise in this EJ area under existing conditions. Under the build year scenario predicted noise levels would decrease at three noise receptor locations in the rage of -0.5 to -0.4 and would increase at three additional noise receptor locations in the range of 1.0 to 1.3. The three predicted increases are below the threshold of 10 dB(A) over existing noise conditions. Therefore, the construction of the Recommended Preferred Alternative would not cause permanent impacts.

Construction related noise are expected to have a short-term effect on noise levels related to the operation of bulldozers, trucks, graders and compressors. It is anticipated that construction efforts would occur during daytime hours. Should night work be required the conditions outlined in the Noise Ordinance for Baltimore City would be applied.

Contaminated Materials
An initial Environmental Site Assessment (ESA) of the proposed construction limits of disturbance within the study area. The ESA included a windshield survey, review of current and historic activities and conditions of the select parcels located in the study area, review of local, state, and federal regulatory database records, review of historical records, and a survey of the adjacent land uses. The predominate land use was industrial and commercial facilities and several residential uses. None of the eight parcels selected for more detailed study are located in EJ areas. However, for the purposes of assessing exposure to workers in the areas of the ESA study findings were further reviewed. It was concluded that there is some risk of subsurface contamination on several parcels due to the historical development and

documented cases of environmental contamination at select properties. A Phase II ESA has been recommended.

During construction of the project, contaminated soil and materials would be removed from affected areas. Additional investigations would be conducted to further define the type and extent of contamination as well as short-term and long-term remediation requirements to protect public health and worker safety. The project would not result in direct effects to the general population, including EJ populations.

Construction Effects and Mitigation

Potential impacts related to construction activities are presented in Section 3.14. Potential impacts considered include the effects of mobile source emissions, fugitive dust air, noise, light pollution and a delay in transit service for transit dependent populations. The potential impacts are short-term in nature and would not result in any permanent effects. Implementation of the planned mitigation measures would lessen impacts on residents and travelers traversing the construction area.

Assessment of Potential for 'Disproportionately High and Adverse Effects' on Minority and Low-Income Populations

a) Standards For Evaluating Effects

The US Department of Transportation has defined a "disproportionately high and adverse effect" on minority and low-income populations as an adverse effect that:

- "Is predominantly borne by a minority population and/or a low-income population"; or
- Will be suffered by the minority population and/or low-income population and is appreciably more severe or greater in magnitude than the adverse effect that will be suffered by the non-minority population and/or non low-income population."

The identification of a disproportionately high and adverse effect on EJ populations does not preclude a project from moving forward. USDOT Order 5601.2a states that a project with disproportionately high and adverse effects on EJ populations may be carried out under the following conditions:

- Programs, policies, and activities that would have a disproportionately high and adverse effect on minority populations or low-income populations would only be carried out if further mitigation measures or alternatives that would avoid or reduce the disproportionately high and adverse effects are not practicable. In determining whether a mitigation measure or an alternative is "practicable," the social, economic (including costs) and environmental effects of avoiding or mitigating the adverse effects would be taken into account.

- Programs, policies or activities that would have a disproportionately high and adverse effect on populations protected by Title VI ("protected populations") would only be carried out if:

    1. A substantial need for the program, policy or activity exists, based on the overall public interest; and
    2. Alternatives that would have less adverse effects on protected populations (and still satisfy the need identified in subparagraph (1) above have either:

(a) adverse social, economic, environmental, or human health impacts that are more severe; or
(b) would involve increased costs of an extraordinary magnitude.

Determinations of whether a project will have disproportionately high and adverse effects must take into consideration "mitigation and enhancements measures that will be taken and all offsetting benefits to the affected minority and low-income populations…" USDOT Order 6640.23A, Section 5.d.

b) Evaluation of Effects

Potential adverse effects on EJ populations in the study area would not result from the Recommended Preferred Alternative. However, there is the potential for minimal effects on EJ populations as related to temporary construction effects. Temporary effects include limited access and lane closures during construction in the Westport and Mount Winans neighborhoods. These temporary construction effects can be mitigated through the development and implementation of construction staging plans, standard practice in field construction measures and the use of restricted work times and zones during morning and afternoon rush hours. The Recommended Preferred Alternative would maintain or improve existing LOS within the transportation network and address increased demand due to planned and approved investment in the Port Covington site. Two of the EJ areas that would be most directly affected include the Westport and Mount Winans neighborhoods; these specific neighborhoods would benefit from a reduction in cut through traffic, through the improved transportation network for travelers. The project is also consistent with master plans to help to promote economic growth and the removal of blight and brownfield sites. The proposed site acquisition of a facility that house three business has been identified. However, those business relocations and their effects on minority business owners or employees will be documented following standard relocation processes in the future.

Taking all of these factors into account, MDTA and FHWA have concluded that the Recommended Preferred Alternative as a whole would not cause "disproportionately high and adverse effects" on EJ populations.

3.3.4 Potential Mitigation Measures

Neighborhoods and Community Facilities

Temporary impacts to local bus service during the construction of the project may impact transit dependent populations. Potential temporary impacts may include minimal delays due to roadway speed reductions, detours and the shifting or consolidation of bus stop locations. In addition, construction of the Recommended Preferred Alternative could temporarily affect bicycle and pedestrian facilities and activities, and may include temporary sidewalk and trail route detours.

As no short- or long-term impacts are anticipated for the Maisel Street Park, no mitigation would be needed for this property. Potential temporary construction impacts along the Gwynns Falls Trail would be managed with an approved Traffic Control Plan. MDTA and the Baltimore City Department of Recreation and Parks would continue to coordinate with the Sagamore Development Company regarding the development schedule for Relocated Swann Park. If Relocated Swann Park would not be in public use prior

to the construction of the Recommended Preferred Alternative, MDTA would work with Baltimore City to relocate any sporting and recreational events

Economic

Mitigation is not warranted

Environmental Justice

Mitigation is not warranted, specific mitigation for temporary impacts have been addressed.

3.4 VISUAL CHARACTER

This section describes the existing and future visual character within the study area, potential effects to visual environs, and measures to avoid, minimize, and mitigate visual effects that could occur with the Recommended Preferred Alternative when completed, or during its construction. For further information regarding the property acquisitions for this project, please refer to Appendix C, "Socio-Economic Technical Report."

3.4.1 Regulatory Context and Methodology

Visual effects associated with the I-95 Access Improvements Project would depend on the viewshed, viewer's proximity, and the degree of contrast with the surrounding environment. A visual impact assessment (VIA) is conducted when a project has the potential to alter the current visual environment to resources that are sensitive to changes in their surrounding environ such that they require visual screening to maintain existing visitor experience. The FHWA *Guidelines for the Visual Impact Assessment of Highway Projects* (FHWA-HEP-15-029) were used to identify the visual resources within the study area or that would have a view of the project area, and to determine potential effects. For this project, the analysis focuses on the publicly accessible natural and cultural resources with potential views of the proposed improvements. For further information regarding the visual character of this project, please refer to Appendix C, "Socio-Economic Technical Report."

The VIA methodology and evaluation for this study are summarized below:

1. **Define Project Viewshed/Physical Limits of Visual Environment**: The project "viewshed" is the surface area within which the project site would be visible to a person. The viewshed for this assessment is represented by the area within which the proposed improvements under the Recommended Preferred Alternative, are visible. Because the project is located in an already developed urban setting with buildings and other vertical structures blocking views toward the project site, the viewshed comprises areas in close proximity (generally within 200 feet) to the site of the Recommended Preferred Alternative, as well as more distant, across the Middle Branch of the Patapsco River to the south, up to approximately one mile from the project site. Visual resources, such as publicly accessible parks and open space, as well as historic resources, were identified within this viewshed.

2. **Identify Viewer Groups**: Viewer groups associated with each of the visual resources, such as park users, were identified and their likely sensitivity to visible changes at the project site considered.

3. **Identify Key Viewpoints and Views and Assess Visual Quality**: Visual resources including public open spaces and natural resources within the viewshed were identified for further evaluation. These viewpoints represent locations that allow for visual connectivity, referred to as a "view corridor," between a particular vantage point at a visual resource (such as within a park) and the project site. Field surveys were conducted to identify views toward the project site, and to determine where views were blocked by trees or other structures. Twelve key viewpoints from within the seven visual resources in the viewshed were identified for assessment and are shown on Figure 3-9.
4. **Analyze changes in Existing Visual Resources and Viewer Response**: The extent to which the Recommended Preferred Alternative would be visible and perceptible to viewer groups was considered in order to determine whether changes to the view corridor might affect the localized experience of publicly accessible parks and other visual resources.

5. **Depict Visual Appearance with the Project**: This step in the VIA considers the project components, such as changes to existing and new elevated infrastructure.

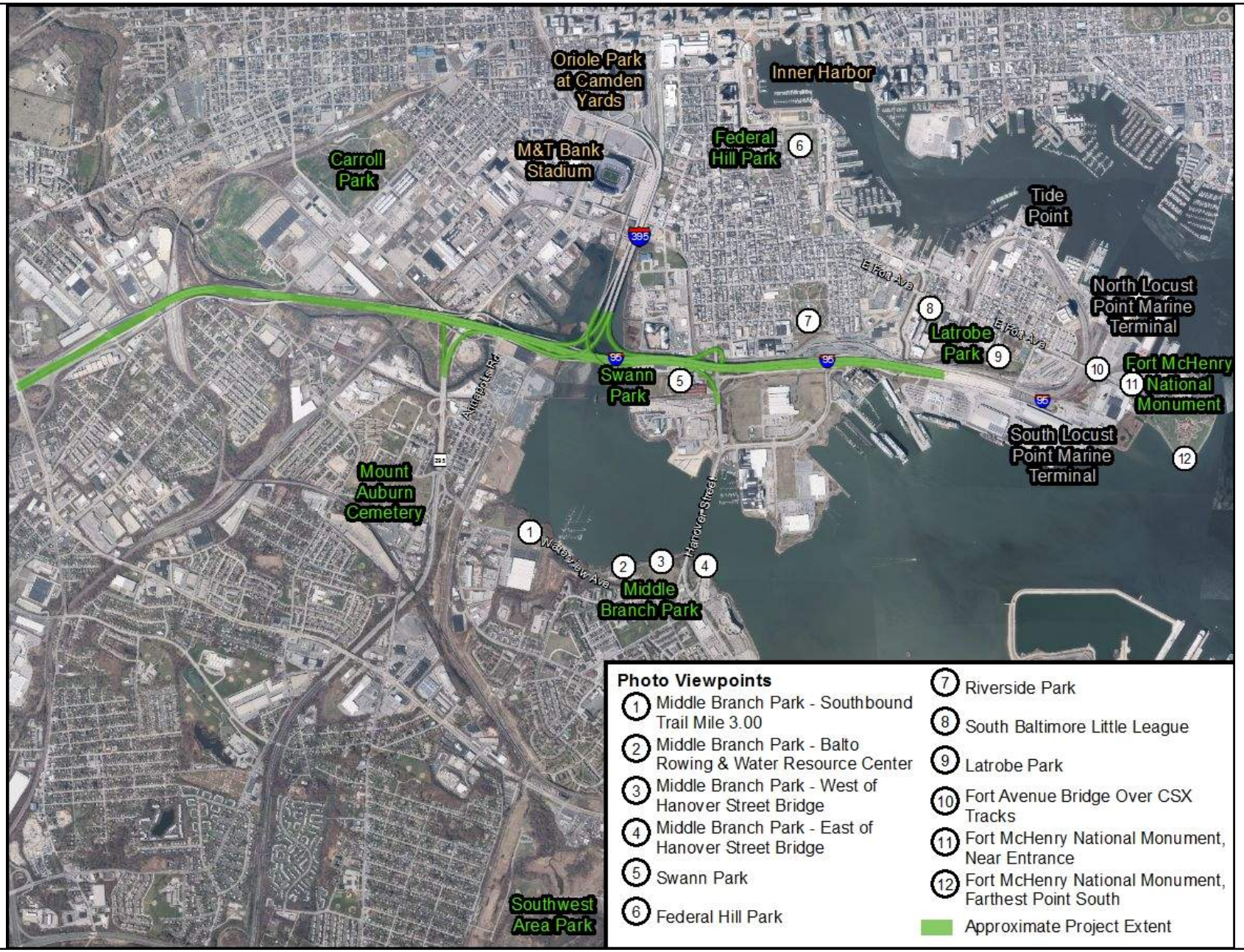
6. **Assess the Project's Visual Impacts**: The VIA considered the ways in which the Recommended Preferred Alternative would alter view corridors, as they are expected to exist in the future with the full build-out of the Port Covington Master Plan. Consideration was given to visibility of the Recommended Preferred Alternative project elements, as well as to determine whether these changes to the corridor would be perceived by respective user groups, and if so the degree to which their experience would be altered.

3.4.2 Existing and Future Conditions

For this analysis, seven visually-sensitive resources were identified within the viewshed, and twelve viewpoints from within them were selected for evaluation, as shown on Figure 3-9. Table 3-10 outlines the project's observability from the 12 viewpoints. Representative photos from each viewpoint are included within Appendix C, "Socio-Economic Technical Report."

Table 3-10: Observability of Proposed Project from Key Viewpoints

Project Vicinity Observable	Viewpoint
Not Likely	• Federal Hill Park • Riverside Park • South Baltimore Little League • Latrobe Park • Fort Avenue Bridge over CSX Tracks • Fort McHenry National Monument - Entrance • Fort McHenry National Monument – Farthest Point South
Extreme Distance (approximately 1 mile)	• Middle Branch Park - Southbound Trail Mile 3 • Middle Branch Park – Balto Rowing & Water Resource Center • Middle Branch Park – West of Hanover Street Bridge • Middle Branch Park – East of Hanover Street Bridge
Close Proximity (within 200 feet)	• Swann Park



dot DEPARTMENT OF TRANSPORTATION BALTIMORE CITY

Maryland Transportatior Authority

I-95 ACCESS IMPROVEMENTS
FIGURE 3-9
VISUALLY-SENSITIVE RESOURCES

MARYLAND TRANSPORTATION AUTHORITY

BALTIMORE CITY DOT

The project would not be visible from seven of the twelve viewpoints due to existing tree lines, buildings, and structures. It is only visible from two of the existing visual resources, Middle Branch Park and Swann Park. From the four viewpoints located at Middle Branch Park, the project is only visible at extreme distance (approximately one mile) across the Middle Branch of the Patapsco River. Patrons may be exploring trails, engaging in water activities, or playing on park facilities; therefore, they are expected to be more focused on their immediate surroundings than the project in the distance.

Currently, Swann Park is located within close proximity (within 200 feet) to the project. However, according to the Port Covington Master Plan, the park will be relocated in 2027. This relocated Swann Park, or otherwise re-named park, would be approximately 26 acres, extending along the majority of the peninsula's western waterfront. Though no detailed site plans for the relocated Swann Park are currently available, as contemplated in the Port Covington Master Plan, it would include a network of roads, walkways, and pedestrian ways. Further detail and illustrations of the existing views is provided in Appendix C, "Socio-Economic Technical Report." A copy of the Port Covington Master Plan is included in Appendix H, "Section 4(f)."

In addition to the relocation of Swann Park, most of the Port Covington peninsula will be redeveloped pursuant to the Port Covington Master Plan. That development is expected to include buildings and structures that will block views of the project site from Middle Branch Park. The existing ramp over the Middle Branch of the Patapsco River will still be visible but at a great distance. The future Swann Park, or a newly named park, would be located further away from the project and views to the project area would likely be blocked by other new buildings developed on the peninsula with the full build-out of the Port Covington Master Plan.

3.4.3 Probable Consequences

The future No Build condition consists of the existing road network, as well as the planned and programmed improvements in the approved master plan. No new visual impacts related to the project and its components would occur.

The Recommended Preferred Alternative would not be visible from seven of the twelve viewpoints and only the reconstructed ramps over the Middle Branch of the Patapsco River would be visible in the extreme distance (approximately one mile) from the four Middle Branch Park viewpoints. The project infrastructure would also be visible from parts of the relocated Swann Park.

Because the Recommended Preferred Alternative would generally be reconstruction of the existing highway infrastructure in approximately the same locations and with similar heights, vertical profile and appearance, the new alignments, ramps, and interchanges would generally resemble existing conditions. As such the visual character of the Recommended Preferred Alternative would be similar to the existing highway infrastructure and its contribution to view corridors would also be similar.

The visual character of the study area would not be substantially altered with the Recommended Preferred Alternative. Therefore, the Recommended Preferred Alternative though perceptible from either Swann Park or Middle Branch Park, would not be expected to alter the localized viewer experience.

Introduction of various construction activities, including heavy equipment, trucks, protective fencing or walls, signage, and additional vehicles surrounding proposed construction and staging areas, as well as

fugitive dust, would create a temporary visual and aesthetic effect to surrounding or adjacent areas where these activities would occur. Given the temporary and intermittent occurrence of construction activities, their visibility would not cause adverse impacts to either Swann Park or Middle Branch Park.

Therefore, the proposed project will not create adverse impacts to the aesthetic character of visual resources or their environs, and the proposed project would not affect the limited views that park users may have of the project area from Middle Branch Park, Swann Park (existing location), or the approximate future location of Swann Park. As there would be no adverse impacts, no mitigation is necessary.

3.4.4 Potential Mitigation Measures

Mitigation is not warranted.

3.5 NOISE

This section documents the Existing and Future Build noise levels associated with the highway and local roadway improvements in the Recommended Preferred Alternative. For purposes of the noise study, noise monitoring was performed at nine locations during peak traffic conditions. Noise modeling using the Federal Highway Administration's Traffic Noise Model (FHWA TNM 2.5), was conducted at additional locations to gain a thorough understanding of the existing noise environment and to determine how the proposed improvements would affect future noise levels throughout the project study area. For additional information refer to Appendix D, "Noise Technical Report."

3.5.1 Regulatory Context and Methodology

The Maryland Department of Transportation, State Highway Administration (SHA) Highway Noise Policy provides guidance for the evaluation of traffic noise effects and noise abatement opportunities for communities adjacent to state highways. Highway noise impacts are analyzed as either Type I or Type II situations, as defined in the Code of Federal Regulations (23 CFR 772), Procedures for Abatement of Highway Traffic Noise and Construction Noise. Type I projects are associated with the construction of new highways, capacity additions to existing highways, major operational improvements, and the construction or modification of specific highway-related facilities as defined in 23 CFR 772.5. The I-95 Access Improvements project is considered a Type I project, and therefore, federal regulations require the evaluation of highway traffic noise impacts and consideration of abatement. With respect to Type I noise analyses, MDTA follows MDOT SHA's policy and guidance. In light of the wide range of land uses and sensitivities of the exposed population, the MDOT SHA/FHWA has set design goals and regulations of acceptable noise levels as they relate to highway projects. These regulations appear in Title 23 CFR Part 772 (Highway Traffic Noise and Construction Noise). They require that a noise analysis be conducted for all highway projects that meet the guidance criteria.

In addition, noise sensitive land uses must be identified and future design year noise levels due to the project must be predicted for these land uses. These levels must then be compared to the Noise Abatement Criteria (NAC), which are listed in Table 3-11, and MDOT SHA's definition of a substantial increase in order to assess noise impacts. If the Future Build noise levels approach or exceed (are within one decibel of) the NAC, or if the projected noise increase is "substantial" (at least 10 to 15 dBA, depending

upon the existing noise level), then noise abatement measures must be considered and, if reasonable and feasible, implemented.

Where required, 23 CFR 772 designates noise abatement measures that must be considered for reasonableness and feasibility. Reasonableness and feasibility requirements are defined in the *MDOT SHA - Highway Noise Policy* (2011).

Table 3-11: MDOT SHA/FHWA Noise Abatement Criteria (Hourly A-Weighted Sound Level (dBA)

Activity Category	Activity Criteria[1] $L_{eq}(h)$[2]	Maryland SHA Approach Criteria	Description of Activity Category
A	57 (Exterior)	56 (Exterior)	Lands on which serenity and quiet are of extraordinary significance and serve an important public need and where the preservation of those qualities is essential if the area is to continue to serve its intended purpose.
B [3]	67 (Exterior)	66 (Exterior)	Residential
C [3]	67 (Exterior)	66 (Exterior)	Active sport areas, amphitheaters, auditoriums, campgrounds, cemeteries, daycare centers, hospitals, libraries, medical facilities, parks, picnic areas, places of worship, playgrounds, public meeting rooms, public or nonprofit institutional structures, radio studios, recording studios, recreation areas, Section 4(f) sites, schools, television studios, trails, and trail crossings
D	52 (Interior	51 (Interior)	Auditoriums, day care centers, hospitals, libraries, medical facilities, places of worship, public meeting rooms, public or nonprofit institutional structures, radio studios, recording studios, schools, and television studios
E [3]	72 (Exterior)	71 (Exterior)	Hotels, motels, offices, restaurants/bars, and other developed lands, properties or activities not included in A-D or F
F	--	--	Agriculture, airports, bus yards, emergency services, industrial, logging maintenance facilities, manufacturing, mining, rail yards, retail facilities, shipyards, utilities (water resources, water treatment, electrical), and warehousing
G	--	--	Undeveloped lands that are not permitted

[1] The Leq(h) Activity Criteria values are for impact determination only, and are not design standards for noise abatement measures.

[2] The equivalent steady-state sound level which in a stated period of time contains the same acoustic energy as the time-varying sound level during the same time period, with Leq(h) being the hourly value of Leq.

[3] Includes undeveloped lands permitted for this activity category.

3.5.2 Existing Conditions

The study area consists of the Port Covington peninsula, areas north of I-95, and a small portion of the Westport community. The majority of land usage to the north of the I-95 viaduct consists of the existing CSX Rail Tracks and Yard. North of the rail tracks and yard are several single- and multi-family residential buildings along with active parkland and a few industrial uses just west of Hanover Street. South of the I-95 viaduct, land usage primarily consist of industrial uses with a few residences and a baseball field (Swann Park) located along McComas Street, just west of Hanover Street. Several row houses also exist along Annapolis Street in the northeast section of Westport.

Noise Sensitive Areas

As shown in Table 3-11 above, the study of traffic noise considers different categories of impact depending upon the land usage. As a result, NSAs for common land usage and impact criteria are defined for specific and common geographic areas. Due to the length of this study area, this analysis was separated into eight sections common to an individual NSA. The location and extents of these NSAs are shown on Figure 3-10**.**

Ambient Noise Level Measurements

The goal of measuring existing noise is threefold. First, the measurements provide the baseline information required to establish the noise environment to which the various communities are being exposed. These levels may exceed noise levels recommended by various Federal, State and local agencies. Second, existing noise level measurements are required by FHWA as a baseline against which future noise levels are assessed. Third, the noise model used to assess the impacts of future conditions must be validated with the use of existing measured data.

Noise Monitoring Results

Nine noise sensitive locations were identified for monitoring. All of the locations are residential uses, or would be by 2040. These locations, include:

1. 1901 S. Charles Street
2. 1946 Light Street
3. Baltimore Sun North Property Line #1 (future development site)
4. 220 W. McComas Street
5. 1880 Covington Street
6. Baltimore Sun North Property Line #2 (future development site)
7. 1724 Whetstone Way (near Key Hwy)
8. 101 Wells Street – Apartments
9. Annapolis Street @ Clare Street

Noise Sensitive Areas

1 Noise Monitoring Location

I-95 ACCESS IMPROVEMENTS

FIGURE 3 - 10

NOISE SENSITIVE AREAS & NOISE MONITORING LOCATIONS

MARYLAND TRANSPORTATION AUTHORITY

CITY OF BALTIMORE

The monitoring results shown in Table 3-12 indicate daytime hourly noise levels ranging from a low of 61.5 dBA at 1901 S. Charles Street to a high of 72.2 dBA at the Baltimore Sun North Property Line #1 receptor. Of the nine monitoring locations, noise levels at six locations either approached (within 1db) or exceeded the 66 dBA L_{eq} (h) NAC. In all cases, the noise generated by traffic was both predominant and consistent during the monitoring time periods. However, at receptor locations 2, 5 and 8 to the north of both the I-95 viaduct and the CSX Rail Tracks and Yard, receptors would have a direct and unobstructed line-of-sight to the CSX Rail Tracks and Yard. Consequently at these locations, occasional rail movement and activity resulted in increased baseline noise levels readings.

Table 3-12: Noise Monitoring Results (dBA Leq (h))

NSA	Receptor	Address	Period	Date	Duration	Noise Level
NSA BB1	1	1901 S. Charles Street	AM	06/14/16	15 min	61.5
			PM	06/14/16	15 min	63.4
NSA LS	2	1946 Light Street	AM	06/14/16	15 min	64.5
			PM	06/14/16	15 min	63.6
NSA PCE	3	Baltimore Sun North Property Line #1	AM	06/14/16	15 min	72.2
			PM	06/14/16	15 min	71.3
NSA PCW	4	220 W. McComas Street	AM	06/15/16	15 min	63
			PM	06/15/16	15 min	64.1
NSA RIV	5	1880 Covington Street	AM	06/15/16	15 min	67
			PM	06/15/16	15 min	65.3
NSA PCE	6	Baltimore Sun North Property Line #2	AM	06/14/16	15 min	71.3
			PM	06/14/16	15 min	69.9
NSA KWY	7	1724 Whetstone Way (elevated above Key Hwy)	AM	06/14/16	15 min	66.3
			PM	06/14/16	15 min	66.3
NSA BB2	8	101 Wells Street - Apartments	AM	06/15/16	15 min	66.7
			PM	06/15/16	15 min	68
NSA WR	9	Annapolis Street @ Clare Street	AM	06/01/17	30 Min	71.2
			PM	06/01/17	30 Min	63.5

Noise Model Validation

Validation of the FHWA Traffic Noise Model was conducted to define the relationship between measured and modeled Leq noise levels and to ensure that the model could accurately predict future noise levels. Comparisons are made between the predicted and measured existing sound levels. Modeled noise levels that are within ± 3 dB of one another indicate that the model is within an acceptable level of accuracy. Based on the results of the validation process, the model was considered to be an accurate representation of existing traffic conditions throughout the project area. Further details of the validation assessment results can be found in Appendix D, “Noise Technical Report.”

3.5.3 Probable Consequences

Traffic noise was predicted for the Existing (2016) condition and peak Future Build (2040) condition at selected sensitive receptor locations using FHWA's Traffic Noise Model (TNM) version 2.5. Utilizing Existing and Future Build year (2040) traffic volumes, vehicle composition, and speeds assigned to the existing and proposed roadways, potential impacts at affected study area receptors were assessed. For future conditions, the model also accounted for proposed project improvements and application of 2040 traffic data. Existing and Future Build (2040) noise levels were then predicted throughout the study area with the improvements in place and in use.

Table 3-13 shows the predicted worse case noise levels for the Existing and Future Build conditions.

Table 3-13: Noise Assessment Summary [1, 2]

Receptor	Existing Noise Level	2040 Build Noise Level	Change Over Existing	Consider Noise Abatement?
NSA WR1	65.6	65.2	-0.4	N
NSA WR2	57.4	58.7	1.3	N
NSA WR3	55.4	56.4	1	N
NSA WR4	55.4	56.4	1	N
NSA WR5	64.8	64.4	-0.4	N
NSA WR6	65.7	65.2	-0.5	N
NSA LS1	56	57.2	1.2	N
NSA LS2	55.7	57	1.3	N
NSA LS3	55.7	56.9	1.2	N
NSA LS4	56.9	59	2.1	N
NSA LS5	55.1	57.3	2.2	N
NSA LS6	53.6	55.8	2.2	N
NSA RIV1	61.3	63.6	2.3	N
NSA RIV2	58.7	61	2.3	N
NSA RIV3	61.2	63.4	2.2	N
NSA RIV4	56.9	59	2.1	N
NSA RIV5	56.8	58.5	1.7	N
NSA RIV6	61.2	63.5	2.3	N
NSA RIV7	57.5	59.3	1.8	N
NSA RIV8	60.9	63.3	2.4	N
NSA RIV9	60.4	62.9	2.5	N
NSA RIV10	60.6	63.1	2.5	N
NSA RIV11	60.7	63.3	2.6	N
NSA KWY3	68.8	70.3	1.5	Y
NSA KWY4	68.4	69.6	1.2	Y
NSA KWY5	68.8	70.5	1.7	Y
NSA KWY6	68.5	69.7	1.2	Y
NSA KWY7	68.8	70.7	1.9	Y
NSA KWY8	68.5	70.1	1.6	Y
NSA KWY9	68.9	70.7	1.8	Y
NSA KWY10	68.5	70.1	1.6	Y
NSA KWY11	68.9	70.8	1.9	Y
NSA KWY12	68.5	70.1	1.6	Y

Receptor	Existing Noise Level	2040 Build Noise Level	Change Over Existing	Consider Noise Abatement?
NSA PCW1	----	80.4	NA	NA
NSA PCW2	----	78.6	NA	NA
NSA PCW3	----	78.6	NA	NA
NSA PCW4	----	78.5	NA	NA
NSA PCW5	----	65	NA	NA
NSA PCW6	----	72.4	NA	NA
NSA PCE1	----	75.4	NA	NA
NSA PCE2	----	73.2	NA	NA
NSA PCE3	----	73.1	NA	NA
NSA PCE4	----	73	NA	NA
NSA PCE5	----	72.2	NA	NA
NSA PCE6	----	74	NA	NA
NSA PCE7	----	74.2	NA	NA
NSA PCE8	----	74.6	NA	NA
NSA PCE9	----	74.2	NA	NA
NSA PCE10	----	73.8	NA	NA
NSA PCE11	----	75.2	NA	NA
NSA PCE12	----	74.9	NA	NA

[1] All noise levels were based on the calibrated TNM model, which only considers noise due to traffic.
[2] "---- or NA" represents receptor locations that do not exist in the existing condition or would not exist in the future condition.

Although NSA's BB1 and BB2 are residential in nature, impact determination at these NSA's were not included in the summary results in Table 3-13, since they both are large scale apartment buildings with no exterior recreational areas. For those remaining NSA's which were considered, the summary results in Table 3-13 indicate that at the majority of studied receptor locations, the Recommended Preferred Alternative would not have a significant impact on noise in the community. To the north of the project corridor. NSA RIV and NSA LS would not exceed NAC criteria. NSA WR would also not be significantly impacted by the Recommended Preferred Alternative as the NAC would not be exceeded. However, for NSA KWY, the results indicate that the NAC would be exceeded here due primarily to improvements along Key Highway. As a result, noise abatement was considered. NSA's PCE and PCW represent the boundaries of the future proposed action. While projected noise levels indicate that noise would exceed the category B NAC criteria at NSA's PCE and PCW, because no specific building permit has been issued, the projected noise levels are only included here for informational purposes.

3.5.4 Potential Mitigation Measures

The evaluation of whether or not noise abatement would be considered for a community requires that three questions be considered:

- Does a noise impact currently exist, or is it projected to exist?
- Is the design of noise abatement feasible?
- Is the construction of noise abatement reasonable?

Based on the noise assessment summary results contained in Table 3-13 above, noise abatement was considered at the NSA's indicated. These noise sensitive areas were evaluated to determine if the construction of abatement would be both feasible and reasonable.

NSA KWY

The only NSA studied that warranted abatement consideration was NSA KWY. The impacted receptors for NSA KWY include upper floor outdoor balconies that face directly towards Key Highway. In general, abatement for upper floor windows in a large residential building is typically not feasible. Utilizing simple line-of-sight geometric principles, the required barrier height for upper floor windows are typically found to be prohibitive as heights would have to be unacceptably tall to block the line-of-sight for a significant number of properties. However, for completeness, an abatement assessment was conducted for the receptors along Key Highway As shown in Table 3-14, the results indicate that abatement would not be feasible for this NSA as the proposed noise barrier would not reduce noise levels at any of the receptors by at least 5 dBA.

NSA PCE and NSA PCW

Because specific design plans for the Port Covington Redevelopment project have not been advanced, an assessment of abatement measures for specific buildings cannot be properly considered at this time. As a result, 2040 noise levels were specifically projected at the site boundaries of the Port Covington Redevelopment area to help inform future design plans only.

Table 3-14: Noise Abatement Summary (NSA KWY)[1]

Receptor	Existing Noise Level	2040 Build Noise Level	Change Over Existing	Consider Noise Abatement?	With Barrier	Insertion Loss
NSA KWY3	68.8	70.3	1.5	Y	66.9	3.4
NSA KWY4	68.4	69.6	1.2	Y	66.7	2.9
NSA KWY5	68.8	70.5	1.7	Y	67.9	2.6
NSA KWY6	68.5	69.7	1.2	Y	67.2	2.5
NSA KWY7	68.8	70.7	1.9	Y	69.2	1.5
NSA KWY8	68.5	70.1	1.6	Y	68.2	1.9
NSA KWY9	68.9	70.7	1.8	Y	69.8	0.9
NSA KWY10	68.5	70.1	1.6	Y	68.8	1.3
NSA KWY11	68.9	70.8	1.9	Y	70.2	0.6
NSA KWY12	68.5	70.1	1.6	Y	69.2	0.9

[1] Abatements results shown for a 30-foot vertical noise barrier. The initial noise barrier height considered was 20 feet.

3.6 AIR QUALITY

Pollutants that can be traced principally to motor vehicles are relevant to the evaluation of a project's impacts; these pollutants include CO, ozone and its precursors (VOC and NO_X), particulate matter, MSATs, and GHGs. Emissions of ozone, VOC, NOx, GHGs and MSATs from vehicular sources are typically associated with regional transportation projects and since this project is contained in one county and is not expected to significantly increase VMT in the study area, detailed analysis of these pollutants is not required. Transportation sources account for a small percentage of regional emissions of SO_X and Pb; thus, a detailed analysis is not required.

This section documents the potential effects to air quality as a result of the construction or operation of the proposed I-95 Access Improvements project. It summarizes the detailed information in Appendix E, "Air Quality Technical Report."

3.6.1 Regulatory Context

Air pollution is a general term that refers to one or more chemical substance that degrades the quality of the atmosphere. Individual air pollutants can cause acute respiratory illnesses, contribute to the development of chronic ailments, reduce visibility, and inhibit the growth and resilience of crops. Air pollutants are regulated by the Clean Air Act (CAA) to protect public and environmental well-being. The purpose of this analysis is to determine whether the Recommended Preferred Alternative would cause or contribute to a violation of the CAA requirements and standards.

Clean Air Act

The CAA is the overarching statute regulating air quality in the United States. The CAA requires the United States Environmental Protection Agency (USEPA) to set standards for air pollutants, and approve state plans and enforce deadlines for reducing air pollution, among many other responsibilities. The CAA Amendments of 1990 and the Final Transportation Conformity Rule [40 CFR Parts 51 and 93] direct USEPA to implement environmental policies and regulations that ensure acceptable levels of air quality.

Transportation conformity is a process mandated by USEPA and US Department of Transportation (DOT) and required by the CAA section 176(c) (42 U.S.C. 7506 (c)) to ensure that federally-supported highway and transit projects are consistent with the state's air quality goals. The CAA and Final Transportation Conformity Rule affect proposed transportation projects in the following way, according to Title I, Section 176 (c) 2:

> *"No federal agency may approve, accept, or fund any transportation plan, program, or project unless such plan, program, or project has been found to conform to any applicable State Implementation Plan in effect under this act."*

According to Section 176 (c) 2 (A) of the CAA, conformity to an implementation plan means eliminating or reducing the severity and number of violations of the National Ambient Air Quality Standards (NAAQS) and achieving expeditious attainment of such standards, and ensuring that such activities will not:

- Cause or contribute to any new violation of any NAAQS in any area:
- Increase the frequency or severity of any existing violation of any NAAQS in any area: or
- Delay timely attainment of any NAAQS or any required interim emission reductions or other milestones in any area.

National Ambient Air Quality Standards

As required by the CAA, USEPA sets NAAQS for airborne pollutants that have adverse impacts on human health and the environment. The NAAQS are a set of baseline standards over which state governments can choose to impose stricter standards.

USEPA has established NAAQS for six pollutants, which are commonly known as "criteria pollutants": ozone, carbon monoxide (CO), particulate matter ($PM_{2.5}$ and PM_{10}), nitrogen dioxide, sulfur dioxide, and lead. Within the NAAQS are primary and secondary standards. The primary standards serve to protect sensitive members of the human population, such as asthmatics, children, and the elderly. Secondary standards protect the general environment, including animals, crops, vegetation, and buildings. The NAAQS as of June 2017 are summarized in Table 3-15.

Table 3-15: National Ambient Air Quality Standards

National Ambient Air Quality Standards Criteria Pollutant	Primary / Secondary	Averaging Period	Concentration	Form
Carbon Monoxide (CO)	Primary	1-hour	35 ppm	Not to be exceeded more than once per year
		8-hour	9 ppm	
Lead (Pb)	Primary and Secondary	Rolling 3 Month Average	0.15 μg/m^3 (1)	Not to be exceeded
Nitrogen Dioxide (NO_2)	Primary	1-hour	188 μg/m^3	98th percentile of 1-hour daily maximum concentrations, averaged over 3 years
	Primary and Secondary	Annual	100 μg/m^3 (2)	Annual Mean
Ozone (O_3)	Primary and Secondary	8-hour	0.070 ppm (3)	Annual fourth highest daily maximum 8-hour concentration, averaged over 3 years
Particulates ($PM_{2.5}$)	Primary	Annual	12 μg/m^3	Annual mean, averaged over 3 years
	Secondary	Annual	15 μg/m^3	Annual mean, averaged over 3 years
	Primary and Secondary	24-hour	35 μg/m^3	98th percentile, averaged over 3 years
Particulates (PM_{10})	Primary and Secondary	24-hour	150 μg/m^3	Not to be exceeded more than once per year on average over 3 years
Sulfur Dioxide (SO_2)	Primary	1-hour	75 ppb (4)	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

[1] Final rule signed October 15, 2008. The 1978 lead standard (1.5 μg/m^3 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_2 standard is 100 μg/m^3.

[3] Final rule signed October 1, 2015, and effective December 28, 2015. The previous (2008) O_3 standards additionally remain in effect in some areas. Revocation of the previous (2008) O_3 standards and transitioning to the current (2015) standards will be addressed in the implementation rule for the current standards.

[4] The previous SO_2 standards (0.14 ppm 24-hour and 0.03 ppm annual) will additionally remain in effect in certain areas: (1) any area for which it is not yet 1 year since the effective date of designation under the current (2010) standards, and (2)any area for which implementation plans providing for attainment of the current (2010) standard have not been submitted and approved and which is designated nonattainment under the previous SO_2 standards or is not meeting the requirements of a SIP call under the previous SO_2 standards (40 CFR 50.4(3)), A SIP call is an EPA action requiring a state to resubmit all or part of its State Implementation Plan to demonstrate attainment of the require NAAQS.

Source: U.S. Environmental Protection Agency 2017

Regional Air Quality Conformity

MDTA is currently in the process of adding the I-95 Access Improvements Project to the most recent Maryland Transportation Improvement Plan (TIP). Once included, the proposed project will have been deemed to be in conformity with the region's long-term air quality plans for ozone and no further analysis of this pollutant will be required.

Peak hour traffic volumes, lane configurations, intersection geometry, saturation flow rates, signal type, arrival rate, and signal phasing information were referenced from the Synchro7 traffic simulation model for the AM and PM peak travel periods for the 2040 analysis year. A summary of the most relevant traffic factors related to the air quality analysis is shown in Table 3-16.

Table 3-16: Traffic Parameters

Freeway Operations Parameters	Scenarios		
	Existing	No Build 2040	Alt 5 2040
Annual Study Area VMT	1.4M	1.64M	1.71M
Percent passenger cars	91%	91%	91%
Percent light trucks	2.5%	2.5%	2.5%
Percent Heavy Vehicles	6.5%	6.5%	6.5%
Base Free-flow Speed (mph)	55-65	55-65	55-65

Project-Level Conformity

Project level conformity determinations require that an FHWA/FTA project must come from a conforming transportation plan/TIP or associated regional emissions analysis. In addition, in carbon monoxide and particulate matter nonattainment and maintenance areas, an analysis of localized emissions may be required for federally funded or approved projects. This analysis is called a "hot-spot" analysis.

Mobile Source Air Toxics

The Federal Highway Administration (FHWA) has developed a tiered approach for analyzing MSATs, as indicated in the *Interim Guidance Update on Mobile Source Air Toxic Analysis in NEPA Documents* (October 2016). Three levels of analysis have been indicated in this guidance*:*

- Tier I: No analysis for projects with no potential for meaningful MSAT effects;
- Tier II: Qualitative analysis for projects with low potential MSAT effects; or
- Tier III: Quantitative analysis to differentiate alternatives for projects with higher potential MSAT effects.

Tier I includes projects which have no meaningful effects on MSAT levels. Tier II covers a broad range of projects, including those that serve to improve operations of highway, transit, or freight without adding substantial new capacity or without creating a facility that is likely to meaningfully increase MSAT emissions. Tier III standards cover projects that increase diesel vehicles at intermodal freight facilities or add significant capacity to urban highways.

As shown in Table 3-16, the Recommended Preferred Alternative will not significantly increase VMT or heavy duty diesel vehicle percentages throughout the project study area. Therefore, the project would classify as a Tier 1 project and not require an analysis for MSATs.

Greenhouse Gases

In 2009, the state of Maryland passed the Greenhouse Gas Reduction Act (GGRA). The GGRA, which led to the creation of Maryland's wide-ranging Greenhouse Gas Reduction Plan, directed the state to reduce GHG levels by 25 percent by 2020. In 2015, the Maryland Department of the Environment (MDE) issued a report stating that Maryland was on track to the meet the 25% reduction goal by 2020. In 2016, the governor of Maryland reauthorized the GGRA and extended its GHG reduction goals to 40 percent by 2030. A description of the primary greenhouse gases in the Earth's atmosphere is provided below.

Based on the localized nature of the project, the insignificant VMT increase that is expected and the project's impending inclusion in the most current TIP, it is not expected that the Recommended Preferred Alternative would adversely affect the regional GHG forecast and no further analysis is required.

3.6.2 Existing Conditions

Monitored Air Quality

The Air and Radiation Management Administration within the MDE is responsible for implementing and enforcing regulations to ensure that the air Maryland citizens breathe is clean and healthful. One of their functions is to operate a statewide network of air quality monitors that continuously measure air quality. This data is made available through USEPA's AirData website. The closest monitor to the project study area is located approximately eight miles northeast at 600 Dorsey Avenue in Essex, MD in Baltimore County. The local monitored air quality data is shown below in Table 3-17.

Table 3-17: Local Monitored Air Quality Data

Pollutant	Location	Units	Period	Concentrations			Number of Exceedances of Federal Standard	
				Mean	Highest	Second Highest	Primary	Secondary
CO	600 Dorsey Avenue, Essex, MD	ppm	8-hour	-	1.5	1.0	0	0
			1-hour	-	2.1	1.5	0	0
SO_2	600 Dorsey Avenue, Essex, MD	ppm	3-hour	-	11.1	8.9	0	-
			1-hour	-	21.4	20.1	-	0
Respirable Particulates (PM10)	1100 Hillen Street, Baltimore, MD	µg/m^3	24-hour	-	33	23	0	0

Pollutant	Location	Units	Period	Concentrations			Number of Exceedances of Federal Standard	
				Mean	Highest	Second Highest	Primary	Secondary
Respirable Particulates (PM2.5)	600 Dorsey Avenue, Essex, MD	µg/m³	Annual	8.7	-	-	0	0
			24-hour	20.7	32.6	20.6	0	0
NO2	600 Dorsey Avenue, Essex, MD	ppb	Annual	10.4	-	-	0	0
			1-hour	22.9	51.9	51.3	0	0
Lead (Pb)	N/A	µg/m³	3-month	-	-	-	0	0
O_3	600 Dorsey Avenue, Essex, MD	ppm	8-hour	0.078			1	1

*There is no active Lead monitoring site within 100 miles of the project site.

Attainment Status/Regional Air Quality Conformity

In 2017, Baltimore City is classified as a moderate nonattainment area for the 8-hour ozone standard. Baltimore City is classified as a "maintenance" (formerly nonattainment) area for CO and as an attainment area for all other criteria pollutants.[13]

3.6.3 Methodology

Pollutants for Analysis

The study area is located in an attainment area for particulate matter, SO_2, NO_2 and lead. Ozone, MSATs and GHGs are considered regional pollutants and since the proposed project is not expected to significantly increase VMT or heavy-duty diesel vehicle percentages, potential impacts from these pollutants do not need to be analyzed.

As noted earlier, in order to demonstrate project level conformity in CO and particulate matter nonattainment and maintenance areas, analysis of localized emissions may be required for CO and PM. Since the study area is in attainment for PM, CO is the pollutant of concern for further analysis.

The CO dispersion analysis was conducted following procedures outlined in USEPA's 1992 *Guideline for Modeling Carbon Monoxide from Roadway Intersection* and shown in Figure 1 of Appendix E, "Air Quality Technical Report."

[13] USEPA Greenbook (https://www3.epa.gov/airquality/greenbook/popexp.html)

3.6.4 Dispersion Modeling

Emissions Estimating Software

Motor Vehicle Emissions Simulator (MOVES) is an emission factor model for predicting gram per mile emissions of hydrocarbons (VOC), CO, NO_X, CO_2, particulate matter, and air toxics from cars, trucks, and motorcycles under various conditions. It was used for local emission factor development of CO in this air quality analysis in an effort to demonstrate consistency with national air quality standards. Vehicular emission factors for this analysis were developed using MOVES2014a utilizing all available federal and local approved control measures and national default data.

Microscale air quality modeling was performed using emission factors generated from MOVES2014a, Synchro7 traffic data, and the CAL3QHC Version 2.0 carbon monoxide dispersion model. Carbon monoxide concentrations were estimated for the No Build Alternative and the Recommended Preferred Alternative at selected intersections throughout the study area. BREEZE Roads (graphical user interface software which incorporates CAL3QHC) was used to complete the analysis.

Site Selection

Seventeen intersections in the study area were screened for evaluation. These were screened for each scenario: Existing Conditions, No Build Alternative, and the Recommended Preferred Alternative.

The top three intersections with the highest traffic volumes and the top 3 intersections with the worst LOS were selected for CO microscale analysis.

It is assumed that if these "worst case" intersections meet the NAAQS, then all other intersections in the study area with lower volumes and a better LOS should also meet the NAAQS.

As a result, five intersections were analyzed for the No Build Alternative and the Recommended Preferred Alternative. These are listed in Table 3-18.

Table 3-18: Carbon Monoxide Microscale Analysis Locations

Int ID#	Description
4	Hanover Street at McComas Street
5	McComas Street at Cromwell Street/White Street
7E	Key Hwy at McComas Street (EB)
7W	Key Hwy at McComas Street (WB)
10	McComas Street at Gray Street

3.6.5 Probable Consequences

Regional Conformity/Impacts

Based on the traffic analysis, the amount of diesel vehicles and VMT in the study area is not expected to significantly increase from the No Build Alternative to the Recommended Preferred Alternative. Furthermore, this project will be included in the region's TIP. Therefore, it is not expected to adversely impact the regional air quality forecast.

Project-level Conformity/Impacts

Predicted worst case 1-hour and 8-hour CO concentrations in 2040 for the Recommended Preferred Alternative and No Build Alternative scenarios for all modeled intersections are listed in Table 3-19.

Table 3-19: Microscale CO Emissions

No Build Alternative – 1 Hour Maximum CO Concentrations (ppm)

Intersection	AM	PM	NAAQS
Key Highway @ McComas Street (Eastbound)	4.9	4.5	35
Key Highway @ McComas Street (Westbound)	3.7	4	35
Hanover Street @ McComas Street	4.8	5.2	35
McComas Street @ Tan Street	4.0	4.5	35
McComas Street @ Gray Street	4.0	4.6	35

*Includes background concentration of 1.5 ppm

No Build Alternative – 8 Hour Maximum CO Concentrations (ppm)

Intersection	AM	PM	NAAQS
Key Highway @ McComas Street (Eastbound)	3.4	3.1	9
Key Highway @ McComas Street (Westbound)	2.5	2.8	9
Hanover Street @ McComas Street	3.3	3.6	9
McComas Street @ Tan Street	2.8	3.1	9
McComas Street @ Gray Street	2.8	3.2	9

*Includes background concentration of 1.0 ppm

Recommended Preferred Alternative – 1 Hour Maximum CO Concentrations (ppm)

Intersection	AM	PM	NAAQS
Key Highway @ McComas Street (Eastbound)	5.0	5.0	35
Key Highway @ McComas Street (Westbound)	4.7	4.2	35
Hanover Street @ McComas Street	5.0	5.5	35
McComas Street @ Cromwell/White Street	4.1	4.3	35
McComas Street @ Gray Street	3.4	4.5	35

*Includes background concentration of 1.5 ppm

Recommended Preferred Alternative – 8 Hour Maximum CO Concentrations (ppm)

Intersection	AM	PM	NAAQS
Key Highway @ McComas Street (Eastbound)	3.5	3.5	9
Key Highway @ McComas Street (Westbound)	3.2	2.9	9
Hanover Street @ McComas Street	3.5	3.8	9
McComas Street @ Cromwell/White Street	2.8	3.0	9
McComas Street @ Gray Street	2.3	3.1	9

*Includes background concentration of 1.0 ppm

As shown in the above table, the CO microscale analysis at the selected intersections revealed maximum 1-hour CO concentrations below the NAAQS of 35 ppm and maximum 8-hour CO concentrations below the NAAQS of 9 ppm. Therefore, the proposed project is not likely to cause any adverse air quality impacts and no further mobile source analysis is required.

3.6.6 Potential Mitigation Measures

The Recommended Preferred Alternative is not predicted to increase emissions compared to the No Build Alternative, nor cause or exacerbate a violation of the NAAQS; this takes into account the pollutants for which the area is in nonattainment or maintenance, including ozone and its precursor molecules, fine particulate matter, and carbon monoxide. The project is not expected to measurably increase MSAT or greenhouse gas emissions over the No Build Alternative. No long-term mitigation measures are proposed.

As the project's construction is not anticipated to last more than five years in any location, construction impacts are considered to be temporary. Short-term mitigation measures to control dust during construction are described in detail in Appendix E, "Air Quality Technical Report."

3.7 NATURAL RESOURCES

The following section summarizes the probable impacts on, and potential mitigation for, natural resources associated with the construction and operation of the Recommended Preferred Alternative, which are detailed in Appendix F, "Natural Environment Technical Report." All correspondence with resource agencies is included in Appendix K, "Agency Correspondence." For the purpose of this assessment, the proposed construction limits of disturbance (LOD) constitutes the natural resources LOD.

3.7.1 Regulatory Context and Methodology

This section identifies applicable federal and state regulations, statutes, Executive Orders (EO), and memoranda related to natural resources, both aquatic and terrestrial. It also summarizes the methodology for identifying natural resources and analyzing the probable impacts associated with the construction and operation of the Recommended Preferred Alternative. Water resources and aquatic ecology include groundwater, the 100-year floodplain and floodway, Waters of the United States (WUS), aquatic species, wild and scenic rivers, and the Chesapeake and Atlantic Coastal Bays Critical Area. Terrestrial resources include physiography, habitat, wildlife, and rare, threatened, and endangered (RTE) species.

Water Resources and Aquatic Ecology

The Clean Water Act (CWA) of 1972 regulates pollutant discharges into WUS and establishes standards for surface water quality. Since impaired waterbodies are present within the LOD, total maximum daily loads (TMDLs) for these segments exist. The CWA requires TMDLs when water quality is below an established standard, as a way to attach specific limits on pollution entering degraded waterways. The CWA, as well as MDE and other regulations, requires transportation projects to minimize, avoid, and/or reduce impacts to WUS, including wetlands. Mitigation proposals for unavoidable adverse impacts to aquatic resources must adhere to the preferred hierarchy, as stated in the U.S. Environmental Protection Agency (EPA) and U.S. Army Corps (USACE) Final Compensatory Mitigation Rule.

WUS with a significant nexus to a Traditional Navigable Water (TNW) are regulated by the USACE and/or MDE. Impacts to wetlands and WUS are authorized via a Joint Permit Application (JPA). Due to the tidal nature of the area, any boring activity to conduct geological, hazardous materials, or other exploratory drilling within the waterways, wetlands, buffer, or floodplain would require a separate JPA in advance of the JPA associated with the Recommended Preferred Alternative.

The Recommended Preferred Alternative would require MDTA to obtain certification from the Critical Area Commission for the Chesapeake and Atlantic Coastal Bays (CAC) within Baltimore City to confirm that the actions associated with the Recommended Preferred Alternative are in concurrence with the local Critical Area program. Authorization from Baltimore City, CAC, MDE, USACE, and the Maryland Department of Natural Resources (DNR) must be received prior to initiating any construction activities within the Critical Area. Additional policies apply to Critical Area within intense development areas (CAC, 2012). Additionally, actions in floodplains are regulated by MDE and the Baltimore City Floodplain Management Program with guidance from the Federal Emergency Management Agency (FEMA).

Legislation from the federal, state, and local governments were considered in the analysis documented in this Environmental Assessment, as related to dredged or fill materials; permitting and mitigation related to the CWA; minimization or avoidance of impacts to wetlands and floodplains during planning and construction; compensatory mitigation for authorized unavoidable impacts to WUS and wetlands; state water quality standards certification; impacts to nontidal wetlands and associated wetland buffers; and activities affecting surface waters and available water supplies. The following statutes, regulations, and EOs are applicable to any project activities that interact with water resources and aquatic ecology:

- Section 10 of the Rivers and Harbors Act
- Sections 303(d), 401, 402, and 404 of the CWA
- EO 11990, Protection of Wetlands
- U.S. Department of Transportation (USDOT) Order 5660.1A, Preservation of the Nation's Wetlands
- 33 Code of Federal Regulations (CFR) Parts 322 and 325
- 40 CFR Part 230
- Maryland Nontidal Wetlands Protection Act
- Waterway and 100-year Floodplain Construction Regulations
- MDE Water Quality Standards
- USDOT Order 5650.2, Floodplain Management and Protection
- EO 11988, Floodplain Management
- Safe Drinking Water Act
- Critical Area Act

- Coastal Zone Management Act
- 44 CFR Part 9

To identify water resources and features of aquatic ecology, reviews of available published data sources, online sources, aerial photography, and field investigations occurred. Data sources included the Maryland Geological Society (MGS), FEMA Flood Insurance Rate Maps, MDE, U.S. Fish and Wildlife Service (USFWS), and (CAC, National Wetland Inventory (NWI). Field investigations verified data and investigated limits of wetlands and waterways. All fieldwork was performed according to the *1987 Corps Wetland Delineation Manual* and the *Atlantic & Gulf Coast Regional Supplement* (Environmental Laboratory, 1987; USACE, 2010).

Once water resource locations were identified, probable impacts were determined from overlaying the LOD using Geographical Information Systems (GIS) and analyzing how the Recommended Preferred Alternative could interact with water resources and aquatic ecology.

Terrestrial Resources

RTE species are protected under federal legislation. The USFWS and National Oceanic and Atmospheric Administration (NOAA) Fisheries regulate federally-listed threatened and endangered species under the Endangered Species Act of 1973 (ESA) and through coordination during the NEPA, Critical Area, and WUS permitting processes. In Maryland, the 1975 Nongame and Endangered Species Conservation Act (Annotated Code of Maryland 10-2A-01) governs the legal listing of threatened and endangered species. DNR maintains a listing of all species considered endangered, threatened, or in need of conservation (Code of Maryland [COMAR] 08.02.12). The legal federal status of a species is determined by USFWS and National Marine Fisheries Service (NMFS). Ground disturbances associated with the Recommended Preferred Alternative are to adhere to state-approved plans, as prompted by the CWA and Stormwater Management Act of 2007.

Agency correspondence confirmed whether RTE species exist in the LOD, and a desktop review provided information on other terrestrial resources including Forest Interior Dwelling Species (FIDS) and Sensitive Species Project Review Areas. Reviews of available published data sources, online materials, aerial imagery, and field investigations provided remaining data for this EA. Data sources included the MGS, National Resource Conservation Service (NRCS) Web Soil Survey, MDE, USFWS, DNR, and NMFS. Once the presence and locations of terrestrial resources were known, probable impacts were determined from overlaying the LOD in GIS and analyzing how the proposed construction and implementation of the Recommended Preferred Alternative could interact with terrestrial resources.

3.7.2 Water Resources and Aquatic Ecology

3.7.2.1 Existing and Future Conditions

Surface Water and Water Quality

Watersheds in the United States were delineated by the U.S. Geological Survey using a national standard hierarchical system based on surface hydrologic features and are classified into four hydrologic levels: first-field (region), second-field (sub-region), third-field (accounting unit), and fourth-field (cataloguing unit). The LOD is located within two Maryland sub-basin watersheds, which are part of the larger Patapsco River Basin (021309). The two sub-basin watersheds are the Gwynns Falls Watershed (02130905) and the Baltimore Harbor Watershed (02130903). The watersheds are described below and portions surrounding the LOD are shown on Figure 3-11. Both contributing watersheds are highly urbanized, with mainly residential and commercial areas, especially within Baltimore City. The northern portions of the Gwynns Falls Watershed include forested land and some crop use, which has led to increased amounts of sediment and nutrients. Table 3-20 summarizes the TMDLs within the Recommended Preferred Alternative's watersheds and streams.

Table 3-20: Status of the TMDLS within the Project Watershed and Streams

Watershed/Stream	Impairment	Status
Gwynns Falls	E. coli	Approved December 4, 2007
Gwynns Falls	TSS	Approved March 10, 2010
Gwynns Falls	Trash	Approved January 5, 2015
Baltimore Harbor	Nitrogen	Approved December 17, 2007
Baltimore Harbor	Phosphorus	Approved December 17, 2007
Baltimore Harbor	PCB	Approved October 1, 2012
Baltimore Harbor	Chlordane	Approved March 20, 2001
Patapsco River	Nitrogen	Approved December 29, 2010
Patapsco River	Phosphorus	Approved December 29, 2010
Patapsco River	TSS	Approved December 29, 2010
Middle Branch Portion of the Patapsco River	Trash	Approved January 5, 2015

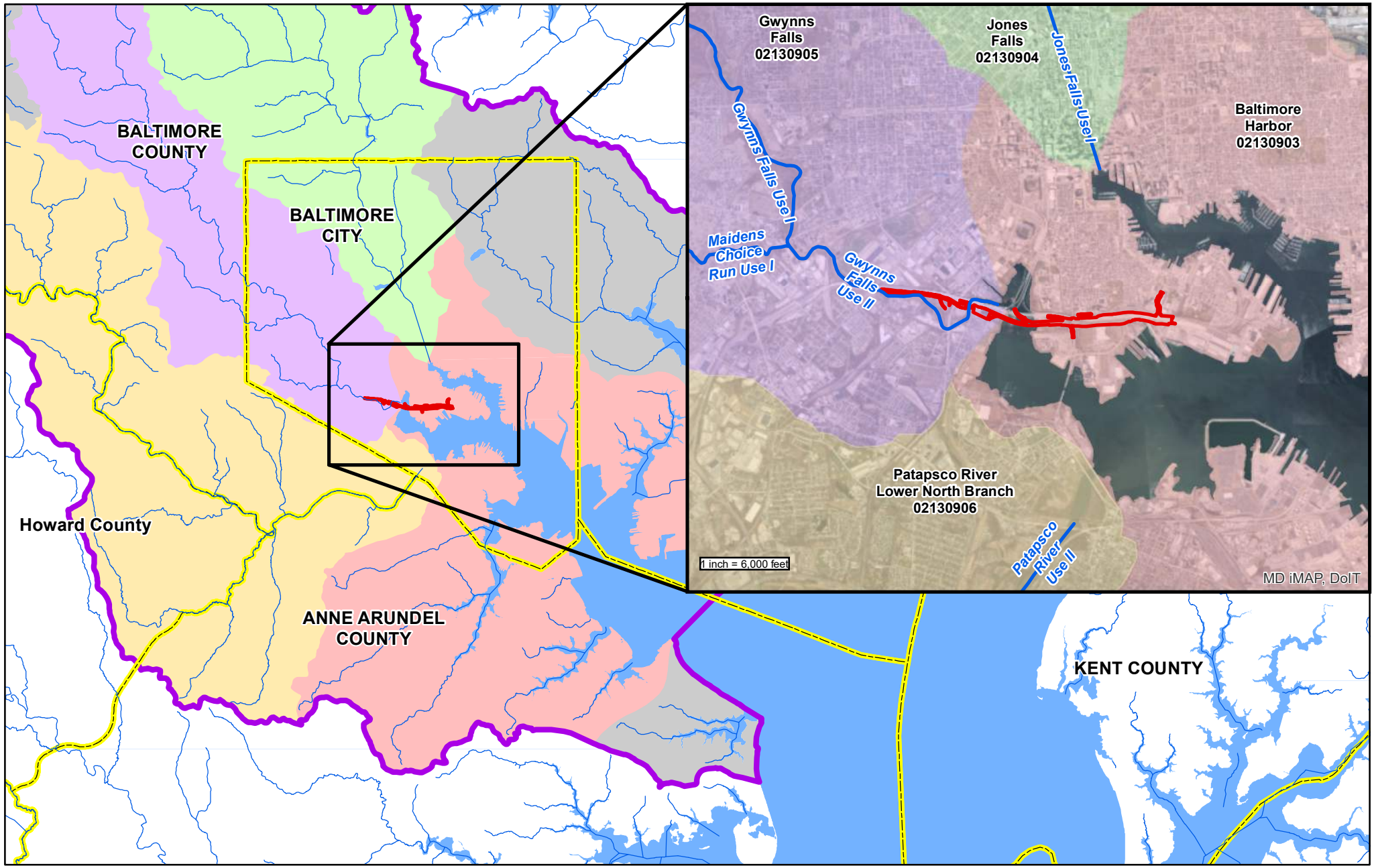
Source: MDE Current Status of TMDL Development in Maryland.

Gwynns Falls (02130905) – The Gwynns Falls waterway enters the LOD north of the intersection of Washington Boulevard (US 1 Alt) and Hollins Ferry Road, and continues east to the Middle Branch of the Patapsco River near downtown Baltimore. Gwynns Falls flows adjacent to the LOD, and then crosses the LOD near the intersection of South Monroe Street and Annapolis Road. At this crossing, the river spans approximately 130 feet. The river continues to flow adjacent to the LOD until its confluence with the Middle Branch of the Patapsco River.

The Gwynns Falls Water Quality Management Plan (WQMP) (Baltimore City Department of Public Works, 2004) divided the Gwynns Falls watershed into 11 sub-watersheds, and the Lower Gwynns Falls sub-watershed coincides with the LOD. The Lower Gwynns Falls sub-watershed had one of the highest nutrient

loads of the 11 sub-watersheds designated in the study. These nutrients included total suspended solids (TSS), total Kjeldahl nitrogen (concentration of organic nitrogen and ammonia, abbreviated TKN), nitrate-nitrogen, and total phosphorus. The results of the study indicate a stream system that has been altered due to urbanization, is highly entrenched, with unstable banks, but with a somewhat intact riparian buffer.

A Water Quality Analysis of Eutrophication for the Gwynns Falls Watershed in Baltimore City (MDE, 2010) concludes that Gwynns Falls meets some water quality standards; however, there is insufficient data for all impairments to be assessed. Gwynns Falls has also been identified on the EPA list of impaired waters because of suspended sediments and chlorides.



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Maryland Transportation Authority

LEGEND

- LOD
- WATERWAY
- COUNTY BOUNDARY
- PATAPSCO RIVER BASIN
- PATAPSCO RIVER LOWER NORTH BRANCH SUB WATERSHED
- BALTIMORE HARBOR SUB WATERSHED
- GWYNNS FALLS SUB WATERSHED
- JONES FALLS SUB WATERSHED
- OTHER PATAPSCO RIVER BASIN SUB WATERSHEDS

FIGURE 3-11

SURFACE WATER

1 inch = 20,000 feet

0 10,000 20,000 Feet

N

I-95 ACCESS IMPROVEMENTS

MARYLAND TRANSPORTATION AUTHORITY

CITY OF BALTIMORE

Baltimore Harbor (02130903) – The Baltimore Harbor and Middle Branch of the Patapsco River are part of the greater Patapsco River Watershed. The Baltimore Harbor Watershed covers approximately 210 square miles in southeast Baltimore City, eventually flowing into the Chesapeake Bay, as shown on Figure 3-11. At the intersection of the LOD, the Middle Branch of the Patapsco River is approximately 1,400 feet in width, low in gradient, shallow, and rocky, with scattered deep pools and sandy runs. The Patapsco River is considered a TNW.

The LOD crosses the Middle Branch portion of the Patapsco River between Annapolis Road and South Hanover Street in Baltimore City. The Baltimore Harbor Watershed includes the industrial areas of Westport and Spring Garden, and both of Baltimore's major sports stadiums. Most of the drainage is from the Gwynns Falls Watershed.

The watershed is comprised of highly urbanized land uses, including tracts with heavy industrial activity. Few parcels of open space exist within the watershed. The Baltimore Harbor and its feeder streams are heavily polluted by sewage leaks, stormwater runoff, and trash

Baltimore Harbor is listed as impaired by nutrients due to signs of eutrophication, expressed high levels of chlorophyll, and low concentrations of dissolved oxygen, and because of bacteria including fecal coliforms; toxics including PCBs; metals including chromium, zinc, and lead; suspended sediments; and impacts to biological communities. TMDLs on the Patapsco River for nitrogen, phosphorus, and total suspended solids were approved on December 29, 2010. Additionally, trash pollution is a significant aesthetic, environmental, and human health concern in the Middle Branch of the Patapsco River.

The LOD is within the Patuxent aquifer system of the Coastal Plain Physiographic Province. The Patuxent aquifer system consists of sandy portions of the Lower Cretaceous-age Patuxent Formation. The system is composed of medium to coarse-grained, feldspathic and quartzose sands, and gravels interbedded with layers of clay. The top of the aquifer system ranges from approximately 170 feet above sea level near its outcrop to 4,200 feet below sea level. According to the Maryland Geological Society, the total thickness of the Patuxent aquifer system ranges from 125 feet in southern Maryland to 525 feet in the upper eastern shore of Maryland (MGS, 2016). The aquifer is overlain by low permeability clay layers that likely prevent surface contaminants from reaching the aquifer. Drinking water within the LOD is supplied from the Montebello Filtration Plants, using groundwater from the Loch Raven Reservoir or the Susquehanna River. Both watersheds for these water bodies are outside of the LOD.

Floodplain and Floodway

The regulatory floodplain for Baltimore City is the area inundated by flood waters during a rain event that has a 0.2-percent chance of occurring in any given year, commonly referred to as the "500-year flood event". The 100-year floodplain is a subset of the 500-year floodplain and is the area inundated by flood waters during a rain event that has a one-percent chance of occurring in any given year. A floodway, another subset of the 500-year floodplain, is that portion of the floodplain which is effective at carrying flow, and where the flood hazard is generally highest. The LOD is located on multiple Flood Insurance Rate Map (FIRM) panels including 2400870024F (effective April 2, 2014), 2400870025F (effective April 2, 2014), and 2400870026F (effective April 2, 2014). According to the FIRMs, approximately 7,876 linear feet of the LOD is located within the 500-year floodplain, approximately 3,300 linear feet of the LOD is located within the 100-year floodplain, and approximately 1,500 linear feet of the LOD is located within the floodway of the Middle Branch of the Patapsco River. These are shown on Figure 3-12.

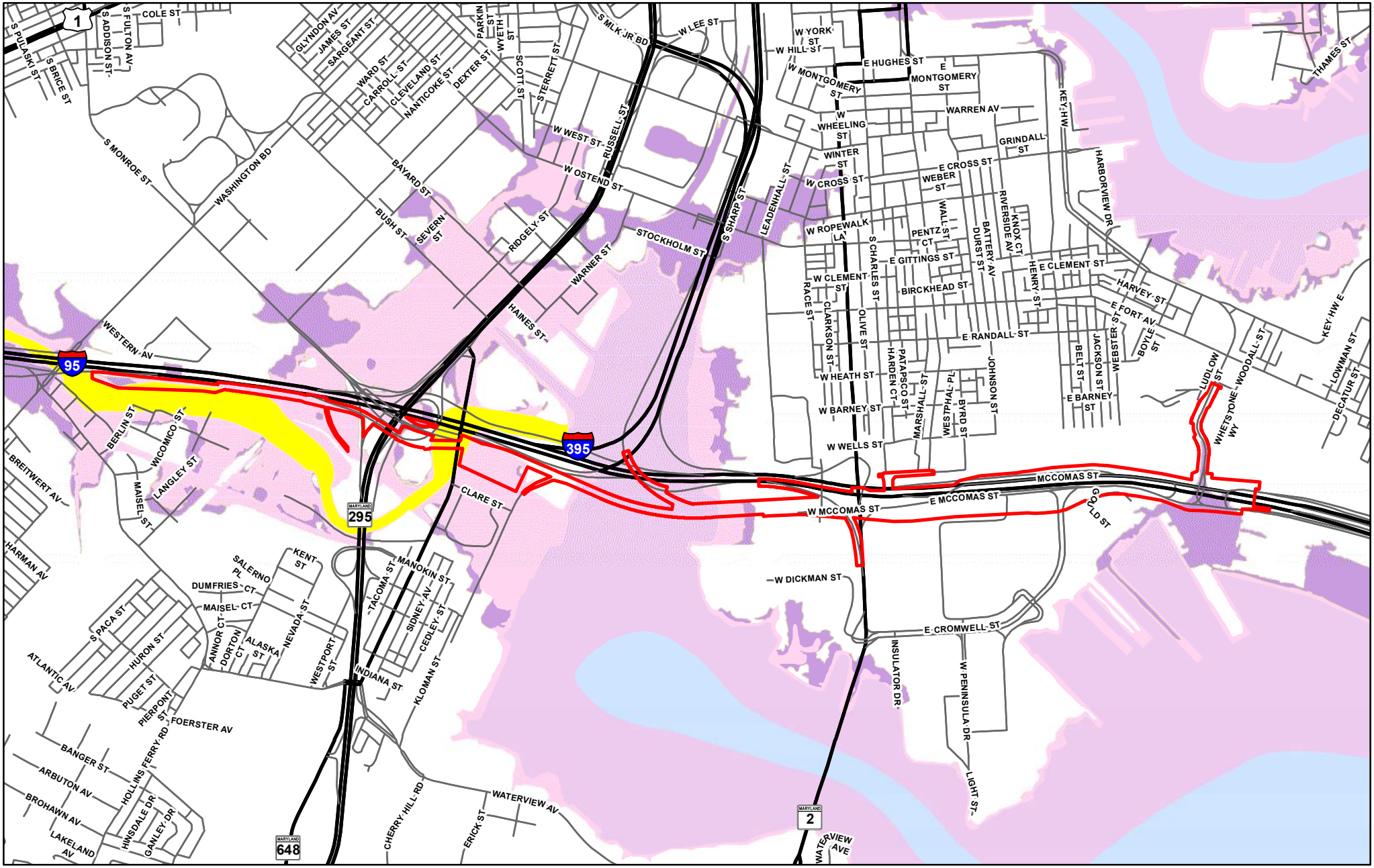
Wetlands and other WUS

Field investigations were conducted within the LOD between August 3 and August 11, 2016 and again on November 11, 2016. Of the multiple systems identified, two waterways and one wetland are located within the LOD. The delineated systems, as described below, ultimately convey flow to the Patapsco River Basin. At the time of the site visit, all waterways were flowing. All the delineated systems have a significant nexus to a TNW (Patapsco River) and would likely would be regulated. However, the USACE and MDE would make the final determination concerning the jurisdictional status of delineated features. The location of each water resource is shown in Figure 3-13.

Waterway WL001 (Gwynns Falls) is a perennial waterway that conveys flow east to the Patapsco River. The waterway parallels I-95 eastbound on the south side of the LOD, and then turns north to cross under South Monroe Street and I-95. Waterway WL001 measures approximately 117 linear feet and is approximately 130 feet wide within the LOD boundary, with a bed composed of mainly cobble and gravel. The NWI Map for the City of Baltimore, Maryland (USFWS, 2016) identified Waterway WL001 as riverine, tidal, unconsolidated bottom, permanently flooded – tidal (R1UBV) westward from the I-95 overpass; and as estuarine, subtidal, unconsolidated bottom, subtidal (E1UBL) from the I-95 overpass east to its outlet at the Patapsco River. The waterway is also identified on the *Soil Survey of the City of Baltimore, Maryland* (USDA-NRCS, 2017).

Wetland WP003 is a tidally-influenced palustrine emergent (PEM) wetland that abuts the west bank of the Patapsco River, south of the I-95 and I-395 intersection. Data were collected from Sample Plot WP003-WET to characterize the wetland; however, an upland sample plot was not collected due to the steepness of the surrounding terrain. Vegetation within WP003-WET is dominated by common reed (*Phragmites australis*). Hydrologic indicators include surface water, high water table, saturation, sediment deposits, drift deposits, water stained leaves, and hydrogen sulfide odor. The soils in this area meet the hydric soil indicator F3: Depleted Matrix.

Waterway WL004 is the Patapsco River, a perennial waterway that measures approximately 748 linear feet within the LOD. Waterway WL004 is located in the central portion of the LOD, entering just north of I-95 and continuing south, ultimately flowing to the Chesapeake Bay. The river is approximately 1,600 feet wide at the I-95 bridge crossing. On the NWI Map for Baltimore City, Maryland (USFWS, 2017), Waterway WL004 is identified as estuarine, subtidal, unconsolidated bottom, subtidal (E1UBL). The waterway is also identified on the *Soil Survey of the City of Baltimore, Maryland* (USDA-NRCS, 2017).



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LEGEND

- LOD
- ROADWAY
- MAJOR ROADWAY
- FLOODWAY
- 100 YR FLOODPLAIN
- 500 YR FLOODPLAIN

FIGURE 3.12

FLOODPLAIN AND FLOODWAY

1 inch = 1,500 feet

0 750 1,500 Feet

N

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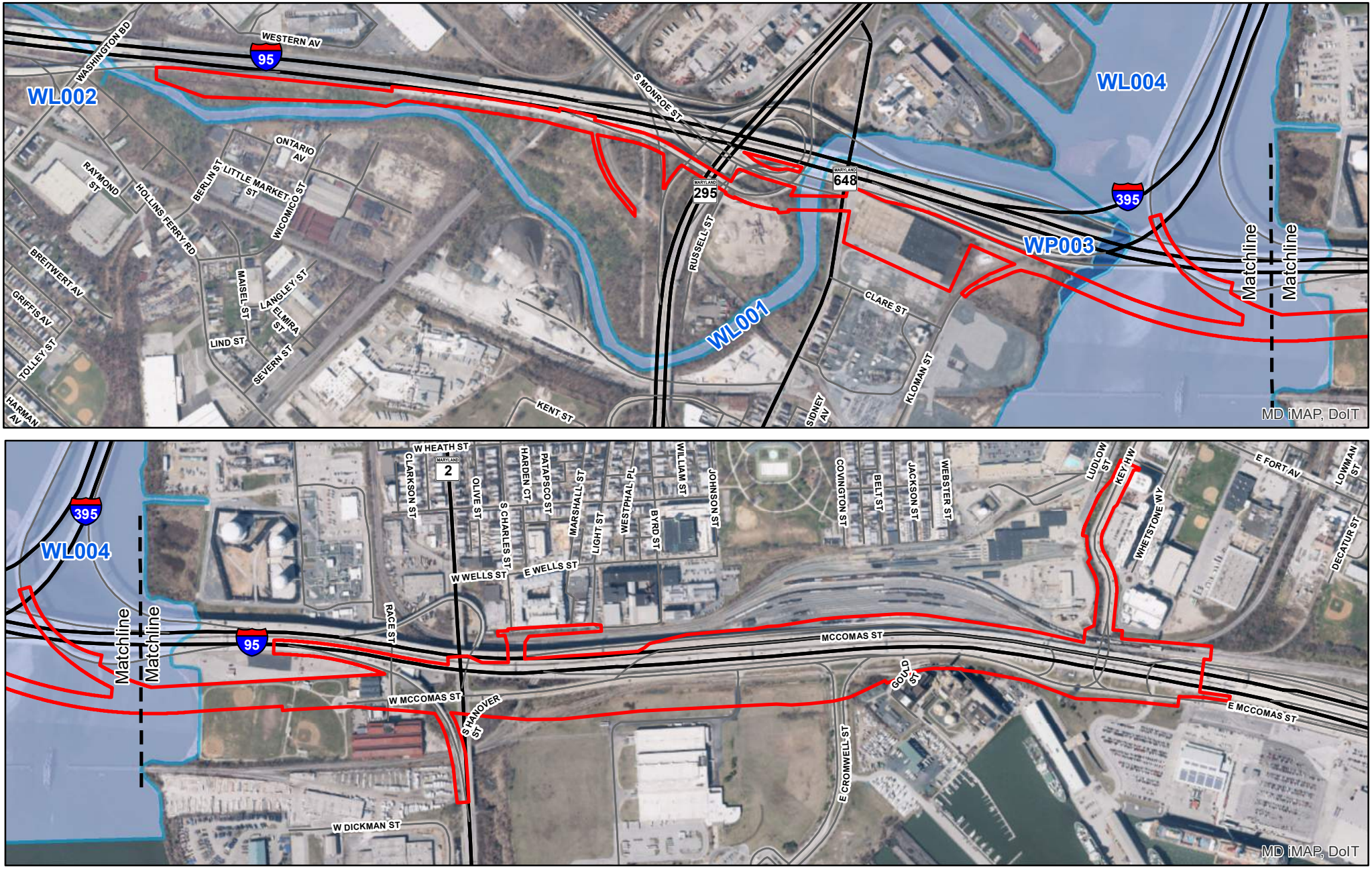

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Maryland Transportation Authority

LEGEND

- LOD
- ROADWAY
- MAJOR ROADWAY
- DELINEATED WATERWAY
- DELINEATED WETLAND

FIGURE 3.13

WETLANDS AND WATERWAYS

1 inch = 800 feet

0 400 800 Feet

N

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CITY OF BALTIMORE

Aquatic Species

The Watershed Report for Biological Impairment of the Gwynns Falls Watershed suggests that degradation of the biological communities of Gwynns Falls is due in large part to urban land use and the associated impacts of altered hydrology, elevated ammonia levels, chlorides, and conductivity (MDE, 2012). The report also suggests that the biological communities of Gwynns Falls are likely degraded by flow and sediment related stressors and the anthropogenic channelization of streams. The *Watershed Report for Biological Impairment of the Baltimore Harbor Watershed* suggest that degradation of the biological communities of the Middle Branch of the Patapsco River is due in large part to urbanization of the watershed. The report cites high chloride and sulfate levels from urban runoff, increased total suspended solids and channel erosion from increased urban runoff, stream channelization, and loss of riparian buffer zones as the main causes of degradation to biological communities (MDE, 2014).

Fish Species, Benthic Communities, and Associated Habitat: According to DNR, common benthic invertebrates in Maryland waterways include mayflies, stoneflies, caddisflies, craneflies, damselflies, dragonflies, riffle beetles, crayfish, scud, black flies, non-biting midges, aquatic worms, ramshorn snails, and pouch snails. The Gwynns Falls Watershed report states that approximately 79 percent of stream miles in the Gwynns Falls Watershed have a Benthic Index of Biotic Integrity (BIBI) and Fish Index of Biotic Integrity (FIBI) in the poor to very poor categories (MDE, 2012). In 2016, four sampled sites on Gwynns Falls averaged a BIBI score of 2.67, which is categorized as poor (DNR, 2016). In 2014, MDE noted that eight sites sampled on the Patapsco River averaged a BIBI score of 3.0, which is categorized as fair.

Based on information provided by DNR and USFWS, no state or federally listed RTE species, critical habitats, refuges or fish hatcheries are known to occur within the project vicinity. According to a letter dated January 13, 2017 from DNR-ERU, anadromous fish species, including herring, white perch, and yellow perch, are documented to spawn and migrate in the vicinity of the LOD. Please refer to Appendix K, “Agency Correspondence” for a copy of this letter. These fish may migrate toward riverine habitat near the mouths of Gwynns Falls and the Patapsco River, or areas upstream. There are also various resident and transient fish species. Based on correspondence from DNR-ERU, SAV have not been documented in the area for over ten years. The tidal waters of the Patapsco River and Gwynns Falls are designated as Use II waters. Nontidal tributaries in the surrounding area are designated as Use I waters.

A search of the online NOAA Essential Fish Habitat (EFH) Data Query Tool indicated that habitat is available for the window pane flounder, summer flounder, and bluefish. In correspondence from NOAA, dated April 21 and May 3, 2017, it was confirmed that this habitat is not preferred by these species, but consideration should be given to the prey species. Copies of this correspondence are included in Appendix K, “Agency Correspondence.”

Waterfowl and Other Water-Dependent Migratory Birds: According to USFWS, around one million swans, geese, and ducks winter in the Chesapeake Bay region. This represents approximately one-third of all wintering waterfowl along the Atlantic coast. During spring and fall migrations along the Atlantic Flyway, the Chesapeake Bay is an interim stop for migratory songbirds, shorebirds, and raptors. The Bay also provides an important spring breeding location (USFWS, 2016).

Chesapeake and Atlantic Coastal Bays Critical Area

Figure 3-14 shows where the LOD overlaps with the designated Chesapeake Bay Critical Area. The Critical Area extends nearly the entire length of the LOD along Gwynns Falls and the Middle Branch of the Patapsco River. Only the area along East McComas Street, between South Hanover Street and East Cromwell Street, is not within the Critical Area. The Habitat Protection Area extends along Gwynns Falls and includes the Middle Branch of the Patapsco River at the bridge crossing; there is no HPA within the eastern portion of the LOD.

3.7.2.2 Probable Consequences

In this section, potential impacts to water resources and aquatic ecology are considered for the No Build Alternative and the Recommended Preferred Alternative. There would be no project-related impacts to water resources and aquatic ecology associated with the No Build Alternative. There would be no construction, and therefore no disturbances would occur within the LOD. Probable consequences associated with the construction and operation of the Recommended Preferred Alternative are discussed in the following text.

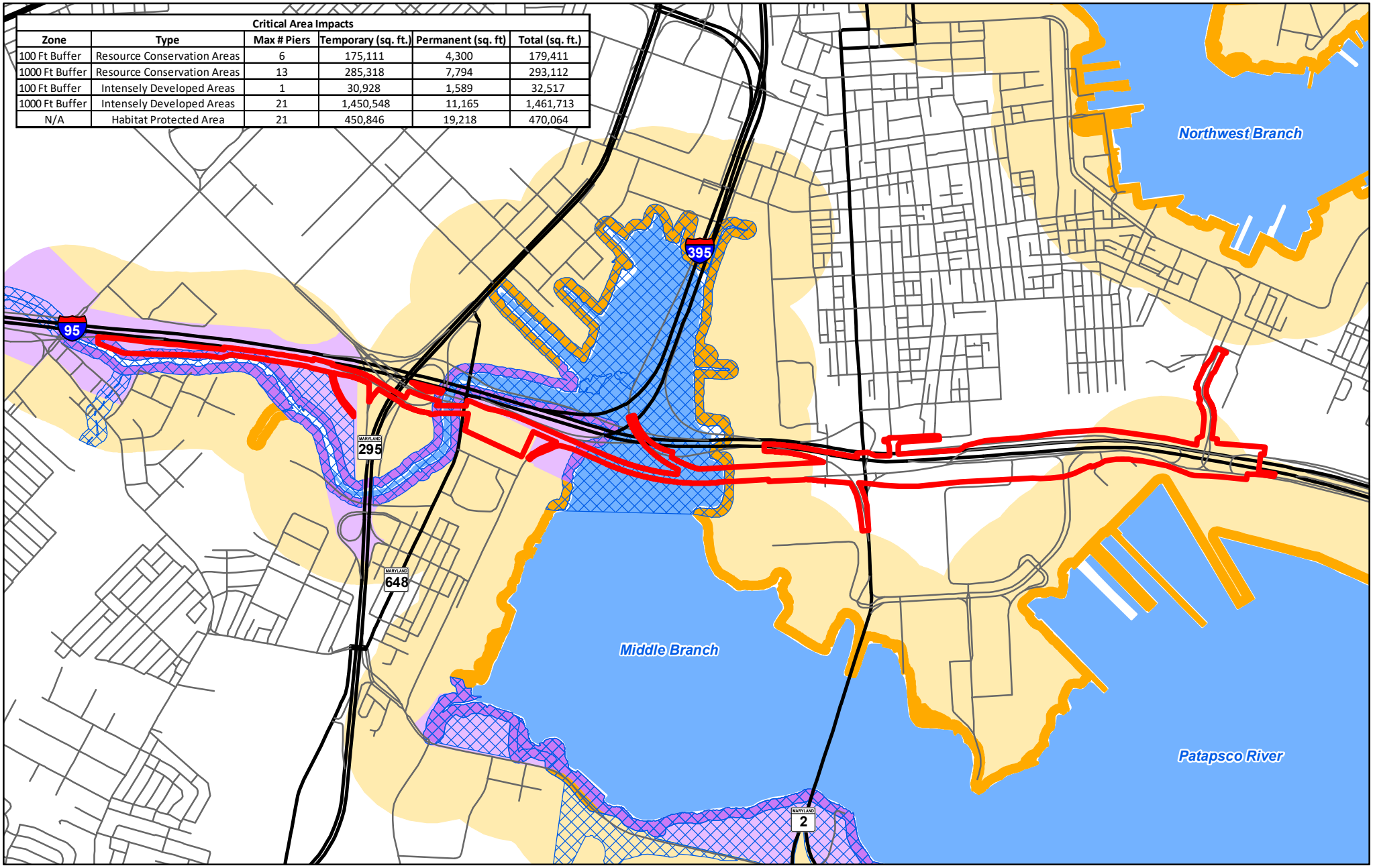
Surface Water and Water Quality

Construction of the bridge piers within wetlands or WUS would have a direct and permanent impact to these resources. Although no piers are anticipated to be placed within Gwynns Falls, up to 15 piers would be placed within the Patapsco River, permanently impacting approximately 15,062 square feet of waterway. However, the total area of impact may decrease if fewer piers are installed.

During facility use, major factors in determining concentrations of pollutants in highway stormwater runoff include the extent of impervious area and the volume of traffic. Construction of the I-95 Access Improvements would result in a permanent increase of impervious road surface and traffic volumes. The East-West Gateway Coordinating Council compiled a comprehensive list of the most common pollutants in highway runoff. These include:

> *"…heavy metals, inorganic salts, aromatic hydrocarbons, and suspended solids which accumulate on the road surface as a result of regular highway operation and maintenance activities. Winter time salting and sanding practices, for example may leave concentrations of chloride, sodium, and calcium on the roadway surface. Ordinary operations and the wear and tear of motor vehicles also result in oil, grease, rust, hydrocarbons, rubber particles, and other solid materials dropping onto the highway surface. These materials are often washed off the highway during rain or snow storm events."*

Critical Area Impacts					
Zone	Type	Max # Piers	Temporary (sq. ft.)	Permanent (sq. ft)	Total (sq. ft.)
100 Ft Buffer	Resource Conservation Areas	6	175,111	4,300	179,411
1000 Ft Buffer	Resource Conservation Areas	13	285,318	7,794	293,112
100 Ft Buffer	Intensely Developed Areas	1	30,928	1,589	32,517
1000 Ft Buffer	Intensely Developed Areas	21	1,450,548	11,165	1,461,713
N/A	Habitat Protected Area	21	450,846	19,218	470,064



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Maryland Transportation Authority

LEGEND

- NETR STUDY AREA
- ROADWAY
- MAJOR ROADWAY
- HABITAT PROTECTION AREA
- 100 FT RESOURCE CONSERVATION AREA
- 1000 FT RESOURCE CONSERVATION AREA
- 100 FT INTENSELY DEVELOPED AREA
- 1000 FT INTENSELY DEVELOPED AREA

FIGURE 3.14

CRITICAL AREA

1 inch = 1,500 feet

0 750 1,500 Feet

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Some of the critical factors in determining the magnitude of highway runoff on a receiving stream include watershed size, the type of receiving stream, the potential for dilution, and the receiving stream's ecology and biodiversity. Through an increase in the amount of impervious area, stormwater volumes and peak discharge intensities may occur. The result of these stormwater volume increases can be excessive stream bank erosion resulting in greater loads of sediment and other pollutants into the stream. These secondary water quality impacts may exceed the direct impact of highway pollutant runoff. In addition, particulates suspended in runoff may contain insoluble heavy metals. These substances are then transported to receiving waters where they can become a threat to aquatic life. Additionally, an increase in impervious surface within an area with a high per capita rate of inlet clogging may have the potential to further expand the clogging problem.

During construction, temporary impacts from sedimentation and chemical spills may occur from land disturbing activities. Standard Erosion and Sediment Control plans, Stormwater Pollution Prevention Plans (SWPPP), and industry practices including washout areas for concrete trucks would avoid or minimize potential impacts during construction. Fuel and hydraulic spills from construction equipment could also temporarily affect water quality and other aquatic resources, if standard best management practices were to experience a failure.

Groundwater Resources

Aquifers may be susceptible to contamination depending on drainage patterns, depth, and distance from the alignment. Since the Patuxent aquifer is 125 to 525 feet below the surface, and overlain by clay layers, the likelihood of contamination from the Recommended Preferred Alternative is negligible.

Floodplain and Floodway

Permanent floodplain impacts associated with the Recommended Preferred Alternative would result from placing approximately 37 piers (0.64 acres) within the 500-year floodplain, 35 (0.62 acres) of which would also be within the 100-year floodplain. Pier installation would require drilling, boring, and driving a foundation piling. Three of the piers would be placed within the Gywnns Falls floodway.

Temporary floodplain impacts would result from excavation within the floodplain required for the construction of the Recommended Preferred Alternative. Additionally, the Recommended Preferred Alternative would require the placement of an unknown quantity of fill material in the floodplain and may require temporary occupancy of equipment during construction. The temporary, construction impact within the 500-year floodplain would be 26 acres, of which 20.2 acres are also within the 100-year floodplain. Fill would be placed within the floodplain along I-95 northbound between the Caton Avenue on ramp and the Russell Street off ramp. Both the fill and permanent piers have the potential to increase base flood levels, but the level of increase at this time cannot be determined until a detailed hydrologic and hydraulic study is been prepared during the final design of the Recommended Preferred Alternative. Table 3-21 and Figure 3-12 show quantities of 100-year floodplain and floodway present within the LOD, along with anticipated temporary and permanent impacts.

Table 3-21: Floodplain and Floodway Impacts

Impact Type	100-Year Floodplain (includes Floodway)		500-Year Floodplain (includes Floodway)		Floodway	
	# of Piers	Acres	# of Piers	Acres	# of Piers	Acres
Operation (Permanent)	35	0.62	37	0.64	3	0.07
Construction (Temporary)	35	20.2	37	26	3	2.9

Wetlands and other WUS

Potential impacts of the Recommended Preferred Alternative on wetlands and waterways within the LOD are summarized in Table 3-22 and described below.

Table 3-22: Wetland and Waterway Impacts

System	Temporary Impacts (acres)	Permanent Impacts (acres)
WL001 (Gwynns Falls)	0.27	0
WP003	0.17	0.02
WP003 Buffer	0.05	0.01
WL004 (Patapsco River)	5.63	0.34

Waterway WL001 (Gwynns Falls): The Recommended Preferred Alternative would result in no permanent impacts to Waterway WL001 (Gwynns Falls). Any support structures for the proposed I-95 bridge over the Gwynns Falls would be installed on either side of the waterway, and no grading or fill would occur within the waterway. However, temporary impacts may occur during construction. The surface area of the Recommended Preferred Alternative bridging over the waterway would be approximately 0.27 acres. The proposed bridge over Gwynns Falls would be constructed approximately 50 to 100 feet above the water surface. At that height, the roadway would still allow sunlight to reach much of the water's surface, resulting in minimal disturbance to the existing habitat within the channel.

Wetland WP003: One pier may be placed within either Wetland WP003 or its buffer, resulting in 230 square feet of permanent impacts. Temporary, construction impacts would be associated with erecting the bridge and roadway from the overhead superstructure. Also, the placement of the pier would require temporary construction impacts around the pier footer and along access paths needed to construct the pier. Impacts could include grading or temporary matting to prevent permanent damage to the wetland and buffer. The surface area of the Recommended Preferred Alternative bridging over the wetland would be approximately 0.17 acres and approximately 0.05 acres over the wetland buffer.

Waterway WL004 (Patapsco River): The Recommended Preferred Alternative would result in approximately 15 piers to support the overhead roadway, which would result in up to 0.34 acres of permanent impacts to WL004. Additionally, there would be roughly 5.6 acres of temporary impacts that would occur during construction. Impacts could occur from the use of floating barges for equipment and material transport; use of a water jet to release the barge should it become lodged in the streambed; and

the construction of cofferdams that would likely be removed after construction, but may be retained permanently.

Aquatic Species

Because the LOD is located within an already highly-urbanized area, the Recommended Preferred Alternative is anticipated to have few permanent or temporary impacts on aquatic wildlife and associated habitat. While there may be a temporary increase in barge boat traffic and audible above-ground and below-ground disturbances during construction, the effect of noise levels on the aquatic community after construction would likely remain similar to existing conditions. Details on specific aquatic communities are discussed below.

Fish Species, Benthic Communities, and Associated Habitat: Fish species, benthic communities, and associated habitat would be impacted due to the construction of the Recommended Preferred Alternative. The Recommended Preferred Alternative requires a roadway to be constructed over a waterway or wetland and piers to be installed throughout the waterway. A temporary increase in erosion and sediment within the waterbody is also anticipated. Per MDE's 2012 report, impacts associated with erosion and sedimentation include smothering of benthic communities, reduced survival rate of fish eggs, and reduced habitat quality from embedding of the stream bottom. These processes cause an unstable stream ecosystem, impacting habitat, structure, and abundance of these organisms.

Up to 15 piers would be installed in the Patapsco waterway, resulting in up to 15,062 square feet of permanent waterway impacts. Noise from drilling and pile driving would cause audible disturbances above and below the surface of the water, potentially leading to behavioral and psychological effects on fish species. These effects range from avoidance of a foraging area or migration route to death. Localized changes to the topography and composition of the bed of the waterbody may also occur due to the installation of piers, which could have localized impacts on habitat and anadromous fish, including herring and perch species.

Construction would also lead to additional boat traffic within the vicinity of the LOD, resulting in surface disturbances, additional noise, and potential water pollution from traveling vessels. Hazardous materials could be present in the soil that may be disturbed during construction activities and mobilized hazardous materials could potentially enter the water column. Deep-water fish, such as bluefish and flounder species, may be affected by the construction of the Recommended Preferred Alternative because they may be present in the maintained deep-water shipping channels. Foraging areas of benthic invertebrates or shellfish would be impacted, but the affected area constitutes a very small portion of available foraging areas.

Waterfowl and Other Water-Dependent Migratory Birds: The Recommended Preferred Alternative would result in 11.1 acres of permanent, long-term impacts to Habitat Protection Areas. This would reduce the area available for bird nesting and breeding. Fewer bird species are anticipated to stay near the LOD due to activities associated with construction and long-term operation of the Recommended Preferred Alternative. Migratory birds are likely to avoid the area until disruptive activity subsides.

Because of the existing structures, the shading impacts on waterfowl associated with proposed piers and bridge decks are anticipated to be negligible. Flight patterns are unlikely to be altered as the proposed bridge is adjacent the existing roadway. Noise aboveground and below the water's surface may cause audible temporary disturbances during construction.

Chesapeake and Atlantic Coastal Bays Critical Area

There would be both temporary and permanent impacts to Critical Area due to infill, vegetation removal, and pier placement. Table 3-23 summarizes the anticipated impacts to Critical Areas identified as the Resource Conservation Areas and Intensely Developed Areas associated with the Gwynns Falls and the Middle Branch of the Patapsco River. The anticipated impacts quantified within the 1,000-foot Critical Area Buffers provided are in addition to the anticipated impacts quantified within the 100-foot Critical Area Buffers. Table 3-23 also summarizes the impacts to the Habitat Protection Area, which is a subset of the Critical Area that includes the 100-foot Critical Area buffers and the Middle Branch of the Patapsco River. The Recommended Preferred Alternative would temporary impact approximately 44 acres of Critical Area, of which 4.7 acres are within the 100-foot buffer. Vegetation removal on the Critical Area would comprise 8.7 acres of the temporary impacts due to construction activities, and vegetation would be restored according to mitigation standards. The permanent placement of 40 piers would impact nearly 46,000 square feet of Critical Area, of which 5,890 square feet are within the 100-foot buffer.

Table 3-23: Critical Area Impacts

Zone	Type	Temporary Impacts	Permanent Impacts	Piers
		square feet (ac.)	square feet (ac.)	#
1,000 Foot Buffer	RCA	285,318 (6.55)	8,801 (0.20)	13
100 Foot Buffer	RCA	175,111 (4.02)	4,300 (0.10)	6
1,000 Foot Buffer	IDA	1,450,548 (33.30)	30,303 (0.70)	20
100 Foot Buffer	IDA	30,928 (0.71)	1,589 (0.04)	1
N/A	HPA	450,846 (10.35)	19,218 (0.44)	15

* RCA-Resource Conservation Area; IDA-Intensely Developed Area; HPA-Habitat Protection Area

Authorization from the City of Baltimore, Maryland DNR, and the Critical Area Commission (CAC) must be received prior to initiating any construction activities within the Critical Area. Up to 15 piers would be placed in the Middle Branch to accommodate construction equipment and workers. New piers would be aligned with existing I-95 piers to the north and the swing bridge piers to the south, therefore they would be spaced to span the existing navigable waterway channel and positioned to maintain the existing navigable waterway channel.

The I-95 Access Improvements project necessitates a Major Buffer Management Plan because the area of buffer establishment and mitigation required is more than 5,000 square feet. The Major Buffer Management Plan must include limits of disturbance, quantification and measurement of trees expected to be removed, a landscape schedule, a maintenance plan with financial assurance, an inspection agreement with the local government, and determination of area calculations related to buffer establishment and mitigation. Final use and occupancy permits would only be issued after the complete implementation of the Major Buffer Management Plan, or once financial assurance is established.

Furthermore, implementation of the I-95 Access Improvements requires certification from the CAC to confirm the actions associated with the Recommended Preferred Alternative are in concurrence with the Critical Area program. Coordination with the CAC will occur during final design prior to construction.

3.7.2.3 Potential Mitigation Measures

Surface Water and Water Quality

Highway runoff is considered a non-point source pollutant and can be managed effectively by employing proper stormwater best management practices (BMPs). These practices provide means of avoiding or minimizing the negative impacts of various pollutants that can be carried by rainfall into the groundwater and receiving waters. Design and construction techniques that reduce water quality impacts and protect aquatic species, as described in the Maryland *Stormwater Management (SWM) and Erosion & Sediment Control Guidelines for State and Federal Projects* (MDE, 2015) and the 2000 *Maryland Stormwater Design Manual* (MDE, 2009), would be followed for all roadway and associated stormwater facilities. Potential techniques include stabilization of slopes, channels, swales, and embankments after construction activities are completed; minimization of excavation; and installation of turbidity barriers and silt fences around the areas of construction.

Due to the highly-developed nature of the watersheds that contribute to surface waters within the LOD and the proposed SWM facilities that would be required as part of the Recommended Preferred Alternative, the likelihood of the I-95 Access Improvements having a measurable effect on water quality is negligible. Increases in nutrient levels from the implementation of the Recommended Preferred Alternative are unlikely to affect TMDL management. Similarly, while the I-95 Access Improvements project is not listed in the Baltimore City Trash TMDL Implementation Plan for specific mitigation measures, the road surface and inlets would be maintained as part of the Stop Gap measures, including street sweeping and preventative inlet cleaning. Other techniques include infiltration galleries, and SWM ponds and retrofits to address stormwater on site.

Groundwater Resources

To mitigate for potential groundwater contamination, construction of the Recommended Preferred Alternative would adhere to an approved SWM plan; this plan would address proper slope and soil stabilization techniques for all stages of construction, which would limit the flow of water and the potential transfer of contaminants. SWM BMPs would be installed to contain and treat runoff from the bridge and associated infrastructure.

Floodplain and Floodway

Roadway design would focus on avoiding and minimizing floodplain encroachment to ensure that the design is consistent with 23 CFR Part 650, Subpart A and any other state or local requirements. However, final location and number of piers would be determined by engineering constraints and channel navigability. MDTA will prepare a detailed hydrologic and hydraulic study for the Recommended Preferred Alternative during final design. SWM and hydraulic structures will be designed to accommodate the 100-year flood.

Up to eight piers may be placed within the Gwynns Falls floodway. Development in a floodway will require preparation of a hydrologic and hydraulic analysis, and coordination with the state and local floodplain managers. If it is determined that the piers or other floodplain occupancy associated with the project may potentially increase flood elevations or velocities upstream or downstream, additional coordination with the Floodplain Manager and permitting may be required.

Up to 85,000 cubic yards of fill is to be placed within the LOD, with an unknown amount to be placed within the floodplain. Fill amounts greater than 600 cubic yards in the floodplain will require a variance from the Baltimore City. MDTA may be required to demonstrate that the fill is the only option to raise the structure and that the fill will not affect neighboring properties. A Hydrology & Hydraulics (H&H) analysis would determine anticipated effects.

Generally, equipment and/or materials would be staged and stored outside the floodplain, minimizing the chance for flood-related impacts.

Wetlands and other WUS

A JPA authorization from USACE and MDE would be required before construction commences in any regulated wetland or waterway. Additionally, any boring activity to conduct geological, hazardous materials, or other exploratory drilling within the waterways, wetlands, buffer, or floodplain would require a separate JPA authorization in advance of the JPA authorization associated with the Recommended Preferred Alternative. Throughout the design and permitting process, alternative construction and design measures would be investigated to avoid and minimize potential impacts to waterways, wetlands, and buffers.

Unavoidable impacts to waters or wetlands that cannot be minimized using practicable measures require mitigation through the purchase of mitigation banking credits, payment of in-lieu of fee, or on-site and in-kind mitigation by the permittee. The determination of mitigation measures for waterway impacts by federal and state regulatory agencies typically considers the size, stream order, and location. The compensatory mitigation package would be designed to comply with the Federal Compensatory Mitigation Rule (33 CFR Part 325 and 40 CFR Part 230), as well as stipulations from federal and state resource agencies. Compensatory mitigation would be required for permanent impacts to streams and wetlands resulting from the implementation of the Recommended Preferred Alternative. Compensatory mitigation is typically required in the same or adjacent watershed and physiographic province as the impact. MDTA would coordinate with the regulatory agencies to develop a project-wide compensatory mitigation strategy to offset unavoidable impacts to WUS.

Mitigation ratios vary depending on type of resource impacted and proposed mitigation. The preferred method for determining a mitigation site is to use a watershed approach to establish/create, enhance, and/or preserve aquatic resource functions. The preferred hierarchy, as stated in the EPA and USACE Mitigation Rule, for the forms and location of compensatory mitigation is as follows:

- Mitigation bank credits from an approved mitigation bank
- ILF program credits from an approved ILF program
- Mitigation under a watershed approach
- Mitigation through on-site and in-kind mitigation
- Mitigation through off-site and/or out-of-kind mitigation

Aquatic Species

During construction of the Recommended Preferred Alternative, applicable BMPs would be employed to minimize impacts to aquatic habitats and associated wildlife. In addition to adhering to all guidelines for the Critical Area, an ESC Plan would be developed for the project, as clearing and grading would disturb

more than 5,000 feet of land area. MDE has the authority to establish requirements and approve the ESC Plan. This project qualifies as a combination of new development and redevelopment, which determines the level of applicable SWM requirements. The ESC plan would address the potential contamination from construction runoff, including concrete washout. More details about the ESC Plan can be found in Appendix F, "Natural Resources Technical Report." A Hazardous Spill Prevention Plan would also be developed in addition to a Phase I Environmental Site Assessment to prevent hazardous materials, including equipment fuel and lubricants, from contaminating waterways and associated aquatic habitats.

Construction would adhere to the required MDE stream closure periods. To protect species of fish present in the LOD, in-stream work is restricted between February 15 and June 15 each year in Use II streams. At present, no submerged aquatic vegetation (SAV) is documented in the study area. If any are located in the future, additional in-stream restrictions during the SAV growing season would be applicable. Work would also be prohibited within 500 yards of the proposed in-stream construction within tidal waters. For Use II waters, an analysis would be performed to determine whether construction activities would increase suspended sediments within the water column. As mentioned above, proactive sediment and erosion control measures would be implemented to guard aquatic habitat and the health of fish species. Other protection measures include avoidance of pH spikes from curing of concrete materials and BMPs for pile driving and other activities that could result increased noise and vibration levels.

As the project design develops, additional BMP measures will be incorporated as necessary to reduce impacts to aquatic species. An example would be to place new piers outside of the deep-water shipping channels in order to maintain deep water sturgeon habitat. To minimize underwater noise levels during drilling or pile driving, NMFS recommends the use of cushion blocks, bubble curtain, and other noise attenuating tools. The amount of barge traffic for hauling equipment and materials, as well as the speed at which the vessels travel, would be restricted to reduce the possibility of collision incidents while reducing the intensity of ecological disturbances.

Direct impacts to aquatic wildlife could be avoided or minimized through project design considerations, including bridging, countersinking of culverts, and minimizing the bridge footprint. Shading from the additional roadway could be addressed by constructing at a similar height to the current roadway, allowing sunlight to reach under the corridor. To protect migratory birds and maintain compliance with the Migratory Bird Treaty Act of 1918, trees and nesting sites would not be disturbed during the recognized breeding period.

Chesapeake and Atlantic Coastal Bays Critical Area

Under the Critical Area Law and COMAR Title 27, several mitigation efforts are likely. The project would adhere to mitigation actions set forth in these regulations, and may require additional mitigation from Baltimore City Department of Recreation and Parks (BCRP). Project activities fall within the variance category; therefore, the Critical Area Buffer mitigation requirement is a 3:1 ratio for permanent disturbances. Plantings designated in the Major Buffer Management Plan would consist of native species. Until plantings are established, temporary vegetative stabilization or mulch will provide soil stability. Planting credits would be accrued for proposed vegetation. Further coordination with the Critical Area Commission would be required to determine final mitigation requirements.

Mitigation for impacts to HPAs would require coordination with DNR-WHS Waterfowl Program Manager. A habitat assessment and mitigation plan may be required. Because the project is anticipated to be greater

than 375 linear feet, it may be subject to a restriction from in-stream construction between November 15 and March 1, inclusive, to avoid impacts to overwintering waterfowl.

During construction, permanent signs would be posted every 200 linear feet of the shoreline to demarcate the buffer. Signs would note the prohibition of clearing or disturbance. Shoreline erosion protection would be added, where required, to minimize the depletion of the shore's mass in the Critical Area.

SWM practices and site planning would be implemented to mimic the natural hydrologic conditions to the maximum extent practicable, with the following goals:

- Channel stability,
- 100 percent of the annual predevelopment groundwater recharge,
- Minimization of non-point source pollution, and
- Implementation of structural SWM practices.

No construction vehicle wash plants or equipment would be kept inside of the 100-foot buffer zone. To reduce adverse water quality impacts, a soil ESC plan would be developed. The design of SWM facilities would accept runoff caused by development, in excess of that which would come from the site in its predevelopment state (MDE, 2015).

Additional policies apply to the IDA portion of the Critical Area including the conservation of fish, wildlife, and plant habitats; improvement of the quality of runoff into waterways; stormwater pollution reduction of 10 percent; maintenance or establishment of public access to the shoreline; and the advantageous location of ports and industries which use water for transportation and derive economic benefits from shore access (CAC, 2012).

3.7.3 Terrestrial Resources

3.7.3.1 Existing and Future Conditions

Physiographic Resources

The LOD is underlain by the Atlantic Coastal Plain Physiographic Province and is directly adjacent to the Piedmont Plateau Province. The Piedmont Plateau Province consists of hard, crystalline igneous and metamorphic rocks. The transition between the two provinces, known as the Fall Zone or Fall Line, crosses central Maryland from southwest to northeast, approximately along the I-95 corridor. Soils in the Coastal Plain consist of unconsolidated, stratified sandy, silty, clayey, and loamy sediment that also contain lignitized or other carbonaceous materials. Most of the soils formed in material weathered from the Coastal Plain formations retain many of the particle-size and mineralogy characteristics typical of the sediment.

The National Resource Conservation Service (NRCS) publishes soil survey maps which were used to identify the soil associations within the LOD. The Web Soil Survey (2016) from NRCS indicates that the following soil series occur within the LOD:

- Udorthents, 0 to 35 percent slopes (42E) – very deep, well drained, contains loamy and clayey soil material and varying amounts of rock fragments. Depth to hard bedrock varies from a few inches to more than five feet. Areas range from slightly compacted to severely compacted.
- Urban land-Udorthents complex, 0 to 3 percent slopes and occasionally flooded (43U) – on the Atlantic Coastal Plain Province. It consists mainly of areas that have been smoothed, where the original soil has been disturbed, filled over, or otherwise destroyed prior to construction.
- Urban land, slopes range from 0 to 15 percent (44UC) – soils where more than 80 percent of the surface is covered with asphalt, concrete, buildings or other impervious surfaces. Slopes are generally gentle to moderate.

Table 3-24: Soils within the LOD

Soil Name	Map Unit Symbol	Area (ac.)
Udorthents, smoothed, 0 to 35 percent slopes	42E	22.9
Urban land-Udorthents complex, occasionally flooded	43U	12.2
Urban land, 0 to 15 percent slopes	44UC	41.7
Water	W	6.3

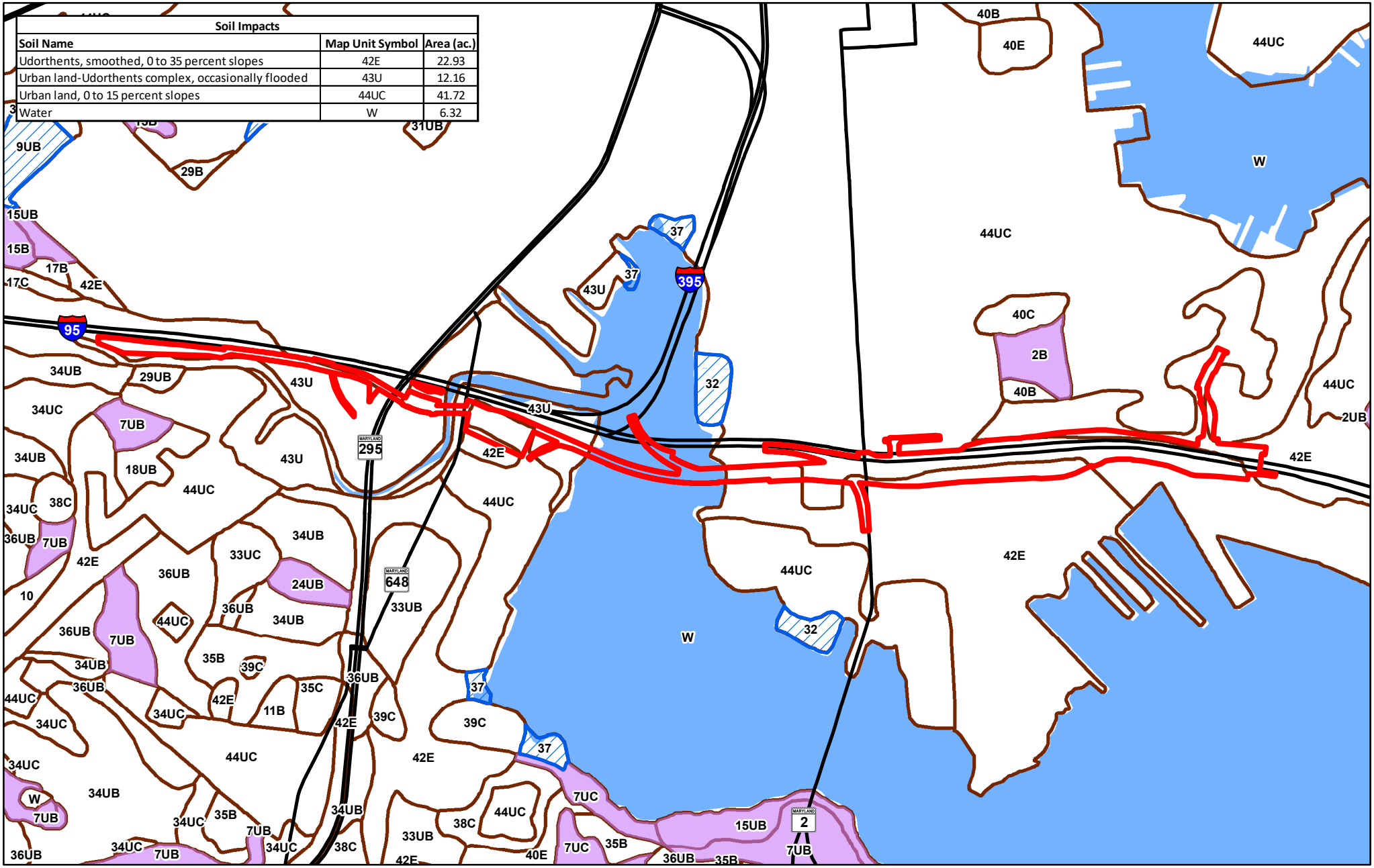
Source: USDA, NRCS. 2016. *Web Soil Survey*. http://websoilsurvey.nrcs.usda.gov/. Accessed [09/14/2016].

The NRCS database does not identify any highly erodible or hydric soils within the LOD. A hydric soil is formed under conditions of saturation, flooding, or ponding for at least 21 consecutive days during the growing season to develop anaerobic conditions in the soil layers closest to the surface. Urban land-Udorthents complex (43U) is predominantly non-hydric, with a hydric rating of three percent. Soils within the LOD are shown on Figure 3-15.

Terrestrial Habitat

Land cover within the LOD was assessed via aerial imaging and field investigations conducted on August 17 and November 11, 2016. A patchwork of vegetated areas, labeled Vegetative Community A, consists of fragmented areas of trees, shrubs, and/or herbaceous plants throughout the length of the LOD. This vegetated land provides a number of important environmental benefits to the surrounding urban settings, including improving air quality, pleasing natural aesthetics, reducing stormwater runoff volumes and temperatures, and providing an oasis of habitat for birds, insects, and other wildlife.

Soil Impacts		
Soil Name	Map Unit Symbol	Area (ac.)
Udorthents, smoothed, 0 to 35 percent slopes	42E	22.93
Urban land-Udorthents complex, occasionally flooded	43U	12.16
Urban land, 0 to 15 percent slopes	44UC	41.72
Water	W	6.32



LEGEND

- LOD
- MAJOR ROADWAY
- HYDRIC SOILS
- HIGHLY ERODIBLE SOILS
- SOIL CLASSIFICATION BOUNDARY

FIGURE 3.15

SOILS

1 inch = 1,500 feet

0 750 1,500 Feet

I-95 ACCESS IMPROVEMENTS

MARYLAND TRANSPORTATION AUTHORITY

CITY OF BALTIMORE

The largest tract of potential terrestrial wildlife habitat within the LOD is limited to the remnant vegetative community along Gwynns Falls, referred to as Vegetative Community A. The remainder of Vegetative Community A contains small fragments of vegetation associated with city parks, undeveloped private parcels, landscaped areas, hedgerows, and street trees around residential yards and commercial properties. Five specimen trees were located within or immediately adjacent to the LOD. These are listed in Table 3-25 and shown on Figure 3-16.

Table 3-25: Specimen Trees Within LOD

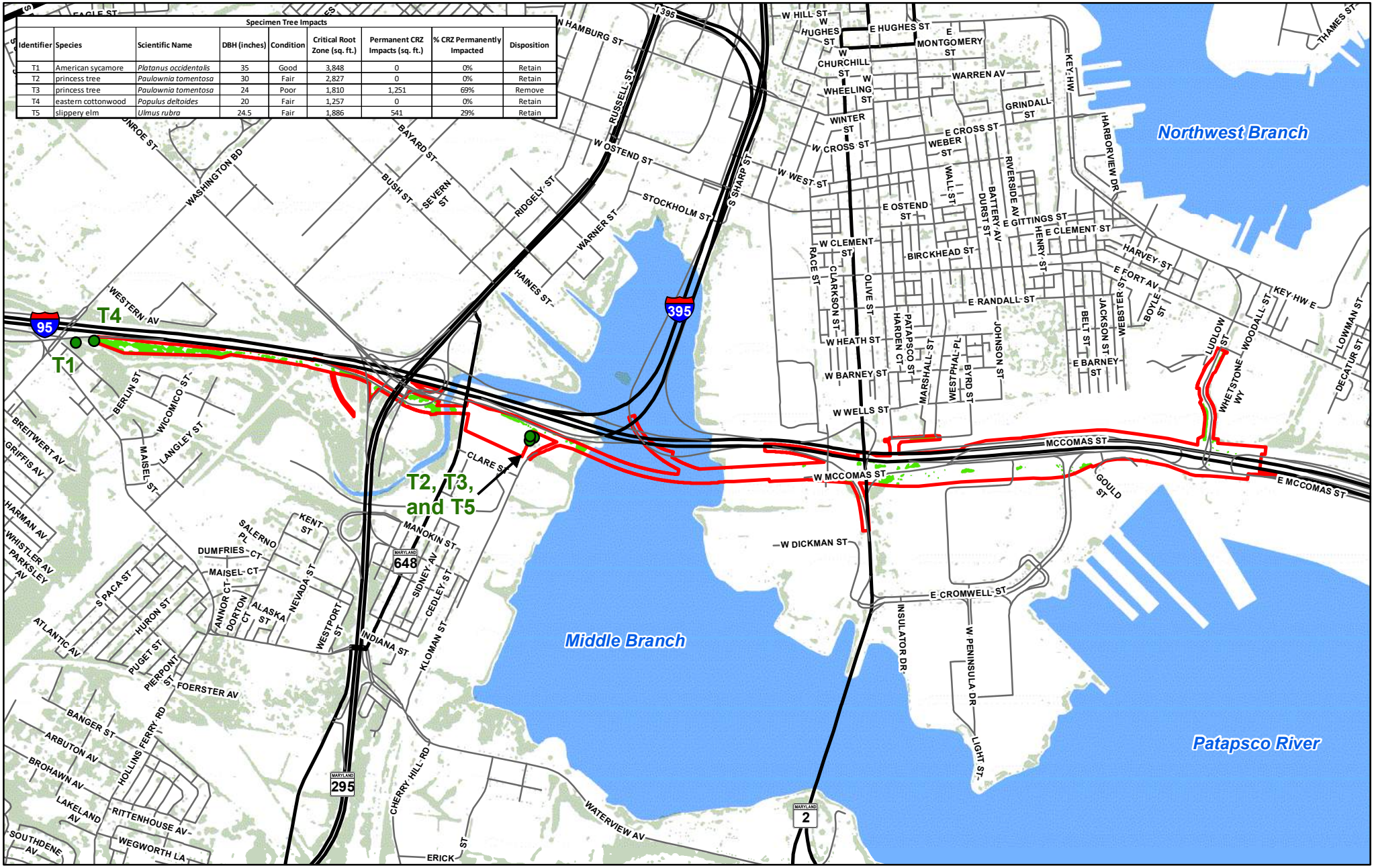
Identifier	Species	Scientific Name	Diameter at Breast Height (DBH)	Condition
T1	American sycamore	*Platanus occidentalis*	35 inches	Good
T2	princess tree	*Paulownia tomentosa*	30 inches	Fair
T3*	princess tree	*Paulownia tomentosa*	24 inches	Poor
T4	eastern cottonwood	*Populus deltoides*	20 inches	Fair
T5	slippery elm	*Ulmus rubra*	24.5 inches	Fair

Source: Field investigations, 2016.

* *To be removed; non-native, invasive species*

The most apparent threats to the health and vitality of Vegetative Community A were forest fragmentation, climbing vines, trash, and non-native, invasive species. Several non-native, invasive species were recorded in the LOD. These species spread quickly and have few natural controls. Vectors for non-native invasive species include waterways, trails, soil and canopy disturbance, animals, people, and other methods of dispersing seeds, fruits, and plant fragments. Non-native, invasive species displace native vegetation and compete for resources, disrupting habitat and specialized food webs of native ecosystems. Documented non-native, invasive species include tree of heaven, princess tree, white mulberry, porcelainberry, wineberry, mile-a-minute, multiflora rose, callery pear, thistle sp., *Lonicera* sp., Norway maple, Asiatic bittersweet, Chinese lespedeza, and Japanese knotweed.

Plant species present within the LOD are separated by the associated forest layer. Dominant tree species are defined by the DNR as "trees that extend above surrounding individuals" to receive sunlight from both the top and sides of the crown. Dominant canopy species within the LOD include eastern cottonwood (*Populous deltoides*), black oak (*Quercus velutina*), princess tree (*Paulownia tomentosa*), and tree of heaven (*Ailanthus altissima*). Co-dominant trees extend into the upper forest canopy, just below the dominant canopy layer, to receive sunlight from the top, but are prevented by dominant trees from receiving sunlight from the side. Co-dominant tree species include black locust (*Robinia pseudoacacia*), black walnut (*Juglans nigra*), callery pear (*Pyrus calleryana*), and white mulberry (*Morus alba*). Understory species consist of shrubs, small trees, and vines that lie beneath the co-dominant tree layer, with a height between three and twenty feet. Common understory species within the LOD include Virginia creeper (*Parthenocissus quinquefolia*), boxelder (*Acer negundo*), mimosa (*Albizia julibrissin*), and persimmon (*Diospyros virginiana*). The herbaceous layer consists of all species typically found on the ground and up to three feet from the surface and may consist of both woody and non-woody plant species. Common herbaceous plants found within the LOD include Asiatic bittersweet (*Celastrus orbiculatus*), American pokeweed (*Phytolacca americana*), multiflora rose (*Rosa multiflora*), and porcelainberry (*Ampelopsis brevipedunculata*).



LEGEND

- LOD
- SPECIMEN TREE
- ROADWAY
- MAJOR ROADWAY
- VEGETATIVE COMMUNITY A
- TREE CANOPY

DEPARTMENT OF TRANSPORTATION BALTIMORE CITY

Maryland Transportation Authority

FIGURE 3.16

TERRESTRIAL RESOUCES

1 inch = 1,500 feet

0 750 1,500 Feet

N

I-95 ACCESS IMPROVEMENTS

MARYLAND TRANSPORTATION AUTHORITY

CITY OF BALTIMORE

Terrestrial Wildlife

A desktop review for Forest Interior Dwelling Species (FIDS) and Sensitive Species Project Review Areas was performed and neither were identified within the LOD. In correspondence dated August 3, 2016, USFWS stated that no Critical Habitat Areas or Wildlife Refuges occur within the LOD. A copy of this correspondence is included in Appendix K, "Agency Correspondence."

The largest tract of potential terrestrial wildlife habitat within the LOD is limited to the remnant riparian buffer along Gwynns Falls. The remainder of the corridor contains small fragments of vegetation associated with city parks, undeveloped private parcels, landscaped areas, hedgerows, and street trees around residential yards and commercial properties.

Due to the highly developed and fragmented conditions associated with the LOD, only those wildlife species adapted to these disturbed habitats can be expected to occur. Animals such as white-tailed deer (*Odocoileus virginianus*), eastern gray squirrel (*Sciurus carolinensis*), house sparrow (*Passer domesticus*), blue jay (*Cyanocitta cristata*), and eastern box turtle (*Terrapine Carolina Carolina*) were commonly found within the LOD.

Rare, Threatened, and Endangered Species

To determine the existence of RTE species within the LOD, correspondence was submitted to the state regulatory agencies, DNR-WHS and DNR-ERU. In a letter dated November 23, 2016, the DNR-WHS confirmed that there are no state or federal records for RTE species within the LOD. In a letter dated January 13, 2017, the DNR-ERU did not identify any RTE within the LOD. This correspondence includes confirmation that no known eagle populations are residing within the LOD.

Section 7 coordination was initiated in August of 2016 to determine the potential presence of federal RTE species within the LOD. NMFS Protected Resources and Habitat Conservation Divisions stated that both the Atlantic sturgeon (*Acipenser oxyrinchus oxyrinchus*) and the shortnose sturgeon (*Acipenser brevirostrum*), and/or suitable habitat for these species, may occur within the LOD although it is not a preferred habitat. Both species are on the Federal and State Endangered Species List under the ESA, and are at moderate risk of extinction. However, on August 3, 2016, USFWS Information for Planning and Consultation (IPaC) service confirmed there are no federal endangered or threatened species within the LOD. Please refer to Appendix K, "Agency Correspondence" for copies of all correspondence mentioned in this section.

3.7.3.2 Probable Consequences

In this section, potential impacts to terrestrial resources are considered for the No Build Alternative and the Recommended Preferred Alternative. There would be no impacts to terrestrial resources associated with the No Build Alternative. There would be no construction, and therefore no disturbances would occur within the LOD. Probable consequences associated with the construction and operation of the Recommended Preferred Alternative are discussed in the following text.

Physiographic Resources

Soil disturbances would occur throughout the LOD during construction, including cutting, filling, and grading. Approximately 85,000 cubic yards of fill is anticipated, and would be considered permanent soil impacts. Fill would occur along the following locations:

- I-95 northbound auxiliary lane between the Caton Avenue on ramp and the Russell Street off ramp,
- Prior to the abutments of the shared-use path bridge over CSX tracks,
- The McComas Street two-way boulevard,
- The ramp from I-95 southbound to westbound McComas Street,
- The ramp from westbound McComas Street to I-95 southbound,
- The ramp from I-95 northbound to the McComas Street two-way boulevard, and
- The end of the ramp from Russell Street/I-395 ramp to the western end of McComas Street.

Cutting or grading of soil would occur along both the eastbound and westbound side of I-95, between Gould Street and Key Highway, resulting in potential impacts to drainage patterns within the LOD. These changes would be associated with redirecting surface runoff and localized changes in shallow groundwater movement. Cutting, filling, and grading is anticipated for the many stormwater facilities planned within the LOD.

Outside of the waterway, up to 75 piers would be constructed. During construction, each pier would require drilling, boring, driving a foundation piling, or other excavation of the soil and bedrock. There would be approximately 0.95 acres of impact to soil during operation of the Recommended Preferred Alternative due to the permanent installation of the piers.

There are several known hazardous materials sites near the LOD that have been capped as part of remediation activities (for detailed information, please refer to Appendix I, “Initial Environmental Site Analysis.” Due to the industrial history of the area, additional areas of soil contamination may be possible, and any earth moving activities could expose these contaminants to air and water resources. These contaminants may include lead, heavy metals, PCBs, pesticides, petroleum, chlorides, or polycyclic aromatic hydrocarbons among others.

As indicated by the soil series, soils in the LOD were previously smoothed, compacted, filled, manipulated, covered by development, or otherwise disturbed due to prior urbanization. In most cases, project-induced changes to the existing nature of the soils would be compatible with current and surrounding conditions.

Terrestrial Habitat

Approximately 8.7 acres (378,972 square feet) of vegetative community would be removed during construction. Most of the clearing would occur within the constricted wildlife corridor along Gwynns Falls. The corridor is narrow and subject to wind, sun, and temperature effects associated with non-contiguous forest areas, and to invasion by non-native species. Remaining vegetation, both native and non-native species, in these areas are already tolerant of disturbance and harsh weather conditions, so impacts are anticipated to be minor.

No impacts are anticipated for Specimen Trees T1, T2, T4, and T5, so these trees would be retained. Specimen Tree T3 would be impacted by construction activities, and therefore would be removed. As the project design develops, additional avoidance and minimization techniques may develop.

Terrestrial Wildlife

The Recommended Preferred Alternative would follow existing roadway alignments; therefore, impacts to wildlife resources are anticipated to be minor. The largest areas of potential impact to terrestrial wildlife would occur as a result of construction fill activities and the installation of piers within the Gwynns Falls riparian buffer. The fragmented habitats throughout the remainder of the corridor are expected to incur minor impacts as the wildlife species are already highly tolerant of disturbance in this urban setting.

Rare, Threatened, and Endangered Species

The Recommended Preferred Alternative would not impact rare, threatened, and endangered species, as none are documented within the LOD.

3.7.3.3 Potential Mitigation Measures

Physiographic Resources

Erosion and sediment management would include an MDE approved ESC Plan implemented in its entirety for the Recommended Preferred Alternative. ESC and SWM facilities would be placed in the LOD in accordance with the Environment Article, Title 4, Subtitle 1; Stormwater Management Act of 2007; MDE 2000 Maryland Stormwater Design Manual, Volumes I & II; 2011 Maryland Standards and Specifications for Soil ESC (MDE, 2011); COMAR (Title 26); and Maryland SWM and ESC Guidelines for State and Federal Projects (MDE, 2015). Mitigation activities would be specified within the ESC and SWM Plans and may include reduction of impervious surface, treatment of runoff, and ESD. ESD encourages the conservation and integrity of natural resources within the vicinity of the LOD.

During operation of the Recommended Preferred Alternative, impacts from sediment or contaminants on the roadway would be reduced by required SWM facilities. Currently, 20 SWM facilities of various sizes are planned within the LOD, with additional BMPs to be evaluated as design continues.

Detailed investigations would be conducted to determine specific soil characteristics along the Recommended Preferred Alternative as part of a Phase I Environmental Site Assessment so that construction techniques and environmental safeguards could be developed to address any identified contamination or limitations. To minimize potential effects from soil disturbances, proper slope and soil stabilization techniques would be used in work areas, both during and after construction, to prevent potential sedimentation of nearby waterways.

Terrestrial Habitat

To mitigate impacts to terrestrial habitat, land disturbed during construction of the Recommended Preferred Alternative would be amended and improved according to applicable Grading Permits and ESC Plans. Vegetation density would change during and post-construction. For the areas outside the Critical Area mitigation requirements would be determined by BCRP, and for the areas within road ROW

mitigation requirements would be determined by DNR Roadside Tree Law. Mitigation plans generally include a maintenance agreement for care and replacement of the trees, an inspection agreement, and may include a long-term protection plan.

For the areas within the Critical Area, final Buffer Management Plans would be coordinated between MDTA and the CAC. Further coordination with the CAC would be required to determine final mitigation requirements. Moreover, BCRP may or may not accept the level of mitigation required from CAC, and may impose mitigation in addition to that required by CAC. Tree removal and habitat loss would be offset by replanting efforts both within the LOD and at mitigation sites.

BMPs, including gear and equipment cleaning, would be implemented to avoid introducing and/or dispersing existing non-native invasive plant materials during construction and mitigation activities. Additionally, an Invasive Species Management Plan may be developed according to standards set by Executive Order 13112.

To retain specimen trees and protect CRZ, avoidance and minimization techniques would be employed to retain the tree and/or impact 30 percent or less of the CRZ. Protection measures including root or branch pruning would be implemented by a certified arborist. Other protection techniques include:

- Fencing, signage, trunk planking, root mulching and matting to protect from compaction;
- Preventing spills of toxic materials near the root system;
- Preventing equipment and foot traffic from traversing the root system;
- Considering the root system if dewatering operations are required; and
- Refraining from placing staging areas on root systems.

Terrestrial Wildlife

Most mobile species, such as mammals and migratory birds, would be able to vacate the disturbed area. To protect migratory birds, tree clearing restrictions for forest stands are in effect from April 1 through August 31, inclusive. This prevents tree clearing during the critical nesting periods.

Rare, Threatened, and Endangered Species

There are no documented rare, threatened, or endangered species within the LOD. However, SWM BMPs would be employed during and after construction to reduce or eliminate impacts to any species during construction and operation or the Recommended Preferred Alternative. Important BMP's for the Recommended Preferred Alternative include the use of cofferdams and silt curtains to reduce suspended sediment. In addition, an ESC plan would be developed, approved, and implemented to reduce potential adverse impacts to land and waterways.

3.8 CULTURAL RESOURCES

As part of this NEPA study, MDTA evaluated the direct and indirect effects to cultural resources due to the proposed construction and operation of the Interstate 95 Access Improvement project. This section describes cultural resources located within the project area of potential effects (APE) and describes the potential effects that could occur to historic properties listed in or eligible for the National Register of Historic Places (NRHP) under the Recommended Preferred Alternative.

3.8.1 Regulatory Context and Methodology

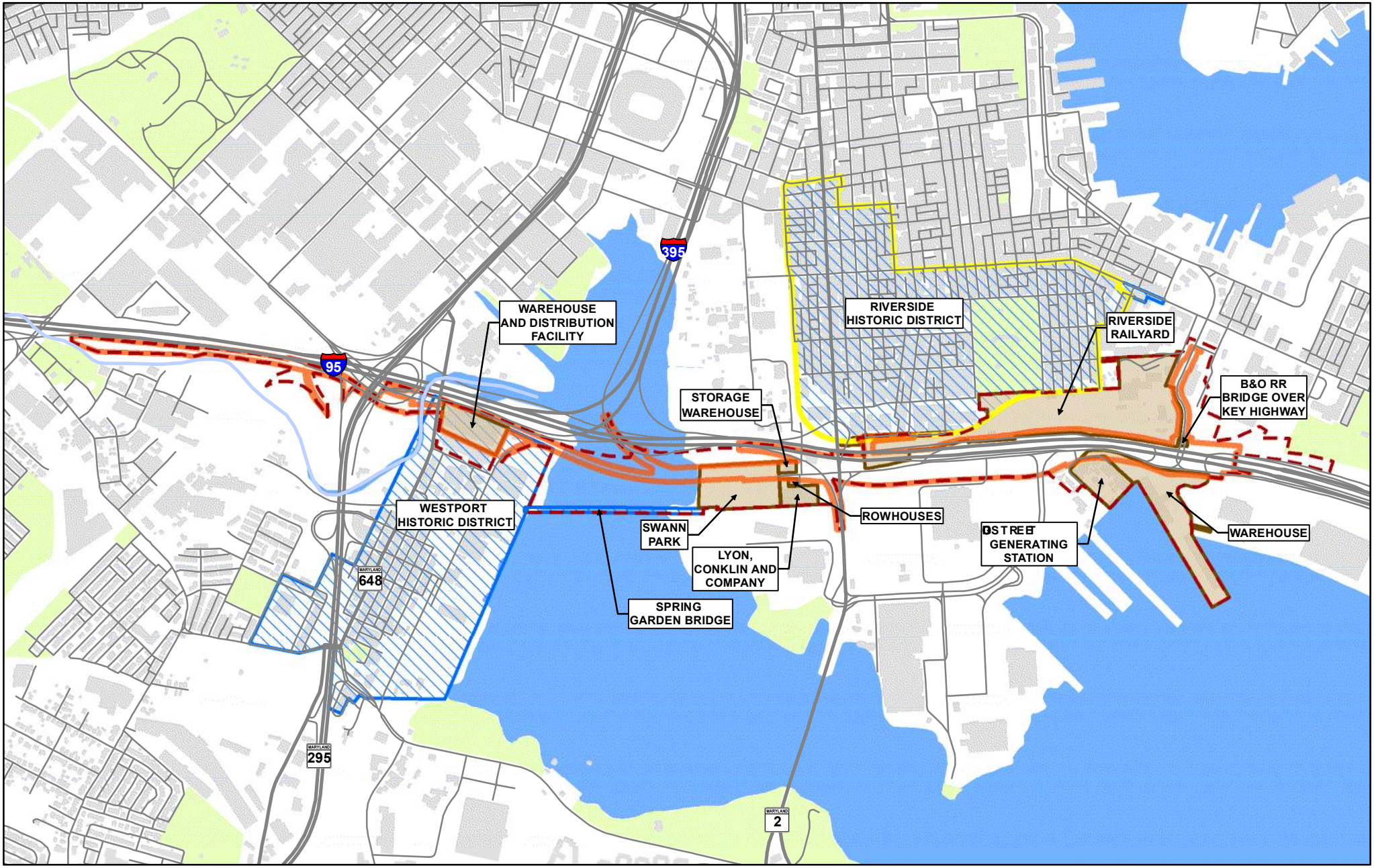
State and federal regulations, including Section 106 of the National Historic Preservation Act of 1966, as amended (36 Code of Federal Regulations (CFR) Part 800 – Protection of Historic Properties) and the Maryland Historical Trust (MHT) Act of 1985 (Article 83B, §§ 5-607, 5-617 to 5-619, and 5-623 of the Annotated Code of Maryland) govern project effects to cultural resources. These regulations require Maryland state and federal agencies to take into account the effects of their undertakings on historic properties within the project APE. Historic properties are defined as properties that are listed on, or eligible for inclusion in, the NRHP. Historic properties can include structures, objects, buildings, districts, landscapes, and archaeological sites.

MDTA initiated the Section 106 process with the MHT and other stakeholders on September 9, 2016. MHT granted concurrence on the proposed methodology for developing the APE as well as the list of proposed consulting parties on November 9, 2016. Section 106 correspondence is included in Appendix K, "Agency Correspondence."

The APE for archeological resources includes the anticipated limits of physical ground disturbance associated with the Recommended Preferred Alternative. The APE for above-ground architectural resources includes areas where physical disturbance could occur and accounts for possible visual, atmospheric, and audible effects of proposed improvements. MDTA received concurrence from MHT with the approach for determining the APEs on November 9, 2016. The APEs are shown on Figure 3-17.

The potential for cultural resources within the archeological and architectural APEs was assessed in December 2016. Cultural resources within the archeological and architectural APEs were identified and assessed for the potential of the alternatives to affect known historic properties. Recommendations for further identification and evaluation efforts were provided to MHT. MHT concurred with the approach for additional cultural resource studies on January 13, 2017.

All previously identified architectural historic properties identified within the APE are shown on Figure 3-17.



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LEGEND

- ARCHITECTURAL
- ARCHEOLOGICAL
- PROPERTIES GREATER THAN 45 YEARS IN AGE
- NRHP LISTED MIHP RESOURCE
- NRHP ELIGIBLE MIHP RESOURCE
- BUILDING
- PARK
- MAJOR ROADWAY
- ROADWAY

FIGURE 3.17
CULTURAL RESOURCES AREA OF POTENTIAL EFFECTS

1 inch = 1,500 feet

0 750 1,500 Feet

N

I-95 ACCESS IMPROVEMENTS

MARYLAND TRANSPORTATION AUTHORITY

CITY OF BALTIMORE

3.8.2 Existing and Future Conditions

Archaeological Resources

MDTA obtained information on previously identified archeological resources within the APE from the MHT's Cultural Resources Information System.

One archeological survey was conducted partially within the archeological APE of the Recommended Preferred Alternative. The survey was completed by the Baltimore Center for Urban Archeology (BCUA) at the site of the proposed Port Covington Commons Business Park in 1990.

No archeological sites were identified in the APE, but BCUA's survey demonstrated that the Port Covington Rail Terminal was constructed on fill, with potential for archeological sites at a subsurface depth of 8-10 feet. The Port Covington archeological site (18BC72), south of the APE, representing the remnants of a mid to late nineteenth-century industrial building, was identified in machine-excavated trenches that were 10-feet wide and up to 12-feet deep. Investigators recommended further survey, finding the Port Covington area in general to have high potential to contain sub-surface remnants of other nineteenth-century industrial sites.

MDTA is undertaking geoarcheological and underwater remote sensing investigations within the archeological APE. The MHT concurred with MDTA's fieldwork and documentation plans for additional archeological investigations in January and September 2017. Please refer to Appendix K, "Agency Correspondence." Geoarcheological field investigations to assess potential for archeological resources within the terrestrial portion of the study area have not yet been completed. Underwater remote sensing investigations within the portion of the APE that lies within the Middle Branch of the Patapsco River were completed in late October 2017. The magnetic gradiometer survey identified 89 magnetic anomalies, all of which individually are consistent with relatively small, shallowly buried, ferrous objects. None of those anomalies, individually, are consistent with magnetic signatures from submerged cultural resource sites. There are two areas, however, where the density of those anomalies is significantly greater than the rest of the area surveyed. While those areas most likely have higher densities of anomalies simply due to their proximity to the historic channel, they may represent the remains of buried submerged cultural resources. During final design, every effort will be made to avoid the locations of those anomalies. If avoiding them is not possible, additional investigations would include Phase I survey in the form of hydraulic jet probing. The purpose of the investigations would be to determine if either of the areas of magnetic anomalies represent articulated structures. If no articulated structures are identified, monitoring during excavation or dredging activities would determine if the magnetic anomalies represent disarticulated submerged cultural resources.

Architectural Resources

MDTA conducted an architectural survey that included the identification of historic properties and unevaluated architectural resources greater than 45 years in age. The APE includes three previously identified historic properties: two historic districts, the Westport and Riverside Historic Districts, and one bridge, the Spring Garden Bridge. These historic properties and their NRHP-eligibility status are included in Table 3-26.

Table 3-26: Previously Identified Historic Properties Within the Architectural APE

MIHP Number	Resource Name	NRHP Eligibility
B-1342	Westport Historic District	Eligible
B-3668	Spring Garden Bridge	Eligible
B-5139	Riverside Historic District	Listed

The historic architectural APE also includes nine properties that are 45 years old or older. One of these properties (Riverside Railyard, MIHP Number B-5267) was determined ineligible for the NRHP by the Maryland Transit Administration for the CSXT Riverside Rail Yard Purchase Project but there was no record of MHT concurrence on the eligibility determination, and the Determination of Eligibility form is being resubmitted to MHT for consideration.

MDTA has completed eligibility determinations for the other resources in accordance with MHT's *Guidelines for Compliance-Generated Determinations of Eligibility* (n.d.). The nine properties that are greater than 45 years in age are listed in Table 3-27 with their NRHP eligibility statuses. Both short and long form Determinations of Eligibility were completed, and two resources—the Gould Street Generating Station (MIHP Number B-5309) and Lyon, Conklin and Company (MIHP Number B-1055)—were considered by MDTA to be NRHP-eligible. The other seven properties are considered ineligible for the NRHP. MDTA's eligibility determinations are pending concurrence from the MHT. The Determination of Eligibility forms, which include descriptions, history, and the eligibility assessment for each property are included in Appendix G, "Cultural Resources Evaluation and Assessment of Effects Technical Report."

Table 3-27: NRHP Eligibility Status of Properties Greater than 45 Years in Age within the Architectural APE

Resource Name	Address	Construction Date	NRHP Eligibility Status[1]
Warehouse and Distribution Facility	1915-1921 Annapolis Road	1964, 1970	Not Eligible
Swann Park	1902	1900	Not Eligible
Gould Street Generating Station (MIHP Number B-5309)	2105 Gould Street	1905, 1927, 1930, 1953	Eligible[1]
Warehouse	1001 E McComas Street	1929	Not Eligible
Storage Warehouse	200 W.McComas Street	circa 1921	Not Eligible
Rowhouses (MIHP Number B-5310)	201-213 W. McComas Street	1905	Not Eligible
Lyon, Conklin and Company (MIHP Number B-1055)	2101 Race Street	1922	Eligible[1]
Baltimore and Ohio Railroad Bridge over Key Highway (MIHP Number B-5311)	N/A	circa 1930	Not Eligible
Riverside Rail Yard (MIHP Number B-5267)[2]	N/A	1871	Not Eligible[2]

1 NRHP Eligibility status is pending concurrence from Maryland Historical Trust.

2 NRHP eligibility status determined by MTA; pending concurrence from Maryland Historical Trust.

3.8.3 Probable Consequences

Architectural Resources

There would be no impacts to architectural resources associated with the No Build Alternative. There would be no construction, and therefore no disturbances would occur within the study area.

The five architectural historic properties identified within the APE would not be adversely affected by the Recommended Preferred Alternative.

In the Westport Historic District (B-1342), proposed improvements would be located adjacent to and visually blend in with the existing elevated main line of I-95 and would otherwise be adjacent to vacant lots that do not contribute to the historic significance of the historic district. The project would not introduce visual, atmospheric, or perceptible audible elements to the Westport Historic District that would diminish the integrity of the district's significant historic features.

At the Spring Garden Bridge (B-3668) proposed improvements would be located adjacent to the existing elevated I-95 main line. Two elevated ramps, one exiting from northbound I- 95 and the other exiting from Russell Street southbound, would merge north of the Spring Garden Swing Bridge, adjacent and south of existing I-95 main line and ramps that span the Middle Branch of the Patapsco River. The ramp elevations would be similar to the existing I-95 bridge deck. Approximately nine concrete bridge piers, similar in appearance to existing piers supporting I-95, would be constructed within the river to support the ramps. Although the ramps would be visible from the Spring Garden Swing Bridge it would be located adjacent to the existing elevated main line of I-95 and its spur ramps to I-395 and Russell Street, which are visually prominent aspects of the viewshed from and towards the Spring Garden Swing Bridge. The new ramp would not introduce any new visual, atmospheric, or audible elements to the Spring Garden Swing Bridge that would diminish the integrity of the bridge's significant historic features.

In the Riverside Historic District, a proposed pedestrian pathway would connect Riverside Park to the Port Covington development. The pathway would be partially elevated, passing under I-95 at 24 feet above grade. Neither the at-grade or elevated portions of the pedestrian pathway would physically alter elements that contribute to the historical or architectural significance of the historic district. The pathway would represent a new visual element within the historic district, although it is minor in scale, and adjacent to the much more visually dominant I-95 bridge deck. It would not be visible from any properties within the district that contribute to the historic significance of the district.

At the Lyon, Conklin and Company (B-1055), the proposed improvements include widening of McComas Street on the north side of the building to accommodate traffic on ramps leading from northbound I-95 and southbound I-395. The proposed improvements would not physically alter the building. The road would however represent a new visual element adjacent to the Lyon, Conklin and Company Building. The existing two-lane McComas Street would be widened to the north to include a median separated roadway with four eastbound lanes and two westbound lanes. The roadway would introduce a minor visual change to the setting of the Lyon, Conklin and Company Building. The visual setting has already been altered by the removal of other industrial buildings and the Western Maryland Railway's tracks and terminal on Port Covington and the addition of the Interstate 95 overpass, a visually prominent highway to the north. More important aspects of integrity which the Lyon, Conklin and Company retains and would continue to retain after project construction include location, design, workmanship, materials, feeling, and association.

Improvements at the Gould Street Generating Station are similar to those at the Lyon, Conklin and Company, including widening McComas Street on the north side of the Generating Station. The road would include three westbound lanes and three eastbound lanes separated by a median. Road construction would not physically alter the building but it would represent a new visual element within the setting of the Generating Station. The roadway would introduce a minor visual change to the setting of the Generating Station; however, the visual setting has already been altered by the removal of other industrial buildings, such as Western Maryland Railway's McComas Street Terminal and its tracks and other port facilities on Port Covington. The addition of the I-95 overpass in 1983 resulted in the construction of a visually prominent highway to the north. The widening of McComas Street would result in a minor visual change to the setting of the Generating Station. More important aspects of integrity which the Gould Street Generating Station retains to a large degree and would continue to retain after project construction include location, design, workmanship, materials, feeling, and association.

In summary, MDTA does not anticipate physical alteration or destruction of any potentially NRHP-eligible resources. The ramp and street improvements would occur adjacent to existing elevated sections of I-95 and other roadways, in a heavily urbanized and industrial environment. MDTA anticipates that the addition of new interstate and pedestrian ramps and realigned roadways would have negligible visual, atmospheric, or audible effects to any NRHP-eligible resources.

MDTA will request concurrence with the effects determination from FHWA, MHT, and other stakeholders. Although no adverse effects have currently been identified, MDTA would continue to coordinate with Section 106 Consulting Parties should any measures be needed to avoid or minimize adverse effects to historic properties.

Archeological Resources

The geoarcheological survey has potential to identify soil layers on Port Covington that may contain NRHP-eligible archeological resources, particularly resources associated with nineteenth century industrial development on Port Covington. Geoarcheological survey would include up to 30 geoprobe borings within the APE. MDTA would make reasonable steps to identify any archeological resources within the APE should geoarcheological survey find potential for such resources to exist. Archeological site 18BC72 was identified following excavation of 8-10 foot mechanically excavated trenches; and MDTA assumes that, if geoarcheological investigations indicate potential for archeological resources that a similar methodology would be employed to identify any archeological resources within the APE.

The remote sensing survey has potential to identify targets associated with shipwrecks within the Middle Branch of the Patapsco River. Remains of wrecked ships are known to exist within the Middle Branch north of the I-95/I-395 interchange. MDTA's consultant underwater archeologist proposes to complete a precision magnetic and acoustic survey of the areas where there is enough water depth to support a marine survey operation and a walking gradiometer survey of areas too shallow for vessel operations. MDTA will complete background research on previous investigations of marine resources and historical documents to identify or categorize any targets identified during the survey.

3.8.4 Potential Mitigation Measures

Adverse effects to architectural historic properties within the APE are not anticipated, therefore, no potential mitigation measures were developed.

Geoarcheological and underwater remote sensing investigations may result in the identification of terrestrial or underwater archeological resources. If NRHP-eligible resources are encountered, every attempt would be made to avoid those resources. MDTA would develop potential mitigation measures in consultation with Section 106 Consulting Parties should unavoidable adverse effects occur, and document these mitigation measures in a Memorandum of Agreement.

3.9 CONTAMINATED MATERIALS

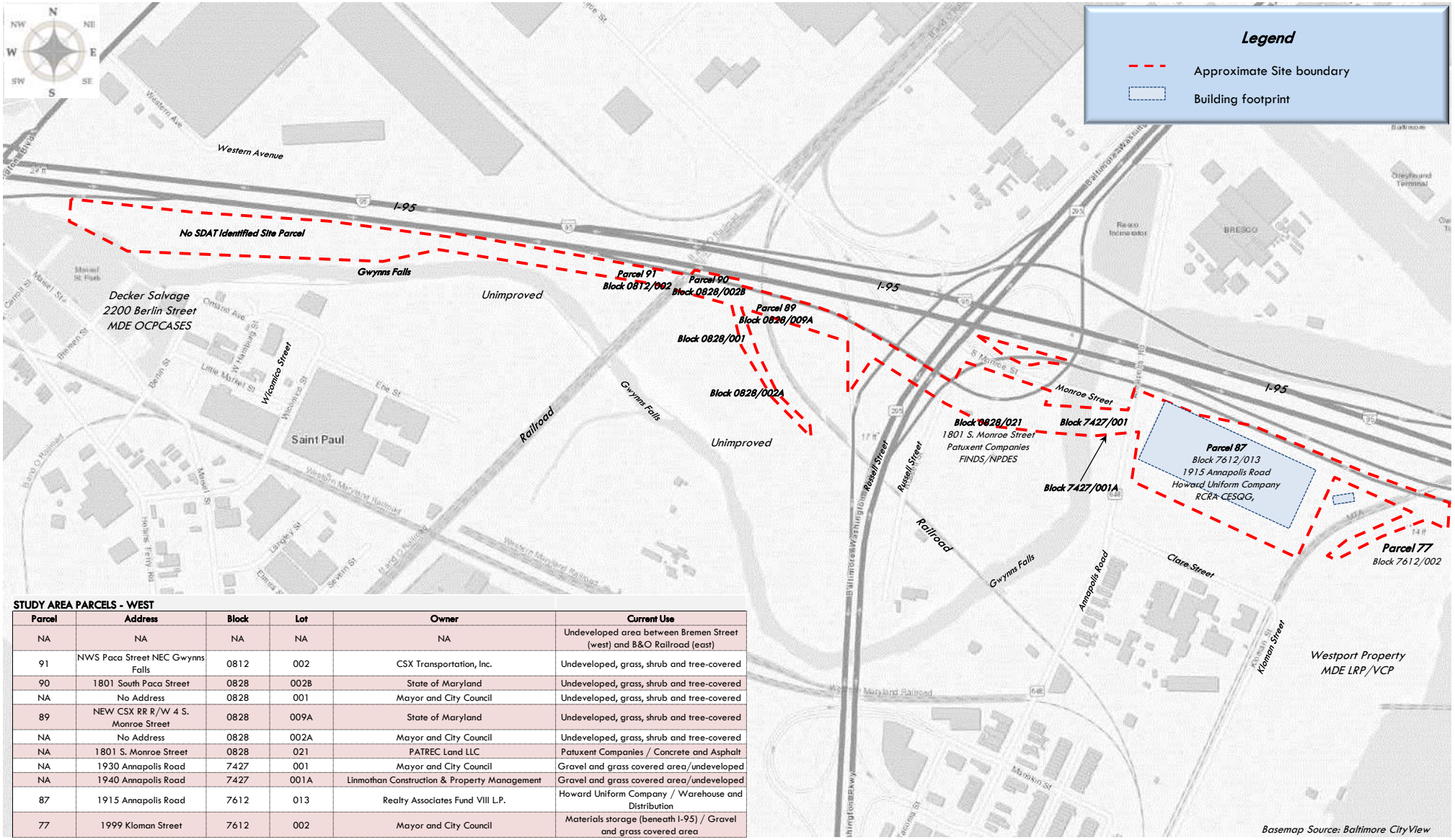
This section summarizes the Initial Environmental Site Assessment (ESA) performed as part of this EA. The full ESA is included as Appendix I, "Initial Environmental Site Assessment."

3.9.1 Regulatory Context and Methodology

The ESA was performed using the American Society for Testing and Materials (ASTM) E1527-13 standard as a guide and consisted of a review of current and historic activities and conditions of the study area, including a non-intrusive visual inspection of the project study area, review of local, state, and federal regulatory database records, review of historical records, and a survey of the adjacent land uses. Limitations, exceptions to, or deletions from, this practice are described in Appendix I, "Initial Environmental Site Assessment."

For the purpose of this assessment, only parcels or portions of parcels within the proposed construction limits of disturbance (LOD) were researched with regards to parcel ownership, historical use/operations, and regulatory case files. This constitutes the contaminated materials study area. These parcels or portions of parcels are located within Baltimore City Blocks 0812, 0828, 7427, 7612, 1053, 1040, 1028, 1036, 1045, 1950, 1958, 2059, and 2065A. A summary of each of these parcels within the proposed construction LOD is included in Appendix I "Initial Environmental Site Assessment." The proposed construction LOD is shown on Figures 3-18 through 3-20.

The purpose of the ESA was to identify potential recognized environmental conditions (RECs), controlled RECs (CRECs) and historical RECs (HRECs) associated with those parcels located within the project study area that are anticipated to be impacted by the proposed LOD. A REC is defined as the presence or likely presence of any hazardous substances or petroleum products in, on, or at a property: 1) due to release to the environment; 2) under conditions that are indicative of a release to the environment; or 3) under conditions that pose a material threat of a release to the environment. CRECs are defined as recognized environmental conditions resulting from a past release of hazardous substances or petroleum products that have been addressed to the satisfaction of the applicable regulatory authority, with hazardous substances or petroleum products allowed to remain in place subject to the implementation of required controls. HRECs are defined as a past release of any hazardous substances or petroleum products that have occurred in connection with a property and been addressed to the satisfaction of the applicable regulatory authority or meeting unrestricted use criteria established by a regulatory authority, without subjecting the property to any required controls.



STUDY AREA PARCELS - WEST

Parcel	Address	Block	Lot	Owner	Current Use
NA	NA	NA	NA	NA	Undeveloped area between Bremen Street (west) and B&O Railroad (east)
91	NWS Paca Street NEC Gwynns Falls	0812	002	CSX Transportation, Inc.	Undeveloped, grass, shrub and tree-covered
90	1801 South Paca Street	0828	002B	State of Maryland	Undeveloped, grass, shrub and tree-covered
NA	No Address	0828	001	Mayor and City Council	Undeveloped, grass, shrub and tree-covered
89	NEW CSX RR R/W 4 S. Monroe Street	0828	009A	State of Maryland	Undeveloped, grass, shrub and tree-covered
NA	No Address	0828	002A	Mayor and City Council	Undeveloped, grass, shrub and tree-covered
NA	1801 S. Monroe Street	0828	021	PATREC Land LLC	Patuxent Companies / Concrete and Asphalt
NA	1930 Annapolis Road	7427	001	Mayor and City Council	Gravel and grass covered area/undeveloped
NA	1940 Annapolis Road	7427	001A	Linmothan Construction & Property Management	Gravel and grass covered area/undeveloped
87	1915 Annapolis Road	7612	013	Realty Associates Fund VIII L.P.	Howard Uniform Company / Warehouse and Distribution
77	1999 Kloman Street	7612	002	Mayor and City Council	Materials storage (beneath I-95) / Gravel and grass covered area

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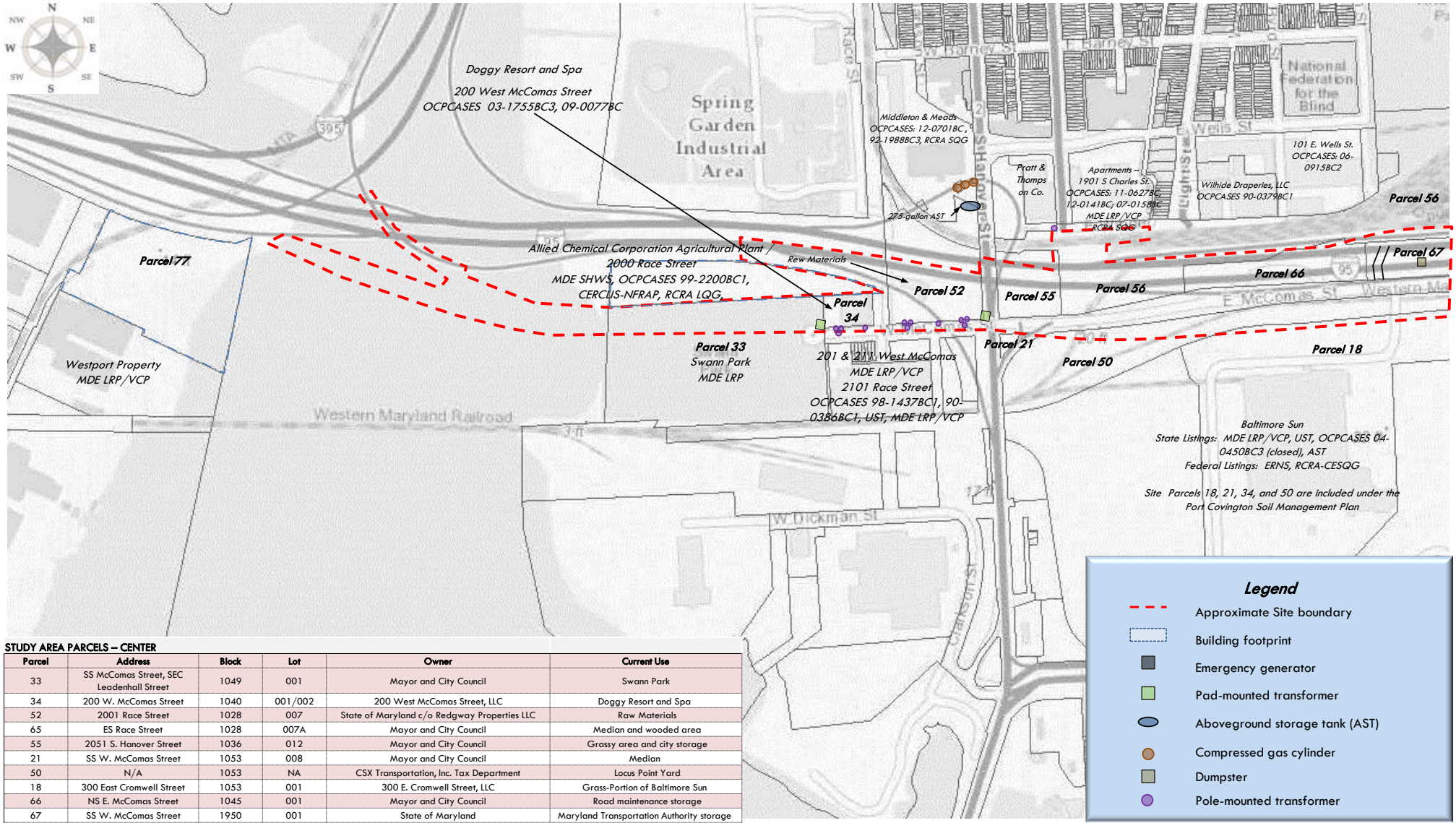
I-95 ACCESS IMPROVEMENTS
FIGURE 3 - 18

STUDY AREA PARCELS - WEST

MARYLAND TRANSPORTATION AUTHORITY

BALTIMORE CITY DOT



Basemap Source: Baltimore CityView

STUDY AREA PARCELS – CENTER

Parcel	Address	Block	Lot	Owner	Current Use
33	SS McComas Street, SEC Leadenhall Street	1049	001	Mayor and City Council	Swann Park
34	200 W. McComas Street	1040	001/002	200 West McComas Street, LLC	Doggy Resort and Spa
52	2001 Race Street	1028	007	State of Maryland c/o Redgway Properties LLC	Raw Materials
65	ES Race Street	1028	007A	Mayor and City Council	Median and wooded area
55	2051 S. Hanover Street	1036	012	Mayor and City Council	Grassy area and city storage
21	SS W. McComas Street	1053	008	Mayor and City Council	Median
50	N/A	1053	NA	CSX Transportation, Inc. Tax Department	Locus Point Yard
18	300 East Cromwell Street	1053	001	300 E. Cromwell Street, LLC	Grass-Portion of Baltimore Sun
66	NS E. McComas Street	1045	001	Mayor and City Council	Road maintenance storage
67	SS W. McComas Street	1950	001	State of Maryland	Maryland Transportation Authority storage

Parcel 77 is described on Figure 2; Parcel 56 is described on Figure 4.

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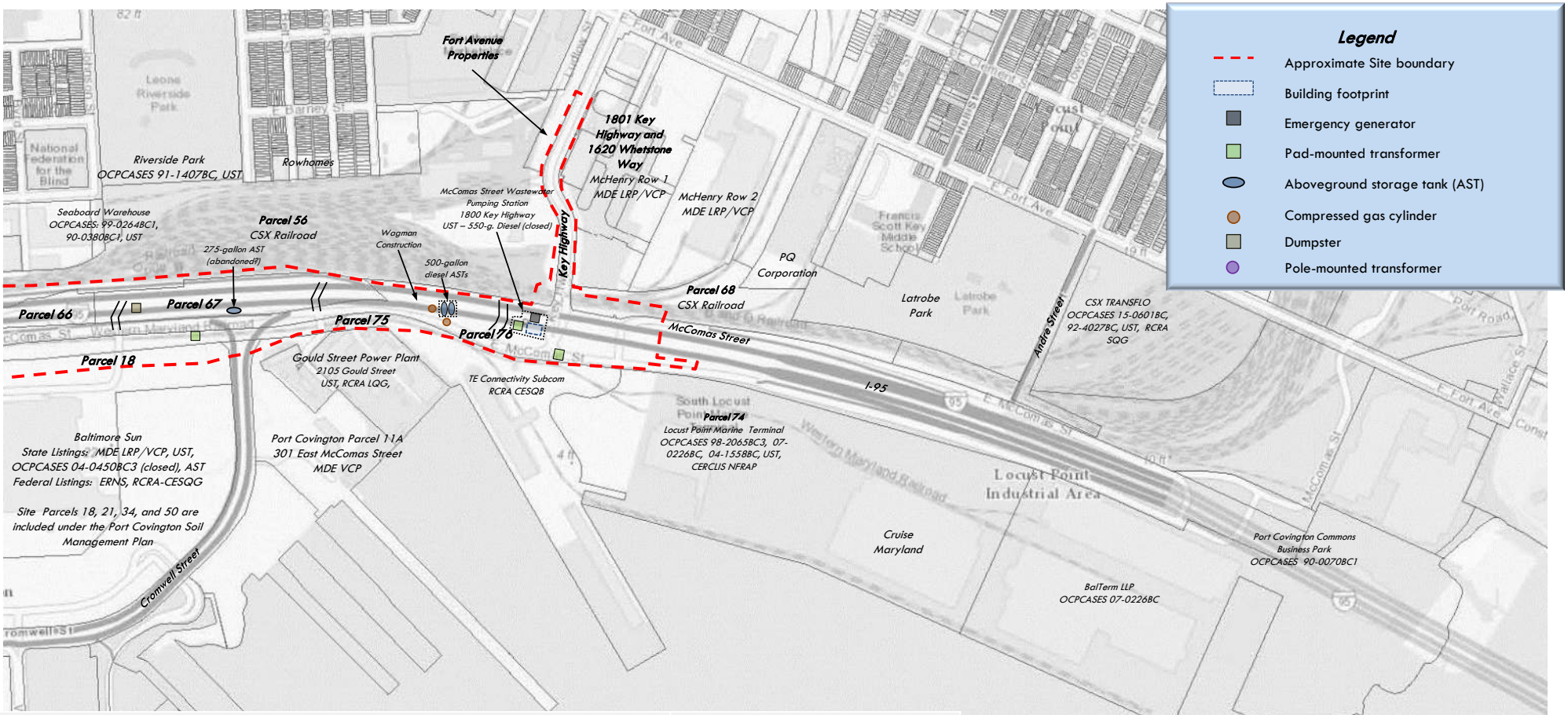
I-95 ACCESS IMPROVEMENTS
FIGURE 3 - 19

STUDY AREA PARCELS - CENTER

MARYLAND TRANSPORTATION AUTHORITY

BALTIMORE CITY DOT



STUDY AREA PARCELS – EAST

Parcel	Address	Block	Lot	Owner	Current Use
56	N/A	PSC0	10	CSX Transportation, Inc.	CSX Railroad
75	1001 E. McComas Street	1958	001	Transoceanic Cable Shipping Co.	Grass – portion of TE Connectivity Subcom
76	1800 Key Highway	2059	001	Mayor and City Council of Baltimore	McComas Street McComas Wastewater pumping station Wagman Construction staging/storage
74	1101 E. McComas Street	1958	002	State of Maryland	Locust Point Marine Terminal
68	ES Key Highway	2065	001	CSX Transportation, Inc.	CSX Railroad
NA	1801 Key Highway	2065	002	CPC HT LLC	McHenry Row 1
NA	1620 Whetstone Way	2034	007B	CPC HT LLC	McHenry Row 1
NA	No Address	2034	001	Fort Avenue Properties, LLC	Western edge of Key Highway

Parcels 18, 66, and 67 are described on Figure 3.

Basemap Source: Baltimore CityView

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I-95 ACCESS IMPROVEMENTS
FIGURE 3 - 20

STUDY AREA PARCELS - EAST

MARYLAND TRANSPORTATION AUTHORITY

BALTIMORE CITY DOT

3.9.2 Existing Conditions

Parcels within the contaminated materials study area consist primarily of industrial and commercial facilities; some multi-family residential apartment buildings are located in the South Baltimore, Riverside, and Locust Point Industrial Area neighborhoods adjoining the contaminated materials study area to the north. In addition, properties located on the western portion of the contaminated materials study area between Russell Street and Bremen Street (south of I-95) consist primarily of unimproved wooded areas and unimproved land along the banks of the Gwynns Falls.

Parcels within the contaminated materials study area are serviced by municipal water and sewer provided by Baltimore City. Natural gas and electricity are provided by Baltimore Gas & Electric (BGE). With the exception of one small building (McComas Street Wastewater Pumping Station), one large warehouse distribution center (1915 Annapolis Road), and the Downtown Dog Resort and Spa facility, no other structures are located within the contaminated materials study area. Based on a review of historical records, the contaminated materials study area has been developed with the existing improvements since construction of I-95 (commenced circa 1976) and the construction of the Fort McHenry Tunnel (completed in 1984). Details regarding historical use of the parcels located within the project study area are found in Appendix I, "Initial Environmental Site Assessment."

No visual evidence of stressed vegetation, surface staining, pits, ponds, or lagoons was observed in the exterior portions of the study area. Nuisance debris was observed along I-95 northbound (NB), I-95 southbound (SB), and throughout the project study area, including along the banks of the Middle Branch of the Patapsco River and Gwynns Falls.

Several of the parcels located within the project study area are identified on state or federal environmental database listings. Listings are based on a review of the environmental regulatory database report, Public Information Act (PIA) requests and a review of case files provided by the Maryland Department of the Environment (MDE), review of information published online with the MDE and researched databases with the United States Environmental Protection Agency (USEPA). A summary of the environmental database listings is included in Appendix I, "Initial Environmental Site Assessment."

Recognized Environmental Conditions

The ESA of the Recommended Preferred Alternative was performed using the ASTM E1527-13 standard as a guide. This assessment revealed evidence of the following RECs.

Based on the review of historical records and soil data within the contaminated materials study area, several portions consist of urban land. Urban land generally consists of material that has been reworked as part of redevelopment. As such, unregulated fill material may have been utilized in several areas throughout the project study area to alter the grade or topographic elevation. Unregulated fill material may contain elevated concentrations of contaminants including, but not limited to, volatile organic compounds (VOCs), semi-volatile organic compounds (SVOCs) including polycyclic aromatic hydrocarbons (PAHs), petroleum hydrocarbons, and metals. Surficial impacts associated with the potential use of unregulated fill material throughout the study area constitutes a REC.

Based on the review of historical records, the following parcels currently or historically contained railroad tracks associated with the Riverside Yard and/or Locust Point Yard: 18, 52, 56, 66, 67, 68, 75, and 76.

Railroad ties were often treated with creosote to preserve the wood and extend the service life. Additionally, railroad tracks are often treated with pesticides and herbicides to prevent the growth of vegetation. The current and historical presence of the railroad tracks at the above listed parcels and the potential for surface and subsurface impacts associated with creosote, pesticides, and herbicides is considered a REC.

Based on the review of historical records, parcel 56 has been utilized as a locomotive rail yard (Riverside Yard) for over 100 years. Historically, portions of the rail yard may have been located within the proposed construction LOD prior to the construction of I-95 including, but not limited to, the following: oil/water separator(s), locomotive support buildings, and three locomotive roundhouses (two near Key Highway and McCommas Street and the third near Johnson Street and East Wells Street). Potential subsurface impacts associated with locomotive maintenance constitutes a REC.

Portions of parcel 75 and 76 are associated with the Gould Street Generating Station, which has been in operations for over 100 years. The Gould Street Generating Station was formerly operated as a coal fire power plant and was historically serviced by rail. The power plant currently operates on natural gas; however, the plant historically operated on coal as well as fuel oil. Potential surface and subsurface impacts associated with the use of fuel oil and coal at portions of these parcels is considered a REC.

Review of historical fire insurance maps indicates that parcel 52 and 65 were utilized for automotive sales and service as well as "gasol" use. Additionally, during the site reconnaissance of the project study area, two fueling ASTs were identified at Parcel 76. The fueling ASTs were located in an area with pervious surfaces. No evidence of staining was observed during the site reconnaissance; however, potential spill and overfills from the fueling ASTs would discharge directly to the ground surface. Surface and subsurface impacts associated with the use of petroleum products at these parcels constitutes a REC.

Several adjoining properties are the subject of environmental remediation through various state programs (e.g., Maryland Voluntary Cleanup Program [VCP], MDE Land Restoration Program, etc.). One noteworthy adjoining property (2000 Race Street Property) is identified in several regulatory listings, most notably the MDE SHWS. An Administrative Consent Order (ACO) between Baltimore City, MDE, and Honeywell, is on file with the MDE for this property. Any future earth disturbances on this parcel must comply with the ACO. The presence of an ACO for known contamination associated with the property is considered a REC.

Three parcels (Parcels 18, 75, and 76) are identified in the underground storage tank (UST) listings. Based on the findings of this assessment, there were no apparent releases associated with the USTs; however potential releases from spills, leaks, and overfills from the USTs is considered a REC.

Controlled Recognized Environmental Conditions

This assessment has revealed evidence of the following CRECs in connection with the contaminated materials study area:

On Blocks 2065/002 and 2034/007B, a containment remedy was completed as part of the MDE VCP and any future disturbances must comply with the respective Certificates of Completion. On Parcel 33 (Swann Park), remediation and a containment remedy was completed through the MDE LRP. Disturbances on Parcel 33 will require coordination, review and approval from the MDE, Honeywell, and Baltimore City. The above coordination on these three parcels may have implications for any future construction, including requirements for health and safety training for construction workers, materials management

and disposal plans; and requirements for environmental cap repair and monitoring. The conditions and controls associated with these parcels constitute a CREC.

Parcels 18, 21, 34, and 50 are included within the Port Covington Comprehensive Soil Management Plan (CSMP) on file with the MDE. Constituents of concern identified on these parcels include metals, PAHs, petroleum hydrocarbons, VOCs and/or hexavalent chromium. Earth disturbance associated with the proposed construction LOD at these parcels must be carried out in accordance with the conditions set forth in the CSMP. The conditions set forth in the CSMP constitutes a CREC.

Historical Recognized Environmental Conditions

This assessment has revealed evidence of the following HRECs in connection with the project study area. By definition, they are not anticipated to require further evaluation.

Three parcels (Parcels 18, 34, and 74) are identified for one or more case files with the MDE Oil Control Program (OCP). The cases associated with these parcels have been closed by the authority having jurisdiction; as such, the MDE OCP case listings are considered HRECs.

De Minimus Conditions

The additional findings noted below are not considered RECs at this time, but rather are considered a *de minimus* condition where no additional investigation or action is currently warranted; however, preventive measures or future actions may be prudent as discussed below.

Regulated materials, including aboveground storage tanks (ASTs) used for onsite consumptive use, transformers and gas cylinders, and nuisance debris were observed at the project study area. Prior to any redevelopment, it is recommended that any inactive or discarded regulated materials and ASTs materials be removed in accordance with state and federal guidelines.

Four parcels (Parcels 18, 75, 76, and 87) are identified as generators of hazardous waste under the Resource Conservation and Recovery Act (RCRA). No violations are reported for these parcels.

Data Gaps

Several data gaps were identified as part of this investigation including the restricted parcel access, absence of interviews/questionnaires from persons knowledgeable about parcels within the Study Area, and the absence of historical ownership information for the westernmost parcels in Blocks 0812, 1828/002b, 0828/001, 0828/002a, and Parcels 21, 50, 65, 66, 67, and 77. These parcels are currently owned by the Mayor and Baltimore City Council, State of Maryland, or CSX Transportation, Inc. Additional RECs or CRECs may exist as a result of these data gaps.

3.9.3 Probable Consequences

Potential impacts to hazardous and contaminated materials were examined for both the No Build Alternative and the Recommended Preferred Alternative. If the No Build Alternative is implemented. there would be no project-related impacts to existing hazardous and contaminated materials. With no

construction activities under this scenario, there would be no disturbances of soil and/or groundwater would within the study area.

Probable consequences associated with the construction and operation of the Recommended Preferred Alternative include the potential for temporary exposures to contaminants present in soil and/or groundwater from excavations and other land disturbing activities. Several portions of the contaminated materials study area consist of urban land. Parcels 18, 52, 56, 66, 67, 68, 75, and 76 currently or historically contained railroad tracks; Parcel 56 was formerly used as a locomotive rail yard, portions of Parcels 75 and 76 were associated with an electric generating station; Parcels 52, 65, and 76 were utilized for fueling and/or automotive uses, and several adjoining parcels, including the 2000 Race Street Property, were identified for known contamination and hazardous materials.

Prior environmental data for the parcels or portions of parcels within the proposed construction LOD do not indicate that the soils, if disturbed and excavated, would be characterized as hazardous. Specifically, Parcels 18, 21, 34, and 50 which are subject to the Port Covington CSMP, Blocks 2065/002 and 2034/007B and Parcel 33 (Swann Park) are identified as parcels with known impacts in soil and/or groundwater, where the impacts/contamination is currently managed either through compliance with the CSMP or existing environmental caps.

It is recommended under the Recommended Preferred Alternative that parcels, where historic environmental data is not available, be further evaluated to determine if additional environmental management plans are required during future earth disturbances or construction activities. Specifically, a Phase II ESA should be performed to evaluate the above referenced RECs and CRECs identified within the construction LOD. The Phase II ESA should focus on known parcel-specific contaminants of concern (e.g. metals and hexavalent chromium, PAHs, petroleum hydrocarbons), contaminants potentially present as a result of the historical parcel uses, such as polychlorinated biphenyls (PCBs), SVOCs including PAHs, VOCs, metals and petroleum hydrocarbons for the former railyard areas, petroleum-related compounds in the areas of the former USTs, and common urban contaminants (PAHs, metals) throughout all historically developed areas of the proposed construction LOD.

Modifications to the proposed construction LOD could alter the findings of this assessment and require revisions to this report since only those parcels potentially impacted by the proposed construction LOD were evaluated as part of this assessment.

3.9.4 Potential Mitigation Measures

Compliance with the existing requirements of the Port Covington CSMP, and the conditions of the Certificates of Completion for Blocks 2065/002 and 2034/007B and Parcel 33 (Swann Park), will minimize potential impacts from these parcels during construction. These requirements and conditions include: implementing requirements for health and safety training for construction workers, environmental monitoring, and the development of materials management and disposal plans. Future exposures would be addressed through the requirements for cap repair and monitoring. Similar mitigation measures, environmental monitoring and materials management would likely be required to address any additional contamination identified as a result of the RECs identified in the preceding sections.

One noteworthy exception for compliance/mitigation efforts is the adjoining 2000 Race Street Property which may contain soils or materials characterized as hazardous and which is subject to an ACO. Any

future earth disturbances on this property would be required to comply with the ACO; this property is not proposed to be disturbed as part of the Recommended Preferred Alternative.

Lastly, if the proposed construction LOD were shifted to encompass portions of adjoining properties subject to the VCP or other land restoration programs, earth disturbance activities would require significant coordination, review and approval from the MDE, as well as conformance to the requirements enumerated within the ACO, COC, or applicable documents. Compliance with these requirements may have numerous implications for any future construction on those particular sites, including, but not limited to, the following:

- Limitations on the ability to penetrate environmental caps;
- Requirements for health and safety training and certifications for construction workers;
- The need for feasibility studies for construction within the site boundaries;
- Materials management and disposal plans; and
- Requirements for ongoing environmental cap repair and monitoring.

3.10 UTILITIES

This section describes the existing and future utilities, potential effects to utilities, and measures to develop avoidance, minimization, and mitigation strategies for maintaining, protecting, or relocating utilities that could be affected during construction. Actual methods to accomplish these objectives will vary, depending on the final project designs and any changes to existing conditions that may occur between the date of this document and the actual start of construction.

3.10.1 Regulatory Context and Methodology

As a federally-funded highway project, the I-95 Access Improvements Project would require integration with existing utility infrastructure, subject to FHWA's *Highway/Utility Guide (1993)*, *Program Guide: Utility Adjustments and Accommodations on Federal-Aid Highway Projects (2003)*, as well as the most recent AASHTO utility guidelines and best practices. Policies and procedures addressing utility adjustment or relocation are based on *23 CFR Part 645, Subparts A and B*. As defined in *23 CFR Part 645.207*, utilities provide essential public and private services, which include electricity, gas, water, steam, and other similar commodities. Utility services may be distributed overhead or underground, through electrical transmission lines, high pressure gas lines, treated water and sanitary sewer mains, storm sewers, steam tunnels, buried fiber optic cables, underground and overhead telephone lines, and communication systems.

Existing utilities in the study area were identified through a review of utility record drawings and base maps obtained from Baltimore Gas and Electric Company (BGE) and Baltimore City Department of Public Works. MDTA and Baltimore City will continue to coordinate with these entities to further identify and verify the location of existing or future utility facilities within the LOD. A comprehensive utility survey to identify above- and underground utilities, including test pits as necessary, to identify size, age and location of the utilities, will be conducted during the preliminary engineering and final design phases.

3.10.2 Existing and Future Conditions

The LOD of the Recommended Preferred Alternative is located within a highly urbanized environment, supported by a complex utility infrastructure. Existing utilities include overhead and underground electrical distribution and service lines, underground lighting and signal, gas, communication, water, sanitary sewer, and storm sewers. BGE's Gould Street facility is located immediately south of I-95 off McComas Street, on the east side of the peninsula and operates as a back-up power plant for the area.

It is anticipated that under the No-Build Alternative the developer of the Port Covington Master Plan will remove or relocate utilities, as appropriate, as the peninsula is cleared for the approved development.

Relocation, protection, reinforcement, and maintenance of existing utilities is anticipated for the construction of the highway elements of the Recommended Preferred Alternative. Existing utilities will be avoided to the extent possible, while obsolete utilities may be removed, upgraded, or relocated, as appropriate. Utility conflicts will be addressed on a case-by-case basis. It is anticipated that there will be utility relocations necessary during the reconstruction of McComas Street and Key Highway.

3.10.3 Probable Consequences

The No Build Alternative is not anticipated to have any utility impacts or relocations beyond those directly associated with the build out of the Port Covington Master Plan. The Recommended Preferred Alternative will likely to have some utility impacts along McComas and Hanover Streets. If the Recommended Preferred Alternative is approved, careful coordination between the proposed improvements and the Master Plan will take place to minimize impacts and ensure that utilities are only relocated once.

Utility conflict identification is ongoing, and coordination with utility service providers will continue throughout preliminary engineering, design, and construction phases. Existing utilities could be altered with the Recommended Preferred Alternative, but the long-term capacity and ability of the utility infrastructure to provide service will not be affected.

Temporary impacts to existing utilities are anticipated during construction, and include service interruptions to install temporary or replacement utility services. The duration of service interruptions will vary according to utility type and construction requirements.

3.10.4 Potential Mitigation Measures

Coordination with utility service providers will continue during preliminary engineering, design, and construction phases. Meetings with the respective utility service providers will continue as the project design progresses to identify additional impacts and minimize service interruptions. Construction activities would be planned and scheduled to avoid and minimize utility service outages to the maximum extent possible. Temporary service disruptions can be expected during required utility relocations. All work involving the relocation and protection of utilities will be coordinated with and approved by the affected utility owners. In addition, planned outages will require adequate advance notification to the affected utility users.

Utility-related effects will be addressed in advance of, or in conjunction with, the construction of the Recommended Preferred Alternative. Any existing utilities found to be in direct conflict with the proposed

elevated roadway, structural supporting elements, or grading and filling required during construction, will be relocated in accordance with the utility owner's specifications. In order to minimize costs and construction delays, and in order to help reduce outages and limit impacts, existing utilities will be protected and reinforced wherever possible, rather than relocated. During the conceptual cost proposal development, it was projected that utility impacts would account for 15 percent of the cost of the at-grade project elements and eight percent of the cost of the elevated roadway elements.

3.11 INDIRECT AND CUMULATIVE EFFECTS

This section provides a summary of the indirect and cumulative effects on socio-economic, cultural, and natural resources resulting from the Recommended Preferred Alternative. The detailed analysis is included in Appendix J, "Indirect and Cumulative Technical Report."

3.11.1 Regulatory Context and Methodology

An Indirect and Cumulative Effects (ICE) analysis has been prepared for this study. This ICE analysis was conducted in compliance with NEPA, the CEQ regulations (40 CFR 1508.25(c)) and other available guidance.

The CEQ guidance defines direct effects as,
"effects caused by the action and occur at the same time and place. Direct effects are typically well understood and predictable, may include residential or business displacements or the removal of a historic structure." (40 CFR 1508.8(a)).

Indirect effects are defined as,
"effects which are caused by the action and are later in time or farther removed in distance, but are still reasonably foreseeable. Indirect effects may include growth inducing effects and other effects related to induced changes in the pattern of land use, population density or growth rate, and related effects on air and water and other natural systems, including ecosystems" (40 CFR § 1508.8(b)).

Cumulative impacts are defined as,
"impacts on the environment which result from the incremental impact of the action when added to other past, present, and reasonably foreseeable future actions regardless of what agency (federal or nonfederal) or person undertakes such other actions" (40 CFR § 1508.7).

ICE Geographic Boundary

In assessing the potential for indirect and cumulative effects associated with the I-95 Access Improvements Project, general development trends were researched, natural and cultural resources were inventoried, and other projects within the general vicinity which may contribute to cumulative effects were evaluated.

The ICE boundary is defined as the 14 census tracts surrounding the project site. This boundary is inclusive of the communities, watersheds, and traffic analysis study areas that would most likely experience the direct, indirect and cumulative effects of this project. The ICE boundary is shown on Figure 3-21 and generally described below:

- West Pratt Street (between South Carey Street and Martin Luther King, Jr. Boulevard), to the north;
- MD 295, southeast of Annapolis Road (MD 648), to the south;
- Fort McHenry on the Locust Point Peninsula, to the east; and
- South Caton Avenue (between the City Line near West Patapsco Avenue and Maiden's Choice Run, approximately 800 feet north of Wilkens Avenue, to the west.

ICE Time Frame

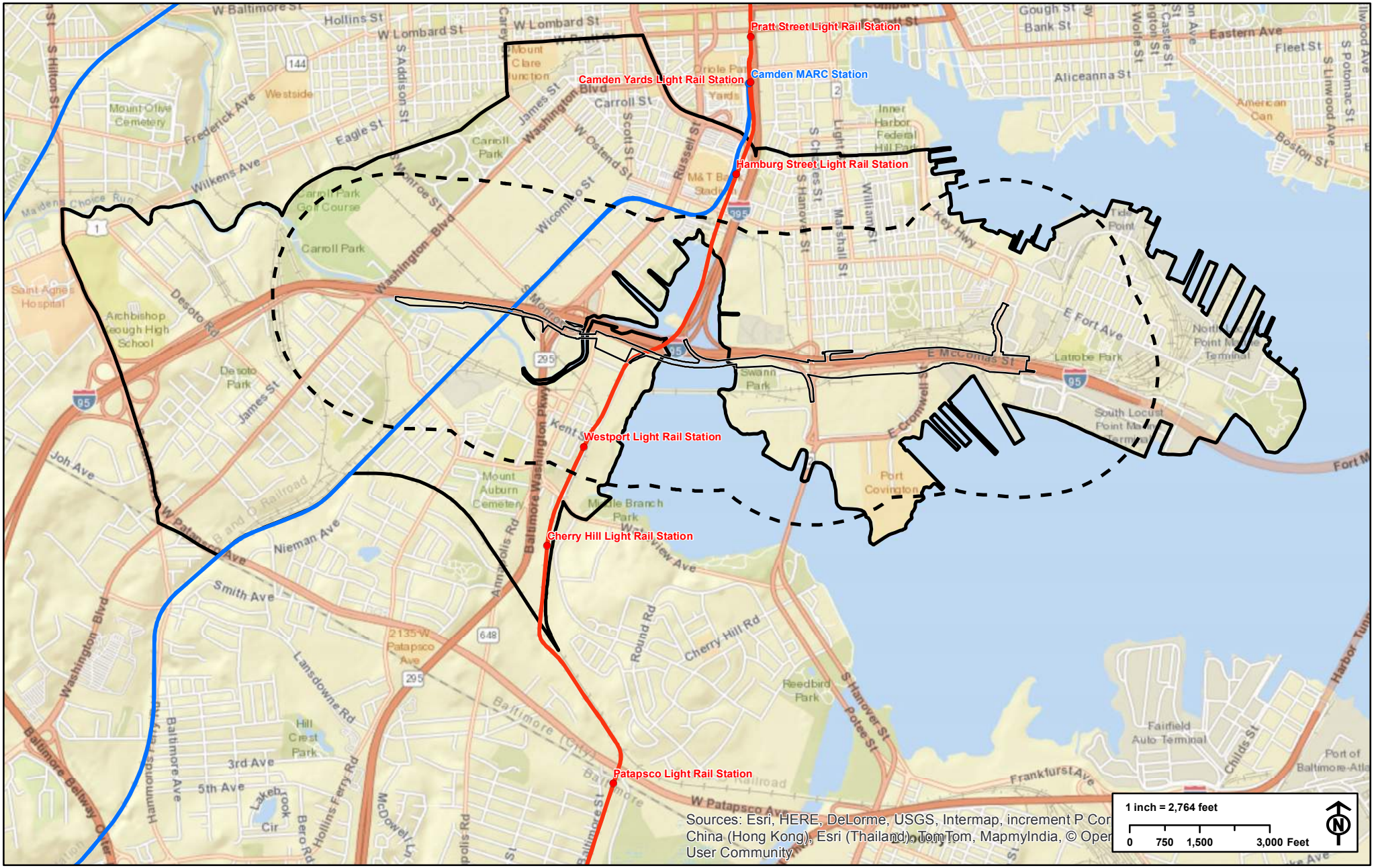
Past and future time frames were established in accordance with CEQ NEPA regulations (40 CFR 1508.25(c)). The time frame for this ICE analysis is 1973 to 2040. This time frame was selected based on the availability of historical land use data, the occurrence of major transportation changes in the city, and the design year for the project. Population trends, as well as significant changes in land use and development within the ICE boundary, were examined. Past, present, and future trends in the ICE boundary and similar areas of Baltimore City are anticipated to continue, resulting in the redevelopment of many former industrialized areas into residential and commercial developments. This trend is expected to continue and result in the full build out of the Port Covington peninsula. It is anticipated that redevelopment of these lands would continue in the future to support the demand for new residential growth and the information and service sector economic growth, and may spur yet additional new developments.

3.11.2 Existing and Future Conditions

This section describes the existing conditions of the socio-economic, cultural, and natural resources, and a summary description of the future conditions within the study area. The Port Covington peninsula is surrounded on three sides by the Middle Branch of the Patapsco River, with I-95 running on structure along the northern boundary. Transportation access to the peninsula is currently provided by north-south connections via Hanover Street and Key Highway; east-west access is provided via I-95 and McComas Street.

Socio-Economic Resources

Socio-Economic resources evaluated within the ICE boundary include land use, neighborhoods and industrial/commercial areas, and park and recreational facilities. Further details on these resources are provided in Appendix C, "Socio-Economic Technical Report."



Maryland Transportation Authority

- Construction LOD
- 1/2-Mile Study Area
- Indirect and Cumulative Effects Boundary
- Light Rail Stops
- MARC Train Stops
- Light Rail Lines
- MARC Train Lines

I-95 ACCESS IMPROVEMENTS
FIGURE 3 - 21

INDIRECT & CUMULATIVE EFFECTS BOUNDARY

MARYLAND TRANSPORTATION AUTHORITY

BALTIMORE CITY DOT

Land Use

The primary land use within the ICE boundary is industrial (36.2 percent). Most industrial uses are immediately adjacent to I-95 and the Middle Branch waterfront. Residential and transportation and parking uses make up 19.7 percent and 14.4 percent, respectively. Together, these three uses account for 70.3 percent of the total study area. The remaining land uses include natural areas/parks/recreation (9.8 percent), institutional (9.7 percent), commercial (5.8 percent), barren land (3.4 percent), and cemetery (1.0 percent).

Neighborhoods and Industrial/Commercial Areas

There are twelve neighborhoods and industrial/commercial areas located within the ICE boundary which include Carroll Park, Carroll-Camden Industrial Area, Locust Point, Locust Point Industrial Area, Morrell Park, Port Covington, Riverside, Saint Paul, South Baltimore, Spring Garden Industrial, Westport/Mount Winans, and Wilhelm Park.

Four of these areas are primarily industrial/commercial areas (Carroll-Camden Industrial Area, Locust Point Industrial Area, Port Covington, and Spring Garden Industrial) that do not contain many (if any) residents. These areas consist mostly of a cruise line terminal, railways, warehouses, and merchandise piers. Neighborhoods within the ICE boundary contain various community facilities (police, fire, and emergency medical services; places of worship, public facilities, and schools). While many of the neighborhoods have residential pockets and community facilities, these are outside of the Recommended Preferred Alternative's LOD and would not be impacted.

Parks and Recreation

Eighteen parks and recreational facilities are located in the neighborhoods within the ICE boundary.

Cultural Resources

The study area has been built-out, with few undeveloped areas remaining. Cultural resources within these areas have a greater potential of previously being disturbed. Cultural resources evaluated within the ICE boundary are archeological resources and historical sites and structures. Further details are provided in Appendix G, "Cultural Resources Evaluation and Assessment of Effects Technical Report."

Archeological Sites and Historic Architectural Sites and Structures

No known archeological sites have been identified in the APE, but Baltimore Center for Urban Archeology's survey demonstrated that the Port Covington Rail Terminal was constructed on fill, with potential for archeological sites at a subsurface depth of 8-10 feet. The Port Covington archeological site (18BC72) is south of the APE, but within the ICE boundary. It contains the remnants of a mid- to late nineteenth-century industrial building that were identified during machine-excavated trenches that were 10-feet wide and up to 12-feet deep. Investigators recommended further survey, finding the Port Covington area in general to have high potential to contain other nineteenth-century industrial sites.

Architectural resources were identified via field survey and GIS parcel research. Within the APE there is one NRHP listed resource (Riverside Historic District) and two NRHP eligible resources (Westport Historic

District and Spring Garden Bridge). Coordination with MHT provided a No Adverse Effect determination for all of these resources.

Natural Resources

The I-95 Access Improvement Project is located within a highly urbanized area where most of the natural resources have been altered due to previous development and industrial use of the area. Despite the many years of disturbance, that has diminished the extent and quality of the natural habitat, the study area contains a number of natural resources that enhance the area.

Natural resources evaluated within the ICE boundary include, surface water and water quality; groundwater; floodplains; and wetlands and other waters of the US. Terrestrial Habitats and rare, threatened, and endangered species (RTE) were not reviewed within the ICE analysis. In a letter dated November 23, 2016, the DNR Wildlife and Heritage Service stated that there are no state or federal records for RTE species within the boundaries of the study area. In a letter dated August 3, 2016, USFWS also confirmed there are no federal endangered or threatened species within the study area. A desktop review for forest interior dwelling species (FIDS) and sensitive species project review areas (SSPRAs) was performed and neither were identified within the ICE boundary. Further details and coordination letters are provided in Appendix F, "Natural Environment Technical Report."

Surface Water and Water Quality

The ICE boundary crosses two surface waters, the Middle Branch of the Patapsco River (between Annapolis Road and South Hanover Street in Baltimore City) and Gwynns Falls Stream (East of Hollins Ferry Road). Both have a Designated Use Class II, supporting estuarine and marine aquatic life and shellfish harvesting. The Patapsco River receives impaired drainage from two distinct Maryland 8-digit watersheds within the ICE boundary: Baltimore Harbor Watershed and Gwynns Falls Watershed. Both contributing watersheds are highly urbanized, with mainly residential and commercial areas, especially within Baltimore City. The northern portions of Gwynns Falls Watershed includes forest land and some crop use, which has led to increased amounts of sediment and nutrients.

Groundwater

The ICE boundary is within the Patuxent aquifer system of the Coastal Plain Physiographic Province. The Patuxent aquifer is 125 to 525 feet and overlain by low permeability clay layers. No drinking water wells are located within the ICE boundary. Drinking water within the ICE boundary is supplied from the Montebello Filtration Plants, using water from the Loch Raven Reservoir or the Susquehanna River. Both watersheds for these water bodies are outside of the ICE boundary.

Floodplains

A large portion of the ICE boundary resides within the 100-year floodplain. The floodplain extends from the main waterbodies within and adjacent to the ICE boundary including the Patapsco River, the Middle Branch of the Patapsco River, and Gwynns Falls.

Wetlands and Waters of the US

Four waterways and one wetland were identified within the ICE boundary. All of the delineated systems, ultimately convey flow to the Gwynns Falls watershed, part of the larger Patapsco River Basin (HUC# 021309). At the time of the site visit, all waterways were flowing. All the delineated systems have a significant nexus to a traditional navigable water and, therefore, likely will be regulated. However, the U.S. Army Corps of Engineers (USACE) and MDE will make the final determination concerning the jurisdictional status of delineated features.

Future Conditions

The Port Covington Master Plan proposes to redevelop approximately 260 acres of under-utilized industrial brownfields. As currently planned, the revitalization of the Port Covington site will increase population density on the peninsula, which will generate an attendant demand for infrastructure improvements. The proposed redevelopment is currently underway and includes the following:

- Relocation of the Under Armour World headquarters (roughly 3 million square feet and 11,000 employees anticipated by 2040);
- Approximately 1.5 million square feet of office space (in addition to the Under Armour World headquarters);
- Approximately 500,000 square feet of industrial/light manufacturing space;
- Approximately 1.5 million square feet of destination, attraction, entertainment and specialty retail establishments;
- Over 7,500 residential units, including rental and for-sale properties;
- 200+ hotel rooms;
- Civic and cultural uses including 40+ acres of public parks and other civic and cultural uses.

Redevelopment trends are anticipated to continue into the future, resulting in the further construction of residential and commercial areas replacing former industrial properties. The redevelopment of the Port Covington peninsula may increase demand and induce future development in the vicinity of the project.

Neighborhood plans that have been prepared by the City's Planning Department within portions of the ICE boundary recommend strategies for economic development and to support revitalization, encourage redevelopment of underutilized industrial properties, increase mobility for residents and visitors, and promote sustainability, environmental protection, and social equity. In addition, areas on the Patapsco River/Middle Branch recommend improving access to Baltimore's waterfront. The Middle Branch Transportation Plan proposes traditional traffic and roadway improvements, as well as solutions that will make the Middle Branch neighborhoods more pedestrian-, bicycle-, and transit-friendly.

3.11.3 Probable Consequences

Indirect and cumulative effects associated with socio-economic, cultural and natural resources have been identified and described for the proposed I-95 Access Improvement Project, as detailed in the subsequent sections.

ICE on Socio-Economic Resources

Indirect effects to socio-economic resources resulting from Recommended Preferred Alternative may be both beneficial and adverse. The indirect effects would be experienced by communities located in close proximity to the I-95 Access Improvement Project. Transportation benefits associated with the Recommended Preferred Alternative include reduced travel time and more efficient mobility within the region. Improved access, mobility, and safety for drivers in the ICE boundary would improve travel to work, shopping, school, and recreational destinations. Businesses would benefit from the improved transportation system's ability to accommodate projected increases in traffic. However, the project may result in an increase in traffic within the neighborhoods requiring additional future improvements to the roadway network.

Due to the existing highly urbanized development within the study area, most development would occur as redevelopment of industrial land. With the existing Smart Growth laws, land use plans and zoning regulations of Baltimore City in place, adverse indirect and cumulative effects are not anticipated from the I-95 Access Improvements Project, itself.

Projected land use changes and planned development are consistent with development trends, population growth, and land conversion patterns in the ICE boundary, and could induce future development/redevelopment. Increased development often coincides with increased population and employment. Population size and density will increase, as will traffic congestion, which may facilitate the need for additional future transportation improvements, commercial development, and community facilities and services (police, fire, and emergency medical services; places of worship, public facilities, and schools).

Population growth in the ICE boundary, resulting from proposed Port Covington redevelopment, is expected to increase demand and capacity pressure on public parks and recreation facilities. The potential cumulative effect to a long-term shortfall in the ratio of parks and recreation areas to population will be coordinated between Baltimore City and private entities consistent with the development approval requirements and Adequate Public Facilities Ordinances.

ICE on Cultural Resources

There are no indirect effects to Archaeological and Historical Sites and Structures associated with the project. The Recommended Preferred Alternative would not require right-of-way from any historically registered sites and is not expected to increase development rates or densities itself within the ICE boundary. The project is not anticipated to introduce visual, atmospheric, or audible elements to the sites, thus would not diminish the integrity of significant historic features of the sites.

ICE on Natural Resources

Minor indirect effects to groundwater, surface water, wetlands may occur as a result roadway runoff, sedimentation, and alterations to hydrology, thereby potentially affecting the extent and quality of available wetland habitat. Construction of the piers and fill for the I-95 Access Improvements Project could potentially increase base flood levels, but to what extent will not be known until a later design pending a detailed hydrologic and hydraulic study.

The study area and the ICE boundary have been built-out, with few undeveloped areas remaining. Future planned residential and commercial development independent of the I-95 Access Improvements Project is likely to have cumulative effects of increasing population and employment within the ICE boundary and the master plan is approved for redevelopment of Port Covington.

Due to the existing urbanized study area it is unlikely that runoff would reach the groundwater table and any runoff would be treated in accordance with MDE regulations for stormwater management and released to surface waters, resulting in minor cumulative effects to these resources, if any. As redevelopment pressure rises, there may be additional cumulative effects to groundwater, surface water, wetlands such as alterations to local hydrology.

Cumulative effects associated with the I-95 Access Improvements Project will be minor because the ICE boundary coincides with Baltimore City's planned redevelopment areas, and the project would support both commercial and residential growth.

3.11.4 Potential Mitigation Measures

Baltimore City is ultimately responsible for monitoring and applying growth management strategies and mechanisms that result in development at a pace that is consistent with roadways and infrastructure. Avoidance and minimization strategies to reduce direct effects to environmental resources will be incorporated into the I-95 Access Improvement Project future design efforts. Mitigation is required for any direct effects that remain following avoidance and minimization efforts. MDTA will develop conceptual mitigation plans for any unavoidable impacts and coordinate efforts with the appropriate regulatory agencies for the Recommended Preferred Alternative.

Regulatory agencies and responsible parties are obligated to evaluate mitigation for cumulative effects associated with environmental effects. Any future development that occurs in the 2040 time frame will be required to comply with the numerous federal, state, and local ordinances in place to protect resources. Strict zoning and state and federal regulations are in place to protect wetlands, waterways, and designated conservation areas from development through the permitting process. Additionally, limiting cumulative effects to natural resources will require protection of critical resource lands, directing new development to existing developed lands, enhancing control of stormwater quantity and quality, and maximizing the use of smart growth and low impact development approaches. The use of Best Management Practices and stormwater management practices by future developers in the ICE boundary will minimize overall impacts.

3.12 CONSTRUCTION EFFECTS

This section describes construction activities for the Recommended Preferred Alternative, potential construction effects, and measures to avoid, minimize, and mitigate the effects of these activities on the socio-economic, natural, and cultural resources in the study area. Actual construction methods may change depending on the final project design. As the project design advances, MDTA and BCDOT will develop a specific construction plan describing construction sequencing, equipment, and methodologies. Both agencies will be responsible for completing commitments made as part of the NEPA process for the facilities which fall under their jurisdiction.

3.12.1 Regulatory Context and Methodology

Construction activities will adhere to all local, state, and federal regulations and guidelines, including but not limited to the most current versions of the: *Maryland Standards and Specifications for Soil Erosion and Sediment Control*, *Maryland Stormwater Design Manual*, and standard and specifications for construction effects related to air quality, noise, and vibration. MDTA and BCDOT will coordinate with the local, state, and federal regulatory agencies, including but not limited to MDE, USFWS, EPA, and FHWA.

Project elements for the Recommended Preferred Alternative were developed based on design criteria published in the American Association of State Highway and Transportation Officials (AASHTO) *A Policy on the Geometric Design of Highways and Streets, 2011* (Green Book) and applicable FHWA, MDTA, and Baltimore City standards. The roadway geometric design guidelines used in the development of the options are presented in the *Alternatives Development Technical Report* for this project.

A Transportation Management Plan (TMP) would be developed and implemented for the entire project in accordance with the Maryland Department of Transportation State Highway Administration's *Transportation Management Plans: Guidelines for Development, Implementation and Evaluation*, and in coordination with the Maryland Department of Transportation State Highway Administration (MDOT SHA), Baltimore City, private entities and emergency services, in order to minimize negative effects on transportation. The TMP would include traffic control plans that illustrate how to maintain vehicular, pedestrian, bicycle, and transit traffic during construction, as well as emergency vehicle and property access.

MDTA and Baltimore City will develop and implement an Environmental Compliance Plan (ECP) prior to the initiation of construction activities. The plan will identify and describe the management of environmental commitments and mitigation measures as the project design advances.

3.12.2 Existing and Future Conditions

The Port Covington peninsula is surrounded on three sides by the Middle Branch of the Patapsco River, with I-95 running on structure along the northern boundary. Transportation access to the peninsula is currently provided by north-south connections via Hanover Street and Key Highway; east-west access is provided via I-95 and McComas Street. The existing road and roadway capacity are not adequate to meet projected traffic demand and there are limited multi-modal connections around and across I-95 in the vicinity of Port Covington.

Currently, the project is funded for project planning and preliminary engineering up to 30 percent design. Final design, right-of-way, and construction are not funded at this time. Final design and right-of-way acquisition must be completed prior to initiating each construction phase. Utility design and relocations are anticipated to be completed prior to or during construction of the individual elements. Construction will result in temporary impacts. Construction will occur within an area identified as the LOD.

Construction Limits of Disturbance

The seven elements and the proposed construction activities for the No Build Alternative and Recommended Preferred Alternative are shown in Table 3-28.

Table 3-28: Construction Elements

Element	Element Name	Locations/Limits	No Build Alternative	Recommended Preferred Alternative
A	I-95 Northbound Off- Ramps	• I-95 NB to Hanover Street SB • I-95 NB to McComas Street	Maintain the Existing Hanover and McComas Street Ramps	Russell Street Ramp Spur to I-95 NB; I-395 SB Spur Ramp to I-95 NB (Removes Hanover Street Ramp); Realign McComas Street Ramp
B	I-95 Northbound On-Ramps	• Key Highway to I-95 NB	Maintain the Existing Key Highway Ramp	Construct an On-Ramp from McComas Street East of Hanover Street
C	I-95 Southbound Off- Ramps	• I-95 SB to Key Highway	Maintain the Existing Key Highway Ramp	Provide an Additional I-95 SB Off-Ramp from a New Location
D	I-95 Southbound On-Ramps	• McComas Street WB to I-95 SB • Hanover Street NB to I-95 SB	Maintain the Existing Hanover and McComas Street Ramps	Realign Existing McComas Street Ramp
E	Hanover Street	• Between Wells and McComas Streets	Minor Modifications to Hanover Street	Maintain Existing Hanover Street
F	McComas Street and Key Highway	• Swann Park to Key Highway • McComas Street to McHenry Row	Maintain One-Way McComas Street	Construct Two-Way McComas Street
G	Pedestrian and Bicycle Connections	• Hanover Street • Key Highway • McComas Street • Shared-Use Path	Maintain Existing Pedestrian Connections	Construct Additional Pedestrian Connection to South Baltimore

The initial assumptions used to establish the LOD are shown in Table 3-29. These are detailed in Appendix A, “Alternatives Development Technical Report.”

Table 3-29: Recommended Preferred Alternative LOD

Component	Descriptions
Cut Sections	• LOD offset of 25'-30' from cut line to account for ditches or lateral Stormwater Management (SWM) features. • LOD would extend around all SWM features, allowing for installation of diversion fence if necessary to divert off-site runoff around the work zone and rounding of cut slope and access, if needed during construction.
Fill Sections	• LOD offset of 25'-30' from the fill line to account for ditches or lateral SWM features. • LOD would extend around all SWM features, allowing for the installation of perimeter controls such as silt fence, super silt fence, filter logs, temporary swales, TSOs/TGOs, stabilized construction entrances and small sediment traps, as well as providing room to stage, stockpile, and install perimeter controls around these areas.
Pavement Removal	• LOD offset of 10' from the edge of removal, to provide room adjacent to the work area.
Parcel Acquisitions	• LOD follows the parcel boundary allowing for demolition of existing structures and necessary sediment controls to treat sediment-laden water and egress/ingress from adjacent roadways.
Bridge/ Retaining Walls	• LOD offset of 20'-30' from the edge of structure, dependent on structure height and adjacent existing structures.
Temporary Access Roads	• LOD width of 30'.

Potential Construction Phasing

Potential construction sequencing has been developed considered how the proposed Alternative 5 improvements could be divided into discrete projects, a logical implementation order, and reasonable timeframes for the work to be completed. The project sequencing was based on type of work, location, maintenance of traffic, and other key implementation needs. The timeframe for when the projects would be constructed was based on the Port Covington development schedule and the preparatory work that is needed before construction on any of the projects could begin. The overall duration for each project was estimated based upon the type and complexity of work required.

The potential contracts, construction sequence, and construction timeframes are presented in Table 3-30.

Table 3-30: Potential Construction Phasing

Project/ Contract	Description/ Elements	Duration	Start	End
1	• SB exit ramp to McComas St. (Element C) • SB entrance ramp from McComas St. (Element D) • CSX ROW acquisition/track relocation Notes: Construction cannot start until CSX ROW acquired and tracks are relocated	36 months	Early 2020	End 2022
10	CSX bridge over Key Highway (Element C) Notes: Must be completed before Key Hwy. widening (Contract 4)	30 months	Mid 2020	End 2022
2	McComas St. from Hanover St. to Key Highway (Element F) Notes: Construction cannot start until preliminary work is complete	30 months	Early 2021	Mid/ Late 2023
3	NB exit ramp to McComas St. (Element A) Notes: • Must be completed concurrent with McComas Street (Contract 2) • Exit must remain open at all times	36 months	Mid/ Late 2020	Mid/ Late 2023
4	• Key Highway SB exit ramp intersection improvements (Element C) • Key Highway widening (Element C) Notes: • Preferable for ramp construction to begin after new SB exit ramp is constructed (Contract 1) • Cannot widen Key Hwy. until CSX bridge replaced	18 months	Mid 2023	End 2024
5	McComas St. west of Hanover St. (Element F) Notes: Must be completed, at least sufficiently to provide eastbound access to Hanover Street, prior to new NB exit ramps (Russell St. and I-395) (Contract 6)	18 months	Mid 2025	End 2026
6	• NB Russell St. ramp/spur/bridge (Element A) • I-395 SB ramp spur (Element A) Notes: Constructed prior to beginning of development and infrastructure improvements on the west side of the PC site	48 months	Early/ Mid 2022	Early/ Mid 2026
7	Removal of NB ramp to Hanover St. (Element A) Notes: Cannot remove ramp until new NB exit ramps have been constructed (Contracts 3 and 5)	12 months	Late 2025	Mid/ Late 2026
8	NB entrance ramp from McComas St. (Element B) Notes: Can be constructed any time after McComas St., but likely not needed until after other ramps	30 months	Early 2026	Mid 2028
9	New pedestrian bridge over CSX/under I-95 (Element G) Notes: Can be constructed any time after McComas St.	30 months	Early 2029	Late 2029

3.12.3 Probable Consequences

Effects on traffic, neighborhoods, and public safety will be avoided, minimized, and mitigated to the maximum extent practical. The potential effects associated with the construction of the Recommended Preferred Alternative could include:

- Temporary interruptions to traffic;
- Temporary loss of on-street parking;
- Emissions and dust from construction vehicles;
- Noise from construction equipment and activities;
- Erosion and sedimentation; and
- Exposure to contaminated soils.

Contaminated soils are known to exist at several locations, including the property located at on the northwest side of the peninsula. As such, the alignment of the merged ramps for Element A will pass through the north side of existing Swann Park to avoid soil disturbance on the property. While the LOD shows potential disturbance to the property, it will only be utilized for construction access to the elevated section of I-95. No ground disturbance would occur at the referenced property.

3.12.4 Potential Mitigation Measures

Temporary changes to traffic patterns are anticipated during construction. Maintenance of Traffic (MOT) and construction staging will be planned and scheduled to minimize traffic delays and interruptions to the maximum extent practical. Access and parking to residences and businesses will be maintained to the maximum extent practical, and access for fire and emergency vehicles will be maintained at all times. Appropriate signage, the project website, and other notices will be used to notify the public of roadway and sidewalk closures and detours. Particular attention will be given to maintaining public safety during the construction period. Public access to construction areas will be limited to the greatest extent practical, through the use of temporary fencing, warning signs and other safety precautions.

A TMP will be developed detailing mitigation for these temporary construction effects on traffic. The Plan will be coordinated with the public, transit providers, and emergency services. The TMP will address detours and temporary connections to maintain continuity of bicycle and pedestrian facilities during the construction. Pedestrian movements would be maintained to the extent reasonably feasible and pedestrian access to adjacent properties would be maintained during construction. Where it is not possible to maintain existing movements, alternate routing with appropriate signing would be designated.

Air quality and noise effects will be avoided, minimized, and mitigated to the maximum extent practical. Air polluting emissions from construction equipment can be minimized by proper engine maintenance and code enforcement. Dust control measures will be applied to haul roads, wheel and vehicle washing, street cleaning, covered trucks, erosion control, stabilization of exposed earth, and covering stockpiles. Noise related construction activities should be planned to avoid prolonged noise generating activities and to minimize construction activities during the most sensitive time of day or night. Construction staging considerations could include limiting hours of loading and hauling operations, stockpiling excavated materials in the station excavation equipment instead of tracked equipment, and disabling backup alarms on trucks operating in sensitive areas.

In selecting mitigation sites, MDTA will consider potential environmental effects on natural resources (e.g., surface water, groundwater, floodplains, and wetlands and waters of the U.S.). Additionally, consideration will be given for effects related to construction staging areas, earthwork stockpile areas, construction materials, rubble and rubble transport, riprap, bulkheads, temporary haul roads, utility relocations, erosion and sediment controls, stormwater management controls, and other permanent or temporary measures.

MDTA and Baltimore City will submit erosion and sediment control plans and stormwater management plans to MDE for approval, pursuant to obtaining National Pollutant Discharge Elimination System (NPDES) permits. Construction may be subject to time-of-year restrictions. Coordination will be undertaken with the appropriate regulatory agencies, and the necessary permits obtained. Commitments made during the project development will be included in the final design plans, specifications and advertisement package. At a minimum, appropriate BMPs will be implemented, including development of a comprehensive monitoring program.

Any contaminated materials generated during construction will be properly handled and disposed in accordance with applicable solid waste regulatory requirements. In addition, a Health and Safety Plan prepared for the construction phases will describe worker safety procedures. The health of area residents and employees, including construction workers, will be safeguarded to ensure that there is no impact to public health or safety. Safe handling and disposal of contaminated materials will adhere to an approved work plan to protect the people residing and working in the vicinity of the site. These measures will be sufficient to ensure that significant impacts do not occur.

If changes occur during the project's final design phase that result in additional and/or unforeseen environmental effects, an environmental reevaluation will be prepared. MDTA and BCDOT will ensure coordination of a reevaluation with FHWA and the regulatory agencies as needed.