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1. Introduction

This Natural Resources Technical Report (NRTR) presents the detailed analysis of the natural environment for the Red Line Preferred Alternative. This technical report includes a discussion on ecological resources, forests, street trees/individual trees, Chesapeake Bay Critical Area (CBCA), wetlands and waters of the US, surface waters, and groundwater. For each of these subject areas, an in-depth methodology, existing conditions, effects, as well as any avoidance/minimization and mitigation requirements are presented. This NRTR and technical appendices support the findings contained throughout the Natural Environment sections of the Final Environmental Impact Statement (FEIS).

The Red Line Preferred Alternative is a proposed 14.1-mile light rail transit line that would operate from the Centers for Medicare & Medicaid Services (CMS) in Baltimore County to the Johns Hopkins Bayview Medical Center campus in Baltimore City (**Figure 1**). The transitway includes a combination of surface, tunnel, and aerial segments. The alignment, stations, park-and-ride facilities, system elements, tunnel ventilation, light rail vehicles, operations and maintenance facility, and rail and bus operations plans are described in Chapter 2 of the FEIS.

For data collection and analysis purposes, the project study corridor has been divided into five segments consisting of three at-grade/aerial segments and two tunnel segments totaling approximately 14.1 miles (**Figure 1**). From west to east, these segments are: (1) West, (2) Cooks Lane Tunnel, (3) US 40, (4) Downtown Tunnel, and (5) East.

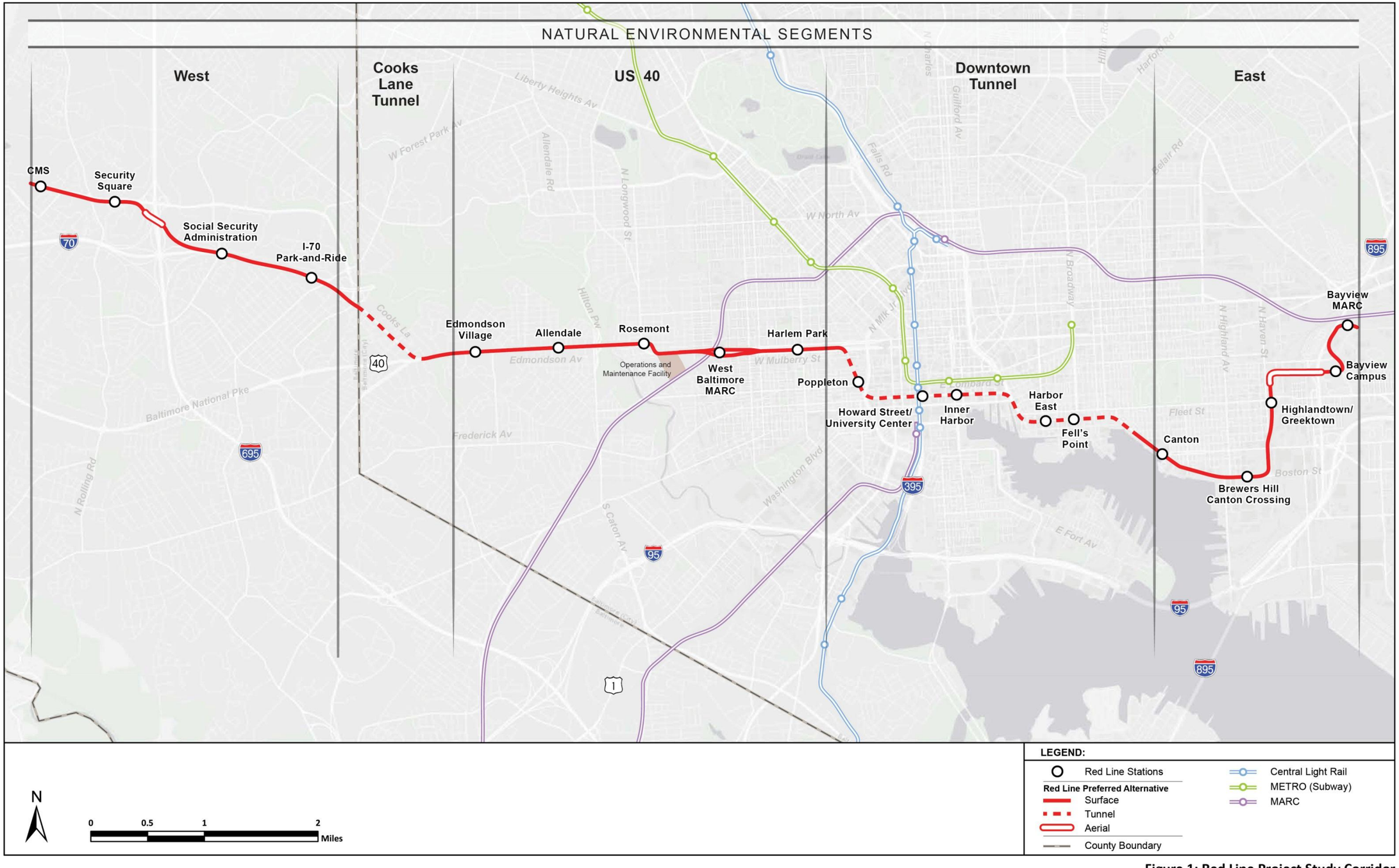

Figure 1: Red Line Project Study Corridor

2. Ecological Resources

2.1 Background and Methodology

The Red Line project study corridor is located primarily within urban and suburban areas of Baltimore City and adjacent Baltimore County. This corridor was developed to accommodate the immediate work areas (i.e., tracks, access roads, stations, etc.) and includes a 50-foot buffer to capture contiguous wetlands and waters features and critical root zones of adjacent trees, in accordance with Maryland Department of Natural Resources (DNR) requirements. According to the *State Forest Conservation Technical Manual*, a critical root zone is a circular region measured outward from a tree trunk that represents the area of roots that must be maintained or protected for the tree's survival. The critical root zone equals 1 foot of radial distance for every inch of tree diameter measured at 4.5 feet above the ground (diameter at breast height) – see **Section 3, Forests**. For specimen trees, the critical root zone is 1.5 feet for every inch of tree diameter. For aquatic resources, public agency data were gathered for stream monitoring stations in watersheds directly crossed by the corridor that fell generally within a 5 mile radius of the corridor described above.

Very few areas within the project study corridor support natural habitats. The portions of the Red Line project study corridor supporting larger tracts of natural habitat occur primarily within the I-70 corridor and the Gwynns Falls stream valley. The remainder of the project study corridor contains smaller patches of mostly disturbed vegetation that occur in small community parks, along small tributary streams, or in the cloverleaves of major interchanges.

2.1.1 Terrestrial Habitat

Terrestrial habitats are defined as areas of land that provide food and shelter required for the survival of various terrestrial plants and animals. Terrestrial habitats within the project study corridor include forests, individual trees, and non-forested, but vegetated areas (e.g., lawns, parkland). Terrestrial habitats are not broadly protected by federal or state law; however, certain classes of terrestrial habitat, such as forested areas, are regulated by the State of Maryland through the Forest Conservation Act or Reforestation Law.

Terrestrial habitat within the project study corridor was assessed through aerial mapping and a field reconnaissance conducted in Spring 2012. The field reconnaissance was conducted throughout the project study corridor over several weeks in April and May 2012, and included an inventory of existing forest and individual street trees, and other environmental site features that comprise wildlife habitat, such as mowed lawns or maintained park areas. The Anderson et al. (1976) land use and land cover classification was used to classify the corridor into broad habitat categories that are referenced in the **Environmental Effects section**.

Effects to terrestrial habitats presented in the **Environmental Effects section** below were primarily assessed qualitatively based on the availability and quality of habitats within the Red Line limits-of-disturbance (limits of disturbance), and the type and extent of changes likely to occur within these habitats during construction and operation of the project. Effects to forested terrestrial habitats, the most high-value habitats present within the corridor, were assessed

quantitatively and were calculated using a Geographic Information System (GIS) overlay of the limits of disturbance on the mapped forests within the corridor. Specific acreage of forests affected is presented in **Section 3, Forests.**

2.1.2 Terrestrial Wildlife

The presence and diversity of terrestrial wildlife, including birds, mammals, reptiles and amphibians, in the project study corridor is largely dependent on the quality and availability of terrestrial habitats. Because of the urban nature of the study area, terrestrial habitats are limited, thereby reducing the diversity of wildlife. Most wildlife resources expected to occur within the project study corridor would likely be found within the larger, less developed riparian corridors of Dead Run and Gwynns Falls. Terrestrial wildlife are not broadly regulated by state and federal laws; however, certain sensitive species, or categories of wildlife are protected by either law or management policies.

The US Fish and Wildlife Service (USFWS) and National Oceanic and Atmospheric Administration (NOAA) provide for the protection of threatened and endangered wildlife and their habitat through the 1973 Endangered Species Act (ESA). In addition, the Migratory Bird Treaty Act (1918) and the Bald and Golden Eagle Protection Act (1940) protect species that are not otherwise covered by the ESA. USFWS also has protection and management plans in place for conserving colonial nesting water birds, including wading birds and seabirds. The protection of mammals and other terrestrial wildlife is regulated by the Nongame and Endangered Species Conservation Act (COMAR 10-2A-01) and coordinated through DNR.

Forest Interior Dwelling Bird Species (FIDS) depend on large, contiguous forest stands to successfully breed and produce sustainable populations, and optimally require forests of at least 100 acres or riparian forest at least 300 feet wide to maintain viable breeding populations. However, forests as small as 50 acres in size can also provide important FIDS habitat if interior habitat (defined as at least 300 feet from any edge) within the overall acreage is 10 acres or greater, and trees are generally at least 5 inches in diameter or greater, or provide a closed canopy. FIDS are regulated at the state level through the protection of forest interior habitat (COMAR, 1992). FIDS species recorded within the project study corridor have been identified through the use of the on-line Breeding Bird Atlas Explorer (*USGS Patuxent Wildlife Research Center & National Biological Information Infrastructure*) with data from the Maryland and District of Columbia Breeding Bird Atlas Project for the Baltimore West and Baltimore East United States Geological Survey (USGS) Quadrangle Maps.

Information on wildlife within the project study corridor was obtained from observations noted during fieldwork for other natural resources, as well as from published or unpublished data collected from outside sources. Specific data on breeding birds was used with permission from the second Maryland and District of Columbia Breeding Bird Atlas Project (*Breeding Bird Atlas Explorer online resource 2006; accessed September 8, 2006; interim results used with permission from the Maryland Ornithological Society, Maryland Department of Natural Resources, and US Geological Survey Patuxent Wildlife Research Center).* Bird sightings were

obtained from Audubon Maryland-DC *(Dave Curson, Director of Bird Conservation, personal communication, 2006).*

Effects to terrestrial wildlife presented in the **Environmental Effects section** were assessed qualitatively based on the species likely to occur within habitats affected by the Preferred Alternative limits of disturbance, and the type and extent of changes likely to occur within these habitats during construction and operation of the project.

2.1.3 Aquatic Habitat and Species

Aquatic habitat within the project study corridor is primarily comprised of nontidal streams associated with the Patapsco River watershed. Major tributary streams and their subwatersheds that cross or receive drainage from the corridor include the Gwynns Falls and its tributary, Dead Run, the Jones Falls, and Back River (see **Figure 2**). The mainstems of these streams that fall within the project study corridor have retained some of their natural characteristics and forested floodplains; however, past and present disturbances from adjacent developments and infrastructure have greatly affected the aquatic habitat and species of these waterways. In particular, the smaller, first and second order tributaries are typically piped for much of their length or confined in concrete channels. The Baltimore Harbor subwatershed is also crossed by the project though no surface tributaries of the Baltimore Harbor subwatershed are affected. Tidal waters of the Patapsco River and Baltimore Harbor are located adjacent to the downtown portion of the project study corridor, however, the Preferred Alternative would be located in a tunnel in the majority of this portion of the corridor, and would not include any surface crossings of tidal aquatic habitats.

The Maryland Department of the Environment (MDE) regulates aquatic habitat and fisheries resources in the State of Maryland, and the National Marine Fisheries Service (NMFS) regulates marine habitat and fisheries resources throughout the United States. The *Code of Maryland Regulations* (COMAR) 26.08.02.08 – Stream Segment Designations (MDE 2007) provides in-stream construction restrictions for the protection of aquatic habitat and fisheries resources during certain periods of the year depending upon the designated Stream Use Classification of a particular stream segment. The DNR Environmental Review Unit (ERU) is the lead agency for fisheries resources data and technical support, and ERU supports MDE in the administration of state fisheries regulations. NMFS was contacted in January 2006 as part of the preparation of the Draft Environmental Impact Statement (DEIS) to determine the potential presence of marine fisheries resources within the project study corridor. Follow-up letters were submitted to the NMFS and DNR ERU in 2009 and again in December 2011 to obtain current fisheries information as part of the preparation of the FEIS (See **Appendix A**). Response letters were received from the Northeast Regional Office and the Habitat Conservation Division, Chesapeake Bay Program Office of the NMFS on December 16, 2011 and December 30, 2011, respectively. DNR ERU responded on January 9, 2011. All agency response letters can be found in **Appendix A**.

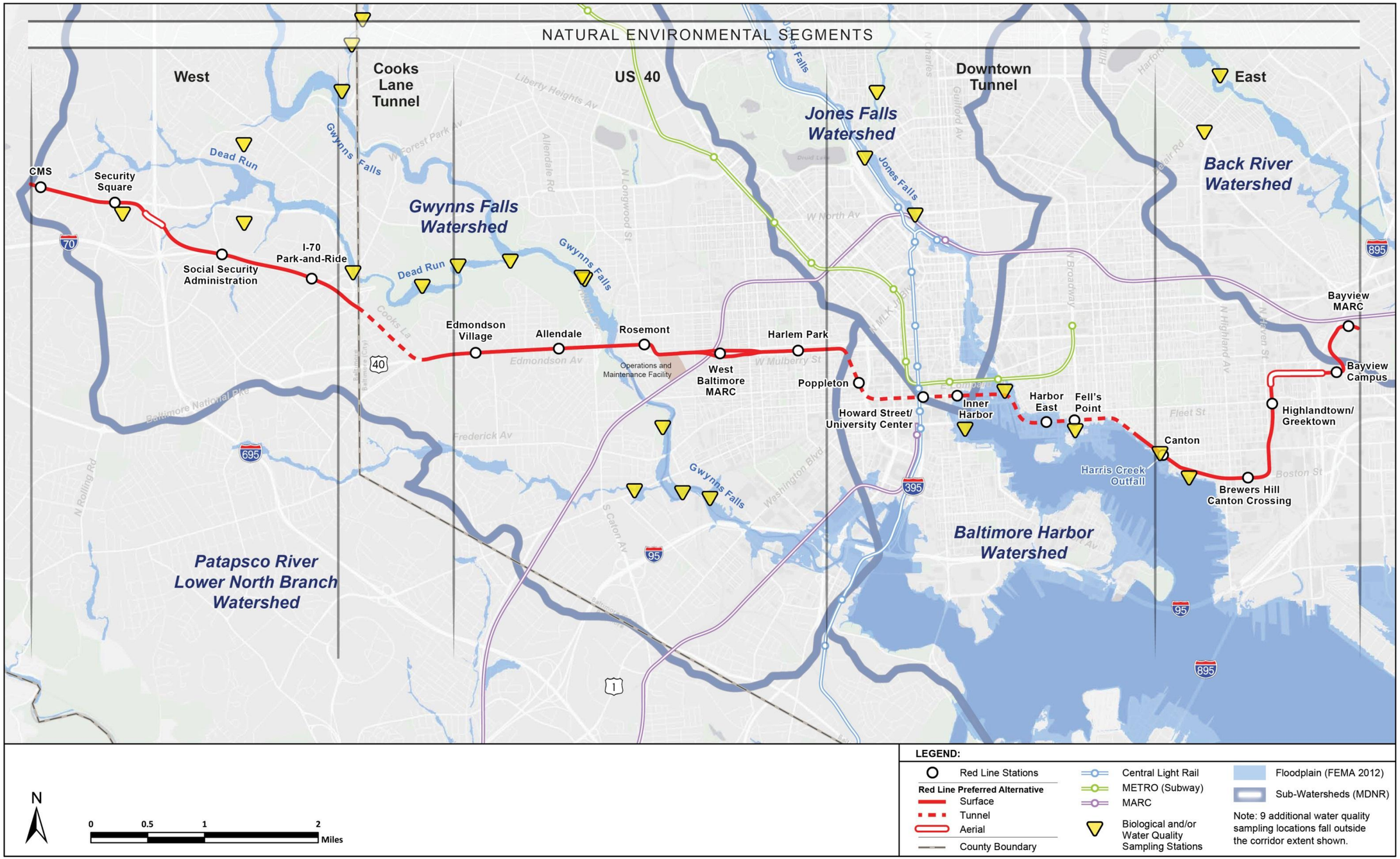

Figure 2: Watersheds, Biological/Water Quality Monitoring Stations, and Floodplains

The overall biological condition of the streams within the project study corridor can be determined by analyzing the fish and benthic macroinvertebrate communities within those streams, as well as the physical habitat quality of the stream. Existing data from the DNR Maryland Biological Stream Survey (MBSS), Baltimore County Department of Environmental Protection (BCDEP), and Baltimore City Department of Public Works (BCDPW) were reviewed and compiled to determine the biological conditions within the Red Line project study corridor. These agencies conduct monitoring of fish, benthic macroinvertebrates, and aquatic habitat, which is evaluated using a physical habitat index as well as Indices of Biotic Integrity (IBI) for both fish and macroinvertebrates. The biotic indices, developed by MBSS and used by all three agencies, compile data on the biotic community structure in monitored streams and compare them to the conditions in minimally impacted reference streams in Maryland. **Table 1** summarizes how the fish and benthic macroinvertebrate IBI scores are translated into narrative rankings and how the rankings relate to State reference stream conditions. More specific information on how these data are gathered and biotic indices are calculated is available from MBSS (Roth et al., 1997).

Table 1: MBSS Fish and Macroinvertebrate IBI Scores and Rankings

IBI Score	Narrative Ranking	Characteristics
4.0 – 5.0	Good	Comparable to reference streams considered to be minimally impacted, biological metrics fall within the upper 50 percent of reference site conditions.
3.0 – 3.9	Fair	Comparable to reference conditions, but some aspects of biological integrity may not resemble the qualities of minimally impacted streams.
2.0 – 2.9	Poor	Significant deviation from reference conditions, indicating some degradation. On average, biological metrics fall below the 10th percentile of reference site values.
1.0 - 1.9	Very Poor	Strong deviation from reference conditions, with most aspects of biological integrity not resembling the qualities of minimally impacted streams, indicating severe degradation. On average, most or all metrics fall below the 10th percentile of reference site values.

Source: Roth et al., 1997

The aquatic habitat methods are based on the Environmental Protection Agency's (EPA) Rapid Bioassessment Protocol (RBP) and have been modified for use in Maryland streams. This protocol assigns a value and weighting to each of the eight parameters including instream habitat, epifaunal substrate, number of rootwads and woody debris, remoteness, shading, bank erosion, riffle-run quality, and embeddedness. These parameters are combined into a Physical Habitat Index (PHI) that takes into account watershed size. The PHI is set on a zero to 100 scale and has a narrative ranking assigned to it as shown in **Table 2**. More specific information on how these data are gathered and aquatic habitat scores are calculated is available from MBSS (Paul et al., 2003).

As these state and local agencies were able to provide a considerable amount of aquatic habitat and species data documenting existing conditions in project area streams, no new sampling of physical, biological, or chemical parameters was conducted by the Maryland Transit Administration (MTA) for the Red Line project.

Table 2: MBSS Habitat Ranking Criteria

Score	Narrative Ranking	Characteristics
81-100	Minimally Degraded	Comparable to reference streams considered minimally impacted.
66-80	Partially Degraded	Comparable to reference conditions, but some aspects of physical habitat may not resemble the qualities of minimally impacted streams.
51-65	Degraded	Significant deviation from reference conditions, indicating some degradation
0-50	Severely Degraded	Strong deviation from reference conditions, with most aspects of habitat not resembling the qualities of minimally impacted streams, indicating severe degradation.

Source: Paul et al. 2003

Effects to aquatic habitats and species were assessed qualitatively based on the availability and quality of aquatic habitats within the Red Line limits of disturbance, and the type and extent of changes likely to occur within these habitats during construction and operation of the project. Direct effects to non-tidal habitat in streams, the primary aquatic habitat within the project study corridor, were also assessed quantitatively and were calculated using a GIS overlay of the limits of disturbance on the delineated streams within the corridor.

2.1.4 Endangered and Threatened Species

Regulatory agencies that protect special status species include USFWS, NMFS, and DNR Wildlife and Heritage Service.

USFWS and NMFS regulate and protect federally-listed endangered and threatened species under the Endangered Species Act of 1973, and federally managed fish species under the Magnuson-Stevens Fishery Conservation & Management Act. State and federally-listed rare, threatened and endangered species are regulated in Maryland through DNR Wildlife and Heritage Service.

Effects to endangered and threatened species, as described in the **Environmental Effects section**, were assessed qualitatively based on queries to regulatory agencies. NMFS, USFWS and DNR were contacted in January 2006 as part of the preparation of the DEIS to determine the potential presence of endangered or threatened species within the project study corridor.

Follow-up letters were submitted to these same agencies in December 2009 and December 2011, and the USFWS on-line certification database was queried in November 2011 to obtain

current species information, as part of the preparation of the FEIS. See **Appendix A** for agency responses.

2.2 Existing Conditions

2.2.1 Terrestrial Habitat

The entire project study corridor is broadly classified as Urban or Built-up Land (Anderson et al. 1976) that includes sub-classes of residential, commercial, industrial, and other urban or built land. The Anderson classification system is a macro-scale assessment and assigns classifications related to the most common, or majority, land use in an area. Consequently, this land use also includes areas of non-developed lands such as the forested stream valley of Gwynns Falls that bisects the US 40 segment of the project study corridor.

Primary terrestrial habitat types in the project study corridor include woodlands (**Section 3, Forests**) and other areas that are vegetated, but non-forested, such as narrow hedgerows or mowed lawns and landscaping. These forested and non-forested habitat types include both upland and wetland vegetative communities. Of these types, the forested upland and wetland areas provide the highest value terrestrial habitat. Non-forested habitat is associated primarily with the I-70/I-695, I-695/Security Boulevard, and I-70/Security Boulevard interchanges, parkland in Canton, and portions of the inactive Norfolk-Southern-Canton rail line. The interchanges and inactive rail line are comprised of disturbance-tolerant tree, sapling, shrub, vine, and herbaceous species including numerous non-native varieties. The remainder of the terrestrial habitat present occurs throughout the corridor in small patches of maintained lawn grasses with scattered larger trees within residential communities and landscaped commercial properties.

2.2.2 Terrestrial Wildlife

The presence of terrestrial wildlife within the project study corridor is a function of available habitats. Because of the urban nature of the project study corridor, terrestrial habitats are limited, thereby reducing the diversity of wildlife, Most wildlife resources expected to occur within the project study corridor would likely be found within the larger, less developed riparian corridors of Dead Run and Gwynns Falls.

More open, early successional habitats, such as those found within the interchanges at the western end of the project study corridor and the inactive rail line at the eastern end of the project study corridor, provide habitat for disturbance-tolerant species and species adapted to woodland/field edges. Wildlife use of these areas would be expected to be limited because of their relatively small size, limited cover, and isolation from larger vegetated corridors. Common species found in these types of habitats as transients or residents include raccoon (*Procyon lotor)*, gray squirrel (*Sciurus carolinensis)*, Virginia opossum (*Didelphis virginiana)*, Eastern cottontail (*Sylvilagus floridanus)*, groundhog *(Marmota monax)*, meadow vole (*Microtus pennsylvanicus)*, mourning dove (*Zenaida macroura)*, Carolina wren (*Thryothorus ludovicianus)*, American robin (*Turdus migratorius)*, gray catbird (*Dumetella carolinensis)*, Northern mockingbird (*Mimus polyglottos)*, European starling (*Sturnus vulgaris)*, song sparrow (*Melospiza*

melodia), white-throated sparrow (*Zonotrichia albicollis)*, Northern cardinal (*Cardinalis cardinalis)*, common grackle (*Quiscalus quiscula)*, house finch (*Carpodacus mexicanus)*, American goldfinch (*Carduelis tristis)*, and house sparrow (*Passer domesticus)*.

The forest habitat within the Dead Run and Gwynns Falls watershed portions of the project study corridor provide habitat to many forest and forest edge species of wildlife. Wildlife in these areas may include white-tailed deer (*Odocoileus virginianus)*, red fox (*Vulpes vulpes)*, gray squirrel, Southern flying squirrel (*Glaucomys volans)*, Eastern chipmunk (*Tamias striatus)*, raccoon, Virginia opossum, striped skunk (*Mephitis mephitis)*, white-footed mouse (*Peromyscus leucopus)*, Eastern box turtle (*Terrapene Carolina)*, black rat snake (*Elaphe obsoleta obsoleta)*, and American toad (*Anaxyrus americanus)*. According to the *2002-2006 Maryland-DC Breeding Bird Atlas Project*, 78 species of birds were reported as at least possibly breeding within these riparian and adjacent developed areas, including such notable species as yellow-crowned night-heron (*Nyctanassa violacea)* and Eastern screech-owl (*Megascops asio)* (*Breeding Bird Atlas Explorer online resource 2006)*.

These larger forest patches also serve as habitat for FIDS. FIDS depend upon large, contiguous forest stands in order to successfully breed and produce sustainable populations. Within Maryland's CBCA, FIDS are regulated through the protection of forest interior habitat (COMAR, 1992). While the Critical Area law does not extend outside this zone and the suitable FIDS habitat within the project study corridor occurs outside of the Critical Area, the decline of FIDS and FIDS habitat has created awareness of the conservation needs for this group of birds throughout the state, region, and hemisphere. FIDS typically require forests of at least 100 acres or riparian forest at least 300 feet wide to maintain viable breeding populations (Robbins et al. 1989). The Critical Area Program recognizes 25 species of FIDS that potentially breed within forest interior habitats of Maryland's coastal plain (Jones et al. 2001). **Table 3** lists the species of FIDS recorded during the 2002-2006 Maryland-DC Breeding Bird Atlas Project as at least possibly breeding within the larger forest tracts of the project study corridor.

Table 3: Forest Interior Dwelling Bird Species (FIDS) Recorded within Project Study Corridor

Common Name	Scientific Name
Red-shouldered Hawk[1]	*Buteo lineatus*
Barred Owl[1]	*Strix varia*
Hairy Woodpecker	*Picoides villosus*
Pileated Woodpecker	*Dryocopus pileatus*
Acadian Flycatcher	*Empidonax virescens*
Wood Thrush	*Hylocichla mustelina*
Yellow-throated Vireo	*Vireo flavifrons*
Red-eyed Vireo	*Vireo olivaceus*
Northern Parula	*Setophaga Americana*
Cerulean Warbler[1]	*Setophaga cerulean*
Black-and-white Warbler[1]	*Mniotilta varia*
American Redstart[1]	*Setophaga ruticilla*

Table 3: Forest Interior Dwelling Bird Species (FIDS) Recorded within Project Study Corridor

Common Name	Scientific Name
Ovenbird	*Seiurus aurocapilla*
Louisiana Waterthrush[1]	*Parkesia motacilla*
Scarlet Tanager	*Piranga olivacea*

Note: [1] Highly area-sensitive species most vulnerable to forest loss, fragmentation, and overall habitat degradation.
Source: Breeding Bird Atlas Explorer (online resource). 2006. US Geological Survey Patuxent Wildlife Research Center & National Biological Information Infrastructure. Accessed September 8, 2006. http://www.pwrc.usgs.gov/bba. Data compiled from: Maryland and the District of Columbia Breeding Bird Atlas 2002-2006. Maryland Ornithological Society. Interim results used with permission.

2.2.3 Aquatic Habitat and Species

The *Code of Maryland Regulations* (COMAR) 26.08.02.01-.02 provides designated use classes for all Maryland waterways. With the exception of Dead Run, all stream segments located within the project study corridor are classified as Use I, which are protected for water contact recreation and aquatic life. Dead Run is classified as a Use IV waterbody which is protected for water contact recreation, aquatic life, and recreation trout waters (Maryland Department of the Environment, 2012).

Numerous MBSS, BCDEP, and BCDPW biological/water quality monitoring stations within close proximity to the project study corridor are located along the Gwynns Falls, Jones Falls, and Back River subwatersheds and their tributaries. Because the streams of the Baltimore Harbor subwatershed are piped in closed sections beneath the urban street grid, no biological data were available in the Baltimore Harbor subwatershed. Although a small portion of the Lower North Branch of the Patapsco River subwatershed is located near the far southwestern corner of the project study corridor, no portion of the project limits of disturbance drains to this subwatershed. Consequently, the Lower North Branch subwatershed is not expected to be affected by the Preferred Alternative and is therefore not included in the detailed existing conditions or effects discussions that follow.

In general, the biological communities in project study corridor streams reflect the high degree of urbanization in their associated watersheds. During its extensive surveys of Maryland's streams, the MBSS found that in Maryland watersheds with greater than 15 percent impervious ground cover, stream health is never rated as "Good" based on combined data from the fish and benthic macroinvertebrate communities and physical habitat (DNR 1999). When impervious percentages reach 20 percent and above, pollution-tolerant species dominate and stream health is rarely rated above "Poor" (CWP 2003). All three of the project study corridor subwatersheds have impervious percentages greater than 34 percent (ACOE 2006 and DNR 1998). While three sites within the vicinity of the project study corridor on the mainstem of the Gwynns Falls and Jones Falls scored as Fair for fish, most IBI scores were in the Poor and Very Poor range. These generally low scores reflect the high level of imperviousness in the project study corridor.

a. Fish

Overall, 24 species of fish were identified within the project study corridor (**Table 4**). Of these 24 species, only two, American eel (*Anguilla rostrata*) and striped bass (*Morone saxatilis*) are considered migratory fish. With its proximity to tidal waters, the project study corridor would be expected to support more migratory species; however, with the high level of stream piping and overall urbanization, it is likely that downstream blockages and impaired water quality limit the use of many project study corridor streams by migratory species. However, the NMFS Chesapeake Bay Program Office reports that "the Gwynns Falls is probable spawning and nursery ground for migratory white perch (*Morone americana*) and yellow perch (*Perca flavescens*), both species being important prey for mobile federally-managed predators in the Chesapeake Bay such as striped bass and bluefish. The Gwynns Falls mainstem is passable for both migratory perch species to its confluence with Dead Run, upstream of the [Preferred Alternative] crossing" (NMFS letter December 30, 2011).

Four species of gamefish, rainbow trout (*Oncorhynchus mykiss*), largemouth bass (*Micropterus salmoides*), smallmouth bass (*Micropterus dolomieu*), and striped bass, were identified within the project study corridor. Dead Run is classified as Use IV, Recreation Trout Waters, and has been occasionally stocked with trout for recreational fishing in the spring, though stocking of Dead Run by DNR Fisheries Service was not planned in 2012.

Table 4: Fish Species Identified within Red Line Project Study Corridor

Common Name	Scientific Name
American eel	*Anguilla rostrata*
Blacknose dace	*Rhinichthys atratulus*
Bluegill	*Lepomis macrochirus*
Bluntnose minnow	*Pimephales notatus*
Central stoneroller	*Campostoma anomalum*
Common shiner	*Luxilus cornutus*
Cutlips minnow	*Exoglossum maxillingua*
Fathead minnow	*Pimephales promelas*
Largemouth bass	*Micropterus salmoides*
Longnose dace	*Rhinichthys cataractae*
Margined madtom	*Noturus insignis*
Mummichog	*Fundulus heteroclitus*
Northern hogsucker	*Hypentelium nigricans*
Pumpkinseed	*Lepomis gibbosus*
Rainbow trout	*Oncorhynchus mykiss*
Redbreast sunfish	*Lepomis auritus*
Satinfin shiner	*Cyprinella analostana*
Smallmouth bass	*Micropterus dolomieu*
Spottail shiner	*Notropis hudsonius*
Striped bass	*Morone saxatilis*

Table 4: Fish Species Identified within Red Line Project Study Corridor

Common Name	Scientific Name
Swallowtail shiner	*Notropis procne*
Tessellated darter	*Etheostoma olmstedi*
White sucker	*Catostomus commersoni*
Yellow bullhead	*Ameiurus natalis*

Source: MBSS Website (www.dnr.state.md.us/streams/mbss)

Table 5 summarizes Fish Index of Biotic Integrity (FIBI) scores from sampling conducted by MBSS within the project study corridor. These scores provide an assessment of the general health of the fish community in these streams. Within the Gwynns Falls subwatershed, FIBI scores ranged from 1.00 (Very Poor) to 3.67 (Fair). The average FIBI score within this subwatershed was 2.53 (Poor). Twenty-two species of fish were collected within the Gwynns Falls subwatershed, including the Dead Run tributary. Eight percent of the total individuals collected were considered intolerant to urban stressors including satinfin shiner (*Cyprinella analostana*), northern hogsucker (*Hypentelium nigricans*), margined madtom (*Noturus insignis*), central stoneroller (*Campostoma anomalum*), spottail shiner (*Notropis hudsonius*), and common shiner (*Luxilus cornutus*). Twenty-one percent of the individuals collected were considered tolerant, including tessellated darter (*Etheostoma olmstedi*), white sucker (*Catostomus commersoni*), pumpkinseed (*Lepomis gibbosus*), bluegill (*Lepomis macrochirus*), green sunfish (*Lepomis cyanellus*), and blacknose dace (*Rhinichthys atratulus*).

Table 5: Summary of Fish Index of Biotic Integrity within the Project Study Corridor

Agency	Subwatershed	FIBI Score Range	FIBI Narrative	Average FIBI Score
MBSS	Gwynns Falls	1.00 – 3.67	Very Poor – Fair	2.53
MBSS	Jones Falls	1.00 – 3.67	Very Poor – Fair	1.89
MBSS	Back River	2.67	Poor	2.67

Source: MBSS website (www.dnr.state.md.us/streams/mbss)

Three species of gamefish were collected in the Gwynns Falls subwatershed including smallmouth bass, striped bass, and rainbow trout. Rainbow trout were identified at two sites, both within Dead Run. Trout are generally stocked by DNR in the spring of each year in both Gwynns Falls and Jones Falls, upstream of the project study corridor for recreational fishing use. Two migratory fish species, American eel and striped bass, were identified within the Gwynns Falls subwatershed.

Within the portion of the Jones Falls subwatershed in the Red Line project study corridor, the FIBI scores ranged from 1.00 (Very Poor) to 3.67 (Fair). The average FIBI score within this subwatershed was 1.89 (Poor). Only 12 species of fish were identified within this portion of the Jones Falls subwatershed. Two sites sampled by MBSS, JONE-102-R-2002 and JONE-105-R-2002, contained no fish species during the time of the field investigation. These sites are located north of the project study corridor, along Stony Run. Only 20 percent of the individuals

identified were considered intolerant, including satinfin shiner and northern hogsucker. Forty percent of the individuals identified within the Jones Falls subwatershed were considered tolerant including white sucker, tessellated darter, bluntnose minnow (*Pimephales notatus*), and largemouth bass. One species of gamefish, largemouth bass, and one migratory fish species, American eel, were identified within the Jones Falls subwatershed.

Only one site was sampled by MBSS in the Back River subwatershed in the project vicinity. This site is located on Herring Run. The FIBI at the Herring Run sampling station was Poor (2.67). Seven species of fish were identified within the sampled reach. Forty-one percent of the individuals identified were considered intolerant to urban stressors including satinfin shiner. Twenty-seven percent of the individuals identified were considered tolerant including blacknose dace and white sucker. One migratory fish species, American eel, was identified.

b. Benthic macroinvertebrates

As shown in **Table 6,** benthic macroinvertebrate Index of Biotic Integrity (BIBI) scores ranged from 1.00 (Very Poor) to 2.67 (Poor) within the Gwynns Falls subwatershed. The average BIBI within the subwatershed was 1.56 (Very Poor). The benthic macroinvertebrate communities within this portion of the Gwynns Falls were dominated by aquatic worms (*Oligochaeta*), midges (*Chironomidae*), and common net-spinning caddisflies (*Hydropsychidae*). Generally, all of these groups of macroinvertebrates are considered tolerant to urbanization and other impairments and their dominance reflects the impacted condition of the community.

Table 6: Summary of Benthic Index of Biotic Integrity within the Project Study Corridor

Agencies	Subwatershed	BIBI Score Range	BIBI Narrative	Average BIBI Score
MBSS, BCDEP, BCDPW	Gwynns Falls	1.00 - 2.67	Very Poor - Poor	1.56
MBSS, BCDPW	Jones Falls	1.33 - 2.33	Very Poor - Poor	1.81
MBSS	Back River	1.67	Very Poor	1.67

Source: MBSS website (www.dnr.state.md.us/streams/mbss), BCDEPS website (http://www.baltimorecountymd.gov/Agencies/environment/), and BCDPW (http://www.baltimorecity.gov/Government/Agencies/PublicWorks/)

BIBI scores ranged from 1.33 (Very Poor) to 2.33 (Poor) within the portion of the Jones Falls subwatershed in the Red Line project study corridor. The average BIBI within the subwatershed was 1.81 (Very Poor). The benthic macroinvertebrate communities within Jones Falls were dominated by aquatic worms, midges, sow bugs (Isopoda), blackflies (Simulidae), and common net-spinning caddisflies. Generally, all of these groups of macroinvertebrates are considered tolerant and their dominance within the samples reflects the impacted condition of the aquatic community.

The BIBI was Very Poor (1.67) in the Back River subwatershed at the site sampled within Herring Run. The benthic macroinvertebrate community within the sampled reach was dominated by aquatic worms, midges, and common net-spinning caddisflies. Generally, all of these groups of

macro-invertebrates are considered tolerant to urbanization, reflecting the impacted nature of the aquatic community.

c. Physical Habitat

As shown in **Table 7,** the MBSS Physical Habitat Index (PHI) rated the sites within the Gwynns Falls subwatershed from Severely Degraded to Partially Degraded, with scores ranging from 48.83 to 75.98. The average PHI score at these sites is 60.11 (Degraded). Overall, the sites located within the Gwynns Falls subwatershed had a moderate amount of shading with low bank erosion because of bank armoring, including concrete lining and gabion baskets. Instream habitat, riffle/run quality, and epifaunal substrate usually scored in the suboptimal range for the individual metrics. Low amounts of instream woody debris and rootwads negatively affect the aquatic habitat availability in the subwatershed.

Table 7: Summary of Physical Habitat Index within the Project Study Corridor

Agencies	Subwatershed	PHI Score Range	PHI Narrative	Average PHI Score
MBSS, BCDEP	Gwynns Falls	48.83 - 75.98	Severely Degraded - Partially Degraded	60.11
MBSS	Jones Falls	38.58 - 48.15	Severely Degraded	44.69

Note: PHI values were not available for the Back River subwatershed
Source: MBSS website (www.dnr.state.md.us/streams/mbss) and BCDEPS website (http://www.baltimorecountymd.gov/Agencies/environment/).

The Final PHI rated all sites sampled within the Jones Falls subwatershed as "Severely Degraded", with scores ranging from 38.58 to 48.15. The average PHI score was 44.69 (Severely Degraded). The site located on the larger mainstem of Jones Falls (JONE-312-R-2002), in the northern portions of the project study corridor, had optimal levels of instream habitat, velocity depth/diversity, and pool quality, while the smaller tributary sites scored very low in those categories. All of the MBSS-sampled sites suffered from either extensive concrete channelization or severe bank erosion. Very low amounts of instream rootwads and woody debris were present, and embeddedness was very high. These factors greatly reduce the potential for colonization by sensitive macro-invertebrate communities, though the large pools and good instream habitat would allow for a relatively diverse fish population.

PHI values were not available for the one site sampled by MBSS in the portion of the Back River subwatershed within the project study corridor (BACK-301-R-2009-Herring Run). However, the "Poor" and "Very Poor" respective fish and macroinvertebrate IBI scores may indicate that the physical habitat is also degraded.

2.2.4 Endangered and Threatened Species

No known rare, threatened or endangered species were identified by federal or state agencies within the project study corridor. According to November 15, 2011 USFWS correspondence, except for occasional transient individuals, no federally proposed or listed threatened or endangered species are known to exist with the project study corridor (**Appendix A**). Therefore, no Biological Assessment or further Section 7 consultation with the USFWS is required.

According to December 30, 2011 NMFS correspondence, resource impact concerns are limited to the proposed crossing of the Gwynns Falls near US 40, as probably spawning and nursery ground for species that are important prey for mobile, federally managed predators within the Chesapeake Bay (**Appendix A**). In a letter dated July 6, 2010, DNR indicated that there is an American Peregrine Falcon nest site occurring within the study area. The documented species in need of conservation and important species known to occur within the vicinity of the corridor, as identified by NMFS and DNR (refer to **Appendix A**) are listed in **Table 8** with their current status. Species considered "In Need of Conservation" are those species whose existence as part of the State's natural resources is in jeopardy. "Important Prey" species are those species that serve as prey for federally-managed or endangered predators.

Table 8: Listed Species and Species of Interest Identified by DNR and NMFS as Occurring in the Vicinity of the Project Study Corridor

Common Name	Scientific Name	State (S)/Federal (F) Status
American Peregrine Falcon	*Falco peregrinus anatum*	In Need of Conservation (S)
White Perch	*Morone americana*	Important Prey (F)
Yellow Perch	*Perca flavescens*	Important Prey (F)

Source: Maryland Department of Natural Resources letters dated July 6, 2010, and January 2012. National Marine Fisheries Service letter dated December 30, 2011.

Peregrine falcons have bred on the 33rd floor of the former Legg Mason Building (formerly known as the US Fidelity and Guaranty Building) at the corner of Pratt Street and Light Street since the early 1980s. Nesting again took place in 2006, and the DNR Wildlife and Heritage Service database (DNR, July 6, 2010) indicates that the peregrines currently maintain a nest site on a window ledge of the building.

The Gwynns Falls provides "probable nursing and spawning ground" for white perch and yellow perch that migrate from the Chesapeake Bay into the watershed. These species are important prey for the federally-managed Bluefish *(Pomatomus saltatrix)* and other federally-managed predators in the Bay. Migratory perch can travel from the Bay into the Gwynns Falls passing through the project study corridor upstream to the confluence with Dead Run (NMFS, December 30, 2011).

2.3 Environmental Effects

The No-Build Alternative would not result in changes to the natural environment and no short and long-term effects are anticipated. A discussion of the effects from the Preferred Alternative follows.

2.3.1 Terrestrial Habitat

Effects to forest, including avoidance and minimization, and mitigation are detailed in the **Section 3, Forests**. A summary of environmental effects to terrestrial forest and non-forest terrestrial habitat follows.

a. Long-Term and Short-Term Effects

Primary long-term forest and hedgerow effects would occur within the West and Cooks Lane Tunnel segments at the west end of Security Boulevard at the proposed CMS Station, the Security Square Mall loop adjacent to I-695, Social Security Administration (SSA) property adjacent to the I-70 off-ramp to I-695, the new Parallel Drive/I-70 intersection, I-70 Park-and-Ride, and Cooks Lane western tunnel portal where siting of facilities would permanently remove forest in those locations. Although considered permanent removal, this minor effect (i.e., only small sections of forest to be removed) would not significantly affect the terrestrial habitat available to local wildlife since adjacent forested areas would remain intact. The forested areas to be affected do not provide valuable terrestrial wildlife because forest is adjacent to roadways, is small in area, and are fragmented contiguous forest. Further detail on forest/hedgerow effects are described in the **Section 3, Forests**.

Long-term forest effects at the US 40 segment Gwynns Fall crossing would be minor since Baltimore City would be widening the US 40/Edmondson Avenue bridge crossing at that location, removing forest during their work. The Red Line Project would not remove any additional forest at the US 40/Edmondson Avenue bridge crossing, since rail line construction would be conducted entirely within the footprint of the Baltimore City bridge reconstruction project limits of disturbance. No long-term effects to forest or hedgerow resources would occur within the Downtown Tunnel segment. Non-forested areas, primarily lawn and isolated trees that provide minimal terrestrial habitat value, would also realize long-term effects through displacement from siting of facilities in the US 40 and Downtown Tunnel segments.

Long-term forest and hedgerow effects within the East segment would involve clearing of low quality forest/hedgerow resources located within the in-active Norfolk Southern (NS) rail line. In addition, long-term effects to previously disturbed forest/hedgerow resources would occur for construction of the rail line within the Maryland Transportation Authority (MDTA) right-of-way (I-895), and Bayview MARC station adjacent to Johns Hopkins Bayview Medical Center, PiCorp, Norfolk Southern, and industrial properties near the terminus of the project study corridor.

Short-term forest/hedgerow effects throughout the corridor would be limited because temporary staging and stockpile areas during construction would primarily be sited in non-forested areas (such as parking lots, and lawns), or within forest to be permanently affected. Non-forested areas would also realize short-term effects during construction, and these temporary effects would be limited to staging and stockpile areas.

b. Avoidance and Minimization

The Preferred Alternative alignment has been designed to minimize the impact on the higher value terrestrial habitat that forested areas provide. For example, forest effects within the project study corridor in the West segment near I-70 and the SSA, would be minimized to the

extent possible by transitioning the track alignment from the wooded strip between Parallel Drive and I-70, onto the westbound lanes of I-70 resulting in reduced forest effects on the north side of I-70.

In the US 40 segment, forest effects associated with the Gwynns Falls stream valley would be minimized since Baltimore City would be reconstructing the bridge over the stream prior to construction of the Preferred Alternative. Effects to forest that would occur in the project study corridor at Gwynns Falls would be minor, since tree removal would be minimal along the edges of the forest.

As design moves forward, the MTA would continue to refine the limits of disturbance to further reduce forest and hedgerow effects through incorporation of tree protection measures during the development of the Forest Conservation Plan to be coordinated, reviewed and approved by DNR and the City.

c. Mitigation

Unavoidable effects to forest would be mitigated in accordance with state requirements as described in **Section 3**.

2.3.2 Terrestrial Wildlife

a. Long-Term and Short-Term Effects

Most wildlife resources expected to occur within the project study corridor would likely be found within the larger, less developed riparian corridors of Dead Run and Gwynns Falls. Long-term effects to wildlife resources are unlikely and short-term effects are anticipated to be minor since the Preferred Alternative would follow existing roadway alignments, and any wildlife corridors such as along Gwynns Falls, would remain intact. Construction may temporarily displace mobile species such as birds and mammals (which would likely move to existing adjacent habitat), but they typically quickly relocate back to their former habitat post-construction. In some cases mobile species may permanently relocate to the nearest similar habitat. In either case, this would be considered a minor impact.

Long-term effects to FIDS habitat are unlikely, and short-term effects from construction are anticipated to be minor for the reasons stated above. FIDS habitat would be affected by only minor encroachment since only slight widening of existing roadways would be necessary to accommodate the Preferred Alternative.

b. Avoidance and Minimization

Forest and non-forested habitat (and the wildlife species occurring within that habitat) have been avoided or effects minimized to the greatest extent practicable throughout the project study corridor through careful design. Contiguous riparian corridors (such as at Gwynns Falls and Dead Run) and large forest tracts, in particular have been avoided to reduce the potential for effects to FIDS habitat. The minor encroachments on the edges of FIDS habitat that would occur would minimize the extent of effect to forest interior that would otherwise result if the transitway alignment were to bisect FIDS habitat.

c. Mitigation

Mitigation would not be required since long-term effects would be avoided.

2.3.3 Aquatic Habitat and Species

a. Long-Term and Short-Term Effects

Effects to aquatic habitats and species are related to direct loss of habitat from project infrastructure such as culvert extensions that would occur and water quality degradation that could potentially occur from construction and operation of the Preferred Alternative. In accordance with the Clean Water Act, direct effects to stream channels require a Section 404 permit from the US Army Corps of Engineers (USACE). In addition, a Section 401 water quality certification from MDE would be required to assure that the Preferred Alternative would comply with federally-mandated water quality standards. A waterway construction permit would also be required for work in streams and floodplains.

Because of the limited aquatic resources directly within the Red Line project study corridor, and water quality protection measures that would be employed throughout construction and operation of the Preferred Alternative, overall effects to aquatic habitat and species from the Preferred Alternative are expected to be minimal.

Potential effects during construction include physical disturbances or alterations, accidental spills, and sediment releases that can affect aquatic life. Earth-moving activities would expose unstabilized soils that can be delivered to waterways during storm events. Increased sediment loads can destroy or damage fish spawning areas and macroinvertebrate habitat. An accidental sediment release in a stream can clog the respiratory organs of fish, macroinvertebrates, and the other members of their food web (Barrett 1998). Additional suspended sediment loads have also been shown to cause stream warming by reflecting radiant energy (CWP 2003). Many metal contaminants, bound to the small particles, are transported during accidental releases of sediment. Barrett (1995) found that the initial response to increased sedimentation because of construction was a reduction in numbers and species of fish and macroinvertebrates. This reduction in fish numbers in areas of siltation was generally reversed within 12 months of the cessation of construction activity. While sediment releases are possible during construction, the potential for sediment related effects would be greatly minimized through the strict adherence to MDE approved sediment and erosion control plans.

The Preferred Alternative would result in the permanent or temporary loss of approximately 1,941 linear feet of aquatic stream habitat within the project corridor, largely as a result of proposed culvert extensions. Extension of culverts could lead to direct loss of fish and macroinvertebrates within the construction zone and would permanently alter the available habitat in the impact area. However, the species expected to be impacted are acclimated to disturbed settings and would be likely to recolonize temporarily disturbed areas, though the communities are unlikely to be identical to those present prior to construction.

During operation, the Preferred Alternative would have the potential to increase water quality degradation from stormwater runoff because greater impervious surfaces created by the

Preferred Alternative could affect water quality. However, as discussed in **Section 7.3.1.a, Chemical Water Quality, Long-term and Short-Term Effects**, overall net increases in impervious surfaces are expected to be minimal, amounting to an approximately seven-acre increase in impervious area for the approximately 340 total acres of the project alignment. Because all of the impacted watersheds have already exceeded impervious thresholds for aquatic degradation, the small incremental impervious effects that could be expected from the Preferred Alternative are unlikely to affect overall aquatic habitat or the makeup of biological communities to an appreciable degree.

b. Avoidance, Minimization, and Mitigation

Efforts to minimize effects to aquatic habitat through the reduction of direct stream channel effects and stormwater management planning are ongoing and would continue through final design and construction of the Preferred Alternative. During the planning process, direct effects to stream channels have been substantially reduced by locating the Preferred Alternative within tunnels where appropriate and within existing impervious or developed areas for a majority of its length. Additional opportunities to decrease stream effects through the use of retaining walls and other techniques to reduce the Preferred Alternative limits of disturbance are currently being explored and would continue as more detailed project designs are developed. Unavoidable direct effects to stream channels would be mitigated in accordance with state and federal requirements as described in **Section 6.3.c, Mitigation** of this document. Mitigation of stream effects generally focus on water quality and stream stability improvements and, as such, would also be expected to provide mitigation of impacted aquatic habitat.

Potential effects to aquatic habitat and water quality during construction would be minimized by strict adherence to MDE-approved sediment and erosion control plans. Long-term water quality effects would be minimized through the use of stormwater management plans developed in accordance with state regulations requiring the use of Environmental Site Design (ESD) to provide long-term mitigation of potential effects from stormwater. Greater detail on stormwater management planning and design is provided in **Section 7.3.1.b, Chemical Water Quality/Total Maximum Daily Loads, Avoidance and Minimization.** In addition, in-stream construction would not be performed in Use I streams during the period of fish spawning and early development from March 1 to June 15 in accordance with the State's Use I time of year restrictions. In Dead Run and its tributaries, in-stream construction would be restricted from March 1 through May 31 in accordance with the State's Use IV time of year restrictions.

2.3.4 Endangered and Threatened Species

a. Long-Term and Short-Term Effects

Long-term or short-term effects would not be anticipated since rare, threatened or endangered species are not known to occur within the project study corridor per DNR, USFWS and NMFS. Short-term effects may occur to species of interest during construction including peregrine falcon and certain fishes. Construction effects could include noise, and sedimentation into waterways from stormwater runoff of disturbed soil. The proximity of nesting peregrine falcons at Light Street and Lombard Street may result in temporary effects to the species during construction of the Inner Harbor Station and associated roadway work in the vicinity. Further

consultation with DNR would be required as design proceeds to provide for their review of project details (DNR, July 6, 2010).

b. Avoidance and Minimization

Proposed tunneling under the Jones Falls, and use of the existing US 40 crossing over Gwynns Falls would avoid effects to downstream fisheries resources and their habitat. Application of required erosion and sediment control BMPs would minimize the potential effects to fish by limiting sedimentation into streams during rain events. Construction work would be scheduled to avoid noise effects to the falcon during nesting season.

c. Mitigation

Mitigation would not be required since long-term effects would be avoided.

3. Forests

3.1 Background and Methodology

DNR defines forest as “a biological community dominated by trees and other woody plants covering a land area of 10,000 square feet or larger and at least 35 feet wide. Forest includes areas that have at least 100 trees per acre with at least 50 percent of those having a two-inch or greater diameter at breast height (dbh), and forest areas that have been cut but not cleared. Forest does not include orchards." Specimen trees are defined by DNR as “trees having a dbh of 30-inch or more, or trees having 75 percent or more dbh of the current State champion of that species.” Areas dominated by trees and/or brush that did not meet the stem-density or width requirements of a forest, as defined by DNR, were classified as hedgerow.

Applicants following the Forest Conservation Act are required to submit a Forest Stand Delineation (FSD) and a Forest Conservation Plan (FCP), prepared by a Maryland qualified forest professional, to DNR or the local reviewing agency for review and approval. Forest conservation compliance would be coordinated through DNR for the entire Red Line Project Corridor, in consultation with the Baltimore City Department of Planning (Baltimore City portion). Staff from the Baltimore County Department of Environmental Protection and Sustainability (DEPS) were consulted in April 2012 and indicated that the County does not have jurisdiction over state projects and would not participate in the environmental review of the project (personal communication, April 18, 2012).

An FSD is an inventory of existing forest/trees and other environmental site features, and it provides a basis for determination of the most suitable forest and resource protection areas during the early stages of site development planning.

An FCP is prepared during the latter stages of site design and it details the limits of disturbance; amount of forest that would be retained, removed, reforested and afforested during site development; locations of specimen trees for retention and removal; types and locations of tree/forest protection devices and supplemental tree care; maintenance and monitoring parameters; and long-term protection measures. The *State Forest Conservation Technical Manual*, Third Edition, 1997 outlines the requirements for FSD and FCP preparation and submittal.

A full FSD would not be required for this project and no plot points were recorded, based on guidance from DNR during an October 21, 2011 phone conversation (**Appendix B**). This NRTR, including the forest stand and hedgerow descriptions, and mapping would meet the requirements of the FSD submittal to DNR. The investigation included a walk-through level FSD that characterized the forests within the forest study area boundary, which includes 50 feet outside of the limits of disturbance, including common and dominant species, invasive species, overall forest condition, history and successional stage. All specimen trees within the forest study area boundary were inventoried and located on the plans using hand held GPS survey. Refer to the Natural Resources mapping found in **Appendix C** of this NRTR.

Specimen tree removals would require a variance in compliance with the 2009 MD FCA amendment, No Net Loss of Forest Policy (Senate Bill 666), which would be coordinated with DNR and Baltimore City Planning during final design.

Forest stand boundaries were identified in the field and drawn over aerial photographs taken for the project in 2010. Forest stand effects were calculated using ArcMap 10 software. The forest stand shapefile was intersected with the limits of disturbance shapefile to calculate the area (square feet) of each forest stand located within the limits of disturbance, or the proposed impact area for each stand. Individual/Street tree discussions can be found in **Section 6**.

3.2 Existing Conditions

The following discussion presents the identified forest stands, the hedgerows, and specimen trees by segment generally in a west to east direction. Refer to the Red Line Natural Resources Inventory mapping in **Appendix C**. Field data sheets are included in **Appendix E**.

The majority of forest stands, hedgerows, and specimen trees within the project study corridor are located adjacent to existing roadways and contain invasive species, predominantly along previously disturbed edges. According to the National Invasive Species Council (NISC), invasive species are non-native species whose introduction does or is likely to cause economic or environmental harm or harm to human, animal, or plant health. Common forest stand associations, or cover-types, include tulip poplar (*Liriodendron tulipifera*) and oak (*Quercus sp.*) associations. The more urbanized segments of the project study corridor contain hedgerows and small forest stands dominated by disturbance tolerant and invasive species.

3.2.1 West Segment (Segment 1) Forest Stands and Hedgerows

The majority of forest stands and hedgerows within the West segment (Segment 1) are located along the I-70 corridor. In general, forest stands within this segment contain more mature trees and provide a higher quality habitat than other segments within the project study corridor based on species composition and stand age. Invasive and pioneer species (those species that colonize a site following disturbance) dominate the previously disturbed forest stand edges. A total of 26 forest stands and 18 hedgerows occur within this segment and are described in detail below.

Segment 1/Forest Stand 1 (S1-FS1) (page 1 of 57) is an early-successional Virginia Pine/Oak Association forest located at the west end of the project area, between Centers for Medicaid and Medicare Services and Chadwick Elementary School properties. Dominant canopy species include Virginia pine (*Pinus virginiana*), red maple, (*Acer rubrum*), green ash (*Fraxinus pennsylvanica*), and pin oak (*Quercus palustris*). Additional mid-canopy species include white oak (*Quercus alba*), American elm (*Ulmus americana*), and persimmon (*Diospyros virginiana*), while eastern red cedar (*Juniperus virginiana*), black haw (*Viburnum prunifolium*), arrowwood (*Viburnum dentatum*), and poison ivy (*Toxicodendron radicans*) dominate the understory. Invasives are prevalent in the understory and include multiflora rose (*Rosa multiflora*), bush honeysuckle (*Lonicera maackii*), Japanese honeysuckle (*Lonicera japonica*), and oriental bittersweet (*Celastrus orbiculatus*). Overall canopy closure is approximately 80-90 percent, but includes a gas line and associated disturbance through the center of the forest. This forest is in

fair condition with a dominant size class of 8-14-inch dbh, high levels of invasives, coarse woody debris, and woody vine interference.

S1-FS2 (page 2 of 57) is a White Oak/Black Oak/Northern Red Oak Association forest located on Christ the King Episcopal Church property, just south of Security Boulevard and east of Greengage Road. This mid-successional forest is in good/fair condition with a dominant canopy size class of 12-20-inch dbh. Canopy closure is approximately 60-80 percent with dominant species including white oak, black oak (*Quercus velutina*), northern red oak (*Quercus rubra*), and southern red oak (*Quercus falcata*). Some canopy mortality of oaks is present, but there are moderate levels of canopy species regeneration in the forest floor. Dominant understory species include black cherry (*Prunus serrotina*), flowering dogwood (*Cornus florida*), black haw, poison ivy, and greenbrier (*Smilax rotundifolia*). Invasive levels are low/moderate and include bush honeysuckle and Japanese honeysuckle. Coarse woody debris is high and woody vine interference is low.

S1-FS3 (page 4 of 57) is a mid-successional White Oak/Black Oak/Northern Red Oak Association forest in fair/poor condition located along westbound Security Boulevard, south of the Best Buy parking lot. Canopy closure is approximately 80-100 percent with dominant size class of 12-20-inch dbh that includes white oak, northern red oak, and black oak. The understory is thick, dominated primarily by flowering cherry (*Prunus spp.*), beech (*Fagus grandifolia*), green ash, flowering dogwood, black locust (*Robinia pseudoacacia*), black haw, and poison ivy. Coarse woody debris is high and prevalent invasive species include white mulberry (*Morus alba*) and Japanese honeysuckle.

S1-FS4 (pages 4&5 of 57) is a White Oak/Black Oak/Northern Red Oak Association forest located between the Security Square Mall loop road and the interchange ramp from Security Boulevard to south-bound I-695. This mid-successional forest is in fair condition and is dominated primarily by northern red oak, white oak, and green ash. Dominant understory species include bigtooth aspen (*Populus grandidentata*), hickory (*Carya spp.*), beech, flowering cherry, and poison ivy, with Virginia pine along the disturbed edges. Woody debris content is high and invasives are widespread in the understory and include multiflora rose, Russian olive (*Eleagnus angustifolia*), bush honeysuckle, and Japanese honeysuckle. Canopy closure is approximately 70-90percent, with a dominant size class of 12-20-inch dbh.

S1-FS5 (page 7 of 57) is an early-successional Virginia Pine/Oak Association forest, in fair condition located along the I-70 eastbound ramp from northbound I-695. Dominant canopy species include bigtooth aspen, sweetgum (*Liquidambar styraciflua*), white pine (*Pinus strobus*), Virginia pine, and northern red oak. Canopy closure is 80-100 percent, with a dominant size class of 6-18-inch dbh. Woody debris is moderate with some dead branches in the canopy. The understory is dominated by black haw, sumac (*Rhus spp.*), red maple, sweet gum, and invasives such as Japanese honeysuckle and bush honeysuckle.

S1-FS6 (pages 7-10 of 57) is a Virginia Pine/Oak Association forest located along eastbound I-70, just east of Woodlawn Drive. This early-successional forest is in good condition, with a dominant canopy size class of 8-14-inch dbh. Canopy closure is approximately 80-100 percent

with dominant species including red maple, green ash, northern red oak, and Virginia pine. Coarse woody debris is low, with beech, eastern red cedar, willow oak (*Quercus phellos*), pin oak, and white pine dominating the understory. Invasive content is high along the edges and includes Bradford pear (*Pyrus calleryana*), Japanese honeysuckle, and bush honeysuckle.

S1-FS7 (pages 8&9 of 57) is a mid-successional Sycamore/Green Ash/Boxelder/Silver Maple Association forest located along west bound I-70. Dominant species include green ash, white oak, red maple, and northern red oak. Slippery elm (*Ulmus rubra*), hickory, black haw, and greenbrier dominate the understory, with high levels of Bradford pear and Japanese honeysuckle along the edges. Overall canopy closure is approximately 60-90percent, with a dominant size class of 12-18-inch dbh. This forest is in good/fair condition and includes a wetland along the northern boundaries. Coarse woody debris and woody vine interference are low.

S1-FS8 (pages 10&11 of 57) is an early-successional Sycamore/Green Ash/Boxelder/Silver Maple Association forest located along eastbound I-70, just east of S1-FS6. A concrete-lined channel flows through the western section of this forest. Canopy closure is approximately 90percent, with a dominant size class of 8-16-inch dbh. Boxelder (*Acer negundo*) and red maple dominate the canopy, with green ash, silver maple (*Acer saccharinum*), black locust, sawtooth oak (*Quercus accutissima*), and sycamore (*Platanus occidentalis*) in the understory. Dense invasives in the understory include bush honeysuckle, multiflora rose, English ivy (*Hedera helix*), lesser celandine (*Ranunculus ficaria*), and garlic mustard (*Allaria petiolata*). This forest is in fair condition with high woody vine interference and low/moderate woody debris.

S1-FS9/S2-FS1 (pages 11&13 of 57) is a Red Maple Association forest located along eastbound I-70, just west of the Security Boulevard off-ramp. This early-successional forest is growing within a previously disturbed road edge and is in fair condition with a dominant size class of 6-11-inch dbh. Canopy closure is approximately 60 percent with dominant species including black locust, red maple, black cherry, and northern red oak. Understory species include green ash, black cherry, and boxelder. Woody vine interference and invasive levels are high and include multiflora rose, bush honeysuckle, Japanese honeysuckle, and garlic mustard.

S1-FS10 (pages 9&10 of 57) is a mid to late-successional Tulip Poplar Association forest located along westbound I-70. Dominant species include tulip poplar, and northern red oak, with inclusions of hickory, black gum (*Nyssa sylvatica*), green ash, and black cherry in the mid canopy. The understory includes beech, sassafras (*Sassafras albidum*), maple leaf viburnum (*Viburnum acerifolium*), black haw, spice bush (*Lindera benzoin*), jack-in-the-pulpit (*Arisaema triphyllum*), and mayapple (*Podophyllum peltatum*). Invasives are moderate/high in the understory and include Japanese honeysuckle, multiflora rose, and burning bush (*Euonymus alatus*). The overall stand condition and forest structure is good with a dominant size class of 14-30inch dbh and specimen trees scattered throughout. Coarse woody debris is moderate and woody vine interference is moderate/high. Overall canopy closure is approximately 80-100 percent, but includes a disturbed gas line along the northern boundary of the stand near Parallel Drive.

S1-FS11 (pages 10-12 of 57) is a Tulip Poplar Association forest located along the westbound I-70 on-ramp from Ingleside Avenue, just east of S1-FS10. This early-successional forest is in poor condition with a thick understory of invasives and high levels of woody vine interference. Invasives include wineberry (*Rubus phoenicolasius*), Chinese wisteria (*Wisteria sinensis*), garlic mustard, oriental bittersweet, multiflora rose, and Japanese honeysuckle. The dominant canopy size class is 8-14-inch dbh and includes boxelder, black locust, green ash, red maple, tulip poplar, and black walnut (*Juglans nigra*). White mulberry, sassafras, red maple, and the invasives listed above dominate the understory. Canopy closure is approximately 40-80 percent, with lots of openings

S1-FS12 (page 5 of 57) is a Sycamore/Green Ash/Boxelder/Silver Maple Association forest located adjacent to an outfall on SSA property, along the I-695 northbound on-ramp from I-70. This early-successional forest is in fair condition with heavy invasives in the understory including multiflora rose, Japanese honeysuckle, and Bradford pear. Overall canopy closure is approximately 70-80 percent and with a dominant size class of 8-14-inch dbh. Green ash, red maple, slippery elm, and boxelder dominate the canopy, with sumac, white mulberry, and poison ivy in the understory.

S1-FS13 (page 9 of 57) is located along Parallel Drive adjacent to the SSA maintenance facility, just east of S1-FS19. This mid-successional Tulip Poplar Association forest is in good condition, with 80-100 percent canopy closure, good forest structure and specimen trees scattered throughout. The 12-20-inch dbh canopy is dominated by tulip-poplar, with inclusions of slippery elm, green ash, white ash (*Fraxinus americana*), and red maple. Common understory species include seedlings/saplings of canopy species, black cherry, sassafras, flowering dogwood, black haw, mayapple, poison ivy, arrowwood, ironwood (*Carpinus caroliniana*), Virginia creeper (*Parthenoncissus quinquefolia*), and spicebush. Invasive species cover is highest adjacent to Parallel Drive, with moderate levels of woody vine interference and coarse woody debris. Common invasive species include oriental bittersweet, and Japanese honeysuckle.

S1-FS14 (page 9 of 57) is located along Parallel Drive adjacent to the SSA maintenance facility, just east of S1-FS13. This mid-successional Tulip Poplar Association forest is in good/fair condition, with 70-90 percent canopy closure and moderate levels of coarse woody debris. Tulip-poplar dominates the canopy at 12-20-inch dbh, with inclusions of green ash and white ash. Common understory species include black cherry, sassafras, flowering dogwood, black haw, mayapple, and redbud (*Cercis canadensis*). Invasive species cover is moderate to high and includes oriental bittersweet, multiflora rose, white mulberry, and Japanese honeysuckle.

S1-FS15 (pages 9&10 of 57) is a mid-successional Tulip Poplar Association forest located on the north side of Parallel Drive, just east of Lafayette Road. This forest is in fair condition, with 70-90 percent canopy closure, high woody vine interference and a thick shrub layer dominated by invasive species. The dominant canopy size class is 12-20-inch dbh consisting primarily of tulip-poplar, with inclusions of ash, red maple, and black walnut. The understory includes black cherry, black haw, red maple, boxelder, mayapple, elm, Jack-in-the-pulpit, poison ivy, and

spicebush. Invasive species cover is high and consists of multiflora rose, garlic mustard, white mulberry, English ivy, bush honeysuckle, oriental bittersweet, and Japanese honeysuckle.

S1-FS16 (page 10 of 57) is an early to mid-successional Tulip Poplar Association forest located on the north side of Parallel Drive, just west of Calvert Road. This forest is in fair/poor condition, with 50-80 percent canopy closure, high woody vine interference and extremely high levels of invasive species. The dominant canopy size class is 12-18-inch dbh, with a strip of smaller trees (6-10-inch dbh) dominating the road edge. Dominant canopy species include tulip poplar, black walnut, black cherry, and ash. The understory includes tree-of-heaven (*Ailanthus altissima*), wild grape (*Vitus spp.*), sassafras, lesser celandine, wineberry, multiflora rose, garlic mustard, ground ivy (*Glechoma hederacea*), white mulberry, bush honeysuckle, oriental bittersweet, and Japanese honeysuckle.

S1-FS17 (page 12 of 57) is located north of the on-ramp to Parallel Drive from Ingleside Avenue. This mid-successional, Tulip-Poplar Association forest is in poor condition, with 50-80 percent canopy closure and moderate levels of coarse woody debris. The dominant canopy size class is 12-18-inch dbh consisting primarily of tulip poplar and red maple. The understory includes green ash, persimmon, boxelder, holly (*Ilex opaca*), northern red oak, slippery elm, and poison ivy. Invasive species cover is high and consists of English ivy, bush honeysuckle, Japanese honeysuckle, multiflora rose, and white mulberry.

S1-FS18 (page 9 of 57) is a White Oak/Black Oak/Northern Red Oak Association forest located along westbound I-70, just south of Parallel Drive. This late-successional forest is in good condition with low to moderate woody debris. Canopy closure is approximately 80-100 percent with a dominant canopy size class of 16-30+-inch dbh. Dominant canopy species include northern red oak, white oak, and black oak, with inclusions of tulip poplar, and pignut hickory (*Carya glabra*). Common understory species include beech, black gum, spice bush, mayapple, maple-leaf viburnum, arrowwood, ironwood, flowering dogwood, and sassafras. Invasive coverage and woody vine interference is low. This forest has good species diversity and provides high-quality habitat.

S1-FS19 (page 9 of 57) is a late-successional White Oak/Black Oak/Northern Red Oak Association forest located north of Parallel Drive, adjacent to SSA property, just west of S1-FS13. This forest is in good condition with high-quality habitat and good species diversity. The dominant canopy size class is 16-30-inch dbh with lots of specimen trees. Canopy closure is 80-100 percent with dominant species including northern red oak, white oak, and black oak, with inclusions of pignut hickory, black gum, and tulip poplar. The understory includes beech, spicebush, maple-leaf viburnum, arrowwood, ironwood, flowering dogwood, mayapple, and sassafras. Woody vine interference and invasive cover is low, and coarse woody debris is high.

S1-FS20 (pages 4&5 of 57) is an early-successional Red Cedar Association forest located on a roadside mound south of Security Boulevard, just west of I-695. The canopy is open with 20-30 percent closure and a dominant size class of 6-11-inch dbh. Dominant species appear to be volunteers and include eastern red cedar, green ash, American elm, and sumac. Invasive cover is high and includes bush honeysuckle, Russian olive, Japanese honeysuckle, Bradford pear, and

white mulberry. This forest is in fair condition with moderate woody vine interference and low coarse woody debris.

S1-FS21 (page 6 of 57) is an early-successional Red Maple Association forest in fair condition. This forest is located along I-70 eastbound, just north of the I-695 northbound off-ramp. Woody vine interference and invasive content is high, and includes multiflora rose, bush honeysuckle, and Japanese honeysuckle. The dominant canopy size class is 6-11-inch and includes bigtooth aspen, northern red oak, red maple, and black cherry. Common understory species include Austrian pine (*Pinus nigra*), red cedar, staghorn sumac (*Rhus typhina*), and privet (*Ligustrum vulgare*). Coarse woody debris is low and canopy closure is 50-70 percent.

S1-FS22 (page 7 of 57) is an early-successional Tulip Poplar Association forest located on SSA property, west of Woodlawn Drive. Canopy closure is 80-100 percent ,with a dominant size class of 6-14-inch dbh. Dominant canopy species include boxelder, tulip poplar, and black cherry. The understory is thick and includes Virginia pine, red maple, sassafras, poison ivy, and wild grape. Woody vine interference is high and invasive species are widespread and include Bradford pear, Japanese honeysuckle, multiflora rose, and bush honeysuckle. This forest has moderate coarse woody debris and is in fair/poor condition.

S1-FS23 (pages 7&8 of 57) is located along the slope between I-70 westbound and Parallel Drive, just east of Woodlawn Drive. This early-successional Virginia Pine/Oak Association forest is in fair condition, with high woody vine interference and moderate coarse woody debris. Invasive species cover is high and consists of Bradford pear, white mulberry, Russian olive, bush honeysuckle, oriental bittersweet, and Japanese honeysuckle. Canopy closure is approximately 70-80 percent and the dominant canopy size class is 8-14-inch. Dominant trees in the canopy include Virginia pine, black locust, and pin oak, with black haw, green ash, sawtooth oak, and red oak dominating in the understory.

S1-FS24 (page 6 of 57) is a Pioneer Hardwood Association forest in fair condition located along I-70 westbound, just south of the I-695 northbound on-ramp. The dominant canopy size class is 6-11-inch dbh and includes willow oak, and black walnut. Understory species include green ash, black haw, grape vine, sumac, black cherry, and goldenrain tree (*Koelreuteria paniculata*). Woody vine interference is high and invasives are widespread and include, bush honeysuckle, oriental bittersweet, white mulberry, and Japanese honeysuckle. Canopy closure is 40-60 percent and coarse woody debris is low.

S1-FS25 (page 5 of 57) is located along I-695 northbound, just east of the Security Boulevard on-ramp. This early-successional Red Maple Association forest is in good/fair condition with 40-60 percent canopy closure. Dominant size class is 6-11-inch dbh and includes red cedar, staghorn sumac, sawtooth oak, elm, red maple, and boxelder. Bradford pear cover is high and has continued to spread into adjacent forested areas. Woody vine interference and coarse woody debris is low.

S1-FS26 (page 5 of 57) is a Red Maple Association forest located along the Security Boulevard on-ramp from northbound I-695. This early-successional forest is in fair condition, with 40-60

percent canopy closure and low levels of coarse woody debris. The dominant canopy size class is 6-14-inch dbh and includes red maple, Norway maple (*Acer platanoides*), black locust, green ash, and white oak. The understory is covered with a dense carpet of invasive Japanese honeysuckle and includes scattered red cedar saplings.

Segment 1/Hedgerow 1 (S1-H1) (page 1 of 57) is a hedgerow located at the west end of the project area, south of CMS. The dominant size class is 8-14-inch dbh, with scattered larger individuals. Dominant species include green ash and white oak with red maple, black cherry, hickory, and black haw in the understory. This hedgerow is in fair condition with high levels of invasives in the understory including Japanese honeysuckle, Norway maple, white mulberry, and bush honeysuckle.

S1-H2 (pages 1&2 of 57) is a planted hedgerow located at the west end of Security Boulevard, north of Winder Road. The dominant size class is 8-16-inch dbh with some larger individuals and includes white oak, northern red oak, green ash, black locust, black cherry, red maple. This hedgerow is in fair/poor condition with lots of trash and invasives in the understory. Understory species include white mulberry, arborvitae (*Thuja spp.*), red cedar, silver maple, multiflora rose, and Japanese honeysuckle.

S1-H3 (pages 1&2 of 57) is located at the west end of the project area, along Security Boulevard, just south of Derrickson Road. This hedgerow is in good/fair condition and consists of planted and volunteer species. The average size class is 6-10-inch dbh, with larger oaks ranging from 12-20-inch dbh. Dominant species include black oak, white oak, northern red oak, green ash, black locust, sawtooth oak, Leyland cypress (x *Cupressocyparis leylandii*), black cherry, and pin oak. Invasive species include Bradford Pear and bush honeysuckle, with planted Japanese euonymus (*Euonymus alatus*) along an adjacent private driveway.

S1-H4 (page 5 of 57) is located between the I-695 on-ramp from westbound Security Boulevard and southbound I-695. This hedgerow is in good condition and consists of volunteer vegetation with an average size class of 4-6-inch dbh. Dominant species include red cedar and bush honeysuckle, with scattered Bradford pear and white mulberry.

S1-H7 (page 5 of 57) is a shrubby median embankment located between I-695 northbound and the on-ramp to Security Boulevard. This hedgerow is in good condition with an average size class of 3-inch dbh. Dominant species include staghorn sumac, red cedar, crab apple (*Malus spp.*), bush honeysuckle, and poison ivy.

S1-H10 (page 5 of 57) is a located along an I-695 northbound on-ramp, just south of a large SSA parking lot. This hedgerow is in fair condition and consists of a number of planted trees with mixed volunteers, averaging 12-18-inch dbh. Dominant species include sawtooth oak, green ash, red cedar, pin oak, northern red oak, multiflora rose, bush honeysuckle, poison ivy, and Japanese honeysuckle.

S1-H11 (page 6 of 57) is a hedgerow located along a roadway embankment between Security Access Road and the I-695 northbound on-ramp from I-70. Dominant species include red cedar,

Bradford pear, red maple, staghorn sumac, multiflora rose, poison ivy, bush honeysuckle, sawtooth oak, and Russian olive. This hedgerow is in good condition with a dominant size class of 6-10-inch dbh.

S1-H12 (page 6 of 57) is located between Security Access Road and the I-695 northbound on-ramp from I-70, just east of S1-H11. This hedgerow is in good/fair condition with an average size class of 6-14-inch dbh. Dominant species consist of white pine, sawtooth oak, flowering cherry, Austrian pine, crab apple, bush honeysuckle, and Japanese honeysuckle.

S1-H13 (page 6 of 57) is located east of S1-H12, between Security Access Road and the I-695 northbound on-ramp from I-70. This hedgerow is in fair condition with lots of vines and coarse woody debris. Dominant canopy size class is 6-15-inch dbh and includes red maple, sawtooth oak, black locust, American elm, Austrian pine, and black haw. Common invasive species include bush honeysuckle, multiflora rose, Japanese honeysuckle, and Russian olive.

S1-H14 (page 7 of 57) is located west of Woodlawn Drive, between Security Access Road and I-70 westbound. This hedgerow is in good condition with an average size class of 4-10-inch dbh. Dominant species include red maple, red cedar, Virginia pine, and black hawthorn (*Crataegus douglasii*). Invasive species are common and include white mulberry, Bradford pear, bush honeysuckle, multiflora rose, Russian olive, and Japanese honeysuckle.

S1-H18 (page 1 of 57) is located along the fence line on Centers for Medicaid and Medicare Services property, west of S1-H3. This hedgerow is in good condition with an average size class of 6-10-inch dbh. Dominant species include cherry laurel (*Prunus laurocerasus*), arrowwood, and a holly cultivar (*Ilex spp.*).

S1-H19 (page 8 of 57) is a thin hedgerow in fair condition located on SSA property along Parallel Drive, east of E Perimeter Drive. The dominant size class is 6-10-inch dbh and includes black locust and green ash. Invasive cover is heavy and includes bush honeysuckle, multiflora rose, and Japanese honeysuckle.

S1-H20 (page 9 of 57) is a thin strip of trees located east of S1-H19, along Parallel Drive on SSA property. This hedgerow is in fair condition with an average size class of 8-14-inch dbh. Dominant species consist of red maple, green ash, black locust, slippery elm, black oak, and black cherry. Common invasive species include bush honeysuckle, oriental bittersweet, Japanese honeysuckle, and multiflora rose.

S1-H21 (page 12 of 57) is a thin strip of scattered trees in poor condition and is located between Parallel Drive and Eberhart Avenue. The dominant size class is 8-14-inch dbh and includes northern red oak, black cherry, black walnut, green ash, and boxelder. Invasive species cover is high and consists of white mulberry, oriental bittersweet, ground ivy, multiflora rose, wineberry, bush honeysuckle, English ivy, and Japanese honeysuckle.

S1-H22 (page 11 of 57) is located along the Ingleside Avenue and westbound I-70 interchange. This thin hedgerow is in poor condition, with high levels of invasives, including multiflora rose,

oriental bittersweet, and bush honeysuckle. The dominant size class is 6-11-inch dbh and includes red maple, green ash, sycamore, pin oak, black locust, and boxelder.

S1-H23 (pages 11&12 of 57) is a planted hedgerow in front of the Westcliffe apartment complex off Ingleside Avenue. This hedgerow is in good condition with a dominant size class of 8-12-inch dbh. Dominant species include white pine, red maple, and green ash.

S1-H24 (page 1 of 57) is located on the CMS property, south of S1-H1. This hedgerow is in good condition, with an average size class of 6-8-inch dbh, and is dominated by Austrian pine, white spruce (*Picea glauca*), Zelkova (*Zelkova serrata*), and a holly cultivar.

S1-H25 (page 6 of 57) is in good condition and is located between the I-695 on-ramps from I-70 east and west bound. The dominant canopy size class is 6-16-inch dbh and consists of sawtooth oak, red cedar, red maple, and bush honeysuckle.

3.2.2 Cooks Lane Tunnel Segment (Segment 2) Forest Stands and Hedgerows

The majority of forest stands and hedgerows within the Cooks Lane Tunnel segment (Segment 2) are located along the I-70 interchange. In general, forest stands and hedgerows within this segment are early-successional and dominated by disturbance tolerant and invasive species. A total of 12 forest stands and two hedgerows occur within this segment and are described in detail below.

Segment 2/Forest Stand 2 (S2-FS2) (page 13 of 57) is an early-successional Tulip Poplar Association forest located between the Security Boulevard off-ramp and Forest Park Avenue. Dominant canopy species include black walnut, black locust, tulip poplar, and pin oak, with boxelder and black cherry dominant in the understory. Invasives are also prevalent in the understory and include bush honeysuckle, multiflora rose, and Japanese honeysuckle. Overall canopy closure is approximately 80 percent, but includes a disturbed gas line through the center of the forest. This forest is in good/fair condition with a dominant size class of 8-16-inch dbh, high levels of invasives, coarse woody debris, and woody vine interference.

S2-FS3 (page 14 of 57) is a Black Locust Association forest located within the I-70 eastbound loop to Security Boulevard. This early-successional forest is in fair/poor condition with a dominant canopy size class of 10-18-inch dbh. Canopy closure is approximately 50 percent, with dominant species including black locust, northern red oak, white pine, sawtooth oak, and red maple. Dominant understory species include black locust, black cherry, and American holly. Invasive levels are high and include bush honeysuckle and Japanese honeysuckle. Coarse woody debris is low/moderate and woody vine interference is moderate

S2-FS4 (page 14 of 57) is an early-successional Tulip Poplar Association forest located along I-70 eastbound, just east of S2-FS3. Dominant canopy species include black locust, slippery elm, pin oak, tulip poplar, and red maple, with black cherry, black locust, beech, and poison ivy dominating in the understory. Invasive levels are high and include bush honeysuckle, Japanese honeysuckle, and multiflora rose. Overall canopy closure is approximately 80 percent with

some open patches and fallen trees. This forest is in fair/poor condition with a dominant size class of 6-12-inch dbh and high levels of coarse woody debris.

S2-FS5 (pages 14&15 of 57) is a Tulip Poplar Association forest located along the ramp from Cooks Lane to I-70 on park property, just east of S2-FS4. This mid to late-successional forest is in good condition with a dominant canopy size class of 12-30-inch dbh. Canopy closure is approximately 90-100 percent, and includes tulip poplar, white oak, and beech. Dominant understory species include black locust, green ash, black cherry, sycamore, and spicebush. Invasives dominate along the disturbed edges and include multiflora rose, Japanese honeysuckle, and oriental bittersweet. Woody vine interference and coarse woody debris are moderate.

S2-FS6 (pages 12,14&15 of 57) is a mid-successional Sycamore/Green Ash/Boxelder/Silver Maple Association forest located on the westbound side of the I-70 terminus. Dominant canopy species include white oak, northern red oak, black locust, beech, and sycamore, with boxelder, black locust, and poison ivy dominating in the understory. Woody vine interference and invasive levels are high and include oriental bittersweet, Japanese honeysuckle, multiflora rose, and bush honeysuckle. Overall canopy closure is approximately 80-100 percent and coarse woody debris is moderate. This forest is in good/fair condition with a dominant size class of 12-24-inch dbh.

S2-FS7 (page 12 of 57) is a Sycamore/Green Ash/Boxelder/Silver Maple Association forest located near a stream outfall along the southeast quadrant of the intersection at Security Boulevard and North Forest Park Avenue. This early-successional forest is in poor condition with a dominant canopy size class of 6-12-inch dbh. Canopy closure is approximately 60 percent and includes boxelder, black locust, and slippery elm. The understory is dominated by Leyland cypress, red maple, and thick invasives including bush honeysuckle, tree-of-heaven, and Japanese honeysuckle. Coarse woody debris is low and woody vine interference is moderate.

S2-FS8 (page 12 of 57) is a Sycamore/Green Ash/Boxelder/Silver Maple Association forest located in the northeast quadrant of the North Forest Park Avenue/Security Boulevard intersection. This early to mid-successional riparian forest is in fair condition, with a dominant canopy size class of 12-18-inch dbh and canopy closure of approximately 90 percent. The forest canopy is dominated by green ash, boxelder, and slippery elm, with inclusions of red maple, sycamore, American elm, black walnut, and black locust. The understory is dominated by black cherry, poison ivy, blackberry (*Rubus allegheniensis*), Virginia creeper, wild grape, and invasives such as English ivy, garlic mustard, privet, and Japanese honeysuckle. Coarse woody debris is moderate and woody vine interference and invasive species cover are high.

S2-FS9 (page 12 of 57) is a Tulip Poplar Association forest located along the northwest quadrant of the Ingleside Avenue/Security Boulevard intersection. This early to mid-successional forest is in fair condition, with a dominant canopy size class of 8-16-inch dbh and low levels of coarse woody debris. Canopy closure is approximately 70 percent and dominant species include tulip poplar, slippery elm, and boxelder. The understory is dominated by invasives species and includes poison ivy, multiflora rose, Japanese honeysuckle, bush honeysuckle, and English ivy.

S2-FS10 (pages 12&14 of 57) is a Virginia Pine/Oak Association forest located inside the ramp loop within the northwest quadrant of the I-70/Security Boulevard interchange. This early-successional forest is in fair condition, with moderate coarse woody debris and high levels of invasive species cover. The dominant canopy size class is 6-12-inch dbh, with 30-50 percent canopy closure. The scattered canopy is dominated by pin oak, white oak, and black locust, with inclusions of red maple, black cherry, and Virginia pine. Common understory species include poison ivy, Japanese honeysuckle, and bush honeysuckle The "Security White Oak" (49-inch dbh), which is recognized by the Maryland State Highway Administration (SHA) Tree Preservation Initiatives Program, is located within this forest stand.

S2-FS11 (pages 11&12 of 57) is a Tulip Poplar Association forest located around the perimeter of the Westcliffe apartment complex between Ingleside Avenue, Security Boulevard, and I-70, just west of S2-FS10. This mid-successional forested area is in fair condition, with high levels of invasive species cover and moderate levels of coarse woody debris and trash. The dominant canopy size class is 12-18-inch dbh and canopy closure is approximately 70 percent. The canopy is dominated by tulip poplar, slippery elm, black locust, green ash, and northern red oak. Other common tree species include black cherry, silver maple, red maple, black walnut, tree-of-heaven, and boxelder. Planted sawtooth oak and white pine are prevalent along the I-70/apartment complex property boundary. The understory is dominated by invasives species and includes poison ivy, wild grape, multiflora rose, Japanese honeysuckle, and bush honeysuckle.

S2-FS12 (page 13&14 of 57) is a Red Maple Association forest located inside the ramp loop within the southwest quadrant of the I-70/Security Boulevard interchange. This early successional forested area is in fair/poor condition, with moderate to high levels of invasive species cover and low to moderate levels of coarse woody debris. The dominant canopy size class is 10-18-inch dbh and canopy closure is approximately 70 percent, with an open understory. The canopy is dominated by black walnut, black locust, and boxelder, with inclusions of red maple, pin oak, white pine, sawtooth oak, northern red oak, and tree-of-heaven. The understory contains black walnut, boxelder, wild grape, multiflora rose, blackberry, and bush honeysuckle.

S2-FS13 (page 14 of 57) is a Black Locust Association forest located just east of the Cooks Lane/I-70 on-ramp and west of S2-FS5. The forest was delineated as a separate stand from S2-FS5, because of smaller dbh size class and species composition. This early successional forest stand is in fair/poor condition, with high levels of invasive species cover, woody vine interference, and coarse woody debris. The dominant canopy size class is 6-11-inch dbh and canopy closure is estimated at 60-80 percent. The canopy is dominated by black locust, with inclusions of green ash, Austrian pine, and black cherry. The understory is dominated by poison ivy, garlic mustard, multiflora rose, and Japanese honeysuckle.

Segment 2/Hedgerow 1 (S2-H1) (page 14 of 57) is a thin strip of trees loosely connected to S2-FS4 located along the western edge of the I-70 on-ramp from Cooks Lane. This hedgerow is in fair condition with an average size class of 2-6-inch dbh and high levels of invasives. Dominant

species consist of black locust, and bush honeysuckle, with inclusions of white mulberry, sumac (*Rhus* sp.), Japanese honeysuckle, and multiflora rose.

S2-H2 (page 14 of 57) is a small roadside cluster of trees located in the northeastern quadrant of the I-70/Security Boulevard interchange. This hedgerow is in fair condition with an average size class of 4-10-inch dbh and high levels of invasives. Common species include green ash, red maple, pin oak, bush honeysuckle, Oriental bittersweet, and Japanese honeysuckle.

3.2.3 US 40 Segment (Segment 3) Forest Stands and Hedgerows

The majority of forest stands and hedgerows within the US 40 segment (Segment 3) are located along the Edmondson Avenue corridor and Gwynns Falls stream valley. In general, forest stands and hedgerows within this segment are early-successional and dominated by pioneer and invasive species. A total of four forest stands and 12 hedgerows occur within this segment and are described in detail below.

Segment 3 - Forest Stand 1 (S3-FS1 page 25 of 57) is an early to mid-successional Sycamore/Green Ash/Boxelder/Silver Maple Association forest located within the Gwynns Falls stream valley at the Edmondson Avenue bridge crossing. This forested community is in fair condition with high levels of invasive species cover, woody vine interference, and trash. The dominant canopy size class is 10-16-inch dbh, with approximately 80 percent canopy closure. The dominant canopy species are boxelder and elm, with inclusions of black locust, sycamore, and tree-of-heaven. Common understory species consist of English ivy, Japanese honeysuckle, bush honeysuckle, and clematis (*Clematis spp.*).

S3-FS2 (page 23 of 57) is an early successional Sycamore/Green Ash/Boxelder/Silver Maple Association forest located on the grounds of the Allendale senior housing facility on Franklin Street. This forest stand is in poor condition with moderate coarse woody debris and high levels of invasive species cover and woody vine interference. The dominant canopy size class is 8-14-inch dbh, with scattered canopy openings and approximately 50-80 percent canopy closure. The canopy is dominated by green ash, white ash, black locust, and tree-of-heaven, with inclusions of American elm, and white mulberry. Common understory species consist of poison ivy, blackberry, ash, white mulberry, Oriental bittersweet, English ivy, multiflora rose, and Norway maple.

S3-FS3 (page 24 of 57) is an early successional Sycamore/Green Ash/Boxelder/Silver Maple Association forest located south of Edmondson Avenue near the Hilton Street interchange. This small forested area is in poor condition because of high levels of invasive species cover and woody vine interference. The average canopy size class is 6-12-inch dbh, with 60-80 percent canopy closure. The canopy is dominated by black locust, black cherry, and tree-of-heaven, with inclusions of green ash, black gum, and pin oak. Common understory species include blackberry, Oriental bittersweet, bush honeysuckle, English ivy, and multiflora rose.

S3-FS4 (page 24 of 57) is an early successional Sycamore/Green Ash/Boxelder/Silver Maple Association forest located north of Edmondson Avenue near the Hilton Street interchange. This small forested area is in poor condition because of high levels of invasive species cover and

woody vine interference. The average canopy size class is 6-12-inch dbh, with 60-80 percent canopy closure. The canopy is dominated by green ash, boxelder, and tree-of-heaven, with inclusions of black cherry, white mulberry, and elm. Common understory species include blackberry, Oriental bittersweet, bush honeysuckle, Japanese honeysuckle, wild grape, porcelain berry (*Ampelopsis brevipedunculata*), and multiflora rose.

Segment 3/Hedgerow 2 (S3-H2) (page 22 of 57) is a thin strip of volunteer trees growing in a fence line south of Edmondson Avenue at New Cathedral Cemetery. This hedgerow is in poor condition with an average size class of 10-12-inch dbh and high levels of invasives. Dominant species consist of red maple, white mulberry, English ivy, Japanese honeysuckle, and wild grape.

S3-H4 (page 27 of 57) is a small cluster of volunteer trees growing in a fence line at the corner of North Calverton Road and Franklin Street. This hedgerow is in fair/poor condition with an average size class of 4-8-inch dbh and high levels of invasives. Common species include white mulberry, elm, English ivy, and tree-of-heaven.

S3-H5 (pages 27&28 of 57) is a thin strip of volunteer trees growing along the property boundary between the Baltimore City maintenance facility on North Calverton Street and the abandoned lot to the east. This hedgerow consists primarily of 2-6-inch dbh tree-of-heaven and elm in poor condition.

S3-H6 (page 28 of 57) is a thin strip of volunteer trees growing along the south end of North Franklintown Road, North Calverton Street, and North Warwick Avenue adjacent to the Amtrak right-of-way. This hedgerow consists primarily of 2-6-inch dbh tree-of-heaven, black locust, and elm in poor condition.

S3-H7 (page 28 of 57) is a thin strip of invasive volunteers growing along the perimeter of an industrial building on North Calverton Street, across from the Baltimore City maintenance facility. This hedgerow is in poor condition and contains 6-12-inch dbh tree-of-heaven, with Japanese honeysuckle.

S3-H8 (page 27 of 57) is a small cluster of invasive volunteers growing adjacent to Franklin Street within the northeast corner of the closed Maryland State Correctional property on North Calverton Road. This hedgerow is in poor condition and contains 3-6-inch dbh tree-of-heaven, with Japanese honeysuckle.

S3-H9 (page 27 of 57) is a small cluster of invasive volunteers growing adjacent to Franklin Street within the northeast corner of the abandoned lot just east of the Baltimore City maintenance facility located on North Calverton Street. This hedgerow is in poor condition and consists primarily of 6-12-inch dbh princess tree (*Paulownia* tomentosa) and Chinese elm (*Ulmus parvifolia*).

S3-H10 (page 29 of 57) is a cluster of volunteer trees growing along southeastern edge of North Warwick Avenue adjacent to the Amtrak right-of-way. This hedgerow is in poor condition and consists primarily of 3-12-inch dbh princess tree, boxelder, and Siberian elm (*Ulmus pumila*).

S3-H11 (page 29 of 57) is a cluster of volunteers growing along the southern edge of West Mulberry Street, just west of the Amtrak bridge. This hedgerow is in fair/poor condition and contains 3-14-inch dbh Chinese elm and boxelder, with Japanese honeysuckle dominating the understory.

S3-H12 (page 29 of 57) is a thin strip of vegetation located along the northern edge of West Mulberry Street, just west of the Amtrak bridge. This hedgerow is in fair/poor condition and consists of 4-14-inch dbh white mulberry, Chinese elm, tree-of-heaven, and zelkova engulfed in Japanese honeysuckle.

S3-H13 (page 29 of 57) is a cluster of volunteer vegetation growing along the northern edge of West Mulberry Street, just east of the Amtrak bridge. This hedgerow is in fair condition and consists primarily of 8-12-inch dbh boxelder, and elm. Multiflora rose, Japanese honeysuckle, and English ivy dominate the understory.

S3-H14 (page 30 of 57) is a thin strip of invasive volunteers growing along the top of the US 40 retaining wall near the North Monroe Street overpass. This hedgerow is in poor condition and consists of 2-8-inch dbh tree-of-heaven.

3.2.4 Downtown Tunnel Segment (Segment 4) Forest Stands and Hedgerows

The Downtown Tunnel segment (Segment 4) is located in a highly urbanized area dominated primarily by street/individual trees, as described in **Section 4**. Two hedgerows (described below) are located along the US 40 corridor and are of low quality with high levels of invasives. No forest stands were identified in this segment.

Segment 4/Hedgerow 1 (S4-H1) (page 34 of 57) is a thin strip of trees located in the US 40 median, just west of the bridges that span Martin Luther King, Jr. Boulevard. This hedgerow is in fair condition with high levels of invasives, trash, and debris. The canopy contains 10-15-inch dbh tree-of-heaven, American elm, red maple, and Bradford pear.

S4-H2 (page 33 of 57) is a thin strip of invasive volunteers growing along the fence line at the top of the US 40 retaining wall, east of the North Schroeder Street overpass. This hedgerow is in poor condition and consists primarily of 1-4-inch dbh white mulberry and tree of heaven.

3.2.5 East Segment (Segment 5) Forest Stands and Hedgerows

The majority of forest stands and hedgerows within the East segment (Segment 5) are located along inactive rail lines and the I-895 corridor near Lombard Street. In general, forest stands and hedgerows within this segment are early-successional, dominated primarily by pioneer and invasive species. A total of four forest stands and 13 hedgerows occur within this segment and are described in detail below.

Segment 5 - Forest Stand 1 (S5-FS1) (page 56&57 of 57) is an early successional Sweetgum Association forest located along northbound I-895, just north of the Bayview Boulevard on-ramp. This early-successional forest is in fair condition with a dominant canopy size class of 8-14-inch dbh. Canopy closure is approximately 80-100 percent with dominant species including sweetgum, green ash, black cherry, black locust, sycamore, cottonwood, American elm, slippery elm, and pin oak. Black locust is concentrated along previously disturbed edges, while sycamore and cottonwood are more prevalent in the floodplain adjacent to the NS track. Dominant understory species include red maple, red bud, poison ivy, and black hawthorn. Invasive levels are high and include multiflora rose, Japanese honeysuckle, and Russian Olive. Coarse woody debris is low and woody vine interference is high.

S5-FS2 (page 51 of 57) is an early successional Pioneer Association forest located south of Eastern Avenue, east of the NS track. This forest stand is in poor condition with a dominant canopy size class of 8-12-inch dbh. Canopy closure is approximately 80 percent with some gaps and is dominated by black cherry and princess tree. Common understory species include elm, black cherry, pokeweed, poison ivy, blackberry, and Virginia creeper. Invasive levels are high and include white mulberry, tree of heaven, Bradford pear, Japanese honeysuckle, and bush honeysuckle. Coarse woody debris and woody vine interference are high.

S5-FS3 (page 51&52 of 57) is an early successional Pioneer Association forest located north of S5-FS2 and Eastern Avenue. This forest stand is in poor condition with scattered trash throughout and high levels of invasives. The average canopy size class is 6-12-inch dbh, with 60-80 percent canopy closure. Dominant species include black cherry princess tree, elm, Russian olive, white mulberry, tree of heaven, Japanese honeysuckle, bush honeysuckle, and poison ivy. Coarse woody debris and woody vine interference are high.

S5-FS9 (page 52 of 57) is an early successional Pioneer Association forest located along the NS track, east of South Kresson Street. This forest stand is in poor condition with high levels of invasives and woody vine interference. The average canopy size class is 8-14-inch dbh

Segment 5/Hedgerow 1 (S5-H1) (page 48 of 57) is a thin strip of vegetation growing along a fenceline on the Canton Crossing, LLC property, just west of South Clinton Street. This hedgerow is in poor condition and is dominated by invasive species. Dominant canopy size is 2-6 inch dbh and species composition includes tree-of-heaven, Bradford pear, and bush honeysuckle.

S5-H2 (page 53 of 57) is a narrow strip of vegetation growing along the property boundary between Johns Hopkins Bayview Hospital and I-895 near Alpha Commons Drive. This hedgerow is in fair/poor condition with high levels of invasive species cover and woody vine interference. Dominant canopy size is 12-20-inch dbh and species composition includes white mulberry, white pine, tree-of-heaven, black cherry, and northern red oak. The understory is dominated by poison ivy, Virginia creeper, Japanese honeysuckle and thistle (*Cirsium* sp).

S5-H3 (page 49 of 57) is a cluster of volunteer vegetation growing in an abandoned lot along Boston Street, just south of the Exxon property. This hedgerow is in poor condition with high

levels of invasives, woody vines, trash, and debris. Dominant canopy size is 2-6-inch dbh and species composition includes tree of heaven, Bradford pear, sumac, and white mulberry. The understory is dominated by multiflora rose, poison ivy, and oriental bittersweet.

S5-H4 (page 53 of 57) is a brushy area of volunteer vegetation growing between South Ponca Street and southbound I-895. This hedgerow is in fair condition and consists primarily of 1-3-inch dbh invasives tree-of-heaven, Bradford pear, Russian olive, and white mulberry.

S5-H5 (page 55 of 57) is located in the loop from northbound I-895 to East Lombard Street. This brushy hedgerow is in poor condition and consists primarily of 2-6-inch dbh invasive volunteers tree-of-heaven, Bradford pear, and white mulberry. The herbaceous layer is thick and is dominated by poison ivy, multiflora rose, fescue, and wild garlic.

S5-H6 (page 50 of 57) is a cluster of volunteer vegetation growing along the NS fence line, east of South Haven and Hudson Streets. This hedgerow is in poor condition and contains 2-6-inch tree-of-heaven, Bradford pear, and white mulberry in the canopy. Woody-vine interference is high and consists of poison ivy, Virginia creeper, and Japanese honeysuckle.

S5-H7 (page 52 of 57) is growing along a fenceline between South Kresson Street and the CSX ROW, just south of East Lombard Street. This hedgerow is in poor condition and consists primarily of 8-16-inch dbh black locust, black cherry, and white mulberry. Tree-of-heaven, box elder, Japanese honeysuckle, and poison ivy dominate the understory.

S5-H8 (page 52 of 57) is located along an abandoned NS line, between South Haven and South Janney Streets. This hedgerow is in poor condition with heavy invasives, and is dominated by 8-16-inch tree of heaven, white mulberry, black cherry, and cottonwood. Woody vine interference is high and consists of Japanese honeysuckle, Virginia creeper, poison ivy, and wild grape.

S5-H9 (page 51 of 57) is located along an abandoned NS line, south of Eastern Avenue. This hedgerow is in poor condition and is dominated by 8-16-inch dbh black locust, black cherry, white mulberry, and green ash. Woody vine interference is high and consists of Japanese honeysuckle, poison ivy, Virginia creeper, and wild grape.

S5-H11 (page 52 of 57) is a thin strip of trees located in an industrial yard, north of S5-FS3, between South Haven and South Janney Streets. This hedgerow is in poor condition with trash and debris scattered throughout. Dominant species include 6-10-inch dbh black willow, tree of heaven, white mulberry, and cottonwood. Phragmites and Japanese honeysuckle dominate the understory.

S5-H16 (page 51 of 57) is a thin strip of trees located along the western fenceline on the NS yard, east of Fait Avenue. This hedgerow is in poor condition and is dominated by invasive 2-6-inch white mulberry and tree of heaven.

S5-H17 (page 51 of 57) is a small cluster of invasive volunteers growing along the eastern fence on the NS yard, east of S5-H16. This hedgerow is in poor condition and is dominated by 2-6-inch princess tree and tree of heaven.

S5-H18 (page 53 of 57) is a thin strip of trees located along the eastern fenceline of the NS track, east of S5-FS9. This hedgerow is in poor condition with high levels of invasives and vines. Dominant species include 6-12-inch white mulberry, tree of heaven, and cherry, with Japanese honeysuckle and poison ivy present in the understory.

S5-H20 (page 52 of 57) is a thin strip of trees located along the eastern side of the CSX track, east of S5-H7. This hedgerow is in poor condition with high levels of invasives and vines. Dominant species include 2-6-inch tree of heaven and black locust, with bush honeysuckle, Japanese honeysuckle and poison ivy in the understory.

Table 9 summarizes the Forest Stands and Hedgerows.

Table 9: Forest Stand and Hedgerow Summary Table

Stand/ Hedgerow Number	Acreage	Forest Association	Dominant Vegetation		Canopy Size Class (inches dbh)	Condition	Invasive Cover
			Common Name	*Scientific Name*			
S1-FS1	2.89	Virginia Pine/Oak	Virginia pine red maple green ash pin oak persimmon red cedar black haw arrowwood multiflora rose bush honeysuckle Japanese honeysuckle	*Pinus virginiana* *Acer rubrum* *Fraxinus pennsylvanica* *Quercus palustris* *Diospyros virginiana* *Juniperus virginiana* *Viburnum prunifolium* *Viburnum dentatum* *Rosa multiflora* *Lonicera maackii* *Lonicera japonica*	8-14	fair	high
S1-FS2	0.59	White Oak/Black Oak/Northern Red Oak	white oak black oak northern red oak southern red oak black cherry flowering dogwood black haw poison ivy greenbrier bush honeysuckle Japanese honeysuckle	*Quercus alba* *Quercus velutina* *Quercus rubra* *Quercus falcata* *Prunus serotina* *Cornus florida* *Viburnum prunifolium* *Toxicodendron radicans* *Smilax rotundifolia* *Lonicera maackii* *Lonicera japonica*	12-20	good/fair	low/moderate

Table 9: Forest Stand and Hedgerow Summary Table

Stand/ Hedgerow Number	Acreage	Forest Association	Dominant Vegetation		Canopy Size Class (inches dbh)	Condition	Invasive Cover
			Common Name	*Scientific Name*			
S1-FS3	0.26	White Oak/Black Oak/Northern Red Oak	white oak, northern red oak black oak flowering cherry beech green ash flowering dogwood black locust black haw poison ivy white mulberry Japanese honeysuckle	*Quercus alba* *Quercus rubra* *Quercus velutina* *Prunus spp.* *Fagus grandifolia* *Fraxinus pennsylvanica* *Cornus florida* *Robinia pseudoacacia* *Viburnum prunifolium* *Toxicodendron radicans* *Morus alba* *Lonicera japonica*	12-20	fair/poor	high
S1-FS4	2.39	White Oak/Black Oak/Northern Red Oak	northern red oak white oak green ash bigtooth aspen hickory beech, flowering cherry poison ivy Virginia pine multiflora rose Russian olive bush honeysuckle Japanese honeysuckle	*Quercus rubra* *Quercus alba* *Fraxinus pennsylvanica* *Populus grandidentata* *Carya spp.* *Fagus grandifolia* *Prunus spp.* *Toxicodendron radicans* *Pinus virginiana* *Rosa multiflora* *Eleagnus angustifolia* *Lonicera maackii* *Lonicera japonica*	12-20	fair	high

Table 9: Forest Stand and Hedgerow Summary Table

Stand/ Hedgerow Number	Acreage	Forest Association	Dominant Vegetation		Canopy Size Class (inches dbh)	Condition	Invasive Cover
			Common Name	*Scientific Name*			
S1-FS5	1.77	Virginia Pine/Oak	bigtooth aspen sweetgum white pine northern red oak black haw sumac red maple Japanese honeysuckle bush honeysuckle	*Populus grandidentata* *Liquidambar styraciflua* *Pinus strobus* *Quercus rubra* *Viburnum prunifolium* *Rhus spp.* *Acer rubrum* *Lonicera japonica* *Lonicera maackii*	6-18	fair	high
S1-FS6	4.76	Virginia Pine/Oak	red maple green ash northern red oak Virginia pine beech eastern red cedar willow oak pin oak white pine Bradford pear Japanese honeysuckle bush honeysuckle	*Acer rubrum* *Fraxinus pennsylvanica* *Quercus rubra* *Pinus virginiana* *Fagus grandifolia* *Juniperus virginiana* *Quercus phellos* *Quercus palustris* *Pinus strobus* *Pyrus calleryana* *Lonicera japonica* *Lonicera maackii*	8-14	good	high

Table 9: Forest Stand and Hedgerow Summary Table

Stand/ Hedgerow Number	Acreage	Forest Association	Dominant Vegetation		Canopy Size Class (inches dbh)	Condition	Invasive Cover
			Common Name	*Scientific Name*			
S1-FS7	1.83	Sycamore/Green Ash/Boxelder/Silver Maple	green ash white oak red maple northern red oak Slippery elm hickory black haw greenbrier Bradford pear Japanese honeysuckle	*Fraxinus pennsylvanica* *Quercus alba* *Acer rubrum* *Quercus rubra* *Ulmus rubra* *Carya spp.* *Viburnum prunifolium* *Smilax rotundifolia* *Pyrus calleryana* *Lonicera japonica*	12-18	good/fair	high
S1-FS8	2.52	Sycamore/Green Ash/Boxelder/Silver Maple	boxelder red maple green ash silver maple black locust sawtooth oak sycamore bush honeysuckle multiflora rose English ivy lesser celandine garlic mustard	*Acer negundo* *Acer rubrum* *Fraxinus pennsylvanica* *Acer saccharinum* *Robinia pseudoacacia* *Quercus accutissima* *Platanus occidentalis* *Lonicera maackii* *Rosa multiflora* *Hedera helix* *Ranunculus ficaria* *Allaria petiolata*	8-16	fair	high

Table 9: Forest Stand and Hedgerow Summary Table

Stand/ Hedgerow Number	Acreage	Forest Association	Dominant Vegetation		Canopy Size Class (inches dbh)	Condition	Invasive Cover
			Common Name	*Scientific Name*			
S1-FS9	2.36	Red Maple	black locust red maple black cherry northern red oak green ash boxelder multiflora rose bush honeysuckle Japanese honeysuckle garlic mustard	*Robinia pseudoacacia* *Acer rubrum* *Prunus serotina* *Quercus rubra* *Fraxinus pennsylvanica* *Acer negundo* *Rosa multiflora* *Lonicera maackii* *Lonicera japonica* *Allaria petiolata*	6-11	fair	high
S1-FS10	6.20	Tulip Poplar	tulip poplar northern red oak beech sassafras maple leaf viburnum black haw spice bush jack-in-the-pulpit mayapple Japanese honeysuckle multiflora rose burning bush	*Liriodendron tulipifera* *Quercus rubra* *Fagus grandifolia* *Sassafras albidum* *Viburnum acerifolium* *Viburnum prunifolium* *Lindera benzoin* *Arisaema triphyllum* *Podophyllum peltatum* *Lonicera japonica* *Rosa multiflora* *Euonymus alatus*	14-30	good	moderate/high

Table 9: Forest Stand and Hedgerow Summary Table

Stand/ Hedgerow Number	Acreage	Forest Association	Dominant Vegetation		Canopy Size Class (inches dbh)	Condition	Invasive Cover
			Common Name	*Scientific Name*			
S1-FS11	6.16	Tulip Poplar	boxelder black locust green ash red maple tulip poplar black walnut wineberry Chinese wisteria garlic mustard oriental bittersweet multiflora rose Japanese honeysuckle	*Acer negundo* *Robinia pseudoacacia* *Fraxinus pennsylvanica* *Acer rubrum* *Liriodendron tulipifera* *Juglans nigra* *Rubus phoenicolasius* *Wisteria sinensis* *Allaria petiolata* *Celastrus orbiculatus* *Rosa multiflora* *Lonicera japonica*	8-14	poor	high
S1-FS12	1.07	Sycamore/Green Ash/Boxelder/Silver Maple	green ash red maple slippery elm boxelder sumac white mulberry poison ivy multiflora rose Japanese honeysuckle Bradford pear	*Fraxinus pennsylvanica* *Acer rubrum* *Ulmus rubra* *Acer negundo* *Rhus spp.* *Morus alba* *Toxicodendron radicans* *Rosa multiflora* *Lonicera japonica* *Pyrus calleryana*	8-14	fair	high

Table 9: Forest Stand and Hedgerow Summary Table

Stand/ Hedgerow Number	Acreage	Forest Association	Dominant Vegetation		Canopy Size Class (inches dbh)	Condition	Invasive Cover
			Common Name	*Scientific Name*			
S1-FS13	0.45	Tulip Poplar	tulip-poplar slippery elm black cherry sassafras flowering dogwood mayapple arrowwood ironwood Virginia creeper spicebush oriental bittersweet Japanese honeysuckle	*Liriodendron tulipifera* *Ulmus rubra* *Prunus serotina* *Sassafras albidum* *Cornus florida* *Podophyllum peltatum* *Viburnum dentatum* *Carpinus caroliniana* *Parthenoncissus quinquefolia* *Lindera benzoin* *Celastrus orbiculatus* *Lonicera japonica*	12-20	good	moderate/high
S1-FS14	0.25	Tulip Poplar	tulip poplar green ash white ash black cherry sassafras flowering dogwood black haw mayapple redbud oriental bittersweet multiflora rose white mulberry Japanese honeysuckle	*Liriodendron tulipifera* *Fraxinus pennsylvanica* *Fraxinus americana* *Prunus serotina* *Sassafras albidum* *Cornus florida* *Viburnum prunifolium* *Podophyllum peltatum* *Cercis canadensis* *Celastrus orbiculatus* *Rosa multiflora* *Morus alba* *Lonicera japonica*	12-20	good/fair	moderate/high

Table 9: Forest Stand and Hedgerow Summary Table

Stand/ Hedgerow Number	Acreage	Forest Association	Dominant Vegetation		Canopy Size Class (inches dbh)	Condition	Invasive Cover
			Common Name	*Scientific Name*			
S1-FS15	0.51	Tulip Poplar	tulip-poplar black cherry black haw red maple boxelder mayapple elm jack-in-the-pulpit spicebush multiflora rose garlic mustard white mulberry	*Liriodendron tulipifera* *Prunus serotina* *Viburnum prunifolium* *Acer rubrum* *Acer negundo* *Podophyllum peltatum* *Ulmus spp.* *Arisaema triphyllum* *Lindera benzoin* *Rosa multiflora* *Allaria petiolata* *Morus alba*	12-20	fair	high
S1-FS16	0.54	Tulip Poplar	tulip poplar black walnut black cherry green ash wild grape sassafras tree-of-heaven wineberry multiflora rose garlic mustard ground ivy white mulberry bush honeysuckle oriental bittersweet Japanese honeysuckle	*Liriodendron tulipifera* *Juglans nigra* *Prunus serotina* *Fraxinus pennsylvanica* *Vitus spp.* *Sassafras albidum* *Ailanthus altissima* *Rubus phoenicolasius* *Rosa multiflora* *Allaria petiolata* *Glechoma hederacea* *Morus alba* *Lonicera maackii* *Celastrus orbiculatus* *Lonicera japonica*	12-18	fair/poor	high

Table 9: Forest Stand and Hedgerow Summary Table

Stand/ Hedgerow Number	Acreage	Forest Association	Dominant Vegetation		Canopy Size Class (inches dbh)	Condition	Invasive Cover
			Common Name	*Scientific Name*			
S1-FS17	0.48	Tulip Poplar	tulip poplar red maple green ash persimmon boxelder holly northern red oak slippery elm poison ivy English ivy bush honeysuckle Japanese honeysuckle multiflora rose white mulberry	*Liriodendron tulipifera* *Acer rubrum* *Fraxinus pennsylvanica* *Diospyros virginiana* *Acer negundo* *Ilex opaca* *Quercus rubra* *Ulmus rubra* *Toxicodendron radicans* *Hedera helix* *Lonicera maackii* *Lonicera japonica* *Rosa multiflora* *Morus alba*	12-18	poor	high
S1-FS18	2.17	White Oak/Black Oak/Northern Red Oak	northern red oak white oak black oak beech black gum spice bush mayapple maple-leaf viburnum arrowwood ironwood flowering dogwood sassafras	*Quercus rubra* *Quercus alba* *Quercus velutina* *Fagus grandifolia* *Nyssa sylvatica* *Lindera benzoin* *Podophyllum peltatum* *Viburnum acerifolium* *Viburnum dentatum* *Carpinus caroliniana* *Cornus florida* *Sassafras albidum*	16-30+	good	low

Table 9: Forest Stand and Hedgerow Summary Table

Stand/ Hedgerow Number	Acreage	Forest Association	Dominant Vegetation		Canopy Size Class (inches dbh)	Condition	Invasive Cover
			Common Name	*Scientific Name*			
S1-FS19	0.27	White Oak/Black Oak/Northern Red Oak	northern red oak white oak black oak pignut hickory black gum tulip poplar mayapple maple-leaf viburnum arrowwood ironwood flowering dogwood sassafras	*Quercus rubra* *Quercus alba* *Quercus velutina* *Carya glabra* *Nyssa sylvatica* *Liriodendron tulipifera* *Podophyllum peltatum* *Viburnum acerifolium* *Viburnum dentatum* *Carpinus caroliniana* *Cornus florida* *Sassafras albidum*	16-30+	good	low
S1-FS20	0.45	Red Cedar	eastern red cedar green ash American elm sumac bush honeysuckle Russian olive Japanese honeysuckle Bradford pear white mulberry	*Juniperus virginiana* *Fraxinus pennsylvanica* *Ulmus americana* *Rhus spp.* *Lonicera maackii* *Eleagnus angustifolia* *Lonicera japonica* *Pyrus calleryana* *Morus alba*	6-11	fair	high

Table 9: Forest Stand and Hedgerow Summary Table

Stand/ Hedgerow Number	Acreage	Forest Association	Dominant Vegetation		Canopy Size Class (inches dbh)	Condition	Invasive Cover
			Common Name	*Scientific Name*			
S1-FS21	0.18	Red Maple	bigtooth aspen northern red oak red maple black cherry Austrian pine red cedar staghorn sumac privet multiflora rose bush honeysuckle Japanese honeysuckle	*Populus grandidentata* *Quercus rubra* *Acer rubrum* *Prunus serotina* *Pinus nigra* *Juniperus virginiana* *Rhus typhina* *Ligustrum vulgare* *Rosa multiflora* *Lonicera maackii* *Lonicera japonica*	6-11	fair	high
S1-FS22	0.06	Tulip Poplar	boxelder tulip poplar black cherry Virginia pine red maple sassafras poison ivy wild grape Bradford pear Japanese honeysuckle multiflora rose bush honeysuckle	*Acer negundo* *Liriodendron tulipifera* *Prunus serotina* *Pinus virginiana* *Acer rubrum* *Sassafras albidum* *Toxicodendron radicans* *Vitus spp.* *Pyrus calleryana* *Lonicera japonica* *Rosa multiflora* *Lonicera maackii*	6-14	fair/poor	high

Table 9: Forest Stand and Hedgerow Summary Table

Stand/ Hedgerow Number	Acreage	Forest Association	Dominant Vegetation		Canopy Size Class (inches dbh)	Condition	Invasive Cover
			Common Name	*Scientific Name*			
S1-FS23	2.46	Virginia Pine/Oak	Virginia pine black locust pin oak black haw green ash sawtooth oak red oak Bradford pear white mulberry Russian olive bush honeysuckle oriental bittersweet Japanese honeysuckle	*Pinus virginiana* *Robinia pseudoacacia* *Quercus palustris* *Viburnum prunifolium* *Fraxinus pennsylvanica* *Quercus accutissima* *Acer rubrum* *Pyrus calleryana* *Morus alba* *Eleagnus angustifolia* *Lonicera maackii* *Celastrus orbiculatus* *Lonicera japonica*	8-14	fair	high
S1-FS24	0.41	Pioneer Hardwood	willow oak black walnut green ash black haw grape vine sumac black cherry goldenrain tree bush honeysuckle oriental bittersweet white mulberry Japanese honeysuckle	*Quercus phellos* *Juglans nigra* *Fraxinus pennsylvanica* *Viburnum prunifolium* *Vitus spp.* *Rhus spp.* *Prunus serotina* *Koelreuteria paniculata* *Lonicera maackii* *Celastrus orbiculatus* *Morus alba* *Lonicera japonica*	6-11	fair	high

Table 9: Forest Stand and Hedgerow Summary Table

Stand/ Hedgerow Number	Acreage	Forest Association	Dominant Vegetation		Canopy Size Class (inches dbh)	Condition	Invasive Cover
			Common Name	*Scientific Name*			
S1-FS25	0.08	Red Maple	red cedar staghorn sumac sawtooth oak elm red maple boxelder Bradford pear	*Juniperus virginiana* *Rhus typhina* *Quercus accutissima* *Ulmus spp.* *Acer rubrum* *Acer negundo* *Pyrus calleryana*	6-11	good/fair	high
S1-FS26	0.16	Red Maple	red maple Norway maple black locust green ash white oak red cedar Japanese honeysuckle	*Acer rubrum* *Acer platanoides* *Robinia pseudoacacia* *Fraxinus pennsylvanica* *Quercus alba* *Juniperus virginiana* *Lonicera japonica*	6-14	fair	high
S1-H1	0.05	n/a	green ash white oak red maple black cherry hickory black haw Japanese honeysuckle Norway maple white mulberry bush honeysuckle	*Fraxinus pennsylvanica* *Quercus alba* *Acer rubrum* *Prunus serotina* *Carya spp.* *Viburnum prunifolium* *Lonicera japonica* *Acer platanoides* *Morus alba* *Lonicera maackii*	8-14	fair	high

Table 9: Forest Stand and Hedgerow Summary Table

Stand/ Hedgerow Number	Acreage	Forest Association	Dominant Vegetation		Canopy Size Class (inches dbh)	Condition	Invasive Cover
			Common Name	*Scientific Name*			
S1-H2	0.65	n/a	white oak northern red oak green ash black locust black cherry red maple arborvitae red cedar silver maple multiflora rose Japanese honeysuckle	*Quercus alba* *Quercus rubra* *Fraxinus pennsylvanica* *Robinia pseudoacacia* *Prunus serotina* *Acer rubrum* *Thuja spp.* *Juniperus virginiana* *Acer saccharinum* *Rosa multiflora* *Lonicera japonica*	8-16	fair/poor	high
S1-H3	0.43	n/a	black oak white oak northern red oak green ash black locust sawtooth oak Leyland cypress black cherry pin oak Japanese euonymus Bradford Pear bush honeysuckle	*Quercus velutina* *Quercus alba* *Quercus rubra* *Fraxinus pennsylvanica* *Robinia pseudoacacia* *Quercus accutissima* x *Cupressocyparis leylandii* *Prunus serotina* *Quercus palustris* *Euonymus alatus* *Pyrus calleryana* *Lonicera maackii*	6-10	good/fair	moderate
S1-H4	0.10	n/a	red cedar bush honeysuckle Bradford pear white mulberry	*Juniperus virginiana* *Lonicera maackii* *Pyrus calleryana* *Morus alba*	4-6	good	high

Table 9: Forest Stand and Hedgerow Summary Table

Stand/ Hedgerow Number	Acreage	Forest Association	Dominant Vegetation		Canopy Size Class (inches dbh)	Condition	Invasive Cover
			Common Name	*Scientific Name*			
S1-H7	0.13	n/a	staghorn sumac red cedar crab apple poison ivy bush honeysuckle	*Rhus typhina* *Juniperus virginiana* *Malus spp.* *Toxicodendron radicans* *Lonicera maackii*	3	good	low/moderate
S1-H10	0.34	n/a	sawtooth oak green ash red cedar pin oak northern red oak poison ivy multiflora rose bush honeysuckle Japanese honeysuckle	*Quercus accutissima* *Fraxinus pennsylvanica* *Juniperus virginiana* *Quercus palustris* *Quercus rubra* *Toxicodendron radicans* *Rosa multiflora* *Lonicera maackii* *Lonicera japonica*	12-18	fair	moderate
S1-H11	0.19	n/a	red cedar red maple staghorn sumac sawtooth oak poison ivy multiflora rose bush honeysuckle Russian olive Bradford pear	*Juniperus virginiana* *Acer rubrum* *Rhus typhina* *Quercus accutissima* *Toxicodendron radicans* *Rosa multiflora* *Lonicera japonica* *Eleagnus angustifolia* *Pyrus calleryana*	6-10	good	moderate

Table 9: Forest Stand and Hedgerow Summary Table

Stand/ Hedgerow Number	Acreage	Forest Association	Dominant Vegetation		Canopy Size Class (inches dbh)	Condition	Invasive Cover
			Common Name	*Scientific Name*			
S1-H12	0.28	n/a	white pine sawtooth oak flowering cherry Austrian pine crab apple bush honeysuckle Japanese honeysuckle	*Pinus strobus* *Quercus accutissima* *Prunus spp.* *Pinus nigra* *Malus spp.* *Lonicera maackii* *Lonicera japonica*	6-14	good/fair	low
S1-H13	0.36	n/a	red maple sawtooth oak black locust American elm Austrian pine black haw bush honeysuckle multiflora rose Japanese honeysuckle Russian olive	*Acer rubrum* *Quercus accutissima* *Robinia pseudoacacia* *Ulmus americana* *Pinus nigra* *Viburnum prunifolium* *Lonicera maackii* *Rosa multiflora* *Lonicera japonica* *Eleagnus angustifolia*	6-15	fair	high
S1-H14	1.01	n/a	red maple red cedar Virginia pine black hawthorn white mulberry Bradford pear bush honeysuckle multiflora rose Russian olive Japanese honeysuckle	*Acer rubrum* *Juniperus virginiana* *Pinus virginiana* *Crataegus douglasii* *Morus alba* *Pyrus calleryana* *Lonicera maackii* *Rosa multiflora* *Eleagnus angustifolia* *Lonicera japonica*	4-10	good	moderate/high

Table 9: Forest Stand and Hedgerow Summary Table

Stand/ Hedgerow Number	Acreage	Forest Association	Dominant Vegetation		Canopy Size Class (inches dbh)	Condition	Invasive Cover
			Common Name	*Scientific Name*			
S1-H18	0.11	n/a	cherry laurel arrowwood holly cultivar	*Prunus laurocerasus* *Viburnum dentatum* *Ilex spp.*	6-10	good	low
S1-H19	0.13	n/a	black locust green ash bush honeysuckle multiflora rose Japanese honeysuckle	*Robinia pseudoacacia* *Fraxinus pennsylvanica* *Lonicera maackii* *Rosa multiflora* *Lonicera japonica*	6-10	fair	high
S1-H20	0.26	n/a	red maple green ash black locust slippery elm black oak black cherry bush honeysuckle oriental bittersweet Japanese honeysuckle multiflora rose	*Acer rubrum* *Fraxinus pennsylvanica* *Robinia pseudoacacia* *Ulmus rubra* *Quercus velutina* *Prunus serotina* *Lonicera maackii* *Celastrus orbiculatus* *Lonicera japonica* *Rosa multiflora*	8-14	fair	high

Table 9: Forest Stand and Hedgerow Summary Table

Stand/ Hedgerow Number	Acreage	Forest Association	Dominant Vegetation		Canopy Size Class (inches dbh)	Condition	Invasive Cover
			Common Name	*Scientific Name*			
S1-H21	0.04	n/a	northern red oak black cherry black walnut green ash boxelder white mulberry oriental bittersweet ground ivy multiflora rose wineberry bush honeysuckle English ivy Japanese honeysuckle	*Quercus rubra* *Prunus serotina* *Juglans nigra* *Fraxinus pennsylvanica* *Acer negundo* *Morus alba* *Celastrus orbiculatus* *Glechoma hederacea* *Rosa multiflora* *Rubus phoenicolasius* *Lonicera maackii* *Hedera helix* *Lonicera japonica*	8-14	poor	high
S1-H22	0.51	n/a	red maple green ash sycamore pin oak black locust boxelder multiflora rose oriental bittersweet bush honeysuckle	*Acer rubrum* *Fraxinus pennsylvanica* *Platanus occidentalis* *Quercus palustris* *Robinia pseudoacacia* *Acer negundo* *Rosa multiflora* *Celastrus orbiculatus* *Lonicera maackii*	6-11	poor	high
S1-H23	0.21	n/a	white pine red maple green ash	*Pinus strobus* *Acer rubrum* *Fraxinus pennsylvanica*	8-12	good	low
S1-H24	0.07	n/a	Austrian pine white spruce zelkova	*Pinus nigra* *Picea glauca* *Zelkova serrata*	6-8	good	low

Table 9: Forest Stand and Hedgerow Summary Table

Stand/ Hedgerow Number	Acreage	Forest Association	Dominant Vegetation		Canopy Size Class (inches dbh)	Condition	Invasive Cover
			Common Name	*Scientific Name*			
S2-FS2	1.35	Tulip Poplar	black walnut black locust tulip poplar pin oak boxelder black cherry bush honeysuckle multiflora rose Japanese honeysuckle	*Juglans nigra* *Robinia pseudoacacia* *Liriodendron tulipifera* *Quercus palustris* *Acer negundo* *Prunus serotina* *Lonicera maackii* *Rosa multiflora* *Lonicera japonica*	8-16	good/fair	high
S2-FS3	2.89	Black Locust	black locust northern red oak white pine sawtooth oak red maple black cherry American holly bush honeysuckle Japanese honeysuckle	*Robinia pseudoacacia* *Quercus rubra* *Pinus strobus* *Quercus accutissima* *Acer rubrum* *Prunus serotina* *Ilex americana* *Lonicera maackii* *Lonicera japonica*	10-18	fair/poor	high
S2-FS4	1.41	Tulip Poplar	black locust slippery elm pin oak tulip poplar red maple black cherry beech poison ivy bush honeysuckle Japanese honeysuckle multiflora rose	*Robinia pseudoacacia* *Ulmus rubra* *Quercus palustris* *Liriodendron tulipifera* *Acer rubrum* *Prunus serotina* *Fagus grandifolia* *Toxicodendron radicans* *Lonicera maackii* *Lonicera japonica* *Rosa multiflora*	6-12	fair/poor	high

Table 9: Forest Stand and Hedgerow Summary Table

Stand/ Hedgerow Number	Acreage	Forest Association	Dominant Vegetation		Canopy Size Class (inches dbh)	Condition	Invasive Cover
			Common Name	*Scientific Name*			
S2-FS5	1.13	Tulip Poplar	tulip poplar white oak beech black locust green ash black cherry sycamore spicebush multiflora rose Japanese honeysuckle oriental bittersweet	*Liriodendron tulipifera* *Quercus alba* *Fagus grandifolia* *Robinia pseudoacacia* *Fraxinus pennsylvanica* *Prunus serotina* *Platanus occidentalis* *Lindera benzoin* *Rosa multiflora* *Lonicera japonica* *Celastrus orbiculatus*	12-30	good	moderate
S2-FS6	2.07	Sycamore/Green Ash/Boxelder/Silver Maple	white oak northern red oak black locust beech sycamore boxelder poison ivy oriental bittersweet Japanese honeysuckle multiflora rose bush honeysuckle	*Quercus alba* *Quercus rubra* *Robinia pseudoacacia* *Fagus grandifolia* *Fagus grandifolia* *Acer negundo* *Toxicodendron radicans* *Celastrus orbiculatus* *Lonicera japonica* *Rosa multiflora* *Lonicera maackii*	12-24	good/fair	high
S2-FS7	0.22	Sycamore/Green Ash/Boxelder/Silver Maple	boxelder black locust slippery elm Leyland cypress red maple bush honeysuckle tree-of-heaven Japanese honeysuckle	*Acer negundo* *Robinia pseudoacacia* Ulmus rubra x *Cupressocyparis leylandii* *Acer rubrum* *Lonicera maackii* *Ailanthus altissima* *Lonicera japonica*	6-12	poor	high

Table 9: Forest Stand and Hedgerow Summary Table

Stand/ Hedgerow Number	Acreage	Forest Association	Dominant Vegetation		Canopy Size Class (inches dbh)	Condition	Invasive Cover
			Common Name	*Scientific Name*			
S2-FS8	0.34	Sycamore/Green Ash/Boxelder/Silver Maple	green ash boxelder slippery elm red maple sycamore black cherry poison ivy blackberry Virginia creeper English ivy garlic mustard	*Fraxinus pennsylvanica* *Acer negundo* *Ulmus rubra* *Acer rubrum* *Platanus occidentalis* *Prunus serotina* *Toxicodendron radicans* *Rubus allegheniensis* *Parthenoncissus quinquefolia* *Hedera helix* *Allaria petiolata*	12-18	fair	high
S2-FS9	0.49	Tulip Poplar	tulip poplar slippery elm boxelder poison ivy multiflora rose Japanese honeysuckle bush honeysuckle English ivy	*Liriodendron tulipifera* *Ulmus rubra* *Acer negundo* *Toxicodendron radicans* *Rosa multiflora* *Lonicera japonica* *Lonicera maackii* *Hedera helix*	8-16	fair	high
S2-FS10	3.46	Virginia Pine/Oak	pin oak white oak black locust red maple black cherry Virginia pine poison ivy Japanese honeysuckle bush honeysuckle	*Quercus palustris* *Quercus alba* *Robinia pseudoacacia* *Acer rubrum* *Prunus serotina* *Pinus virginiana* *Toxicodendron radicans* *Lonicera japonica* *Lonicera maackii*	6-12	fair	high

Table 9: Forest Stand and Hedgerow Summary Table

Stand/ Hedgerow Number	Acreage	Forest Association	Dominant Vegetation		Canopy Size Class (inches dbh)	Condition	Invasive Cover
			Common Name	*Scientific Name*			
S2-FS11	3.99	Tulip Poplar	tulip poplar slippery elm black locust green ash northern red oak poison ivy multiflora rose Japanese honeysuckle bush honeysuckle	*Liriodendron tulipifera* *Ulmus rubra* *Robinia pseudoacacia* *Fraxinus pennsylvanica* *Quercus rubra* *Toxicodendron radicans* *Rosa multiflora* *Lonicera japonica* *Lonicera maackii*	12-18	fair	high
S2-FS12	4.56	Red Maple	black walnut black locust boxelder red maple pin oak white pine multiflora rose bush honeysuckle	*Juglans nigra* *Robinia pseudoacacia* *Acer negundo* *Acer rubrum* *Quercus palustris* *Pinus strobus* *Rosa multiflora* *Lonicera maackii*	10-18	fair/poor	moderate/high
S2-FS13	0.36	Black Locust	black locust green ash Austrian pine black cherry poison ivy garlic mustard multiflora rose Japanese honeysuckle	*Robinia pseudoacacia* *Fraxinus pennsylvanica* *Pinus nigra* *Prunus serotina* *Toxicodendron radicans* *Allaria petiolata* *Rosa multiflora* *Lonicera japonica*	6-11	fair/poor	high

Table 9: Forest Stand and Hedgerow Summary Table

Stand/ Hedgerow Number	Acreage	Forest Association	Dominant Vegetation		Canopy Size Class (inches dbh)	Condition	Invasive Cover
			Common Name	*Scientific Name*			
S2-H1	0.10	n/a	black locust sumac bush honeysuckle white mulberry Japanese honeysuckle multiflora rose	*Robinia pseudoacacia* *Rhus spp.* *Lonicera maackii* *Morus alba* *Lonicera japonica* *Rosa multiflora*	2-6	fair	high
S2-H2	0.09	n/a	green ash red maple pin oak bush honeysuckle Oriental bittersweet Japanese honeysuckle	*Fraxinus pennsylvanica* *Acer rubrum* *Quercus palustris* *Lonicera maackii* *Celastrus orbiculatus* *Lonicera japonica*	4-10	fair	moderate
S3-FS1	1.06	Sycamore/Green Ash/Boxelder/Silver Maple	boxelder elm black locust sycamore tree-of-heaven English ivy Japanese honeysuckle bush honeysuckle clematis	*Acer negundo* *Ulmus spp.* *Robinia pseudoacacia* *Platanus occidentalis* *Ailanthus altissima* *Hedera helix* *Lonicera japonica* *Lonicera maackii* *Clematis spp.*	10-16	fair	high

Table 9: Forest Stand and Hedgerow Summary Table

Stand/ Hedgerow Number	Acreage	Forest Association	Dominant Vegetation		Canopy Size Class (inches dbh)	Condition	Invasive Cover
			Common Name	*Scientific Name*			
S3-FS2	0.43	Sycamore/Green Ash/Boxelder/Silver Maple	green ash white ash black locust tree-of-heaven poison ivy blackberry white mulberry Oriental bittersweet English ivy multiflora rose Norway maple	*Fraxinus pennsylvanica* *Fraxinus americana* *Robinia pseudoacacia* *Ailanthus altissima* *Toxicodendron radicans* *Rubus allegheniensis* *Morus alba* *Celastrus orbiculatus* *Hedera helix* *Rosa multiflora* *Acer platanoides*	8-14	poor	high
S3-FS3	0.25	Sycamore/Green Ash/Boxelder/Silver Maple	black locust black cherry tree-of-heaven blackberry Oriental bittersweet bush honeysuckle English ivy multiflora rose	*Robinia pseudoacacia* *Prunus serotina* *Ailanthus altissima* *Rubus allegheniensis* *Celastrus orbiculatus* *Lonicera maackii* *Hedera helix* *Rosa multiflora*	6-12	poor	high
S3-FS4	0.17	Sycamore/Green Ash/Boxelder/Silver Maple	green ash boxelder tree-of-heaven blackberry Oriental bittersweet bush honeysuckle Japanese honeysuckle wild grape porcelain berry *m*ultiflora rose	*Fraxinus pennsylvanica* *Acer negundo* *Ailanthus altissima* *Rubus allegheniensis* *Celastrus orbiculatus* *Lonicera maackii* *Lonicera japonica* *Vitus spp.* *Ampelopsis brevipedunculata* *Rosa multiflora*	6-12	poor	high

Table 9: Forest Stand and Hedgerow Summary Table

Stand/ Hedgerow Number	Acreage	Forest Association	Dominant Vegetation		Canopy Size Class (inches dbh)	Condition	Invasive Cover
			Common Name	*Scientific Name*			
S3-H2	0.02	n/a	red maple white mulberry English ivy Japanese honeysuckle wild grape	*Acer rubrum* *Morus alba* *Hedera helix* *Lonicera japonica* *Vitus spp*	10-12	poor	high
S3-H4	0.03	n/a	white mulberry elm English ivy tree-of-heaven	*Morus alba* *Ulmus spp.* *Hedera helix* *Ailanthus altissima*	4-8	fair/poor	high
S3-H5	0.42	n/a	tree-of-heaven elm	*Ailanthus altissima* *Ulmus spp.*	2-6	poor	high
S3-H6	0.82	n/a	tree-of-heaven black locust elm	*Ailanthus altissima* *Robinia pseudoacacia* *Ulmus spp.*	2-6	poor	high
S3-H7	0.23	n/a	tree-of-heaven Japanese honeysuckle	*Ailanthus altissima* *Lonicera japonica*	6-12	poor	high
S3-H8	0.03	n/a	tree-of-heaven Japanese honeysuckle	*Ailanthus altissima* *Lonicera japonica*	3-6	poor	high
S3-H9	0.05	n/a	princess tree Chinese elm	*Paulownia tomentosa* *Ulmus parvifolia*	6-12	poor	high
S3-H10	0.11	n/a	princess tree boxelder Siberian elm	*Paulownia tomentosa* *Acer negundo* *Ulmus pumila*	3-12	poor	high

Table 9: Forest Stand and Hedgerow Summary Table

Stand/ Hedgerow Number	Acreage	Forest Association	Dominant Vegetation		Canopy Size Class (inches dbh)	Condition	Invasive Cover
			Common Name	*Scientific Name*			
S3-H11	0.14	n/a	Chinese elm boxelder	*Ulmus parvifolia* *Acer negundo*	3-14	fair/poor	high
S3-H12	0.37	n/a	white mulberry Chinese elm tree-of-heaven zelkova Japanese honeysuckle	*Morus alba* *Ulmus parvifolia* *Ailanthus altissima* *Zelkova serrata* *Lonicera japonica*	4-14	fair/poor	high
S3-H13	0.07	n/a	boxelder elm multiflora rose Japanese honeysuckle English ivy	*Acer negundo* *Ulmus spp.* *Rosa multiflora* *Lonicera japonica* *Hedera helix*	8-12	fair	high
S3-H14	0.03	n/a	tree-of-heaven	*Ailanthus altissima*	2-8	poor	high
S4-H1	0.12	n/a	tree-of-heaven American elm red maple Bradford pear	*Ailanthus altissima* *Ulmus americana* *Acer rubrum* *Pyrus calleryana*	10-15	fair	high
S4-H2	0.10	n/a	white mulberry tree of heaven	*Morus alba* *Ailanthus altissima*	1-4	poor	high

Table 9: Forest Stand and Hedgerow Summary Table

Stand/ Hedgerow Number	Acreage	Forest Association	Dominant Vegetation		Canopy Size Class (inches dbh)	Condition	Invasive Cover
			Common Name	*Scientific Name*			
S5-FS1	6.51	Sweetgum	sweetgum green ash black cherry black locust American elm slippery elm pin oak multiflora rose Russian Olive Japanese honeysuckle	*Liquidambar styraciflua* *Fraxinus pennsylvanica* *Prunus serotina* *Robinia pseudoacacia* *Ulmus americana* *Ulmus rubra* *Quercus palustris* *Rosa multiflora* *Eleagnus angustifolia* *Lonicera japonica*	8-14	Fair	high
S5-FS2	0.97	Pioneer Hardwood	black cherry princess tree elm tree of heaven Bradford pear poison ivy Virginia creeper Japanese honeysuckle bush honeysuckle	*Prunus serotina* *Paulownia tomentosa* *Ulmus spp.* *Ailanthus altissima* *Pyrus calleryana* *Toxicodendron radicans* *Parthenoncissus quinquefolia* *Lonicera japonica* *Lonicera maackii*	8-12	Poor	high

Table 9: Forest Stand and Hedgerow Summary Table

Stand/ Hedgerow Number	Acreage	Forest Association	Dominant Vegetation		Canopy Size Class (inches dbh)	Condition	Invasive Cover
			Common Name	*Scientific Name*			
S5-FS3	0.66	Pioneer Hardwood	black cherry princess tree elm white mulberry tree of heaven mimosa Russian olive poison ivy Virginia creeper Japanese honeysuckle bush honeysuckle	*Prunus serotina* *Paulownia tomentosa* *Ulmus spp.* *Morus alba* *Ailanthus altissima* *Albizia julibrissin* *Eleagnus angustifolia* *Toxicodendron radicans* *Parthenoncissus quinquefolia* *Lonicera japonica* *Lonicera maackii*	6-12	Poor	high
S5-FS9	0.38	Pioneer hardwood	black cherry cottonwood white mulberry black locust tree of heaven phragmites Japanese honeysuckle sumac grape vine oriental bittersweet	*Prunus serotina* *Populus deltoides* *Morus alba* *Robinia pseudoacacia* *Ailanthus altissima* *Phragmites communis* *Lonicera japonica* *Rhus spp.* *Vitus spp* *Celastrus orbiculatus*	8-14	Poor	high
S5-H1	0.02	n/a	tree of heaven Bradford pear	*Ailanthus altissima* *Pyrus calleryana*	2-6	Poor	high

Table 9: Forest Stand and Hedgerow Summary Table

Stand/ Hedgerow Number	Acreage	Forest Association	Dominant Vegetation		Canopy Size Class (inches dbh)	Condition	Invasive Cover
			Common Name	*Scientific Name*			
S5-H2	0.22	n/a	white mulberry white pine tree-of-heaven black cherry northern red oak poison ivy Virginia creeper Japanese honeysuckle thistle	*Morus alba* *Pinus strobus* *Ailanthus altissima* *Prunus serotina* *Quercus rubra* *Toxicodendron radicans* *Parthenoncissus quinquefolia* *Lonicera japonica* *Cirsium* sp	12-20	fair/poor	high
S5-H3	1.06	n/a	tree of heaven Bradford pear sumac white mulberry multiflora rose oriental bittersweet	*Ailanthus altissima* *Pyrus calleryana* *Rhus spp.* *Morus alba* *Rosa multiflora* *Celastrus orbiculatus*	2-6	poor	high
S5-H4	0.53	n/a	tree of heaven Bradford pear Russian olive white mulberry .	*Ailanthus altissima* *Pyrus calleryana* *Eleagnus angustifolia* *Morus alba*	1-3	Fair	high
S5-H5	0.19	n/a	tree of heaven Bradford pear white mulberry green ash	*Ailanthus altissima* *Pyrus calleryana* *Morus alba* *Fraxinus pennsylvanica*	2-6	Poor	high

Table 9: Forest Stand and Hedgerow Summary Table

Stand/ Hedgerow Number	Acreage	Forest Association	Dominant Vegetation		Canopy Size Class (inches dbh)	Condition	Invasive Cover
			Common Name	*Scientific Name*			
S5-H6	0.17	n/a	tree of heaven Bradford pear white mulberry Japanese honeysuckle	*Ailanthus altissima* *Pyrus calleryana* *Morus alba* *Lonicera japonica*	2-6	Poor	high
S5-H7	0.21	n/a	black locust black cherry white mulberry tree of heaven Japanese honeysuckle wild grape	*Robinia pseudoacacia* *Prunus serotina* *Morus alba* *Ailanthus altissima* *Lonicera japonica* *Vitus spp*	8-16	Poor	high
S5-H8	1.18	n/a	tree of heaven black cherry white mulberry cottonwood Japanese honeysuckle	*Ailanthus altissima* *Prunus serotina* *Morus alba* *Populus deltoides* *Lonicera japonica*	8-16	Poor	high
S5-H9	0.30	n/a	black locust black cherry white mulberry	*Robinia pseudoacacia* *Prunus serotina* *Morus alba*	8-16	Poor	high
S5-H11	0.24	n/a	black willow tree of heaven white mulberry cottonwood phragmites Japanese honeysuckle poison ivy Virginia creeper	*Salix nigra* *Ailanthus altissima* *Morus alba* *Populus deltoides* *Phragmites communis* *Lonicera japonica* *Toxicodendron radicans* *Parthenoncissus quinquefolia*	6-10	Poor	high

Table 9: Forest Stand and Hedgerow Summary Table

Stand/ Hedgerow Number	Acreage	Forest Association	Dominant Vegetation		Canopy Size Class (inches dbh)	Condition	Invasive Cover
			Common Name	*Scientific Name*			
S5-H16	0.08	n/a	white mulberry tree of heaven Japanese honeysuckle box elder	*Morus alba* *Ailanthus altissima* *Lonicera japonica* *Acer negundo*	2-6	Poor	high
S5-H17	0.09	n/a	princess tree tree of heaven Japanese honeysuckle box elder poison ivy	*Paulownia tomentosa* *Ailanthus altissima* *Lonicera japonica* *Acer negundo* *Toxicodendron radicans*	2-6	Poor	high
S5-H18	0.13	n/a	white mulberry tree of heaven black cherry Japanese honeysuckle box elder poison ivy	*Morus alba* *Ailanthus altissima* *Prunus serotina* *Lonicera japonica* *Acer negundo* *Toxicodendron radicans*	6-12	Poor	high
S5-H20	0.12	n/a	tree of heaven black locust bush honeysuckle Japanese honeysuckle poison ivy	*Ailanthus altissima* *Robinia pseudoacacia* *Lonicera maackii* *Lonicera japonica* *Toxicodendron radicans*	2-6	Fair	high

3.2.6 Specimen Trees

A total of 163 specimen trees were identified within the 50-foot forest study area boundary. **Table 10** below provides a breakdown of inventoried specimen trees by segment.

Table 10: Inventoried Specimen Trees

Segment	Trees
West	79
Cooks Lane Tunnel	70
US 40	13
Downtown Tunnel	0
East	1
Total	**163**

3.3 Environmental Effects

The No-Build Alternative would not result in changes to the natural environment and no short and long-term effects are anticipated. A discussion of the effects from the Preferred Alternative follows.

3.3.1 Long-Term and Short-Term Effects

Long-term forest/hedgerow effects because of construction of the Preferred Alternative would result from physical removal/disturbance during clearing and grubbing operations. See **Table 11** in this section for quantified effects per forest stand. Forest/hedgerow effects may result from critical root zone (CRZ) disturbance, tree canopy/limb damage, soil compaction, and changes in soil moisture regimes because of grading operations and other construction related activities directly adjacent to retained forest/hedgerow areas.

Additional short-term forest/hedgerow effects could result from sunscald and windthrow of individual trees growing along the recently exposed edges of retained forest/hedgerow areas. Accidental spills, sediment and/or concrete washout releases into forest/hedgerow retention areas could also affect the health and vigor of edge trees. Short-term forest/hedgerow effects should be limited since temporary staging and stockpile areas during construction would be sited in non-forested areas, or within forests to be permanently impacted. Staging and stockpiling areas located within forests would be replanted whenever possible following construction. For example, portions of the forest cleared within the cloverleaf area near Forest Park Avenue and I-70 to accommodate staging and stockpiling associated with tunnel boring operations and rail construction would be replanted, where possible.

Forest Conservation Plans, or similar would be developed during the Final Design stage of project to provide tree protection devices and techniques for the preservation of forest/hedgerow and individual tree resources. Hedgerow impact calculations would not be required in this document because they do not meet the definition of “forest” (i.e., 10,000 square feet in area and 100 stems/acre) and thereby would not be included in the forest clearing calculation. However, tree protection measures would be provided for those hedgerow resources designated for preservation during development of the tree protection plans. The

plans would be reviewed and approved to meet Maryland DNR requirements, and in consultation with Baltimore City Planning and Division of Forestry.

The Preferred Alternative would result in 34.78 acres of forest impact and the removal of 39 specimen trees. The primary long-term forest effects would occur within the West and Cooks Lane Tunnel segments (28.50 acres) in the western reaches of the project study corridor, where most of the resources exist. The majority of these resources were previously disturbed to some degree during past construction of roadways and/or surrounding development. Forested areas would be cleared at the west end of Security Boulevard for construction of the CMS Station and tail track section, and adjacent to Greengage Road for potential installation of the Traction Power Sub-Station (TPSS). The I-695 bridge and adjacent track construction at the Security Square Mall loop would also impact mainly early successional forest resources within the Security Boulevard/I-695 interchange. The largest area of vegetation effects would occur on SSA property and the I-70 right-of-way for construction of the new Parallel Drive/I-70 interchange, I-70 Park- and-Ride, and the Cooks Lane tunnel portal.

Minor forest effects are proposed within the US 40 segment at the Allendale senior housing facility on Franklin Street to accommodate a TPSS. Long-term forest effects at the Gwynns Falls crossing would be minor under the Preferred Alternative because Baltimore City would be clearing this forested area as part of the US 40/Edmondson Avenue bridge improvements project that would be constructed prior to the construction of the Preferred Alternative, therefore these effects would not be calculated for the Red Line Preferred Alternative. Scattered areas of hedgerow dominated by invasive species would be removed for construction of the Operations and Maintenance Facility (OMF) at North Calverton Road and North Franklintown Road, as well as adjacent to the Amtrak bridges on West Franklin Street and West Mulberry Street.

The low quality forest/hedgerow resources located within the in-active NS rail line would be cleared for the construction of the Preferred Alternative within the East segment. The MDTA right-of-way (I-895) in the East segment contains previously disturbed forest/hedgerow resources that would be cleared for construction of the rail line and Bayview MARC station adjacent to Johns Hopkins Bayview Medical Center, PiCorp, NS, and industrial property near the eastern terminus of the project study corridor.

Total forest effects are summarized by segment in **Table 11**.

Table 11: Forest Effects by Segment

Stand Name	Effects (sq. foot)	Effects (acres)
West Segment		
S1-FS1	105147.34	2.41
S1-FS2	13194.41	0.30
S1-FS3	136.29	0.00
S1-FS4	96640.42	2.22
S1-FS5	3557.24	0.08
S1-FS6	16433.65	0.38
S1-FS7	3222.85	0.07
S1-FS8	71002.92	1.63
S1-FS9/S2-FS1	65683.14	1.51
S1-FS10	104884.94	2.41
S1-FS11	268391.98	6.16
S1-FS12	43936.80	1.01
S1-FS13	483.33	0.01
S1-FS14	192.49	0.00
S1-FS15	no effect	no effect
S1-FS16	81.67	0.00
S1-FS17	11013.30	0.25
S1-FS18	39719.43	0.91
S1-FS19	no effect	no effect
S1-FS20	2211.34	0.05
S1-FS21	2849.57	0.07
S1-FS22	no effect	no effect
S1-FS23	51258.03	1.18
S1-FS24	169.53	0.00
S1-FS25	1528.74	0.04
S1-FS26	1933.60	0.04
Total Effects in West Segment:	**903673.01**	**20.73**
Cooks Lane Tunnel Segment		
S2-FS2	49160.09	1.13
S2-FS3	17819.84	0.41
S2-FS4	2992.75	0.07
S2-FS5	668.08	0.02
S2-FS6	8703.42	0.20
S2-FS7	288.21	0.01
S2-FS8	1113.71	0.03
S2-FS9	2386.74	0.06
S2-FS10	13959.38	0.32
S2-FS11	40344.93	0.93
S2-FS12	197024.61	4.52
S2-FS13	2923.41	0.07
Total Effects in Cooks Lane Tunnel Segment:	**337385.17**	**7.77**
US 40 Segment		
S3-FS1	no effect	no effect

Table 11: Forest Effects by Segment

Stand Name	Effects (sq. foot)	Effects (acres)
S3-FS2	6986.23	0.16
S3-FS3	866.53	0.02
S3-FS4	207.04	0.01
Total Effects in US 40 Segment:	**8059.8**	**0.19**
East Segment		
S5-FS1	187769.30	4.31
S5-FS2	42295.40	0.97
S5-FS3	26871.59	0.62
S5-FS9	8411.98	0.19
Total Effects in East Segment:	**265348.30**	**6.09**
Total Forest Effects in All Segments: 34.78 Acres		

Total specimen tree effects are summarized by segment in **Table 12** below.

Table 12: Specimen Tree Effects by Segment

Segment	Trees
West	29
Cooks Lane Tunnel	7
US 40	3
Downtown Tunnel	0
East	0
Total	**39**

3.3.2 Avoidance and Minimization

Avoidance and minimization of forest and specimen tree effects would continue throughout the design and construction of the Preferred Alternative. During planning and advanced conceptual design, forest effects were reduced by moving the Preferred Alternative into tunnel sections or within existing impervious surfaces and developed areas, where possible. For example, forest effects were reduced within the I-70 corridor near the SSA complex by shifting the proposed track alignment from the forested strip between I-70 and Parallel Drive to the existing travel lanes of I-70 westbound. Forest/hedgerow effects were minimized at the far western extent of the project study corridor by shifting the track alignment further north into existing Security Boulevard and away from the vegetated buffer and private residences along the southern border of the Preferred Alternative.

Forest Conservation Plans, or similar, will be prepared during the design phase of the project and detail additional impact avoidance and minimization techniques to be applied during construction, as outlined in the *State Forest Conservation Technical Manual*, Third Edition, 1997. Avoidance and minimization measures may include: 1) tree protection fencing installed along the outside edge of the limits of disturbance to prevent access by construction equipment and staging and stockpiling of materials within forest retention areas; 2) root pruning along the edge of the limits of disturbance, where excavation is required to cleanly cut

the roots of retained forest and/or specimen trees to reduce stress by promoting fibrous root growth and to prevent tearing of the roots beyond the limits of disturbance;3) branch pruning to adjacent trees to reduce construction stress, provide equipment clearance, and correct any construction related limb damage; and 4) supplemental watering, fertilization, and mulching may be required to reduce tree stress and promote tree health. Additional construction techniques may be warranted to avoid and minimize forest/specimen tree effects including tree wells, retaining walls, air spading, root aeration matting, and tunneling for utility installation.

An Erosion and Sediment Control Plan would be developed during the Final Design stage of the project and approved by MDE. The plan would minimize the potential for sediment and other constructed related runoff including concrete wash-out to leave the limits of disturbance and contaminate forest retention areas and other adjacent resources. A Hazardous Materials Spill Prevention Plan would be also developed that prevents hazardous materials such as equipment fuel and lubricants from contaminating forest retention areas and other adjacent resources.

3.3.3 Mitigation

Mitigation for forest impacts will be required to meet state regulations. The final forest planting obligation for the project will be negotiated between MTA and DNR, during the design development stage.

Hedgerow and specimen tree effects are not usually mitigated separately from the forest planting obligation, since these resources are included within the limits of disturbance used by the state to meet mitigation requirements. However, Baltimore City will require mitigation for removal of all trees located on parkland or City property including street trees and specimen trees as described in the Street Trees/Individual Trees Section below. Trees planted in Baltimore City to meet the City requirement will be applied to the project-wide forest planting obligation. A variance that requires justification for specimen tree removal within the Preferred Alternative will be submitted to DNR for approval as part of the forest conservation review process.

DNR requires that forest mitigation planting sites be chosen based on a site selection hierarchy as follows:

1. on-site
2. same watershed/county as the impact area
3. forest conservation banks/ fee-in-lieu

The selection of forest mitigation planting sites will be coordinated through DNR and the Baltimore City. The Park Master Plans for Baltimore City and the Tree Baltimore Program may assist in the identification of potential planting sites within City limits. In addition, the City has partnering relationships with watershed groups and non-profits such as Blue Water Baltimore, which may provide planting opportunities. The removal of existing I-70 roadway pavement within the project study corridor may also provide an opportunity to plant trees on-site.

4. Street Trees/Individual Trees

4.1 Background and Methodology

The Maryland Roadside Tree Law was passed in 1914 to ensure that roadside trees were properly protected and cared for, and to ensure compatibility with public utilities. A Roadside Tree Care Permit must be obtained from DNR prior to pruning, fertilizing, removing, planting or caring for any roadside tree. A roadside tree is defined as "any tree that grows all or in part within a public road right-of-way." Any work (including removal) conducted on a roadside tree that is 20 feet or larger in height must be performed by a Maryland Licensed Tree Expert. A Roadside Tree Permit is not required for a project if the roadside trees are included in the forest conservation compliance.

DNR, Baltimore City Planning and Baltimore City Recreation & Parks staff provided guidance regarding inventory of roadside trees and Baltimore City street trees during phone conversations in 2010 and 2011. See phone conversation records in **Appendix B**. A separate Roadside Tree Permit for the Baltimore County portion of the Red Line project would not be required since effects to roadside trees in Baltimore County would be covered under the project-wide state forest compliance. Individual trees located within the project study corridor that may be affected by construction were inventoried to facilitate avoidance and minimization of tree effects and replacement for unavoidable tree removals, particularly on private property. Baltimore City administers its own roadside/street tree regulations in lieu of DNR enforcement of the Roadside Tree Law. The Baltimore City Department of Public Works regulates all planting, protection and control of trees located in the streets, lanes and alleys of Baltimore. The Department of Recreation and Parks (Forestry Division) is responsible for preservation and maintenance of all street trees, according to the Baltimore City Code Article 7, Subtitle 53. A Street Tree Permit must be obtained from the Forestry Division for any street tree care activities conducted within City limits. Baltimore County DEPS has no jurisdiction over forest or trees on state projects as referenced in the **Section 3, Forests**.

Baltimore City defines specimen trees as ≥20-inch dbh and street trees as those trees located within the public right-of-way. As mentioned in the forests section, DNR defines specimen trees as "trees having a dbh of 30-inch or more, or trees having 75 percent or more dbh of the current State champion of that species." All specimen trees within the forest study area boundary in Baltimore City were inventoried and located on the plans using hand-held GPS survey. All street trees in Baltimore City were inventoried and located, regardless of size. Individual trees located within the limit of disturbance plus 50 feet beyond that may be affected by the project were also inventoried, regardless of size, to facilitate avoidance and minimization of tree effects and replacement for unavoidable tree removals, particularly on private property. The tree inventory included recording dbh, species and health status of each tree. The health status assessment of each tree includes ocular estimation of growth form, visible signs of decay, live crown ratio, and indications of disease or insect infestation. Effects to Baltimore City property trees and/or street trees are mitigated on an inch per inch dbh basis. Tree effects were calculated using ArcMap 10 Software. Tree locations were identified in the field with

Trimble GPS units or Apple iPad iGIS software. Trees located within or along the boundaries of the limits of disturbance (depending on DBH) were then used to compute tree effects.

4.2 Existing conditions

A total of 2,671 trees were inventoried within the forest study area boundary. See **Table 13** below and tree inventory list in **Appendix F**.

A total of 723 trees were inventoried within the West segment. The majority of individuals are planted landscape and/or street trees located in commercial areas in and around the Security Square Mall and Social Security (SSA) Property. The most common species include Zelkova, white pine, Bradford pear, honey locust, tulip poplar, and flowering cherry. A total of 79 specimen trees (>30" dbh according to DNR requirements) were inventoried, mostly within forested settings surrounding the I-70 corridor. The majority of trees within this segment were in good condition.

The Cooks Lane Tunnel segment includes 342 trees located primarily on private properties and right-of-way, in residential areas. A total of 69 trees were identified within Gwynns Falls/Leakin Park and 21 trees were identified within Uplands Park. The most common species include white oak, red maple, white pine, and red oak. A total of 69 specimen trees (>30" dbh) were inventoried, and the majority of these were located within forested settings adjacent to Gwynns Falls Park or within residential communities in the western section of Edmondson Avenue near Cooks Lane. Overall, trees within this segment were in good health.

Individual trees within the US 40 segment were identified primarily within residential areas on private properties and right-of-way. A total of 533 trees were inventoried, 13 of which are specimens (>30" dbh). The most common species include red maple, tree-of-heaven, hawthorn, cherry, and honey locust. On average, trees within this segment are in good condition.

A total of 325 trees were inventoried within the Downtown Tunnel segment, primarily within the right-of-way in commercial/business districts of downtown Baltimore. White pine, American linden, sawtooth oak, honey locust, and Leyland cypress are the most common species. No specimen trees (>30" dbh) were identified within this segment. The majority of trees within the Downtown Tunnel segment were in good condition.

The East segment includes 748 trees, with a single specimen tree (>30" dbh). A few trees were located within Canton Park, Boston Street Park, and St. Casmir's Park properties, however, the majority of individuals were located within right-of way or private properties in Canton. These trees are generally in good health and the most common species identified included Zelkova, cherry, sawtooth oak, and red maple.

Table 13: Existing Street/Individual Trees

Location	Segment					Total
	West	Cooks Lane Tunnel	US 40	Downtown Tunnel	East	
Right-of-Way	177	127	199	168	335	1006
Private	546	160	334	157	313	1510
Park	0	55	0	0	100	155
Total Street/Individual Trees	723	342	533	325	748	2,671

4.3 Environmental Effects

The No-Build Alternative would not result in changes to the natural environment and no short and long-term effects are anticipated. A discussion of the effects from the Preferred Alternative follows.

4.3.1 Long-Term and Short-Term Effects

Long-term street/individual tree effects would result from construction of Traction Power Sub-Stations, park-and-ride lots, permanent roadway improvements including curb line shifts and sidewalk construction to accommodate the track alignment within the existing road rights-of-way, and surface construction of ancillary buildings for underground stations.

Short-term effects would result from removal and replacement of trees to accommodate maintenance of traffic (MOT) during construction, underground utility relocations, erosion and sediment control devices, and staging and stockpiling areas. See **Tables 14** and **15** in this section. Tree decline and/or mortality would result from significant critical root zone disturbance (CRZ), tree limb damage, soil compaction, placement of fill in the CRZ, and changes in soil moisture regimes because of grading operations and other construction related activities conducted directly adjacent to retained street/individual trees. Additional short-term tree effects could result from accidental spills, sediment and/or concrete washout releases into tree protection areas, and staging and stockpiling of construction materials within CRZs.

Table 14: Individual/Street Tree Effects in Baltimore City

Location	Segment					Total	Total DBH
	West	Cooks Lane Tunnel	US 40	Downtown Tunnel	East		
ROW/Park/City	0	41	115	75	306	537	4316
Private	0	21	165	119	106	411	3589
Total Baltimore City	0	62	280	194	412	948	7905

*Does not include specimen trees in Forests and Hedgerows

Table 15: Individual/Street Tree Effects in Baltimore County

Location	Segment					Total
	West	Cooks Lane Tunnel	US 40	Downtown Tunnel	East	
ROW	128	5	0	0	0	133
Private	180	2	0	0	0	182
Total Baltimore County	308	7	0	0	0	315

Tree protection devices and techniques for the preservation of individual tree resources would be incorporated into the Forest Conservation Plans that would be developed during the Final Design stage. The Preferred Alternative may impact (both long-term and short-term effects) 315 trees within Baltimore County and 948 in Baltimore City. Landscaping and street tree replacement would be provided within the immediate vicinity of the resource effects, where possible. Street trees and individual trees would be affected along Security Boulevard and adjacent private and commercial properties within the West segment to accommodate roadway re-configuration and sidewalk improvements associated with track installation within the existing road right-of-way between CMS and the I-695/Security Boulevard interchange. The Security Mall Station park-and-ride lot construction would affect individual trees along Security Boulevard and within mall parking lot islands. Landscape trees adjacent to SSA parking lots and buildings would be the primary individual tree effects within the I-70 portion of the project study corridor.

Individual long and short-term tree effects within the Cooks Lane Tunnel segment would result from above ground roadway improvements and tunnel portal construction within the vicinity of the Cooks Lane and Edmondson Avenue intersection and would include street trees, park trees, and privately owned trees.

Street trees and individual trees on private property would be affected along Edmondson Avenue within the US 40 segment to accommodate construction of the track and associated facilities within the narrow urbanized corridor.

Tree effects within the Downtown Tunnel segment would be minimal and would consist of street tree removals associated with above ground construction of tunnel portals, station boxes and ancillary facilities, utility relocations, sidewalk improvements, MOT, and staging/stockpiling areas.

Individual tree effects within the East segment would include street trees, private and City park trees primarily along Boston Street and the Johns Hopkins Bayview Medical Center campus.

4.3.2 Avoidance and Minimization

A large portion of the Preferred Alternative would be constructed within urbanized road rights-of-way, which significantly limits opportunities for avoidance and minimization of street/individual tree effects. However, opportunities to shift the alignment and/or minimize the limits of disturbance have been implemented, where reasonable. During the planning process, street/individual tree effects were reduced by moving the Preferred Alternative into tunnel sections or shifting the alignment to avoid significant trees. For example, several clusters of significant London plane (*Platanus x acerfolia*) street trees exist within the Edmondson Avenue corridor of the Cooks Lane Tunnel and US 40 segments. Potential effects to the cluster of significant/specimen London plane street trees near the intersection of Cooks Lane and Edmondson Avenue in the Cooks Lane Tunnel segment were minimized when the proposed tunnel portal was shifted from the west side to the east side of Winans Way. This shifted the temporary MOT lane shifts further east of this cluster of trees, thereby reducing potential effects to their critical root zones. In addition, the proposed track alignment and roadway improvements in front of the Edmondson Village shopping center were shifted to the south to minimize effects to the London plane trees along the north side of Edmondson Avenue within the US 40 segment.

Specific tree impact avoidance and minimization techniques will be outlined in the Forest Conservation Plans developed in the Final Design stage. Tree protection fencing will be installed along the boundary between tree protection areas limits of disturbance to prevent access by construction equipment and staging and stockpiling of materials within tree protection areas. Root pruning may be conducted along the edge of the limits of disturbance, where excavation is required to cleanly cut the roots of retained trees to reduce stress by promoting fibrous root growth and to prevent tearing of the roots beyond the limits of disturbance. Proper branch pruning is often required to reduce construction stress, provide equipment clearance, and correct any construction related limb damage. Supplemental watering, fertilization, and mulching may be required to reduce tree stress and promote tree health. Additional construction techniques may be warranted to avoid and minimize tree effects including tree wells, retaining walls, air spading, root aeration matting, at-grade sidewalk construction, and tunneling for utility installation, per DNR guidelines.

An Erosion and Sediment Control Plan would be developed during the Final Design stage of the project and approved by MDE. The plan minimizes the potential for sediment and other constructed related runoff including concrete wash-out to leave the limits of disturbance and contaminate tree protection areas. A Hazardous Materials Spill Prevention Plan would be also developed that prevents hazardous materials such as equipment fuel and lubricants from contaminating tree protection areas.

4.3.3 Mitigation

Baltimore City requires mitigation for removal of trees located on parkland or City property including street trees and specimen trees. Trees planted in Baltimore City to meet the tree replacement requirement would be applied to the project wide forest planting obligation at a ratio of 1/100 acre for every 2-inch caliper tree installed or 21.58 acres. The *Park Master Plans*

for Baltimore City may assist in the identification of potential planting sites within City limits. In addition, coordination with DNR and City Planning and Division of Forestry staff will help to identify street tree planting locations within road right-of-way in the immediate vicinity of the impact areas, parks, schools and other City property. Mitigation for individual trees on private property would be provided where possible, as negotiated by MTA and the property owner. Private property tree effects in Baltimore City total 411 and Baltimore County total 182. The 133 trees affected within road right-of-way in Baltimore County would be mitigated to meet state requirements, as described in **Section 3, Forests**. See Individual/Street Tree Impact Tables below.

5. Chesapeake Bay Critical Area

5.1 Background and Methodology

The Maryland Chesapeake Bay Critical Area Act gives special protection to areas that fall within 1,000 feet of tidal waters of the Chesapeake Bay and its tributaries. Critical Area requirements are managed to meet the requirements of the federal Coastal Zone Management Act (CZMA); however there is no direct connection between these state and federal requirements. Development by state agencies on state-owned land may be subject to review by the Chesapeake Bay Critical Area Commission. As part of their review, the commission would require projects in intensely developed areas to reduce stormwater pollutant loadings by 10 percent. This “10 Percent Rule” requires treatment of both existing impervious areas and new impervious areas added by the project to result in a net reduction of yearly phosphorous loading to 90 percent of pre-project conditions within the Critical Area. Phosphorous is recognized by the commission as the keystone pollutant, whose reduction would equate to the reduction of a broad range of other pollutants commonly found in runoff. This 10 percent runoff pollution reduction requirement may be accomplished on-site, either by installing adequate stormwater management or tree planting. Off-site reduction may also be considered as a pollutant offset within the same drainage area or immediate vicinity of the project area, as approved by the commission. The commission would also require replacement of existing trees affected in the Critical Area on a 1:1 basis.

Critical Area boundaries are identified by state-wide mapping developed and maintained by DNR and Baltimore City. The mapping identified the 1,000-foot Critical Area and areas known as "100-foot buffer" - the land within 100 feet of tidal waters, tidal wetlands, and tributaries. The 100-foot buffer was identified based on the edge of water shown in the 2010 project aerial photographs. Vegetation within the Critical Area was characterized during the FSD and street tree inventory efforts, as described in the Forests and Street Trees/Individual Trees sections (**Sections 3 and 4**), to meet the requirements of the Critical Area Commission Project Application Checklist for State Agency Programs. Trees located inside the limits of disturbance within the boundaries of the 1,000-foot Critical Area and 100-foot buffer were identified to compute tree effects.

5.2 Existing conditions

A portion of the project study corridor surrounding the Baltimore Harbor is located within the Critical Area extending from approximately Charles Street to the eastern study limits in Canton, as shown in **Figure 3**. This portion of the Critical Area is designated as an Intensely Developed Area (IDA) and is primarily impervious surface (e.g., roadway, parking lots, sidewalk and buildings) with some landscape vegetation including small trees. A small portion of the project study corridor falls within the 100-foot buffer along Boston Street, near the Harris Creek bridge in Canton. Trees identified within the Critical Area are listed by segment in **Table 16**.

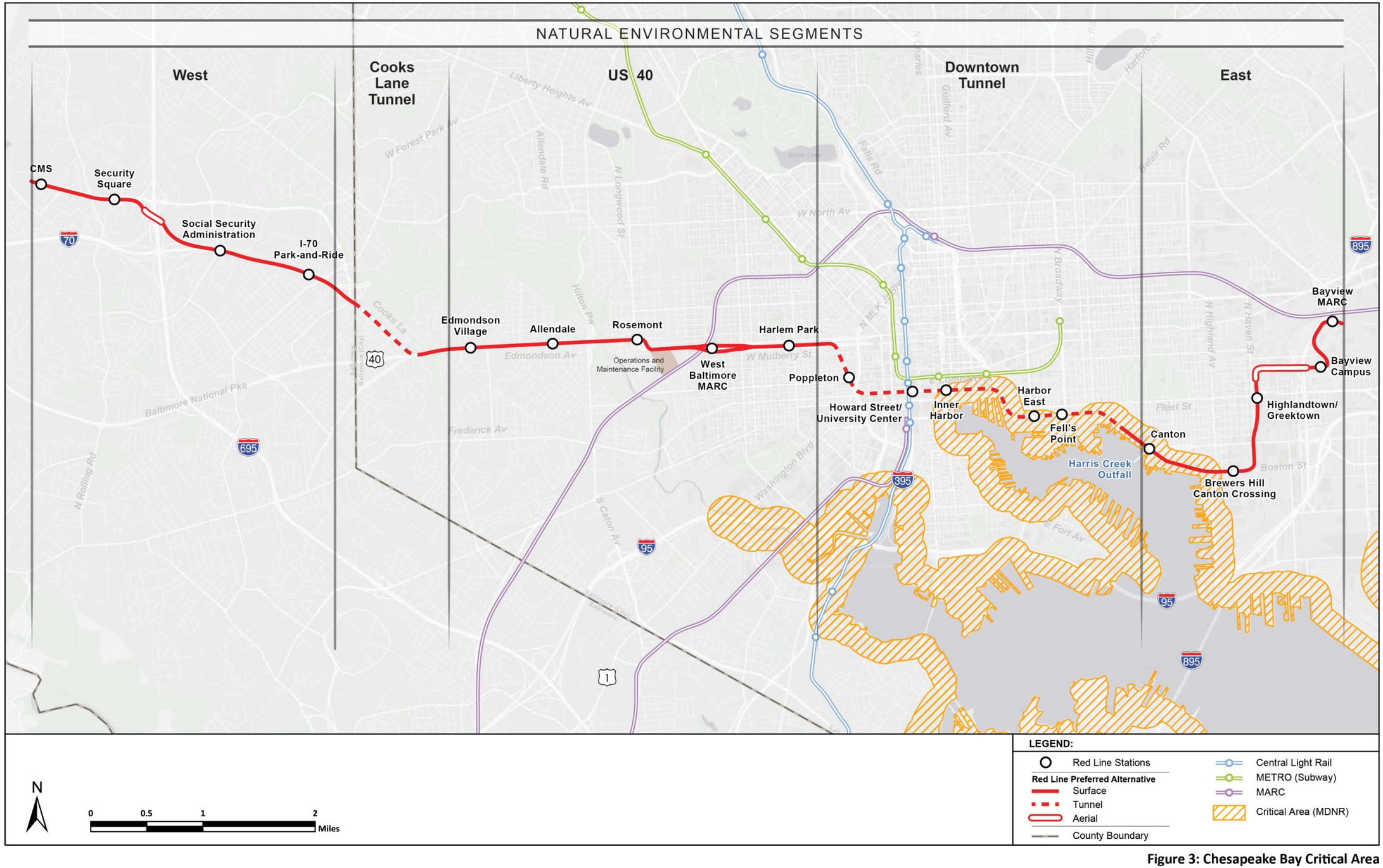

Figure 3: Chesapeake Bay Critical Area

Table 16: Trees within the Critical Area

Segment	Trees 100 ft. Buffer	Trees 1,000 ft. Boundary
West	0	0
Cooks Lane Tunnel	0	0
US 40	0	0
Downtown Tunnel	0	197
East	23	387
Total	**23**	**584**

5.3 Environmental Effects

The No-Build Alternative would not result in changes to the natural environment and no short and long-term effects are anticipated. A discussion of the effects from the Preferred Alternative follows.

5.3.1 Long-Term and Short-Term Effects

Long-term effects to Critical Area would occur in the Downtown Tunnel and East segments. The Preferred Alternative would not convert unpaved area to impervious surfaces in the Downtown Tunnel segment for construction of the Inner Harbor Station, Harbor East Station, and the tunnel portal on Boston Street. Conversion of 1.28 acres of unpaved area to impervious surfaces would occur in the East segment from the construction of the Canton Station and expansion of roadway to accommodate the track in the current median of Boston Street (including within the 100-foot buffer at Harris Creek). The impervious area within the Critical Area would increase from 56% cover (existing conditions) to approximately 61% cover under the preferred alternative. Long-term vegetation effects would occur to landscaping plants, and street and park trees within the Critical Area in both the Downtown Tunnel and East segments. The Downtown Tunnel segment tree effects would total 149. The East segment tree effects would total 232, with 9 additional trees affected within the 100-foot buffer (**Table 17**). Short-term effects would occur from temporary construction activities such as staging areas, stockpiling and erosion/sediment controls. In addition, short-term effects within the Critical Area would also include street tree effects during maintenance of traffic and for stockpile areas used temporarily during construction.

Table 17: Tree Effects within the Critical Area

Segment	Trees 100 ft. Buffer	Trees 1,000 ft. Boundary
West	0	0
Cooks Lane Tunnel	0	0
US 40	0	0
Downtown Tunnel	0	149
East	9	232
Total	**9**	**381**

5.3.2 Avoidance and Minimization

Effects to Critical Area would be minimized through placement of the track alignment in the current roadway with a portion underground. In addition, expansion of the roadway/sidewalk would be minimized by reducing from the current four lanes, to two lanes plus a turn lane.

5.3.3 Mitigation

The project would adhere to the 10 Percent Rule, to meet required pollutant load reductions, through installation of approved stormwater management facilities and implementation of best management practices. Because of the highly developed nature of the project corridor and very limited available space within the right-of-way, stormwater management is anticipated primarily through linear micro-bioretention planter boxes. The micro-bioretention planter box facilities provide landscaped areas to temporarily store and filter impervious runoff through the planting media prior to introduction to the closed pipe storm drain network. The micro-bioretention planter boxes are proposed within the existing public right-of-way, and generally located between the back of sidewalk and right-of-way line.

Street tree replacement required by Baltimore City will be used to fulfill the replacement required by Critical Area, and buffer effects (near Harris Creek bridge crossing) will be mitigated with tree planting within the buffer through coordination with DNR and Baltimore City. Any trees affected at staging areas that are not designated for permanent facilities will be replaced on-site to mitigate for short-term construction effects at those locations.

6. Wetlands and Waters of the United States

6.1 Background and Methodology

Waters of the US, including wetlands, are regulated under Section 401 and 404 of the Clean Water Act. Executive Order 11990 of the Federal Register (FR) (42 FR 26961E.O. 11990, May 1977), entitled *Protection of Wetlands*, was enacted to avoid to the extent possible the long- and short-term adverse impacts associated with the destruction or modification of wetlands, to avoid direct or indirect support of new construction in wetlands wherever there is a practicable alternative, and to ensure that proposed construction incorporates all possible measures to limit harm to the wetland. The State of Maryland also regulates these resources under the Maryland Tidal Wetlands Act, and the Maryland Nontidal Wetlands Protection Act. Unavoidable effects to non-tidal resources may require a Maryland Nontidal Wetlands Permit, a Section 401 Water Quality Certificate, and a Waterway Construction Permit from the MDE, as well as a Section 404 permit from the USACE for the discharge of dredged or fill material into waters of the US, including wetlands. Effects to tidal resources would also require Section 401/404 CWA permitting and coordination, but would be regulated under a Maryland Tidal Wetlands license at the state level. In addition, and as noted previously, tidal waterways classified as Navigable Waterways, are regulated under Section 10 of the Rivers and Harbor's Act.

Because of the length of time elapsed between the Alternatives Analysis/Draft Environmental Impact Statement (AA/DEIS) and the FEIS phases of the Red Line, and shifts in the Preferred Alternative, Waters of the US, including wetlands were completely reevaluated for the FEIS phase of the project for the Preferred Alternative. Information on potential waters of the US, including wetlands within the project study corridor was gathered from published sources including the USFWS National Wetland Inventory (NWI) maps, DNR wetland maps, and Natural Resources Conservation Service (NRCS) soil surveys for Baltimore County and Baltimore City. This information was verified and supplemented with wetland field investigations in the first half of 2012. With the exception of Edmondson Avenue where it crosses the Gwynns Falls stream valley, all areas within 50 feet of the limits of disturbance were investigated. At Edmondson Avenue over the Gwynns Falls, the area of field study was limited to the bridge itself, as the Preferred Alternative would be contained entirely within the limits of the new bridge to be built by Baltimore City prior to construction of the Preferred Alternative.

Wetlands and other waters of the US were identified and flagged in accordance with the *Regional Supplement to the Corps of Engineers Wetland Delineation Manual: Atlantic and Gulf Coastal Plain Region Version 2.0* (USACE, November 2010) and *Eastern Mountains and Piedmont Region* (USACE, July 2010). These manuals employ a three-parameter approach to wetland identification using hydrophytic vegetation, hydric soils, and hydrology. All three parameters must be present for an area to be considered a jurisdictional wetland under Section 404 of the Clean Water Act. Areas that do not meet all three of these parameters but may still be regulated include palustrine open water (ponds), stream systems (waterways), and certain disturbed areas.

Wetland Determination data forms were completed in the field for each numbered wetland and an adjacent upland test plot. Data recorded included dominant vegetation, hydrologic indicators, and hydric soil indicators (See **Appendix D**). Soil map types were verified at each wetland location using the NRCS soil survey mapping for Baltimore City and Baltimore County. Soil color was identified using the *Munsell Color Chart* handbook (Munsell 1975). The wetland indicator status of the observed vegetation was identified using the *National List of Plant Species That Occur in Wetlands: Region 1 – Northeast* (USFWS 1988). Perennial and intermittent waterways were assessed using a stream features data sheet (See **Appendix D**). All identified wetlands and waterways were also classified according to the methods established in *A Classification of Wetland and Deep-Water Habitats in the United States* (Cowardin et. al. 1979).

Wetland functions and values were assessed using the New England Method for all wetlands greater than a quarter acre in size. For wetland areas less than a quarter acre in size, a formal functions and values analysis was not conducted; however, any observed functions and values were noted using best professional judgment.

Agency field reviews were conducted with the USACE and MDE on May 9 and September 27, 2012 to gain agency concurrence on the waters of the US and wetland boundaries. Informal concurrence on the wetland and waterway boundaries was received in the field as reflected in meeting minutes, however, the preliminary jurisdictional determination letter formally documenting concurrence is pending. The wetlands and waterways described below and shown on the mapping provided in **Appendix C** reflect the results of these field reviews and agency concurrence with the boundaries as shown. Minutes of the agency field reviews are provided in **Appendix G**.

Direct impacts to wetlands and waterways presented in the Environmental Effects Section were calculated using a GIS overlay of the limits of disturbance on the delineated boundaries of the wetlands and waterways within the corridor.

6.2 Existing conditions

During the field investigation, 19 wetlands and 19 waterways were identified. All of the wetlands and waterways have been influenced to some degree by the intense development in the project study corridor, and the majority of the systems identified have been heavily manipulated through past ditching or filling. Despite the high degree of manipulation, these areas may still provide some limited functions such as groundwater discharge/recharge, wildlife habitat, and sediment trapping. The least impacted and highest functioning wetlands in the project study corridor are those vegetated systems located in the forested floodplain of Dead Run and its tributaries along I-70 (W13, W18, and W21). These wetlands would be expected to provide groundwater discharge/recharge, flood desynchronization, terrestrial and aquatic wildlife habitat, and water quality benefits such as nutrient uptake and sediment trapping. With the exception of waterway 33, which is the tidal Jones Falls just above its confluence with the Baltimore Harbor, all of the wetlands and waterways identified are nontidal resources

Each of the waters of the US, including wetlands, identified during the field investigation is described in detail below, and summarized in **Table 18**. Areas that contained only vegetated

wetland resources are denoted as wetlands, areas identified as perennial and intermittent streams are labeled as waterways. The locations of waters of the US, including wetlands, are shown on the detailed maps provided in **Appendix C**. Data sheets and plot documentation can be found in **Appendices D and H**, respectively**.**

Wetland RL-1 (page 1 of 57) is a drainage ditch located at the westernmost end of Security Boulevard that is classified as palustrine emergent with a seasonally flooded water regime (PEM1C). This wetland drains to a culvert located at the wetland's northern terminus, which presumably then flows through the storm drain system to a tributary of Dead Run. During the site visit, primary indicators of wetland hydrology included up to four inches of surface water, a high water table, saturation at the soil surface, and water-stained leaves. Based on the dominance test for hydrophytic vegetation, 100 percent of the dominant species observed within the test plot (WTP 1-1) were classified as FAC, FACW, or OBL. These included *Scirpus atrovirens* (green bulrush) and *Juncus effusus* (common rush). Soils in the area are mapped as Jackland-Urban land complex, which is not listed as hydric by the NRCS. However, soil samples were confirmed to meet the Depleted Matrix (F3) hydric soil indicator at a depth of three to eight inches of the soil profile with matrix colors of 2.5Y4/2 and 2.5Y3/2 and redox concentrations of 7.5YR4/6. Based on best professional judgment, the principal functions/values provided by this wetland include groundwater recharge/discharge and sediment/toxicant retention.

Wetland RL-2 (page 1 of 57) shares a surface connection with Wetland RL-1, and is comprised of both palustrine forested and emergent components, the latter being the result of regular mowing within a gas line right-of-way. The emergent area maintains a temporarily flooded water regime (PEM1A). During the site visit, primary indicators of wetland hydrology included up to four inches of surface water and water-stained leaves. Based on the dominance test for hydrophytic vegetation, 100 percent of the dominant species observed within the test plot (WTP 2-1) were classified as FAC, FACW, or OBL. Although vegetation was disturbed by regular mowing within the gas line right-of-way, green bulrush and common rush were considered dominant within the test plot. Soils in the area are mapped as Jackland-Urban land complex, which is not listed as hydric by the NRCS. However, soil samples were confirmed to meet the Depleted Matrix (F3) hydric soil indicator at a depth of two to eight inches of the soil profile with a matrix color of 2.5Y4/2 and redox concentrations of 7.5YR4/6.

The forested portion of Wetland RL-2 is classified as temporarily flooded (PFO1A). Observed indicators of wetland hydrology included one-half inch of surface water, a high water table, saturation at the soil surface, and sediment deposits. Based on the dominance test for hydrophytic vegetation, 75 percent of the dominant species observed within the test plot (WTP 2-2) were classified as FAC, FACW, or OBL. Dominant species included *Ulmus rubra* (slippery elm), *Viburnum prunifolium* (blackhaw), *Cornus amomum* (silky dogwood), and *Lonicera japonica* (Japanese honeysuckle). Soils in the area are mapped as Jackland-Urban land complex, which is not listed as hydric by the NRCS. However, soil samples were confirmed to meet the Depleted Matrix (F3) hydric soil indicator at a depth of two to four inches of the soil profile with a matrix color of 2.5Y4/2 and redox concentrations of 10YR4/6. Based on best professional

judgment, the principal function/value provided by this wetland is groundwater recharge/discharge.

Wetland RL-3 (page 3 of 57) is a stormwater management pond just southeast of the intersection of Security Boulevard and Lord Baltimore Drive that intercepts surface runoff from surrounding parking lots and discharges into a pipe that flows into Dead Run. This wetland is classified as palustrine emergent with a seasonally flooded water regime (PEM2C). Primary indicators of wetland hydrology observed during the site visit included a high water table, less than one inch of surface water, saturation at the soil surface, and water-stained leaves. Geomorphic position was also confirmed as a secondary indicator of wetland hydrology. Based on the dominance test for hydrophytic vegetation, 100 percent of the dominant species observed within the test plot (WTP 3-1) are considered FAC, FACW, or OBL. The only plant considered dominant was *Typha angustifolia* (narrowleaf cattail). Soils in the area are mapped as Urban land, which is not listed as hydric by the NRCS. However, soil samples were confirmed to meet the Redox Dark Surface (F6) hydric soil indicator at a depth of four to eight inches of the soil profile with a matrix color of 10YR3/1 and redox concentrations of 7.5YR4/6. Based on best professional judgment, the principal functions/values associated with this wetland include groundwater recharge/discharge, floodflow alteration, sediment/toxicant retention, and nutrient removal.

Waterway RL-4 (page 5 of 57) is an east-flowing, unnamed tributary to Dead Run that is fed mostly by surface runoff from impervious surfaces associated with the Security Square Mall. This waterway is classified as an upper perennial stream with a concrete bottom (R3RB2). Significant alterations in the form of channel armoring and straightening have been made to this waterway in order to accommodate heavy stormwater flows. Width and depth of the channel are four feet and one foot, respectively. Approximately six inches of flowing water were evident in the channel during the site visit. Habitat complexity is very low, because of a lack of stable instream cover, heavy silt deposition, and the absence of riffle-pool sequences. Furthermore, pollutants were abundant, including oil, grease, and trash.

Wetland RL-5 (page 5 of 57) is comprised of three roadside ditches bordering the entrance ramp from Security Boulevard to I-695 South. This wetland is classified as palustrine emergent with a temporarily flooded water regime (PEM2A), and carries runoff from the road and adjacent culvert to Waterway RL-4. Primary indicators of wetland hydrology observed during the site visit included up to two inches of surface water, a high water table, saturation, and water-stained leaves. Drainage patterns were also observed as a secondary indicator of wetland hydrology. Based on the dominance test for hydrophytic vegetation, 100 percent of the dominant species observed within the test plot (WTP 5-1) are considered FAC, FACW, or OBL. The dominant vegetation included *Xanthium strumarium* (rough cocklebur) and *Typha latifolia* (broadleaf cattail). Soils in the area are mapped as Udorthents, which are not listed as hydric by the NRCS. However, soil samples were confirmed to meet the Stratified Layers (A5) hydric soil indicator at a depth of zero to eight inches of the soil profile with a matrix color of 10YR3/1. Based on best professional judgment, the principal functions/values provided by this wetland include groundwater recharge/discharge and sediment/toxicant retention.

Wetland RL-6 (page 5 of 57) is located in a wooded swale west of the exit ramp from I-695 South to I-70 West, immediately southwest of Wetland RL-5. This wetland drains into Waterway RL-4 and is classified as palustrine forested with a temporarily flooded water regime (PFO1A). During the site visit, primary indicators of wetland hydrology included less than one inch of surface water, a high water table, saturation at the soil surface, and water stained leaves. Based on the dominance test for hydrophytic vegetation, 67 percent of the dominant species observed within the test plot (WTP 6-1) are considered FAC, FACW, or OBL. The dominant species included *Fraxinus pennsylvanica* (green ash), *Quercus palustris* (pin oak), *Lonicera tatarica* (Tatarian honeysuckle), *Schedonorus pratensis* (meadow fescue), and *Toxicodendron radicans* (eastern poison ivy). Soils in this wetland are mapped as Urban land-Udorthents, which are not listed as hydric by the NRCS. However, soil samples were confirmed to meet the Depleted Matrix (F3) hydric soil indicator at a depth of three to nine inches of the soil profile with a matrix color of 2.5Y4/2 and redox concentrations of 7.5YR4/6. Based on best professional judgment, the principal function/value provided by this wetland is groundwater recharge/discharge.

Waterway RL-7 (page 6 of 57) is an ephemeral channel originating just south of the ramp from I-70 West onto I-695 North, and draining into Waterway RL-8. The width and depth of this waterway are one foot and four to six inches, respectively. Approximately one-half inch of flowing water was evident during the site visit. Indicators of ephemeral flow included a clear, natural line impressed on the bank, matted/bent vegetation, and disturbed leaf litter. Hydric soils were not present within the channel, indicating groundwater inputs are lacking.

Waterway RL-8 (page 6 of 57) is an unnamed tributary to Dead Run that flows north into the project study corridor from just east of the ramp from I-70 East to I-695 North. This waterway is classified as an intermittent stream with a cobble-gravel bottom (R4UB1). The channel appears natural, but may have been straightened during construction of the highway interchange. Width and depth of the channel are two feet and one foot, respectively. Approximately two to three inches of flowing water were evident during the site visit. Habitat complexity is low, because of a lack of stable instream cover and the absence of riffle-pool sequences.

Waterway RL-9 (page 5 of 57) is an unnamed tributary to Dead Run that flows east through the Social Security Administration (SSA) West property, just north of the ramp connecting I-70 East to I-695 North. This waterway is classified as lower perennial with a cobble-gravel bottom (R4UB1). The channel appears natural, but was likely historically straightened as significant landscape alterations have been made to the surrounding area. The width and depth of the channel are 10 and two feet, respectively. Approximately two to three inches of flowing water were evident during the site visit. Habitat complexity is low, because of a lack of stable instream cover and the absence of riffle-pool sequences.

Wetland RL-10 (page 5 of 57) consists of an enclosed depression that receives runoff from a parking lot on the eastern side of the ramp from I-70 West to I-695 North, just east of Wetlands RL-5 and RL-6. This wetland is classified as palustrine emergent with a temporarily flooded water regime (PEM2A). During the site visit, indicators of wetland hydrology included up to two

inches of surface water, a high water table, saturation at the soil surface, and water-stained leaves. Based on the dominance test for hydrophytic vegetation, 100 percent of the dominant plant species observed within the test plot (WTP 10-1) are considered FAC, FACW, or OBL. The dominant species included *Phragmites australis* (common reed). Soils in the wetland are mapped as Urban land-Udorthents, which are not listed as hydric by the NRCS. However, soil samples were confirmed to meet the Redox Dark Surface (F6) hydric soil indicator at a depth of six to 14 inches, with a matrix color of 5Y3/2 and redox concentrations of 10YR4/6. Based on best professional judgment, the principal functions/values provided by this wetland include groundwater recharge/discharge and sediment/toxicant retention.

Waterway RL-11 (page 8 of 57) is an unnamed tributary to Dead Run that flows north through the project study corridor under I-70 and Parallel Drive. Three ephemeral tributaries are associated with this waterway, and are described collectively below because of their similar characteristics. The main channel is classified as upper perennial with a cobble-gravel bottom (R3UB1). The channel appears natural, but may have been straightened during construction of the aforementioned roadways. Width and depth of the main channel are 15 feet and two to three feet, respectively. Approximately four to six inches of flowing water were evident during the site visit. Habitat complexity is moderate, because of the presence of some riffle habitat and a large pool, although instream cover is generally lacking and algal growth is excessive throughout most of the assessed reach. The ephemeral tributaries flowing into Waterway RL-11 are generally about one-foot wide and less than one-foot deep, with only minimal flow present at the time of the site visit. The channels are characterized by the presence of beds and banks, but the only indicator of ephemeral flow observed was disturbed leaf litter. Hydric soils were not present within the channels, indicating groundwater inputs are lacking.

Waterway RL-12 (page 8 of 57) is a narrow intermittent channel with a cobble-gravel/mud bottom (R4UB1/3) that serves as a connection between Wetland RL-13 and Waterway RL-11. The channel is natural, having developed as a drainage outlet for Wetland RL-13. The width and depth of the channel are six feet and less than one foot, respectively. Approximately three inches of flowing water were present during the site visit. Habitat complexity is low because of highly embedded substrates and a lack of perennial flow.

Wetland RL-13 (pages 8&9 of 57) consists of a broad wooded swale that flows west into Waterway 12 and eventually, Waterway 11. The wetland is located between I-70 and Parallel Drive and is classified as palustrine forested, with a temporarily to seasonally flooded water regime (PFO1A/C). Indicators of wetland hydrology observed during the site visit included up to one inch of surface water, a high water table, saturation at the soil surface, and water-stained leaves. Based on the dominance test for hydrophytic vegetation, 83 percent of the dominant plant species observed within the test plot (WTP 13-1) are considered FAC, FACW, or OBL. The dominant vegetation within the plot included green ash, *Quercus alba* (white oak), silky dogwood, *Cinna arundinacea* (sweet woodreed), and *Smilax rotundifolia* (common greenbrier). Soils in the wetland are mapped as Legore-Montalto-Urban land complex, which is not listed as hydric by the NRCS. However, soil samples were confirmed to meet the Redox Dark Surface (F6) hydric soil indicator at a depth of zero to five inches, with a matrix color of 2.5Y3/2 and redox

concentrations of 10YR4/6. Based on the New England Method, the principal functions/values provided by this wetland include groundwater recharge/discharge, nutrient removal, production export, and visual quality/aesthetics.

Waterway RL-14 (page 10 of 57) is an ephemeral channel occurring just north of the ramp from Parallel Drive onto I-70 West. This waterway flows south and east into a culvert that flows under I-70 and into Waterway RL-20. The width and depth of the channel are six feet and six inches, respectively. However, flowing water was not evident during the site visit. Indicators of ephemeral flow included matted/bent vegetation, sediment deposition, and the presence of litter and debris. Hydric soils were not present within the channel, indicating groundwater inputs are lacking.

Wetland RL-15 (page 7 of 57)is a drainage ditch that flows east along the south side of I-70 into Waterway RL-16, just west of the Woodlawn Drive overpass. This wetland is classified as palustrine emergent with a seasonally flooded water regime (PEM1C). Indicators of wetland hydrology observed during the site visit included a high water table, zero to four inches of surface water, saturation at the soil surface, and water-stained leaves. Based on the dominance test for hydrophytic vegetation, 100 percent of the dominant plant species observed within the test plot (WTP 15-1) are considered FAC, FACW, or OBL. The dominant vegetation within the plot included narrowleaf cattail and *Agrostis stolonifera* (creeping bentgrass). Soils in the wetland are mapped as Udorthents, which are not listed as hydric by the NRCS. However, soil samples were confirmed to meet the Depleted Matrix (F3) hydric soil indicator at a depth of zero to four inches, with a matrix color of 5Y4/1 and redox concentrations of 7.5YR4/6. Based on best professional judgment, the principal functions/values provided by this wetland include groundwater recharge/discharge and sediment/toxicant retention.

Waterway RL-16 (page 7 of 57) consists of a concrete-lined intermittent channel (R4RB2), and a perennial, natural channel with a cobble-gravel/mud bottom (R3UB1/3). The intermittent channel is fed by Wetland RL-15 and flows directly into the perennial portion of Waterway RL-16. Both channels flow east into an underground drainage network that eventually flows into Dead Run. The intermittent portion of Waterway RL-16 is four-feet wide and one-foot deep; four to six inches of flowing water were observed during the site visit. The perennial reach was characterized by a width and depth of four feet and one foot, respectively, and four to six inches of flowing water were present during the site visit. Habitat complexity was low in both channels, because of shallow flows, high embeddedness, and a lack of riffle-pool sequences.

Waterway RL-17 (pages 8&9 of 57) consists of a mud bottom intermittent channel (R4SB5) and an ephemeral tributary that conveys surface runoff from nearby uplands. Both portions of the waterway are west-flowing, eventually draining into Waterway RL-11. The defined stream channel is interrupted by a wetland that has formed on depositional material approximately halfway down the assessed reach (Wetland RL-18, below). The intermittent and ephemeral channels constituting Waterway RL-17 appear natural, but both were likely significantly altered by highway construction. Both channels are about two- to three-feet wide and one-foot deep. The intermittent portion contained four inches of flowing water while the ephemeral portion

was dry at the time of the site visit. Habitat complexity was low in the intermittent channel, because of shallow flows, a lack of riffle-pool sequences, and moderate silt deposition.

Wetland RL-18 (page 8 of 57) consists of a series of streamside wetlands that flow directly into Waterway RL-17, immediately south of I-70. The westernmost portion of Wetland RL-18 is classified as palustrine forested with a temporarily flooded water regime (PFO1A), with overbank flooding serving as the primary source of hydrology. Drift deposits served as a primary indicator of wetland hydrology in this area during the site visit, while water-stained leaves and drainage patterns constituted secondary indicators. Based on the dominance test for hydrophytic vegetation, 75 percent of the dominant species observed within the test plot (WTP 18-1) are considered FAC, FACW, or OBL. The dominant vegetation within the plot included green ash, *Lindera benzoin* (northern spicebush), *Rosa multiflora* (multiflora rose), *Ranunculus ficaria* (fig buttercup), and *Lonicera japonica* (Japanese honeysuckle). Soils in this area are mapped as Watchung silt loam, which is listed as hydric by the NRCS. Soil samples met the Redox Dark Surface (F6) hydric soil indicator at a depth of five to 14 inches, with a matrix color of 10YR3/2 and redox concentrations of 10YR4/4.

The easternmost portions of Wetland RL-18 are also part of the floodplain of Waterway 17, but are hydrologically supplied mostly by groundwater inputs. Therefore the wetland was classified as having a saturated to seasonally flooded water regime (PFO1B/C). During the site visit, indicators of wetland hydrology included a high water table, saturation at the soil surface, and water-stained leaves. Based on the dominance test for hydrophytic vegetation, 100 percent of the dominant plant species observed within the test plot (WTP 18-2) are considered FAC, FACW, or OBL. These included green ash, *Acer rubrum* (red maple), silky dogwood, *Glyceria striata* (fowl mannagrass), Japanese honeysuckle and *Vitis sp.* (unknown grapevine). Soils in the wetland are mapped as Legore-Montalto-Urban land complex, which is not listed as hydric by the NRCS. However, soil samples were confirmed to meet the Redox Dark Surface (F6) hydric soil indicator at a depth of three to eight inches, with matrix colors of 2.5Y3/2 and 5Y3/1, and redox concentrations of 7.5YR3/4 and 7.5YR4/4. Based on best professional judgment, the principal functions/values provided by this wetland include groundwater recharge/discharge, floodflow alteration, sediment/toxicant retention, and nutrient removal.

Wetland RL-19 (page 10 of 57) is a drainage ditch that flows east along the south side of I-70 into Waterway 20, north of an apartment complex on Franklin Avenue. This wetland was classified as palustrine emergent with a saturated water regime (PEM2B) after substantial groundwater discharge was observed flowing from the wetland during the site visit. Other indicators of wetland hydrology that were evident included a high water table and up to two inches of surface water. Based on the dominance test for hydrophytic vegetation, 100 percent of the dominant species observed within the test plot (WTP-19-1) are considered FAC, FACW, or OBL. The only species determined to be dominant was *Nasturtium officinale* (watercress). Soils in this area are mapped as Legore-Montalto-Urban land complex, which are not listed as hydric by the NRCS. However, soil samples were confirmed to meet the Depleted Matrix (F3) hydric soil indicator at a depth of 2 to 4 inches, with a matrix color of 5YR4/2 and redox concentrations of 10YR4/6. Based on best professional judgment, the principal functions/values

provided by this wetland include groundwater recharge/discharge and sediment/toxicant retention.

Waterway RL-20 (page 10 of 57) is an upper perennial, concrete-lined channel (R3RB2) that is hydrologically supplied by groundwater inputs from Wetlands RL-19 and RL-21 (below) and surface runoff from surrounding uplands. This stream flows east into a culvert that flows into Waterway RL-22 (below) and eventually, Dead Run. The width and depth of the channel are four feet and one foot, respectively. Approximately two inches of flowing water were observed during the site visit. Habitat complexity is virtually absent because of the channel modifications that have occurred. Significant algal growth was observed in the channel at the time of the site visit, suggesting excess nutrients are being delivered to this system.

Wetland RL-21 (page 10 of 57) is a slope seepage wetland that abuts Waterway RL-20, just east of Wetland RL-19. This wetland is classified as palustrine forested with a seasonally flooded/saturated water regime (PFO1E). Indicators of wetland hydrology observed during the site visit included a high water table, up to one inch of surface water, saturation at the soil surface, water marks, and water-stained leaves. Drainage patterns served as a secondary indicator. Based on the dominance test for hydrophytic vegetation, 100 percent of the dominant species observed within the test plot (WTP-21-1) are considered FAC, FACW, or OBL. These included green ash, red maple, silky dogwood, *Symplocarpus foetidus* (skunk cabbage), and Japanese honeysuckle. Soils in this wetland are mapped as Legore-Montalto-Urban land complex, which is not considered hydric by the NRCS. However, soil samples were confirmed to meet the Redox Dark Surface (F6) hydric soil indicator at a depth of two to 10 inches with a matrix color of 10YR3/2 and redox concentrations of 10YR3/6. Based on best professional judgment, the principal functions/values provided by this wetland include groundwater recharge/discharge, sediment/toxicant retention, nutrient removal, wildlife habitat, and visual quality/aesthetics.

Waterway RL-22 (pages 11&12 of 57) is an upper perennial, cobble-gravel bottom stream (R3UB1) that flows northeast along Ingleside Avenue, through several culverts passing under Parallel Drive and Security Boulevard, and eventually into Dead Run. The width and depth of the channel are 15 and three feet, respectively. Approximately four inches of flowing water were observed during the site visit. Habitat complexity was considered low because of a highly embedded substrate, heavy silt deposition, and a lack of stable instream structure. Furthermore, trash was abundant throughout the assessed reach.

Wetland RL-23 (page 12 of 57) is located on the floodplain of Dead Run just north of the intersection of Security Boulevard and North Forest Park Avenue. This wetland is classified as palustrine forested with a seasonally flooded/saturated water regime (PFO1E). During the site visit, indicators of wetland hydrology included saturation at a depth of eight inches and water-stained leaves. Based on the dominance test for hydrophytic vegetation, 83 percent of the dominant species observed within the test plot (WTP-23-1) are considered FAC, FACW, or OBL. The dominant species include red maple, *Ulmus americanus* (American elm), northern spicebush, Tatarian honeysuckle, fig buttercup, unknown grapevine, and Japanese honeysuckle.

Soils in this area are mapped as Codorus silt loam, which is not considered hydric by the NRCS. However, soil samples were confirmed to meet the Redox Dark Surface (F6) hydric soil indicator at a depth of three to 10 inches with a matrix color of 10YR3/2 and redox concentrations of 10YR5/6. Based on best professional judgment, the principal functions/values provided by this wetland include groundwater recharge/discharge, floodflow alteration, sediment/toxicant retention, nutrient removal, production export, and wildlife habitat.

Waterway RL-24 (page 12 of 57) is the mainstem of Dead Run, which is classified as upper perennial with a cobble-gravel substrate (R3UB1). This stream constitutes the primary receiving system for all wetlands and waterways delineated in the western portion of the Red Line and is a tributary of Gwynns Falls and the Patapsco River. The assessed reach was about 70 feet wide and eight feet deep, and contained an average of 10 inches of flowing water during the site visit. Habitat complexity was low, because of a highly embedded substrate, a lack of stable instream structure and poorly developed riffle-pool sequences. A small ephemeral tributary was also identified flowing into the west bank of Dead Run from a culvert just south of the Old Ingleside Avenue bridge crossing. The channel contained evidence of ephemeral flow in the form of scour and debris, as well as some flowing water near the bottom portion of the channel. Channel dimensions for the ephemeral channel were five-feet wide by three-feet deep.

Waterway RL-25 (page 15 of 57) is an ephemeral channel originating near the northeastern corner of the I-70 Park-and-Ride parking lot and flowing in a northeasterly direction toward a floodplain wetland associated with Dead Run just outside the wetland delineation study area. The width and depth of this waterway are four and two feet, respectively. Flowing water was not evident during the site visit. Indicators of ephemeral flow included disturbed leaf litter, sediment deposition, the presence of litter and debris, and scour. Hydric soils were not present within the channel, indicating groundwater inputs are lacking.

Waterway RL-26 (page 14 of 57) is a concrete-lined, upper perennial waterway (R3RB2) that flows north from a culvert into Dead Run just south of the entrance ramp connecting the I-70 Park-and-Ride to Security Boulevard. The channel was modified historically to accommodate storm flows, but is currently returning to a natural state as much of the concrete has degraded. The width and depth of the channel are 20 feet and six feet, respectively. Approximately 12 inches of flowing water were observed during the site visit. Habitat complexity is low because of a lack of stable instream structure, although some pool habitat has formed between broken slabs of concrete. Significant algal growth was observed in the channel at the time of the site visit, suggesting excess nutrients are being delivered to this system.

Waterway RL-27 (page 13 of 57) is an intermittent, concrete-lined channel that flows south through a small wooded area located just west of the entrance ramp leading from Security Boulevard to the I-70 Park-and-Ride. This waterway flows into a culvert that appears to direct drainage into Dead Run east of the wetland delineation study area. The width and depth of the channel are four feet and one foot, respectively. Less than one inch of flowing water was

observed during the site visit. Groundwater flow was entering the channel through cracks in the concrete at the time of the site visit, providing evidence intermittent flow.

Wetland RL-28 (page 13 of 57) is a drainage ditch located adjacent to the entrance ramp from Security Boulevard to the I-70 Park-and-Ride. This wetland drains into Waterway RL-29 and is classified as palustrine emergent with a seasonally flooded/saturated water regime (PEM1E). Indicators of wetland hydrology observed during the site visit included less than one inch of surface water, a high water table, and saturation at the soil surface. Based on the dominance test for hydrophytic vegetation, 100 percent of the dominant species observed within the test plot (WTP-28-1) are considered FAC, FACW, or OBL. The dominant species include creeping bentgrass, common rush, *Scirpus polyphyllus* (leafy bulrush), and Japanese honeysuckle. Soils in the wetland are mapped as Udorthents, which are not considered hydric by the NRCS. However, soil samples were confirmed to meet the Depleted Matrix (F3) hydric soil indicator at a depth of two to six inches with a matrix color of 5GY4/1 and redox concentrations of 7.5YR4/6. The soil matrix color is not solely indicative of long-duration saturation but rather green-gray parent material. Based on best professional judgment, the principal functions/values provided by this wetland include groundwater recharge/discharge and sediment/toxicant retention.

Waterway RL-29 (page 13 of 57) is a concrete-lined intermittent tributary (R4RB2) that directs drainage from Wetland RL-28 into the same culvert system carrying runoff from Waterway RL-27 toward Dead Run. The width and depth of the channel are four feet and one-half-foot. Less than one inch of flowing water was observed in the channel during the site visit. Habitat complexity is very low as stable instream habitat is absent from the assessed reach.

Wetland RL-30 (page 15 of 57) is a drainage ditch located just south of the Security Boulevard and I-70 Park-and-Ride. This wetland is classified as palustrine emergent with a seasonally flooded water regime (PEM1C). During the site visit, indicators of wetland hydrology included less than three inches of surface water, a high water table, sediment deposits, saturation at the soil surface, and water-stained leaves. Based on the dominance test for hydrophytic vegetation, 100 percent of the dominant species observed within the test plot (WTP-30) are considered FAC, FACW, or OBL. The only plant considered dominant was *Schoenoplectus tabernaemontani* (softstem bulrush). Soils in the area are mapped as Legore-Urban land complex, which is not considered hydric by the NRCS. However, soil samples were confirmed to meet the Redox Dark Surface (F6) hydric soil indicator at a depth of zero to six inches with matrix colors of 5GY3/1 and 5Y3/2 and redox concentrations of 7.5YR4/4 and 5Y4/4. The soil matrix color is most likely indicative of green-gray parent material rather than highly saturated conditions typically producing gleyed soils. Based on best professional judgment, the principal functions/values provided by this wetland include groundwater recharge/discharge and sediment/toxicant retention.

Wetland RL-31 (page 5 of 57) is a slope seepage wetland located east of the I-70 to I-695 North exit ramp, and also east of Wetland RL-10. This wetland is classified as palustrine emergent with a temporarily flooded water regime (PEM1A), and drains into Waterway RL-32. Indicators of

wetland hydrology observed during the site visit included a high water table and saturation at the soil surface. Based on the dominance test for hydrophytic vegetation, 100 percent of the dominant species observed within the test plot (WTP-31-1) are considered FAC, FACW, or OBL. The only plant considered dominant was common rush. Other vegetation was present in the area but was unrecognizable because of frequent mowing. Soils in the wetland are mapped as Urban Land, which is not considered hydric by the NRCS. However, soil samples were confirmed to meet the Depleted Matrix (F3) hydric soil indicator at a depth of two to 11 inches with matrix colors of 2.5Y4/1 and 5Y4/2, and redox concentrations of 7.5YR4/6. Based on best professional judgment, the principal function/value provided by this wetland is groundwater recharge/discharge.

Waterway RL-32 (page 5 of 57) is a rip rap-lined intermittent stream (R4RB2) that directs surface runoff and groundwater flow from Wetland RL-31 into a storm drain that flows into Waterway RL-9. The width and depth of the channel are five feet and eight inches, respectively. Approximately three inches of flowing water were observed in the channel during the site visit. Habitat complexity is low as instream habitat is virtually absent from the assessed reach.

Waterway RL-35 (page 40 of 57) is the mainstem of the Jones Falls, just north of where it flows into the Baltimore Harbor, between East Lombard and Pratt Streets. This tidal portion of the Jones Falls is classified as estuarine subtidal open water with an unknown bottom (E1OW) and is confined on both sides by concrete walls; and the downtown street grid.

Wetland RL-33 (page 52 of 57) is a wetland ditch located in the inactive NS rail right-of-way. The ditch begins approximately 250 feet north of Eastern Avenue and extends northward for approximately 300 feet. This appears to be an isolated wetland that captures runoff from the surrounding industrial land uses in the depressional ditch and contains both forested and emergent components. The emergent wetland is classified as palustrine emergent with a seasonally flooded water regime (PEM1C), and during the site visit primary indicators of hydrology included surface water and a high water table. Based on the dominance test for hydrophytic vegetation, 100 percent of the dominant species observed within the test plot (WTP-33-1) are considered FAC, FACW, or OBL. The dominant species include black willow and common reed. Soils in the wetland are mapped as Urban Land, which is not considered hydric by the NRCS. However, soil samples were confirmed to meet the Depleted Matrix (F3) hydric soil indicator at a depth of 0 to 6 inches with matrix colors of 10YR4/2 with redox concentrations of 7.5YR5/6.

The forested portion of the wetland is classified as palustrine forested with a saturated water regime (PFO1B). At the time of the site visit, primary indicators of hydrology included surface water, a high water table, and water-stained leaves. Based on the dominance test for hydrophytic vegetation, 100 percent of the dominant species observed within the test plot (WTP-33-1) are considered FAC, FACW, or OBL. The dominant species include *Acer saccharinum* (silver maple), common reed, and Japanese honeysuckle. Soils in the wetland are mapped as Urban Land, which is not considered hydric by the NRCS. However, soil samples were confirmed to meet the black histic (A3) hydric soil indicator at a depth of 0 to 14 inches with matrix colors

of 10YR1/1. Based on best professional judgment, the principal function/values provided by this wetland are groundwater recharge/discharge, sediment/toxicant retention, nutrient retention/removal and wildlife habitat.

Wetland RL-34 (page 52 of 57) is a wetland ditch located in the inactive NS rail right-of-way. The ditch begins approximately 400 feet south of East Pratt Street and extends north past Lombard Street and out of the project corridor. This appears to be an isolated wetland similar to Wetland RL-33 and is classified as both palustrine emergent with a temporary flooded water regime (PEM1B) and palustrine forested with a saturated water regime. During the site visit, the emergent portion of the wetland contained up to two inches of surface water and was saturated to the surface, while the primary indicators of hydrology in the forested portion of the wetland included surface water, a high water table, and water-stained leaves. Based on the dominance test for hydrophytic vegetation, 100 percent of the dominant species observed within the emergent and forested plots are considered FAC, FACW, or OBL. The dominant species in the emergent wetland include Acer saccharinum (silver maple), common reed, and Japanese honeysuckle, while black willow, Acer negundo (box elder), common reed, poison ivy and Vitis vulpina (frost grape) are dominant in the forested wetland, Soils in the wetland are mapped as Urban Land, which is not listed as a hydric soil by the NRCS. However, soil samples met the Hydrogen Sulfide (A4) hydric soil indicator. Based on best professional judgment, the principal function/values provided by this wetland are groundwater recharge/discharge, sediment/toxicant retention, nutrient retention/removal and wildlife habitat.

Wetland RL-36 (page 57 of 57) is located north of East Lombard Street, along the northeastern edge of the limits of disturbance at the eastern terminus of the project. The wetland, which is classified as palustrine emergent with a temporarily flooded water regime, appears to be an abandoned sediment basin and is hydrologically connected to Waterway Rl-41, At the time of the site visit, primary indicators of hydrology included sediment deposits and water-stained leaves. Based on the dominance test for hydrophytic vegetation, 75 percent of the dominant species observed within the test plot (WTP-36-1) are considered FAC, FACW, or OBL. The dominant species include black willow, common reed, Japanese honeysuckle, and Vitis aestivalis (summer grape). Soils in the wetland are mapped as Udorthents, which is not considered hydric by the NRCS. Soil samples indicated disturbed soil conditions because of the excavated nature of the basin. Based on best professional judgment, the principal function/values provided by this wetland are sediment/toxicant retention, nutrient retention/removal, and wildlife habitat.

Wetland RL-40 (page 57 of 57) is also located north of East Lombard Street, just west of Wetland RL-36. The wetland is isolated and appears to have been formed by storage of construction debris being placed in a shallow swale that now impounds water. The primary indicator of hydrology during the site visit was saturation. Based on the dominance test for hydrophytic vegetation, 100 percent of the dominant species observed within the wetland are considered FAC, FACW, or OBL. The dominant species includes common reed. Soil samples were not obtained in this wetland because of access issues. Based on best professional

judgment, the principal function/values provided by this wetland are sediment/toxicant retention, nutrient retention/removal, and wildlife habitat.

Waterway RL-41 (page 57 of 57) is located along the northern edge of the limits of disturbance at the eastern terminus of the Preferred Alternative and is classified as an intermittent stream with a sand bottom (R4SB2). The stream has been manipulated and enters the project area through a culvert under the access road to the NS tracks, continuing westward into a culvert beneath I-895. Less than one inch of flowing water was observed in the channel during the site visit. Habitat complexity is very low because of low flows and manipulation.

Table 18: Wetland and Waterway Summary Table

Wetland Number	Wetland Acreage	Cowardin Classification	Hydrology	Vegetation[1]			Soils	Principal Functions[2]
				Common Name	*Scientific Name*	Indicator Status		
Wetland 1 (WTP-1-1)	0.01	PEM1C	Surface Water, High Water Table, Saturation, Water-stained Leaves	green ash common rush green bulrush	*Fraxinus pennsylvanica* *Juncus effusus* *Scirpus atrovirens*	FACW FACW OBL	*Jackland-Urban land complex* Depleted Matrix (F3) 3-8 inches of 2.5Y4/2 clay loam with 7.5YR4/6 redox concentrations	Groundwater Recharge/ Discharge, Sediment/ Toxicant Retention

Table 18: Wetland and Waterway Summary Table

Wetland Number	Wetland Acreage	Cowardin Classification	Hydrology	Vegetation[1]			Soils	Principal Functions[2]
				Common Name	*Scientific Name*	Indicator Status		
Wetland 2 (WTP-2-1)	0.03	PEM1A	Surface Water, Water-stained Leaves, Sparsely Vegetated Concave Surface	common rush green bulrush	*Juncus effusus* *Scirpus atrovirens*	FACW OBL	*Jackland-Urban land complex* Depleted Matrix (F3) 2-8 inches of 2.5Y4/2 silty clay loam with 7.5YR4/6 redox concentrations	Groundwater Recharge/ Discharge
WTP-2-2	0.03	PFO1A	Surface Water, High Water Table, Saturation, Sediment Deposits	red maple wild garlic silky dogwood eastern red cedar Japanese honeysuckle pin oak slippery elm blackhaw	*Acer rubrum* *Allium vineale* *Cornus amomum* *Juniperus virginiana* *Lonicera japonica* *Quercus palustris* *Ulmus rubra* *Viburnum prunifolium*	FAC FACU FACW FACU FAC FACW FAC FACU	*Jackland-Urban land complex* Depleted Matrix (F3) 2-4 inches of 2.5Y4/2 sandy clay loam with 10YR4/6 redox concentrations	

Table 18: Wetland and Waterway Summary Table

Wetland Number	Wetland Acreage	Cowardin Classification	Hydrology	Vegetation[1]			Soils	Principal Functions[2]
				Common Name	*Scientific Name*	Indicator Status		
Wetland 3 (WTP-3-1)	0.21	PEM2C	Surface Water, High Water Table, Saturation, Water-stained Leaves	Oriental ladysthumb narrowleaf cattail	*Polygonum cespitosum* *Typha angustifolia*	FACU OBL	*Jackland-Urban land complex* Redox Dark Surface (F6) 4-8 inches of 10YR3/1 silt loam with 7.5YR4/6 redox concentrations	Groundwater Recharge/ Discharge, Floodflow Alteration, Sediment/ Toxicant Retention, Nutrient Removal
Waters of the US 4	n/a	R3RB2	n/a	n/a	n/a	n/a	n/a	n/a

Table 18: Wetland and Waterway Summary Table

Wetland Number	Wetland Acreage	Cowardin Classification	Hydrology	Vegetation[1]			Soils	Principal Functions[2]
				Common Name	*Scientific Name*	Indicator Status		
Wetland 5 (WTP-5-1)	0.07	PEM2A	Surface Water, High Water Table, Saturation, Drift Deposits, Water-stained Leaves, Drainage Patterns	green bulrush broadleaf cattail rough cocklebur	*Scirpus atrovirens* *Typha latifolia* *Xanthium strumarium*	OBL OBL FAC	*Udorthents, highway* Stratified Layers (A5) 0-4 inches of 10YR3/1 mucky modified silt loam, and 4-8 inches of 10YR3/1 alluvium and sandy clay loam	Groundwater Recharge/ Discharge, Sediment/ Toxicant Retention

Table 18: Wetland and Waterway Summary Table

Wetland Number	Wetland Acreage	Cowardin Classification	Hydrology	Vegetation[1]			Soils	Principal Functions[2]
				Common Name	*Scientific Name*	Indicator Status		
Wetland 6 (WTP-6-1)	0.05	PFO1A	Surface Water, High Water Table, Saturation, Water-stained Leaves, Sparsely Vegetated Concave Surface	sawtooth oak green ash meadow fescue Japanese honeysuckle Tatarian honeysuckle pin oak eastern poison ivy	*Quercus acutissima* *Fraxinus pennsylvanica* *Schedonorus pratensis* *Lonicera japonica* *Lonicera tatarica* *Quercus palustris* *Toxicodendron radicans*	NI FACW FACU FAC FACU FACW FAC	*Urban land and Udorthents, highway* Depleted Matrix (F3) 3-9 inches of 2.5Y4/2 silty clay loam with 7.5YR4/6 redox concentrations	Groundwater Recharge/ Discharge
Waters of the US 7	n/a	Ephemeral	n/a	n/a	n/a	n/a	n/a	n/a
Waters of the US 8	n/a	R4UB1	n/a	n/a	n/a	n/a	n/a	n/a
Waters of the US 9	n/a	R2UB1	n/a	n/a	n/a	n/a	n/a	n/a

Table 18: Wetland and Waterway Summary Table

Wetland Number	Wetland Acreage	Cowardin Classification	Hydrology	Vegetation[1]			Soils	Principal Functions[2]
				Common Name	*Scientific Name*	Indicator Status		
Wetland 10 (WTP-10-1)	0.02	PEM2A	Surface Water, High Water Table, Saturation, Water-stained Leaves	common reed Oriental ladysthumb	*Phragmites australis* *Polygonum cespitosum*	FACW FACU	*Urban land and Udorthents, highway* 6-14 inches of 5Y3/2 silty clay loam with 10YR4/6 redox concentrations	Groundwater Recharge/ Discharge, Sediment/ Toxicant Retention
Waters of the US 11	n/a	Ephemeral R3UB1 R4SB3	n/a	n/a	n/a	n/a	n/a	n/a
Waters of the US 12	n/a	R4UB1/3	n/a	n/a	n/a	n/a	n/a	n/a

Table 18: Wetland and Waterway Summary Table

Wetland Number	Wetland Acreage	Cowardin Classification	Hydrology	Vegetation[1]			Soils	Principal Functions[2]
				Common Name	*Scientific Name*	Indicator Status		
Wetland 13 (WTP-13-1)	0.37	PFO1A	Surface Water, High Water Table, Saturation, Water-stained Leaves	red maple American hornbeam sweet woodreed silky dogwood green ash blackgum white oak black willow roundleaf greenbrier eastern poison ivy southern arrowwood blackhaw	*Acer rubrum* *Carpinus caroliniana* *Cinna arundinacea* *Cornus amomum* *Fraxinus pennsylvanica* *Nyssa sylvatica* *Quercus alba* *Salix nigra* *Smilax rotundifolia* *Toxicodendron radicans* *Viburnum dentatum* *Viburnum prunifolium*	FAC FAC FACW FACW FACW FAC FACU FACW FAC FAC FAC FACU	*Legore-Montalto-Urban land complex* Redox Dark Surface (F6) 0-5 inches of 2.5Y3/2 silty clay loam with 10YR4/6 redox concentrations	Groundwater Recharge/ Discharge, Nutrient Removal, Production Export, Visual Quality/ Aesthetics
Waters of the US 14	n/a	Ephemeral	n/a	n/a	n/a	n/a	n/a	n/a

Table 18: Wetland and Waterway Summary Table

Wetland Number	Wetland Acreage	Cowardin Classification	Hydrology	Vegetation[1]			Soils	Principal Functions[2]
				Common Name	*Scientific Name*	Indicator Status		
Wetland 15 (WTP-15-1)	0.03	PEM1C	Surface Water, High Water Table, Saturation, Water-stained Leaves, Drainage Patterns	creeping bentgrass poverty rush narrowleaf cattail	*Agrostis stolonifera* *Juncus tenuis* *Typha angustifolia*	FACW FAC OBL	*Udorthents, highway* Depleted Matrix (F3) 0-4 inches of 5Y4/1 sandy clay loam with 7.5YR4/6 redox concentrations	Groundwater Recharge/ Discharge, Sediment/ Toxicant Retention
Waters of the US 16	n/a	R3UB1/3, R4RB	n/a	n/a	n/a	n/a	n/a	n/a
Waters of the US 17	n/a	R4SB5	n/a	n/a	n/a	n/a	n/a	n/a

Table 18: Wetland and Waterway Summary Table

Wetland Number	Wetland Acreage	Cowardin Classification	Hydrology	Vegetation[1]			Soils	Principal Functions[2]
				Common Name	*Scientific Name*	Indicator Status		
Wetland 18 (WTP-18-1)	0.01	PFO1A	Drift Deposits, Water-stained Leaves, Drainage Patterns	red maple unknown sedge green ash common rush Chinese privet northern spicebush Japanese honeysuckle fig buttercup multiflora rose slippery elm	*Acer rubrum* *Carex* sp. *Fraxinus pennsylvanica* *Juncus effusus* *Ligustrum sinense* *Lindera benzoin* *Lonicera japonica* *Ranunculus ficaria* *Rosa multiflora* *Ulmus rubra* *Viburnum prunifolium*	FAC n/a FACW FACW FACU FACW FAC n/a FACU FAC FACU	*Watchung silt loam* Redox Dark Surface (F6) 0-5 inches of 10YR3/2 silt loam with 10YR4/4 redox concentrations	Groundwater Recharge/ Discharge, Floodflow Alteration, Sediment/ Toxicant Retention, Nutrient Removal
WTP-18-2	0.09	PFO1B	High Water Table, Saturation, Water-stained Leaves	blackhaw red maple silky dogwood green ash fowl mannagrass northern spicebush Japanese honeysuckle multiflora rose unknown grapevine	*Acer rubrum* *Cornus amomum* *Fraxinus pennsylvanica* *Glyceria striata* *Lindera benzoin* *Lonicera japonica* *Rosa multiflora* *Vitis* sp.	FAC FACW FACW OBL FACW FAC FACU n/a	*Legore-Montalto-Urban land complex* Redox Dark Surface (F6) 3-8 inches of 2.5Y3/2 silt loam with 7.5YR3/4 redox concentrations	

Table 18: Wetland and Waterway Summary Table

Wetland Number	Wetland Acreage	Cowardin Classification	Hydrology	Vegetation[1]			Soils	Principal Functions[2]
				Common Name	*Scientific Name*	Indicator Status		
Wetland 19 (WTP-19-1)	0.03	PEM2B	Surface Water, High Water Table, Saturation	watercress broadleaf cattail	*Nasturtium officinale* *Typha latifolia*	OBL OBL	*Legore-Montalto-Urban land complex* Depleted Matrix (F3) 2-4 inches of 5Y4/2 sandy loam with 10YR4/6 redox concentrations	Groundwater Recharge/ Discharge, Sediment/ Toxicant Retention
Waters of the US 20	n/a	R3RB	n/a	n/a	n/a	n/a	n/a	n/a

Table 18: Wetland and Waterway Summary Table

Wetland Number	Wetland Acreage	Cowardin Classification	Hydrology	Vegetation[1]			Soils	Principal Functions[2]
				Common Name	*Scientific Name*	Indicator Status		
Wetland 21 (WTP-21-1)	0.17	PFO1E	Surface Water, High Water Table, Saturation, Water-stained leaves	red maple green ash box elder black willow silky dogwood multiflora rose hazel alder northern spicebush sweet woodreed skunk cabbage Japanese honeysuckle	*Acer rubrum* *Fraxinus pennsylvanica* *Acer negundo* *Salix nigra* *Cornus amomum* *Rosa multiflora* *Alnus serrulata* *Lindera benzoin* *Cinna arundinacea* *Symplocarpus foetidus* *Lonicera japonica*	FAC FACW FAC FACW FACW FACU OBL FACW FACW OBL FAC	*Legore-Montalto-Urban land complex* Redox Dark Surface (F6) 2-10 inches of 10YR3/2 silty clay loam with 10YR3/6 redox concentrations	Groundwater Recharge/ Discharge, Sediment/ Toxicant Retention, Nutrient Removal, Wildlife Habitat, Visual Quality/ Aesthetics
Waters of the US 22	n/a	R3UB1	n/a	n/a	n/a	n/a	n/a	n/a

Table 18: Wetland and Waterway Summary Table

Wetland Number	Wetland Acreage	Cowardin Classification	Hydrology	Vegetation[1]			Soils	Principal Functions[2]
				Common Name	*Scientific Name*	Indicator Status		
Wetland 23 (WTP-21-1)	0.17	PFO1E	Saturation, Water-stained leaves	red maple slippery elm green ash Tatarian honeysuckle northern spicebush fig buttercup Japanese honeysuckle unknown grapevine	*Acer rubrum* *Ulmus rubra* *Fraxinus pennsylvanica* *Lonicera tatarica* *Lindera benzoin* *Ranunculus ficaria* *Lonicera japonica* *Vitis* sp.	FAC FACW FACW FACU FACW FAC FAC n/a	*Codorus silt loam* Redox Dark Surface (F6) 3-10 inches of 10YR3/2 silty clay loam with 10YR5/6 redox concentrations	Groundwater Recharge/ Discharge, Floodflow Alteration, Sediment/ Toxicant Retention, Nutrient Removal, Production Export, Wildlife Habitat
Waters of the US 24	n/a	R3UB1, Dead Run (Mainstem)	n/a	n/a	n/a	n/a	n/a	n/a
Waters of the US 25	n/a	Ephemeral	n/a	n/a	n/a	n/a	n/a	n/a
Waters of the US 26	n/a	R2RB	n/a	n/a	n/a	n/a	n/a	n/a
Waters of the US 27	n/a	Ephemeral	n/a	n/a	n/a	n/a	n/a	n/a

Table 18: Wetland and Waterway Summary Table

Wetland Number	Wetland Acreage	Cowardin Classification	Hydrology	Vegetation[1]			Soils	Principal Functions[2]
				Common Name	*Scientific Name*	Indicator Status		
Wetland 28 (WTP-28-1)	0.05	PEM1E	Surface Water, High Water Table, Saturation, Thin Muck Surface	creeping bentgrass common rush leafy bulrush watercress	*Agrostis stolonifera* *Juncus effusus* *Scirpus polyphyllus* *Nasturtium officinale*	FACW FACW OBL OBL	*Udorthents, highway* Depleted Matrix (F3) 2-6 inches of 5GY4/1 with 7.5YR4/6 redox concentrations	Groundwater Recharge/ Discharge, Sediment/ Toxicant Retention
Waters of the US 29	n/a	R4SB5	n/a	n/a	n/a	n/a	n/a	n/a
Wetland 30 (WTP-30-1)	0.01	PEM1C	Surface Water, High Water Table, Saturation, Water-stained leaves	broadleaf cattail softstem bulrush	*Typha latifolia* *Schoenoplectus tabernaemontani*	OBL OBL	*Legore – Urban land complex* Redox Dark Surface (F6) 3-6 inches of 5YR3/2 silty clay loam with 5Y4/4 redox concentrations	Groundwater Recharge/ Discharge, Sediment/ Toxicant Retention

Table 18: Wetland and Waterway Summary Table

Wetland Number	Wetland Acreage	Cowardin Classification	Hydrology	Vegetation[1]			Soils	Principal Functions[2]
				Common Name	*Scientific Name*	Indicator Status		
Wetland 31 (WTP-31-1)	0.01	PEM1A	High Water Table, Saturation	common rush	*Juncus effusus*	FACW	*Urban land* Depleted Matrix (F3) 2-7 inches of 2.5Y4/1 with 7.5YR4/6 redox concentrations	Groundwater Recharge/ Discharge
Waters of the US 32	n/a	R4RB2	n/a	n/a	n/a	n/a	n/a	n/a
Waters of the US 35	n/a	E1OW	tidal (Jones Falls)	n/a	n/a	n/a	n/a	n/a
Wetland 33	0.01	PEM1C	Surface Water, High Water Table,	common reed black willow PA smartweed spotted lady's thumb Canada thistle	*Phragmites australis* *Salix nigra* *Persicaria pennsylvanica* *Persicaria maculosa* *Cirsium arvense*	FACW FACW FACW FACW FACW	*Urban land* *Black Histic (A3)* *0-14 inches muck*	Sediment/ Toxicant Retention, Nutrient Removal, Wildlife Habitat
(WTP-33-1)	0.07	PFO1B	Surface Water, High Water Table, Water-Stained Leaves	silver maple common reed Japanese honeysuckle	*Acer Saccharinum* *Phragmites australis* *Lonicera japonica*	FAC FACW FAC		

Table 18: Wetland and Waterway Summary Table

Wetland Number	Wetland Acreage	Cowardin Classification	Hydrology	Vegetation[1]			Soils	Principal Functions[2]
				Common Name	*Scientific Name*	Indicator Status		
Wetland 34 (WTP-34-1)	0.24	PEM1C	Surface Water, High Water Table, Saturation	common reed black willow PA smartweed spotted lady's thumb Canada thistle	*Phragmites australis* *Salix nigra* *Persicaria pennsylvanica* *Persicaria maculosa* *Cirsium arvense*	FACW FACW FACW FACW FACW	*Urban land* Depleted Matrix (F3) 0-6 inches 10YR4/2 with 7.5YR5/6 redox concentrations	Sediment/ Toxicant Retention, Nutrient Removal, Wildlife Habitat
(WTP-34-2)	0.40	PFO1B	Surface Water, High Water Table, Saturation	white willow ash-leaved maple common reed white vervain frost grape poison ivy Virginia creeper	*Salix alba* *Acer negundo* *Phragmites australis* *Verbena urticifolia* *Vitis vulpina* *Toxicodendron radicans* *Parthenocissus quinquefolia*	FACW FAC FACW FAC FAC FAC FACU	Hydrogen Sulfide (A4) 0-7 inches muck with sulfide odor	
Wetland 36 (WTP-36-1)	0.10	PEM1A	Sediment Deposits, Water-stained leaves	common reed Japanese honeysuckle summer grape	Phragmites australis Lonicera japonica Vitis aestivalis	FAC FAC FACU	*Udorthents* soils are disturbed	Sediment/ Toxicant Retention, Nutrient Removal, Wildlife Habitat

Table 18: Wetland and Waterway Summary Table

Wetland Number	Wetland Acreage	Cowardin Classification	Hydrology	Vegetation[1]			Soils	Principal Functions[2]
				Common Name	*Scientific Name*	Indicator Status		
Wetland 40	0.12	PEM1A	Saturation	common reed	*Phragmites australis*	FAC	*Udorthents*	Sediment/ Toxicant Retention, Nutrient Removal,
Waters of the US 41	n/a	R4SB2	n/a	n/a	n/a	n/a	*n/a*	n/a

Notes: [1]Dominant species are shown in bold type.
[2]Principal functions/values were evaluated using the New England method for wetlands exceeding 0.25 acre in size, these are shown in bold type; all others were evaluated using best professional judgment.

6.3 Environmental Effects

The No-Build Alternative would not result in changes to the natural environment and no short and long-term effects are anticipated. A discussion of the impacts from the Preferred Alternative follows.

6.3.1 Long-Term and Short-Term Effects

Effects to waters of the US, including wetlands, resulting from the Preferred Alternative, are shown in **Table 19**. At this stage of design, calculated impacts are based on the anticipated limits of disturbance and include both long-term, permanent impacts from project structures and facilities needed for operation of the transitway, and short-term, temporary impacts from project construction. Both short and long-term combined impacts were calculated together, and were not differentiated at this phase of study. Temporary effects would be restored following completion of construction. As project design progresses, short and long-term effects would likely be reduced further, as the project limits of disturbance are better defined, and temporary and permanent effects would be calculated separately. Effects to waters of the US, including wetlands from the Preferred Alternative, would only occur within the West, Cooks Lane Tunnel, and East segments with most impacts occurring within the West segment (**Table 19**). No wetland or waterway impacts are proposed within the US 40 or Downtown Tunnel segments. Most effects resulting from the Preferred Alternative would not occur from construction of the rail line itself, as the track is primarily being constructed over existing road surfaces or placed within tunnels. Even where some rail impacts to wetlands are currently shown (e.g., the Red Line crossing of the I-695 ramps and mainlines), more refined design would likely result in some reduction in these impacts, as the rail alignment would be placed on an aerial structure over these wetland systems. The majority of waterway effects would occur where existing roads would be reconfigured or expanded to accommodate the Preferred Alternative, particularly in the West segment where these roads would cross or closely parallel Dead Run and its tributary drainages. The majority of the wetland effects result from these same activities as well as the conversion of the inactive NS rail right-of-way in the East segment for active use as the Redline corridor. There are no effects to tidal waterways, as the only tidal resource crossed by the project corridor is the Jones Falls, and this would be crossed by the Downtown Tunnel segment, well below the stream bottom.

Total wetland effects within the West segment include 0.37 acre of palustrine emergent and 0.13 acre of palustrine forested wetland. Waterway effects within the West segment include 1,560 linear feet of perennial and intermittent streams and 324 linear feet of ephemeral channels (**Table 19**). The Cooks Lane Tunnel segment would affect 0.08 acres of palustrine emergent wetland and 222 linear feet of perennial and intermittent stream, while total effects within the East segment include 0.10 acre of palustrine forested wetlands, 0.54 acres of palustrine emergent wetlands and 159 linear feet of intermittent and perennial streams. These East segment wetland effects include wetlands formed where drainage has not been maintained in the inactive NS right-of-way and an isolated wetland depression and abandoned sediment basin at the Red Line terminus just south of the MARC rail line.

Table 19: Wetland and Waterway Impacts Associated with the Preferred Alternative

Wetland or Waterway No.	PFO[2] (Ac)	PEM[3] (Ac)	R3/R4[4] (Lf)	Ephemeral (Lf)
West Segment[1]				
1		0.01		
2	0.03	0.03		
3		0.21		
5		0.04		
9			282	
10		0.02		
11			111	74
12			3	
13	0.08			
14				250
15		0.03		
16			8	
19		0.03		
20			805	
21	0.02			
22			350	
32			1	
Total	**0.13**	**0.37**	**1,560**	**324**
Cooks Lane Tunnel Segment				
27			167	
28		0.07		
29			55	
30		0.01		
Total		**0.08**	**222**	
East Segment				
33	0.07	0.01		
34	0.03	0.40		
36		0.01		
40		0.12		
41			159	
Total	**0.10**	**0.54**	**159**	**0**
Project Total	**0.23**	**0.99**	**1,941**	**324**

Notes: [1]No impacts occur within the US 40, or Downtown Tunnel Segments
[2]Palustrine Forested Wetland
[3]Palustrine Emergent Wetland
[4]R3 = Riverine Upper Perennial, R4 = Riverine Intermittent

6.3.2 Avoidance and Minimization

In accordance with the federal CWA, Executive order 11990, and state regulations, efforts were made during preliminary design of the Preferred Alternative to reduce the potential for impacts to waters of the US, including wetlands, wherever possible. For example, the Preferred Alternative was placed on an existing roadway bridge over Gwynns Falls and within a tunnel

under the Jones Falls. The current design of the Preferred Alternative presented in this document provides further avoidance or reductions of wetland and waterway impacts as outlined in this section. Consequently, effects to these resources from the Preferred Alternative are minimal. Many of the wetlands originally identified along the project study corridor now fall outside the limits of disturbance for the project. Impacts that do occur are primarily related to stream or ephemeral channels that cross perpendicular to the project or are located in parallel roadside ditches that would be affected when the transitway is placed adjacent to the road. Additionally, unavoidable impacts occur in the inactive NS corridor at the far eastern end of the project study corridor where drainage ditches have not been maintained and wetlands have formed. Specific avoidance and minimization efforts undertaken thus far include:

- Shifting the alignment to follow the I-70 ramp instead of extending through the SSA West campus.
- Relocating the alignment onto I-70 rather than extending the alignment through a wooded section between I-70 and Parallel Drive.
- Constructing retaining walls adjacent to the SSA West campus rather than large embankments.
- Adjusting the track profile to minimize the limit of disturbance.
- Using ballast curb (retained ballast) rather than standard ballast slopes to minimize the limit of disturbance.

Wetlands and waterways that have been completely or partially avoided with the current project design as compared to earlier stages of the project include WL-6 (0.04ac PFO), WUS-8 (70lf R4), WUS-11 (65lf Ephemeral, 180lf R3), WUS-12 (57lf R3), WL-13 (0.29ac PFO), WUS-17 (28lf R3), WUS-22 (73lf R3), and WUS-24 (46lf Ephemeral). This has resulted in a reduction of forested wetland impacts of approximately 0.33 acre, perennial/intermittent stream impacts of approximately 408 linear feet, and ephemeral channel impacts of approximately 111 linear feet. These reductions are reflected in the text and **Table 19** above. Further impact avoidance and minimization efforts will continue to be investigated (including exclusion fencing at wetland, wetland buffer, and stream boundaries) through the final design phases which may result in additional reductions of effects. In addition, since the current level of design does not allow for a detailed break-out of permanent versus temporary effects, some stream and wetland areas currently included in the overall effects calculations would likely be only temporarily affected by construction staging or access, and would be restored following construction.

6.3.3 Mitigation

Section 404 of the Clean Water Act provides regulatory authority to the USACE to issue or deny permits for discharge of dredged or fill material into waters of the US, including special aquatic sites (e.g., wetlands, mud flats, riffle pool complexes, and vegetated shallows). Under the requirements of Section 404 and the Maryland Nontidal Wetland Protection Act, a Joint Federal/State Permit is required for any impacts to nontidal wetlands resulting from the Red Line project.

While impacts to waters of the US, including wetlands, from the Preferred Alternative, total just over an acre of wetlands (1.22 acres) and less than 2,000 linear feet of streams, the project would not currently qualify for the activity specific categories of the Maryland State Programmatic General Permit (MDSPGP-4), as the activity-specific thresholds for a linear transportation project and general fill allow for only one-half acre of wetland impact and 2,000 linear feet of stream impact. Because the one-half acre wetland impact threshold would be exceeded, the MTA intends to apply for an Individual Permit from the USACE and an Individual Non-tidal Wetlands and Waterways Permit from the MDE for the Preferred Alternative.

All mitigation measures employed to compensate for unavoidable project impacts to waters of the US, including wetlands, will follow applicable federal and state regulations and guidelines, as well as other recommendations from federal and state resource agencies. When practicable measures have been taken to avoid and minimize impacts to aquatic resources, mitigation may be required in the form of establishment/creation, enhancement, or preservation to replace the loss of wetland, stream and/or other aquatic resource functions. Mitigation options under both the Federal Rule and state mitigation guidelines could include mitigation banking credits, in-lieu fees, or permittee-responsible mitigation using a watershed approach in that order of preference.

No matter what form of compensatory mitigation is adopted, the mitigation plan must follow the same 12 fundamental components as set out in the Federal Mitigation Rule. These components include:

- Objectives
- Site selection criteria
- Site protection instruments (e.g., conservation easements)
- Baseline information (for impact and compensation sites)
- Credit determination methodology
- Mitigation work plan
- Maintenance plan
- Ecological performance standards
- Monitoring requirements
- Long-term management plan
- Adaptive management plan
- Financial assurances

Traditionally, mitigation requirements under Section 404 are determined by the ratio of wetland acres replaced to wetland acres lost. Emergent wetlands are typically mitigated on a 1:1 replacement basis, while forested and scrub-shrub wetlands are mitigated on a 2:1 basis. The decision to replace function, acreage, or both may be adjusted at the discretion of the

USACE or MDE, depending on the practicability of the proposed mitigation. **Table 20** provides potential acreage requirements for wetland compensation for the Red Line Project based on the above referenced replacement ratios.

Table 20: Projected Wetland Compensation Ratios

Cowardin Class[1]	Wetland Acres Impacted	Wetland Acres Compensation Required (Replacement Ratio)
PFO	0.23	0.46 (2:1)
PEM	0.99	0.99 (1:1)
Total	1.22	1.45

[1] *PFO = Palustrine Forested; PEM = Palustrine Emergent*

The agencies also typically target compensatory stream mitigation projects to replace stream functions when feasible. In addition to stream channel improvements, mitigation measures for waterway impacts consider the size, stream order, and location of the stream to determine appropriate stream mitigation. Other mitigation measures, such as removal of fish blockages, riparian buffer enhancements, and water quality improvements, may also be used at the agencies' discretion.

Development of the Red Line Preferred Alternative Compensatory Mitigation Package would occur in two phases:

- Phase I - Conceptual Mitigation Package
- Phase II – Final Mitigation Plan

The Conceptual Mitigation Package developed in Phase I is based on a comprehensive mitigation site search, and results in a list of proposed mitigation opportunities that, based on initial investigations, are preliminarily both technically feasible and able to provide functional replacement of impacted resources. The Phase I Conceptual Mitigation Plan contains an excess of potential sites to allow for viable replacement site options if detailed site investigations in Phase II result in a site being dropped from further consideration for any reason. Phase II includes detailed on-site technical investigations of the top-ranked sites. For wetlands, Phase II technical investigations may include groundwater monitoring, soil permeability investigations, delineation and monitoring of adjacent wetlands if present, among other investigations. For stream sites, technical investigations during Phase II may include conducting geomorphic assessments and hydraulic analyses. Property-owner negotiations, Phase I cultural resources screening, infrastructure conflict assessments and any other studies necessary to fully evaluate the technical and practical constructability of the proposed sites and address all aspects of the Federal Mitigation Rule would be conducted.

The Phase I Conceptual Mitigation Plan has been completed as part of the FEIS phase of the Red Line Project. The methods used in developing the package are detailed below. Phase II would be initiated following the Record of Decision (ROD) and is required to be complete prior to issuance of the federal wetlands and waterways permit.

6.3.4 Phase I Conceptual Mitigation Package Development Criteria

The Phase I Conceptual Mitigation Plan has been designed to fulfill the mitigation requirements, as well as meet the resource protection goals of natural resource agencies. As the preliminary step in the site search process, research and coordination was performed to determine the potential to contribute to an established wetland mitigation bank as mitigation for the Red Line project in accordance with the Mitigation Rule hierarchy. The following agencies and mitigation banking organizations were consulted: EPA, US Army Corps of Engineers, Ecotone, Inc., BCDEPS, and BCDPW. Based on this research and coordination, there are no active mitigation banks located within or near the targeted watersheds for this project at this time. The regulatory agencies have also indicated that payment to a fee in lieu program for mitigation (e.g., MDE Wetland Compensation Fund) is not the preferred mitigation approach for the Red Line project (see June 8, 2012 Mitigation Approach Meeting Minutes, **Appendix G)**. Because of the general lack of approved wetland/stream mitigation banks and in-lieu fee sites in Maryland, the project would be required to seek permittee-responsible mitigation to compensate for unavoidable wetland and stream impacts. The following discussion summarizes the methods used to identify, review, and select suitable potential permittee-responsible stream and wetland mitigation sites for inclusion in the Draft Phase I Conceptual Mitigation Plan.

The development of the Phase I Conceptual Mitigation Plan occurred in two stages. Stage I consisted of a desktop review of existing published sources and focused on watershed improvement opportunities such as local and state watershed studies and EPA's Watershed Resources Registry, as well as an original GIS-based search for additional sites that may not have been identified previously by others. Stage II consisted of detailed field surveys of the highest ranked sites, where property access was obtained, to more fully evaluate each site's mitigation potential. The sites found to be most suitable during the Stage II field investigations were be ranked and compiled into a Draft Phase I Conceptual Mitigation Plan for review by the agencies. Coordination with the regulatory agencies and other environmental agencies would continue throughout the development of the Phase I Conceptual Mitigation Plan until concurrence on proposed conceptual mitigation is obtained.

a. Wetlands

The wetland mitigation site-selection process focused on locating non-forested areas with the highest potential for wetland creation or restoration with emphasis on "in-kind" replacement within the USGS-designated watershed impacted by the Preferred Alternative. This designation is represented by Hydrologic Unit Code (HUC) 02060003 and corresponds with the Patapsco River watershed. Under the State of Maryland watershed designations, the Red Line project corridor crosses the Gwynns Falls and Back River watersheds and the direct Baltimore Harbor drainage (including tidal portions of Jones Falls).

Stage I – Desktop Wetland Site Identification

- Water Resources Registry Search – The Watershed Resources Registry (WRR) is a GIS based targeting tool that was created by EPA and other partners as part of a Green Highways Partnership project to integrate the Clean Water Act with multiple state programs. Potential wetland restoration sites listed in the database are identified as

areas that have somewhat, poorly, or very poorly drained soils, and do not have existing wetlands or forest. The database scores the potential wetland restoration sites using an array of ecological factors and a maximum 10-point scoring system.

The web-based application was used to locate potential wetland restoration sites in the Gwynns Falls and Back River watersheds in Baltimore County and Baltimore City. To generate a list of feasible mitigation sites, database results were excluded if they were tidally influenced or less than 0.5 acre in size. A list of potential wetland mitigation sites was compiled with additional pertinent information from the registry (see Wetland Mitigation Results below).

- Watershed Studies – Pertinent watershed studies and reports were reviewed to determine potential areas suitable for wetland creation within the targeted sub-watersheds. The following documents were reviewed for potential mitigation sites:
  - Gwynns Falls Water Quality Management Plan (Baltimore County and Baltimore City, October 2004)
  - Upper Gwynns Falls Small Watershed Action Plan (SWAP) (Baltimore County, May 2011)
  - Upper Back River Small Watershed Action Plan (SWAP) (Baltimore County, November 2008)
  - Tidal Back River Small Watershed Action Plan (SWAP) (Baltimore County, February 2010)

  The document review found that the watershed studies only included wetland creation in the context of recommended stormwater treatment projects. Typically, stormwater treatment wetlands would not be appropriate to use for wetland mitigation unless the environmental resource agencies agree that this type of "out of kind" mitigation would be acceptable to provide functional replacement for wetland impacts associated with the Preferred Alternative. As a result, potential wetland mitigation sites were not identified from these sources.

- GIS-Based Search – Additional potential wetland restoration sites in the Gwynns Falls watershed were identified using aerial photographs (BING, 2011; Google Earth, 2011) and GIS data layers for soils (NRCS, 2012), land use (Baltimore County, 2007), and wetland data (DNR, 2005; USFWS, 2002). Areas of primary hydric soils (NRCS, 2012) for the Gwynns Falls watershed in Baltimore County were intersected with low-density residential, industrial, institutional, open-urban land, cropland, pasture, orchards/vineyards/horticulture, feeding operations, row and garden crops, brush, wetlands, and bare ground land cover types (Baltimore County, 2007). This GIS-based search identified a total of 113 potential wetland mitigation areas within the Gwynns Falls watershed. These 113 sites were further reviewed using aerial photography (BING, 2011; Google Earth, 2011) to eliminate sites with obvious constraints such as public utilities and forest cover, or sites unable to provide mitigation acreage greater than 0.5

acre. In several instances, sites from the GIS review were discarded because they were duplicates of sites obtained from the Watershed Resources Registry. A similar GIS-based search was performed for the Back River watershed to account for any potential wetland impacts in that watershed. A total of 83 potential wetland mitigation sites were identified during the GIS-based search in the Back River watershed.

- Coordination with Government Agencies – As part of the mitigation site search, inquiries were also made to the BCDEPS and to the BCDPW to identify any wetland creation opportunities that may have been identified or planned by the agencies in the targeted watersheds. To date, the agencies have not specified any particular wetland creation projects of interest. However, coordination with the Maryland State Highway Administration led to the evaluation of a highly ranked wetland mitigation project (Golupski Site) located in the Back River watershed.

Stage II – Wetland Site Ranking and On-site Investigations

Additional evaluation was completed on potential mitigation sites through further desktop analysis and on-site investigations. Many of the sites identified during Stage I were found to be unsuitable for wetland creation and dropped from further consideration **(Table 21**). Several additional sites were identified from agency recommendations and during field reviews. Each potential wetland mitigation site carried forward was scored and ranked using the following criteria: soils, hydrology, landscape position, vegetation, habitat and water quality, and potential site constraints.

The soils criteria place an emphasis on those sites that are mapped as hydric soils, with higher scores related to percent cover of the hydric unit on site. Hydric soils were mapped in GIS using the NRCS hydric soils lists for Baltimore County and Baltimore City for each potential wetland creation site. The hydrology criteria includes a review of on-site agricultural ditches and/or tile drains, surface water input, and drainage area using ArcView GIS applications at the desktop level and on-site investigations. The drainage area and surface water inputs are evaluated from the USGS quadrangles and the presence of ditches or tile drains on site was determined from observations during the site visit. Sites that have artificial drainage and a high drainage area to site size ratio received higher scores for this category.

The vegetation criteria places an emphasis on farmed wetlands, farmed wetland pastures, and fallow land, as designated by the NRCS. These types of sites were initially assessed using aerial photos to identify wet signatures and active farmland. The conversion of these areas from active agriculture to their original wetland state often proves to be more feasible and sustainable than creation of wetlands in a new area. The proper substrate may be present, seed sources may be on-site or nearby, and the appropriate hydrological conditions may exist or may be more easily recovered. The Mitigation Memorandum of Agreement between the USACE and EPA states that, “because the likelihood of success is greater and the impacts to potentially valuable uplands are reduced, restoration should be the first option considered” (Fed. Regist. 60 (Nov.28): 58605).

Habitat and water quality criteria were established through review of GIS data to determine if the site is contiguous to a riparian corridor or a forest greater than 100 acres. Sites that are connected to habitat corridors score higher for this category. Those sites that receive drainage from agricultural land and urban land received higher scores for this category.

Potential site constraints include utility and access limitations, as determined through on-site investigations and review of aerial photographs or available GIS data. The fewer utilities associated with a site and the presence of an access road from the potential wetland establishment site to a public road resulted in higher scores for a site.

Each potential wetland mitigation site was visited to field-evaluate the scoring criteria, Where permitted, soils were examined using an auger to verify the presence of hydric soils or redoximorphic features. Each criterion evaluated was scored with a factor of 10, 5, or 1, for a total of 100 points. A score of 10 represents the highest or best possible score under each criterion. Hence, the higher the total score, the more suitable the site is for wetland restoration or creation. Preferential consideration was given to sites that met the specific restoration recommendations identified for the Back River, Baltimore Harbor, and Gwynns Falls watersheds in MDE's 2006 document, Prioritizing Sites for Wetland Restoration, Mitigation, and Preservation in Maryland.

- Wetland Mitigation Results – From the Stage I investigations, 34 possible wetland mitigation sites were identified and retained for further study in Stage II. An additional seven sites were identified during the Stage II field investigations and from agency recommendations. A total of 41 sites were evaluated during Stage II. From these 41 sites, 32 sites were dropped because they were not fully-suited for wetland mitigation, leaving a total of 9 potential wetland mitigation sites that were carried forward in the Conceptual Mitigation Plan and presented to the regulatory agencies to obtain their input and feedback regarding site viability in providing suitable compensatory wetland mitigation for impacts anticipated from the Red Line. Details on the potential wetland mitigation sites are presented in **Table 21**, and potential site locations are shown on **Figure 4**.

Table 21: Summary Table of Potential Wetland Mitigation Sites

Site ID	Watershed	County	Lat/Long	Nearest Road Intersection	Potential Mitigation Acreage	Source	Location Notes	Status	Field Score (if applicable)
772048	Gwynns Falls	Baltimore	39°23'58.16"N / 76°45'55.80"W	Riding Hall Rd and Farm Rd	1.56	WRR	Priority Funding Area; FEMA Floodplain; Adjacent to Wetlands of Special State Concern.	Selected for Inclusion in the Conceptual Mitigation Plan	81
771979	Gwynns Falls	Baltimore	39°24'0.83"N / 76°45'57.74"W	Riding Hall Rd and Farm Rd	1.03	WRR	Priority Funding Area; FEMA Floodplain.	Selected for Inclusion in the Conceptual Mitigation Plan	81
782376	Back River	Baltimore	39°16'31.04"N / 76°25'31.48"W	Back River Neck Rd and Bay Ave	1.19	WRR	Chesapeake Bay Critical Area; Protected Lands Rural Legacy Area; Baltimore County Coastal.	Dropped because site has already been used for wetland creation.	N/A
768741	Gwynns Falls	Baltimore	39°26'25.44"N / 76°50'4.27"W	Chromine Rd and Berrymans Ln	5.00	WRR		Dropped because site is too steep for a wetland.	N/A
768805	Gwynns Falls	Baltimore	39°26'20.87"N / 76°49'53.62"W	Chromine Rd and Berrymans Ln	1.45	WRR	Priority Funding Area.	Dropped because access was denied.	N/A
771336	Gwynns Falls	Baltimore	39°24'25.27"N / 76°48'57.38"W	Lakeside Blvd and Dolfield Rd	1.06	WRR	Priority Funding Area.	Dropped because site is fully forested.	N/A
RL_GF_001	Gwynns Falls	Baltimore	39°23'14.74"N / 76°48'10.21"W	Lyonswood Dr and Kentbury Ct	6.93	GIS Analysis	Adjacent to RL_GF_053 and RL_GF_054. Public property.	Dropped because site has been recently reforested.	N/A
RL_GF_004	Gwynns Falls	Baltimore	39°26'5.04"N / 76°46'16.50"W	Crondall Ln and Garrison Forest Rd	9.00	GIS Analysis	Forested Area; Private property.	Dropped because site is an existing wetland.	N/A
RL_GF_005	Gwynns Falls	Baltimore	39°23'9.09"N / 76°47'7.92"W	McDonogh Rd and Foxfield Rd	8.44	GIS Analysis	Partially located on NWI wetland.	Dropped because site is an existing wetland.	N/A
RL_GF_006	Gwynns Falls	Baltimore	39°26'32.85"N / 76°46'58.89"W	Owings Mills Blvd and Gwynnbrook Ave	8.03	GIS Analysis	Rail line runs through site.	Dropped because site is an existing wetland.	N/A
RL_GF_007	Gwynns Falls	Baltimore	39°23'17.56"N / 76°47'1.06"W	Painters Mill Rd and McDonogh Ave	4.14	GIS Analysis	Adjacent to RL_GF_005.	Dropped because site is an existing wetland.	N/A
RL_GF_008	Gwynns Falls	Baltimore	39°24'57.52"N / 76°49'18.18"W	Bayline Cir and Spring Willow Ct	1.04	GIS Analysis		Selected for Inclusion in the Conceptual Mitigation Plan	77
RL_GF_010	Gwynns Falls	Baltimore	39°23'5.28"N / 76°44'29.89"W	Woodholme Village Ct and Woodholme Ave	8.20	GIS Analysis	Golf Course; Includes small NWI wetland.	Dropped because site is in the middle of the golf course.	N/A
RL_GF_011	Gwynns Falls	Baltimore	39°19'1.89"N / 76°45'17.21"W	N Rolling Rd and Glen Spring Rd	5.12	GIS Analysis	Partially on private property.	Selected for Inclusion in the Conceptual Mitigation Plan	72
RL_GF_012	Gwynns Falls	Baltimore	39°17'58.10"N / 76°45'5.16"W	Crosby Rd and Adamsview Rd	3.85	GIS Analysis	Public property.	Dropped because no source of hydrology.	N/A
RL_GF_013	Gwynns Falls	Baltimore	39°21'25.24"N / 76°43'14.79"W	Cedar Ave and Walnut Ave	3.08	GIS Analysis		Dropped because site is an existing wetland.	N/A
RL_GF_024	Gwynns Falls	Baltimore	39°22'50.02"N / 76°44'30.14"W	S Rd and Woodholme Village Ct (Adjacent to Route 695)	0.56	GIS Analysis	Located partially on County ROW.	Dropped because site is too small.	N/A
RL_GF_025	Gwynns Falls	Baltimore	39°23'15.77"N / 76°45'29.94"W	McDonogh Rd and Purdy Ln	2.75	GIS Analysis	Located within County ROW.	Dropped because site is an existing wetland.	N/A
RL_GF_027	Gwynns Falls	Baltimore	39°19'49.87"N / 76°45'17.08"W	N Rolling Rd and Longleys Ln	12.47	GIS Analysis	Private property.	Dropped because site is a stormwater management pond.	N/A
RL_GF_028	Gwynns Falls	Baltimore	39°26'6.78"N / 76°46'53.97"W	Owings Mills Blvd and Crondall Ln	19.76	GIS Analysis	Within a ROW.	Dropped because site is located in power line ROW.	N/A
RL_GF_041	Gwynns Falls	Baltimore	39°17'5.04"N / 76°43'30.95"W	Harlem Ln and Maple Forest Rd	1.92	GIS Analysis		Dropped because site is not feasible.	N/A
RL_GF_049	Gwynns Falls	Baltimore	39°25'35.05"N / 76°46'4.86"W	Rosewood Ln and Garrison Forest Rd	7.05	GIS Analysis	Public property.	Dropped because site is too small and no source of hydrology.	N/A

Table 21: Summary Table of Potential Wetland Mitigation Sites

Site ID	Watershed	County	Lat/Long	Nearest Road Intersection	Potential Mitigation Acreage	Source	Location Notes	Status	Field Score (if applicable)
RL_GF_053	Gwynns Falls	Baltimore	39°23'10.71"N / 76°47'52.21"W	Lancashire Cir and Lyonswood Dr	0.75	GIS Analysis	Adjacent to RL_GF_054.	Dropped because site has been recently reforested.	N/A
RL_GF_054	Gwynns Falls	Baltimore	39°23'12.29"N / 76°47'58.63"W	Lancashire Cir and Lyonswood Dr	3.20	GIS Analysis		Dropped because site has been recently reforested.	N/A
RL_GF_069	Gwynns Falls	Baltimore	39°19'19.58"N / 76°45'17.46"W	Dogwood Rd and Hanna Ct	1.89	GIS Analysis	Private property.	Dropped because site is actively used as ball fields.	N/A
RL_GF_078	Gwynns Falls	Baltimore	39°18'6.49"N / 76°44'12.93"W	Linus Dr and Woodlawn Dr	1.29	GIS Analysis	Private Property.	Dropped because site is too small and no source of hydrology.	N/A
RL_GF_081	Gwynns Falls	Baltimore	39°17'35.23"N / 76°44'4.29"W	Craigmont Rd and Vanderwood Rd	1.85	GIS Analysis	Public School Property.	Dropped because site is too small and no source of hydrology.	N/A
RL_GF_086	Gwynns Falls	Baltimore	39°27'56.18"N / 76°47'36.68"W	High Stakes Dr and Stable Manor Dr	1.21	GIS Analysis	Includes NWI and DNR wetlands; Private property.	Dropped because site is an existing wetland.	N/A
RL_GF_089	Gwynns Falls	Baltimore	39°26'37.27"N / 76°49'47.71"W	Nicodemus Rd and Beau Mondes Ct	3.63	GIS Analysis	Includes NWI and DNR wetlands.	Dropped because site is located in residential yards.	N/A
RL_GF_092	Gwynns Falls	Baltimore	39°26'34.31"N / 76°50'10.13"W	Nicodemus Rd and Berrymans Ln	3.05	GIS Analysis		Dropped because site is too steep for a wetland.	N/A
RL_GF_095	Gwynns Falls	Baltimore	39°23'38.13"N / 76°45'10.58"W	Pittsfield Rd and McDonogh Rd	12.21	GIS Analysis	Multiple property owners.	Selected for Inclusion in the Conceptual Mitigation Plan	55
RL_GF_098	Gwynns Falls	Baltimore	39°22'26.74"N / 76°48'19.40"W	Burmont Ave and Lykens Ct	1.77	GIS Analysis	Forested Area.	Dropped because no source of hydrology.	N/A
RL_GF_104	Gwynns Falls	Baltimore	39°19'13.05"N / 76°45'12.64"W	Crest Ridge Rd and Gaymount Rd	2.53	GIS Analysis		Dropped because site is located in residential yards.	N/A
RL_GF_108	Gwynns Falls	Baltimore	39°19'10.24"N / 76°44'56.83"W	Wildlife Dr and Lord Baltimore Dr	2.99	GIS Analysis		Dropped because site is an existing wetland and orchard.	N/A
RL_GF_120	Gwynns Falls	Baltimore City	39°18'17.33"N/ 76°41'24.29"W	Gwynns Falls Rd and N Franklintown Rd	0.98	Field	Within Leakin Park	Selected for Inclusion in the Conceptual Mitigation Plan	77
FL_GF_121	Gwynns Falls	Baltimore City	39°18'13.65"N/ 76°41'43.94"W	Gwynns Falls Rd and N Franklintown Rd	0.61	Field	Within Leakin Park	Selected for Inclusion in the Conceptual Mitigation Plan	63
RL_PR_01	Patapsco River	Baltimore	39°18'29.98"N/ 76°46'19.71"W	Reserve Circle adjacent to US Route 70	12.07	MTA		Added during Stage II but dropped because site is not located within an impacted watershed.	N/A
RL_BR_084	Back River	Baltimore City	39°18'49.10"N/ 76°33'16.61"W	Sinclair Ln and Shannon Dr	12.03	MTA		Added during Stage II but dropped because site is an existing wetland.	N/A
RL_BR_085	Back River	Baltimore	39°16'36.02"N / 76°24'27.11"W	Golupski Road	4.09	MD SHA	Agricultural	Selected for Inclusion in the Conceptual Mitigation Plan	85
RL_BR_086	Back River	Baltimore	39°16'51.49"N / 76°23'25.88"W	Browns Cove Road	7.49	MD SHA	Agricultural	Added during Stage II but dropped because site is not accessible (fenced) and also appears to be an existing wetland.	N/A
RL_GF_123	Gwynns Falls	Baltimore	39°23'58.16"N / 76°45'55.80"W	Riding Hall Rd and Farm Rd	7.70	Field	McDonogh School	Selected for Inclusion in the Conceptual Mitigation Plan	81

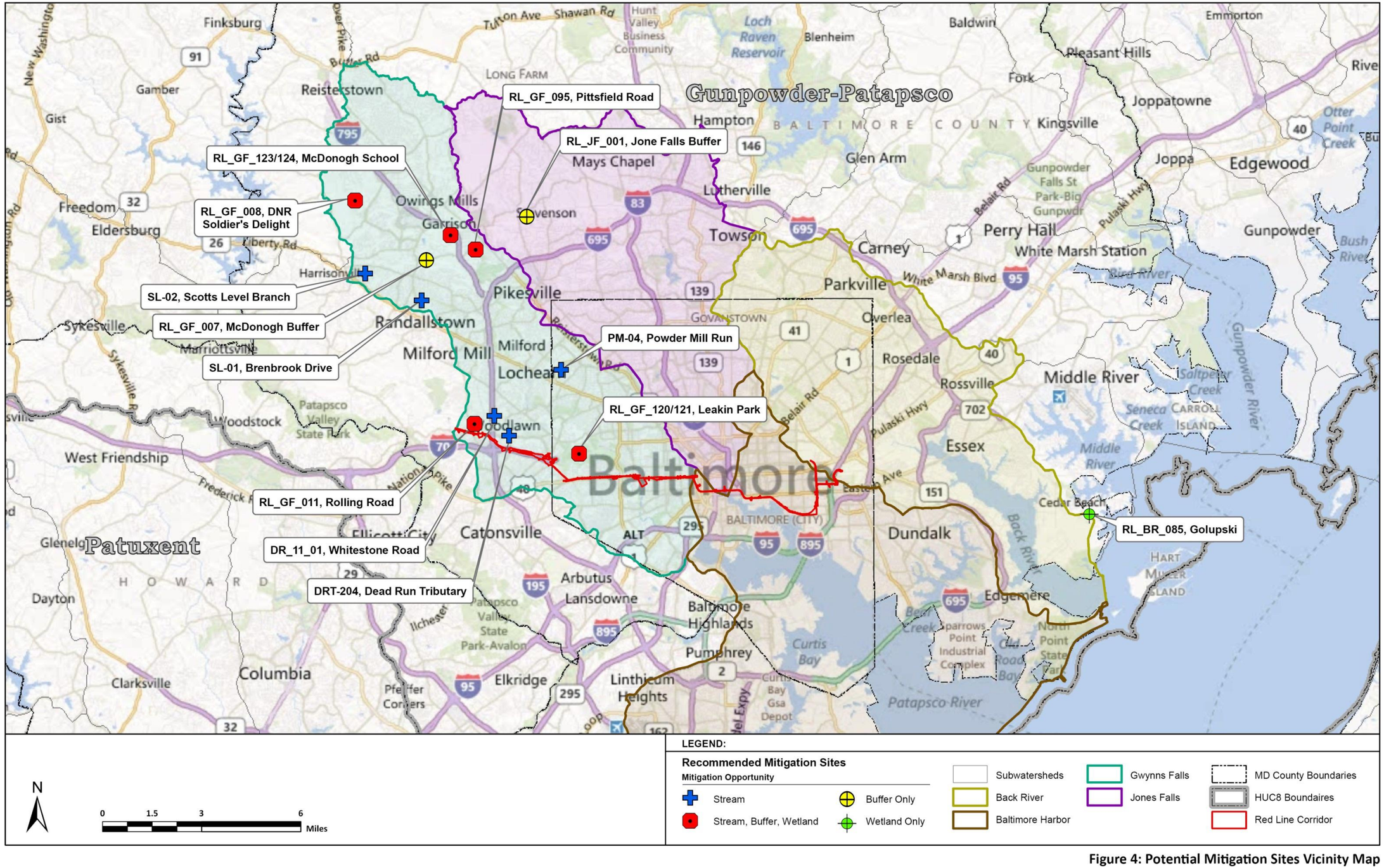

Figure 4: Potential Mitigation Sites Vicinity Map

b. Streams

The stream mitigation site-selection process focused on locating stream segments with the highest potential for restoration within the Patapsco River watershed.

Stage I – Desktop Stream Site Identification

- Water Resources Registry Search – The WRR was used to generate a list of possible riparian reforestation sites in the Dead Run subwatershed of the Gwynns Falls watershed in Baltimore County and Baltimore City since a majority of the anticipated impacts are located in this subwatershed. Potential riparian reforestation sites listed in the database are identified as non-forested areas located within 600 feet of a body of water or stream. The database scores potential riparian restoration sites using an array of ecological factors and a maximum 10-point scoring system:

  Initially, the WRR was used to compile a list of 115 riparian sites that had a ranking of five points or greater. The riparian restoration sites were then verified using aerial photographs (BING, 2011). Many sites were eliminated from the list because of inaccurate location (location appearing on buildings or roads) or inadequate buffer width (less than 50 ft). Sites were also excluded if they existed on privately owned lawns or institutional athletic fields. Additional riparian buffer enhancement sites were identified through desktop analysis using recent aerial photographs that showed streams with little to no existing woody vegetation.

- *Watershed Studies* – Pertinent watershed studies and reports were reviewed in order to determine potential stream reaches suitable for restoration within the targeted sub-watersheds. The following documents were reviewed for potential stream mitigation sites:

  - Gwynns Fall Water Quality Management Plan (Baltimore County and Baltimore City, October 2004)
  - Upper Gwynns Falls Small Watershed Action Plan (SWAP) (Baltimore County, May, 2011)
  - Upper Back River Small Watershed Action Plan (SWAP) (Baltimore County, November 2008)
  - Tidal Back River Small Watershed Action Plan (SWAP) (Baltimore County, February 2010)
  - Chesapeake and Atlantic Coastal Bays Trust Fund, SFY 2013 Annual Work Plan (MD DNR, January 2012)

  Preliminary investigations for potential stream mitigation sites focused on the Dead Run subwatershed within the Gwynns Falls watershed since a majority of the anticipated impacts are located in this subwatershed. Potential stream mitigation sites identified from the Gwynns Falls watershed studies were filtered for suitability as Red Line mitigation projects by location, stream order, and stability. Stream sites were selected if they were located in first order or smaller tributaries of Dead Run and would provide a completely restored reach. For example, projects were prioritized that were located in

small headwater tributaries where stormwater runoff is a problem or larger tributary reaches where the channel is stable both up and downstream of the project reach. Stream restoration reaches classified as unstable stream types in the watershed studies were preferentially selected. Unstable stream types include stream reaches that are incised or entrenched, over-widened (high width-depth ratios), or associated with sediment problems. Additional stream reaches were also selected if the stream channels contained a fish blockage or utility conflict. Fish blockages are defined as debris jams, severe head-cuts, or exposed infrastructure that prevent fish from freely moving up or downstream. Utility conflicts included exposed pipes, manholes, or leakage from utilities. Each of the stream sites selected for potential Red Line mitigation were also evaluated using aerial photography (BING, 2011; Google, 2011) as a preliminary check to ensure recent conditions are similar to riparian conditions at the time of the watershed study.

- Coordination with Government Agencies – As part of the mitigation site search, inquires were made to the BCDEPS and to the BCDPW in order to identify any stream restoration opportunities that may have been started or planned by the agencies in the targeted watersheds. The intent of this coordination effort was to ensure that updated information was obtained on any restoration completed or currently under design since the publication of the watershed studies and to determine if the agencies had any preferred or prioritized areas for potential stream restoration.

  The BCDEPS responded that there is one project currently in the design phase in the Dead Run subwatershed near Westview Park. The BCDEPS has not yet identified other projects from the Small Watershed Action Plans for capital improvements funding, but intend to do so in the next few years. The County is also preparing to start a Small Watershed Action Plan for the Middle Gwynns Falls area, and have requested that the MTA coordinate closely with them on any mitigation efforts in that watershed area.

  The BCDPW suggested several documents resulting from studies performed in the Jones Falls watershed, the Herring Run subwatershed of the Back River watershed, and the direct Baltimore Harbor drainage that might include opportunities for stream restoration in those watersheds. Documents in the Jones Falls and Herring Run watersheds were obtained but not reviewed extensively because of the lack of wetland and stream impacts anticipated from the Red Line Preferred Alternative in these subwatersheds. The BCDPW has also commissioned a new study of the direct Baltimore Harbor drainage that may identify restoration opportunities. Discussion and coordination with the County and City agencies is ongoing and would continue throughout the development of the Red Line Compensatory Mitigation Package to share information about stream restoration activities in the target watersheds.

Stage II - Stream Site Ranking and On-site Investigations

Additional evaluation was completed on potential stream mitigation sites through further desktop analysis and on-site investigations. Potential stream mitigation sites were scored and

ranked using the following criteria: bank erosion, floodplain condition, riparian vegetation, habitat and water quality, feasibility, additional benefits, and location.

Each potential stream mitigation site was visited and evaluated based on the scoring criteria. Stream sites that show severe bank erosion, are disconnected from the floodplain, or have poor existing in-stream habitat opportunities were scored high as potential restoration sites. The riparian vegetation criteria gives more points to sites located in urban or agricultural areas where additional riparian buffer could have significant water quality benefits, and sites that have an existing riparian forest were scored low for riparian vegetation. Project feasibility was determined by construction access, and was rated on proximity to a public road. Sites within 500 feet or less of a public road score the highest for feasibility. Additional points were added to sites that could provide benefits such as utility conflict resolution, fish passage restoration, or floodplain creation. All of these criteria (bank erosion, floodplain condition, riparian vegetation, habitat and water quality, feasibility, and additional benefits) were evaluated through on-site observations during a field visit. These criteria account for 80 percent of the total stream ranking score. An additional 10 'bonus' points were assigned to sites where stream work could be combined with other mitigation opportunities, such as wetland creation, riparian buffer plantings, or stormwater best management practice (BMP) installation.

The remaining 20 percent of the ranking score was based on location and determined through a desktop assessment using GIS. Stream mitigation sites ranked high for location if they are close to the project alignment (less than 5 miles), located in the same subwatershed as the stream impacts, comprise headwater streams, and provide green infrastructure linkage. Each site was scored on both the field and desktop criteria, for a total of 100 points. The higher the total score, the more suitable the site is for stream restoration. Preferential consideration was given to sites that meet the specific restoration recommendations identified for the Back River, Baltimore Harbor, and Gwynns Falls watersheds in MDE's 2006 document, *Prioritizing Sites for Wetland Restoration, Mitigation, and Preservation in Maryland.* Riparian buffer reforestation sites were not scored, but instead were evaluated based on the amount of buffer that could be provided.

- <u>Stream Mitigation Results</u> – From the Stage I investigation, 19 potential stream mitigation sites were identified and retained for further study in Stage II. An additional 15 stream and buffer sites were identified during the Stage II field investigations and further document review. From all of the sites identified, 16 sites were dropped because they were not viable for stream mitigation, leaving a total of 18 stream and buffer sites that were carried forward in the Conceptual Mitigation Plan and presented to the regulatory agencies to obtain their input and feedback regarding site viability in providing suitable compensatory stream mitigation for impacts anticipated from the Preferred Alternative. Details on the potential stream mitigation and riparian buffer reforestation sites are presented in **Table 22**, and potential site locations are shown on **Figure 4**.

Table 22: Summary Table of Potential Stream Mitigation Sites

Site ID	Watershed	County	Upstream Lat/Long	Downstream Lat/Long	Nearest Road Intersection	Mitigation Potential (Linear Feet)	Source	Existing Conditions	Status	Field Score (if applicable)
1150604	Gwynns Falls	Baltimore	39°18'15"N / 76°42'43"W	39°18'13"N / 76°42'44"W	Dogwood Rd and Security Blvd	180	WRR	Public property; Buffer enhancement opportunity	Dropped because site is too small.	N/A
1129571	Gwynns Falls	Baltimore	39°24'2"N / 76°46'11"W	39°23'39"N / 76°45'54"W	Riding Hall Rd and Farm Rd	2824	WRR	Public school property; Buffer enhancement opportunity	Selected for Inclusion in the Conceptual Mitigation Plan	Riparian Buffer
1148192	Gwynns Falls	Baltimore	39°19'6"N / 76°45'12"W	39°18'59"N / 76°45'22"W	Glen Spring Rd and N. Rolling Rd	1001	WRR	Part of channel appears to be concrete; Buffer enhancement opportunity	Selected for Inclusion in the Conceptual Mitigation Plan	Riparian Buffer
DR-11-00	Gwynns Falls	Baltimore	39°19’43”N / 76°44’48”W	39°19’19”N / 76°44’39”W	Rutherford Rd and Ambassador Rd	3966	Document Review	Degrading channel; Aggrading channel	Dropped because site only provides BMP opportunities.	N/A
DR-11-01	Gwynns Falls	Baltimore	39°19’11”N / 76°44’45”W	39°19’14”N / 76°44’36”W	Whitestone Rd and Dogwood Rd	500	Document Review	Degrading channel	Selected for Inclusion in the Conceptual Mitigation Plan	48
DR -10-00	Gwynns Falls	Baltimore	39°19’18”N / 76°45’14”W	39°19’13”N / 76°45’09”W	Dogwood Rd and Richarts Ave	599	Document Review	Degrading channel	Dropped because site is partially a concrete ditch and partially located in a residential yard.	N/A
DR-09-00	Gwynns Falls	Baltimore	39°18’45”N / 76°45’07”W	39°19’01”N / 76°44’52”W	Hill Dr and Gordon Ave	2493	Document Review	Fish blockage; Degrading channel	Selected for Inclusion in the Conceptual Mitigation Plan	29
DR-08-00	Gwynns Falls	Baltimore	39°18’55”N / 76°44’55”W	39°19’00”N / 76°44’51”W	Hill Dr and Gordon Ave	709	Document Review	Fish blockage; Degrading channel	Selected for Inclusion in the Conceptual Mitigation Plan	42
DR-07-04	Gwynns Falls	Baltimore	39°18’23”N / 76°44’00”W	39°18’25”N / 76°44’38”W	I-695 and I-70 Interchange	2042	Document Review	Fish blockage; Aggrading channel	Dropped because site is located within the highway interchange.	N/A
DR-07-03-07	Gwynns Falls	Baltimore	39°18’24”N / 76°45’14”W	39°18’15”N / 76°44’59”W	N. Rolling Rd and Adamsview Rd	1528	Document Review	Fish blockage; Degrading channel	Selected for Inclusion in the Conceptual Mitigation Plan	36
DR-07-03-05	Gwynns Falls	Baltimore	39°18’06”N / 76°44’52”W	39°18’14”N / 76°44’51”W	Woodbridge Rd and Harberson Rd	880	Document Review	Fish blockage; Degrading channel	Dropped because site only provides BMP opportunities.	N/A
DR-07-00	Gwynns Falls	Baltimore	39°17’38”N / 76°44’42”W	39°18’03”N / 76°44’34”W	Chelsworth Rd and Black Friars Rd	1150	Document Review	Fish blockage; Degrading channel; Aggrading channel	Dropped because Baltimore County is using this site for a stream restoration project.	N/A
DRT204 / 1149370	Gwynns Falls	Baltimore	39°18’37”N / 76°44’10”W	39°18’55”N / 76°43’40”W	Woodlawn Dr and Security Blvd	3700	Document Review	Degrading channel; Buffer enhancement opportunity	Selected for Inclusion in the Conceptual Mitigation Plan	46
DR-15-00	Gwynns Falls	Baltimore	39°18’19”N / 76°43’45”W	39°18’45”N / 76°43’28”W	Parallel Rd and Perimeter Dr	3224	Document Review	Fish blockage; Degrading channel	Selected for Inclusion in the Conceptual Mitigation Plan	32
DR-05-00	Gwynns Falls	Baltimore	39°18’12”N / 76°42’55”W	39°18’14”N / 76°42’44”W	Ingleside Ave and Parallel Dr	925	Document Review	Fish blockage; Utility conflict – exposed manhole; Degrading channel	Dropped because site is located in residential yards.	N/A
DR-02-00	Gwynns Falls	Baltimore	39°17’54”N / 76°41’42”W	39°18’07”N / 76°41’42”W	End of Briarclift Rd	1891	Document Review	Fish blockage; Degrading channel	Dropped because access to the stream is difficult.	N/A
DR-02-01	Gwynns Falls	Baltimore	39°17’58”N / 76°41’50”W	39°18’01”N / 76°41’47”W	End of Briarclift Rd	495	Document Review	Fish blockage; Utility conflict – exposed utility crossing; Degrading channel	Dropped because work would be limited to one outfall repair.	N/A
DR-01-00	Gwynns Falls	Baltimore	39°18’06”N / 76°40’21”W	39°18’17”N / 76°41’20”W	N. Franklintown Rd and Lezear Rd	1317	Document Review	Fish blockage; Utility conflict; Degrading channel	Dropped because stream appears to be in good condition.	N/A

Site ID	Watershed	County	Upstream Lat/Long	Downstream Lat/Long	Nearest Road Intersection	Mitigation Potential (Linear Feet)	Source	Existing Conditions	Status	Field Score (if applicable)
DR-04-00	Gwynns Falls	Baltimore	39°17'43"N / 76°43'10"W	39°17'51"N / 76°43'00"W	N. Forest Park Ave and Granville Rd	1253	Document Review	Fish blockage; Degrading channel	Dropped because too many site constraints.	N/A
RL_GF_122	Gwynns Falls	Baltimore	39°18'19"N / 76°41'16"W	39°18'18"N / 76°41'12"W	N. Franklintown Rd and Wetheredsville Rd	500	Field	Leakin Park; Fish blockage; Utility conflict – exposed utility crossing	Selected for Inclusion in the Conceptual Mitigation Plan	65
RL_GF_124	Gwynns Falls	Baltimore	39°24'08"N / 76°46'10"W	39°23'50"N / 76°45'56"W	Riding Hall Rd and Farm Rd	3600	Field	Degraded channel; Protection of sewer utilities; Buffer enhancement at McDonogh School	Selected for Inclusion in the Conceptual Mitigation Plan	73
RL_GF_125	Gwynns Falls	Baltimore	39°21'35"N / 76°43'20"W	39°21'32"N / 76°43'19"W	E. Roman Frasier Ln and Bedford Rd	410	Field	Adjacent to Milford Mill Metro Station	Added during Stage II but Dropped based on Agency Feedback.	N/A
RL_GF_011s	Gwynns Falls	Baltimore	39°19'00"N / 76°45'22"W	39°19'02"N / 76°45'19"W	SE N. Rolling Rd and Glen Spring Rd	330	Field	Associated with wetland site RL_GF_011	Selected for Inclusion in the Conceptual Mitigation Plan	60
RL_GF_008s	Gwynns Falls	Baltimore	39°24'50"N / 76°49'03"W	39°24'46"N / 76°48'52"W	NW Dolfield Blvd and Parked Farm Rd	1000	Field	Associated with wetland site RL_GF_008	Added during Stage II but dropped because of presence of RTE species.	N/A
RL_GF_005_007s	Gwynns Falls	Baltimore	39°23'17"N / 76°47'11"W	39°23'21"N / 76°46'39"W	SE Painters Mill Rd and McDonogh Rd	2670	Field	Associated with wetland sites RL_GF_005 and RL_GF_007	Added during Stage II but Dropped because of potential impacts to floodplain wetlands.	N/A
PM-04	Gwynns Falls	Baltimore City	39°20'38"N / 76°42'10"W	39°20'14"N / 76°42'31"W	NE Liberty Heights Ave and W. Northern Pkwy	3700	Document Review	Degrading channel; Utility conflict resolution	Selected for Inclusion in the Conceptual Mitigation Plan	56
SL-01	Gwynns Falls	Baltimore	39°22'20"N / 76°47'13"W	39°22'17"N / 76°46'35"W	S. Winterbrook Rd and Brenbrook Dr	2100	Document Review	Degrading channel; Protection of sewer utilities	Selected for Inclusion in the Conceptual Mitigation Plan	66
SL-02	Gwynns Falls	Baltimore	39°23'03"N / 76°49'17"W	39°23'00"N / 76°48'46"W	E. Marriottsville Rd and Southhall Rd	2600	Document Review	Degrading channel; SWM BMP's at existing outfalls; Riparian buffer enhancement	Selected for Inclusion in the Conceptual Mitigation Plan	53
GFM-05	Gwynns Falls	Baltimore	39°19'27"N / 76°44'13"W	39°19'21"N / 76°44'03"W	Kincheloe Ave and Thayer Terrace	1000	Document Review	Degraded channel in some areas; Riparian buffer enhancements; Conflicts with park use	Added during Stage II but Dropped based on Agency Feedback.	N/A
Meadow Heights Rd.	Gwynns Falls	Baltimore	39°22'33"N / 76°47'38"W	39°22'26"N / 76°47'28"W	Meadow Heights Rd and McDonogh Rd	1300	Field	Degraded channel in some areas; floodplain wetlands; SWM BMP's at existing outfalls	Added during Stage II but Dropped because Baltimore County is doing a wetland mitigation project here.	N/A
RL_GF_095b	Gwynns Falls	Baltimore	39°23'38"N / 76°45'13"W	39°23'35"N / 76°45'17"W	Pittsfield Rd and McDonogh Rd	900	Field	Sparse woody vegetation along stream channel	Selected for Inclusion in the Conceptual Mitigation Plan	Riparian Buffer
RL_JF_001	Jones Falls	Baltimore	39°24'26"N / 76°43'45"W	39°24'36"N / 76°43'10"W	Greenspring Valley Rd and Old Valley Rd	3100	Field	Sparse to no woody vegetation along stream channel	Selected for Inclusion in the Conceptual Mitigation Plan	Riparian Buffer
RL_GF_007	Gwynns Falls	Baltimore	39°23'19"N / 76°46'57"W	39°23'22"N / 76°46'40"W	McDonogh Rd and Woods Rd	1300	Field	McDonogh School Property	Selected for Inclusion in the Conceptual Mitigation Plan	Riparian Buffer
RL_GF_008b	Gwynns Falls	Baltimore	39°24'50"N / 76°49'03"W	39°24'46"N / 76°48'52"W	Dolfield Blvd and Dolfield Rd	1000	Field	Downstream of wetland site RL_GF_008	Selected for Inclusion in the Conceptual Mitigation Plan	Riparian Buffer

c. Mitigation Package

After the completion of Stages I and II of the mitigation site search for potential wetland and stream mitigation projects, the most viable sites were presented to agency representatives. Field visits to 11 of the 14 highest ranked and most viable sites were completed on September 12, 27, and 28, 2012, and agency feedback was solicited. Meeting minutes developed from the three days of agency field reviews can be found in **Appendix G**. Based on the on-site investigations during Stage II, and the agency review comments during coordination efforts, preferred sites were selected for inclusion in the Phase I Conceptual Mitigation Plan (**Table 23**). The potential mitigation sites presented in this Phase I Conceptual Mitigation Plan total 19.91 acres of potential wetland mitigation and 22,560 linear feet of potential stream mitigation. The linear feet of potential stream mitigation includes estimates on riparian buffer opportunities, but does not factor potential mitigation credit for stormwater management (SWM) BMP opportunities associated with some sites. Detailed information and maps of each site identified for the Phase I Conceptual Mitigation Plan are presented in **Appendix I**.

The MTA has completed a preliminary review of mapped site conditions and existing Maryland Historical Trust (MHT) data to determine the likely need for future Phase I historic and archeological investigations associated with the selected stream and wetland mitigation sites. Based on the preliminary review, all of the sites included in the Draft Conceptual Mitigation Plan would require further cultural resource investigations as part of the detailed investigations that would occur during development of the Phase II Final Mitigation Plan. All but two of the fourteen top-ranked sites were preliminarily determined to either contain or be adjacent to built resources more than 45 years of age, while all but four of the sites were identified as likely to require a Phase IB archaeological survey. However, the sites that were determined unlikely to require further historic structures coordination did not overlap with the sites unlikely to need archaeological surveys, the overall result of which is that all sites would need some level of further cultural investigation in Phase II. The results of preliminary cultural resources analysis for each site can be found in the tables provided in **Appendix J**. During development of the Phase II Final Mitigation Plan, more detailed cultural resources investigations would be completed and fully coordinated with MHT.

In a letter dated November 1, 2012 (**Appendix A**), the USACE acknowledged their review of the Conceptual Mitigation Plan, and acknowledged that the Conceptual Mitigation Plan documents acceptable sites and opportunities to adequately mitigate for anticipated Preferred Alternative impacts to waters of the US, including jurisdictional wetlands. Coordination with MDE will continue until concurrence on proposed mitigation is obtained. The *Phase II Final Mitigation Plan* will be initiated following the Record of Decision (ROD), and is required to be complete prior to issuance of the federal wetlands and waterways permit.

Table 23: Conceptual Wetland and Stream Mitigation Sites for the Mitigation Package

Site Name	Site ID	Type of Mitigation	Potential Wetland Acreage	Potential Stream Length	Location	Watershed	Property Ownership	Cultural Investigation Required
Scotts Level Branch	SL-02	Stream & BMP's		2,600	Randallstown	Gwynns Falls	Public/Private	Yes
Brenbrook Drive	SL-01	Stream & BMP's		2,100	Randallstown	Gwynns Falls	Public/Private	Yes
Powder Mill Run	PM-04	Stream		3,700	Powder Mill Park	Gwynns Falls	Public	Yes
Rolling Road	RL-GF-011	Stream		330	Woodlawn	Gwynns Falls	Private	Yes
		Wetland	1.32					
McDonogh Buffer Site	RL-GF-007	Buffer		1,300	Owings Mills	Gwynns Falls	Private	Yes
Jones Falls Site	RL-JF-001	Buffer		3,100	Stevenson	Jones Falls	Private	Yes
DNR Soldier's Delight	RL-GF-008	Wetland	1.49 (Area 1)		Owings Mills	Gwynns Falls	Public	Yes
	RL-GF-008	Wetland	1.47 (Area 2)					
	RL-GF-008	Stream		130				
	RL-GF-008	Stream Buffer		1,000				
McDonogh School	RL-GF-123	Wetland	0.76 (Area 1)		Owings Mills	Gwynns Falls	Private	Yes
	RL-GF-123	Wetland	2.37 (Area 2)					
	RL-GF-123	Wetland	2.81 (Area 3)					
	RL-GF-123	Wetland	1.76 (Area 4)					
	RL-GF-124	Stream		2,215				
	RL-GF-124	Stream		1,385				
Leakin Park	RL-GF-120	Wetland	0.83		Baltimore	Gwynns Falls	Public	Yes
Leakin Park	RL-GF-121	Wetland	0.22		Baltimore	Gwynns Falls	Public	Yes
Golupski Road	RL-BR-085	Wetland	6.31		Essex	Back River	Private	Yes
Pittsfield Road	RL-GF-095	Wetland	0.57		Owings Mills	Gwynns Falls	Public/Private	Yes
		Stream Buffer		500				
Dead Run Tributary	DRT-204	Stream & BMP's		3,700	Woodlawn	Gwynns Falls	Public/Private	Yes
Whitestone Road	DR-11-01	Stream		500	Woodlawn	Gwynns Falls	Private	Yes
Total Mitigation Estimate:			19.91	22,560				

7. Surface Waters

7.1 Background and Methodology

The location of streams and their associated watershed limits within the project study corridor were determined using DNR third order watershed GIS files. Information on watershed conditions was gathered from published data sources available from the DNR and MDE.

The entire Red Line project study corridor is contained within the Patapsco River third order watershed (**Figure 2**). Two main subwatersheds, Gwynns Falls and Jones Falls, comprise most of the study area. Dead Run, a tributary to Gwynns Falls, parallels a substantial portion of the West segment of the project, from I-695 to I-70. A small portion of the Back River watershed is located in the far eastern portion of the project study corridor in the vicinity of the Johns Hopkins Bayview Medical Center campus. In addition, a small portion of the Lower North Branch Patapsco River is located in the far western portion of the project study corridor. However, no portion of the actual project corridor limits of disturbance cross the Lower North Patapsco River watershed, and consequently, this subwatershed is not discussed in any greater detail below. With the exception of Back River, all of these subwatersheds drain into the Baltimore Harbor, located at the southern edge of the project study corridor. Herring Run, a primary tributary to Back River, is located north of the project study corridor and receives drainage from the project study corridor, although it is not directly crossed by the Preferred Alternative.

7.1.1 Chemical Water Quality/Total Maximum Daily Loads

The *Code of Maryland Regulations* (COMAR) 26.08.02.01-.02 provides designated use classes for all Maryland waterways. The MDE has established acceptable standards for several parameters for each designated Stream Use Classification. The standards are listed in COMAR 26.08.02.01-.03 –*Water Quality* (MDE, 2007) and are shown below in **Table 24**. With the exception of Dead Run, all stream segments located within the project study corridor are classified as Use I, "Water Contact Recreation and the Protection of Aquatic Life." (MDE, 2007). Dead Run is classified as a Use IV waterbody which is protected for "Water Contact Recreation, Protection of Aquatic Life, and Recreational Trout Waters" (MDE, 2012).

Each parameter measured by *in situ* sampling and regulated by the State of Maryland can have a significant impact on the aquatic communities of streams. These parameters: temperature, pH, dissolved oxygen, turbidity, and conductivity each have different effects on aquatic biota.

Existing data on the characteristics of the chemical water quality of the project corridor watersheds was gathered from the DNR Maryland Biological Stream Survey (MBSS), the MDE the Chesapeake Bay Program (CBP), Baltimore Ecosystem Study (BES), Baltimore County Department of Environmental Protection and Sustainability (BCDEPS), and Baltimore City Department of Public Works (BCDPW). These data have been collected at varying intervals and only data collected since 2000 was considered current. *In situ* measurements including, pH, dissolved oxygen, conductivity, and temperature were identified by MBSS, BES, BCDEPS, and BCDPW, while nutrient and other pollutant data were identified by CBP and BCDPW. Using GIS,

the sampling locations provided by the resource agencies were overlaid onto a base map of the project study corridor. Data determined to fall within the project study corridor were then used to compile a summary of existing water quality conditions for the project study corridor. These locations are shown in **Figure 2**

Table 24: Use I and IV Code of Maryland Regulations (COMAR) Water Quality Standards

Parameter	Use I	Use IV
Temperature	Maximum of 90°F (32°C) or ambient temperature, whichever is greater	Maximum of 75°F (23.9°C) or ambient temperature, whichever is greater
pH	6.5 to 8.5	6.5 to 8.5
Dissolved Oxygen	Minimum of 5 mg/L	Minimum of 5 mg/L
Turbidity	Maximum of 150 Nephelometer Turbidity Units (NTU) and maximum monthly average of 50 NTU	Maximum of 150 Nephelometer Turbidity Units (NTU) and maximum monthly average of 50 NTU
Fecal Coliform	Exceeds log mean of 200 per 100 ml, based on a minimum of not less than five samples taken over a 30-day period.	Exceeds log mean of 200 per 100 ml, based on a minimum of not less than five samples taken over a 30-day period.

Source: Maryland Department of Environment, Code of Maryland Regulations (COMAR) 26.08.02.01-.03 – *Water Quality* (MDE 2007)

Total maximum daily loads or "TMDLs" are developed as part of state requirements under the Clean Water Act (CWA). A TMDL plan is developed to determine the maximum amount of a pollutant that a waterbody can receive and meet the ambient water quality standards set forth by Section 303 of the CWA and state requirements. Each state is required to prepare a biannual list of stream segments that are considered "impaired" and submit this list (303(d) list) to the EPA. These segments are known as water quality limited segments (WQLs) and a TMDL must be developed for each. These WQLs can be considered "impaired" by analyzing a wide variety of water quality monitoring data including chemical grab samples, *in situ* measurements, continuous measurements and biological data. After listing a stream as WQL on the 303(d) list, the state is required to prioritize each waterbody's need for TMDL development. Developed TMDLs are then submitted to EPA for approval. Published data from MDE was consulted to determine which streams in the project study corridor had been designated as WQLs or had a submitted or approved TMDL.

Compliance with TMDLs for the Preferred Alternative would be coordinated through the MDE stormwater and sediment and erosion control permitting process as required under Maryland's Sediment and Erosion Control (COMAR 26.17.01) and Stormwater Management regulations (COMAR 26.17.02). Although typically stormwater management is addressed during final design, the Red Line project team has initiated coordination with MDE on preliminary stormwater management concepts to ensure that all requirements would be met.

7.1.2 Scenic and Wild Rivers

The DNR Scenic and Wild Rivers program was developed to protect the scenic, recreational, and aquatic habitat values of the state's wild and scenic rivers under the National Wild and Scenic River Act (16 USC §§ 1271-1287). This Act provides the state with the authority to designate a river as wild and scenic. The definition of a wild and scenic river, under this Act, is a river that possesses outstandingly remarkable scenic, recreational, geologic, fish and wildlife, historic, cultural, or other similar values. The DNR program regulates present and future use and development of the scenic and wild rivers, tributaries, and adjacent land areas to protect their primitive qualities and characteristics, and to protect the water quality of the river. This Act does not serve the purpose of halting development and use of a river; instead the goal is to preserve the character of the river.

The DNR Scenic and Wild Rivers Program website was consulted to determine which project area streams are designated as wild and scenic by the State.
(www.dnr.maryland.gov/land/stewardship/scenicrivers).

7.1.3 Floodplains

Executive Order 11988 of the Federal Register (42 FR 26951, 3 CFR, 1977), entitled *Floodplain Management* requires the avoidance, to the extent possible, of long- and short-term adverse impacts to floodplains and the direct and indirect support of floodplain development, wherever there is a practicable alternative. US Department of Transportation (DOT) Order 5650.2, entitled *Floodplain Management and Protection* prescribes policies and procedures for ensuring that proper consideration is given to the avoidance and mitigation of adverse floodplain effects. Data from the Federal Emergency Management Agency (FEMA) Flood Insurance Rate Maps (FIRM) was obtained and overlaid on GIS mapping of the Red Line project study corridor to identify regulated floodplains within the project study corridor. Floodplains are also regulated at the state level by the MDE. Any construction in nontidal floodplains would require a Waterway Construction Permit from the MDE. Floodplain fill in tidal floodplains is not an MDE permitted activity, though flood protection is a critical consideration for engineering design in tidal floodplains.

7.1.4 Navigable Waterways

The USACE regulates structures that are located in, under or over navigable waters of the US under Section 10 of the Rivers and Harbors Act of 1899. "Navigable waters of the United States are those waters that are subject to the ebb and flow of the tide and/or are presently used, or have been used in the past, or may be susceptible for use to transport interstate or foreign commerce" (33 C.F.R Part 329.4). Navigable waters within the project study corridor were identified in discussions with the USACE Baltimore District (Inter-Agency Review Meeting, November 16, 2011).

7.2 Existing Conditions

Surface waters in the project study corridor generally reflect the high degree of urbanization in their watersheds. The Gwynns Falls and Jones Falls subwatersheds are characterized by high amounts of impervious surfaces and low amounts of forested land uses. Over fifty percent of

the stream miles within Baltimore City have little or no vegetated riparian buffers. High amounts of refuse and channelization also impact the water resources of the project study corridor (DNR, 1999). The Back River subwatershed, at the eastern end of the project study corridor, is one of the most densely populated watersheds within the Chesapeake Bay drainage basin (MDE, 2012). Residential and commercial land use make up 91 percent of the subwatershed and high amounts of refuse and channelization affect the system.

In the West segment of the project study corridor, the majority of the streams have been straightened and armored to some degree to allow for development and to prevent erosion and convey high storm flows. Substantial portions of the stream network have been piped for road culverts and residential and commercial development, but naturalized stream corridors still exist in areas that remain forested. In the Cooks Lane Tunnel, US 40, and Downtown Tunnel segments, the stream network is largely contained within a man-made underground storm drainage network, with the exception of the Gwynns Falls mainstem and the tidal portion of the Jones Falls. The majority of the East segment contains primarily piped water resources; however, the eastern-most portion of the project study corridor includes an open stream channel.

7.2.1 Chemical Water Quality/Total Maximum Daily Loss

The majority of the development within the project study corridor occurred prior to the implementation of stormwater management regulations. Consequently, runoff generated by existing impervious areas is conveyed directly to project area streams through the storm drain network with little or no quantity or quality treatment. Based on the data gathered by MBSS, BES, BCDEP, BCDPW, and the CBP these conditions and other urbanization related impacts have lead to widespread chemical water quality impairments in project area streams.

The results of the chemical water quality sampling by state and local agencies between 2000 and 2012 are summarized in **Table 25**.

Chemical water quality conditions vary throughout the project study corridor. Within the Gwynns Falls subwatershed, the fecal coliform bacteria levels were elevated above Maryland state standards in 86 percent of the readings. The value of these readings ranged from 22 to 900,000 mpn/100mL, with the highest value being 4,500 times the allowable level in Maryland. These elevated fecal coliform values likely indicate the presence of sewage from leaking sewer lines or animal waste. Levels of chloride were substantially outside what is allowed by water quality standards ranging from 0.02 to 11,600 mg/L. Approximately 99 percent of the chloride measurements taken were above the state acute standard and 98 percent of the measurements were above the chronic standard. Elevated chloride levels within urbanized areas are generally associated with road de-icing salts used during the winter months. Dissolved oxygen levels were below the state standards for only one percent of the readings, while total nitrogen and total phosphorus were above state standards for five and seven percent of the readings, respectively. Acid neutralizing capacity levels show that the streams within this subwatershed are well buffered.

Table 25: Summary of Chemical Water Quality Conditions for Use I Streams in the Project Study Corridor

Parameter	Standard or Threshold[1] acute/chronic	Jones Falls		Gwynns Falls		Herring Run		Baltimore Harbor	
		Range	Percent Above	Range	Percent Above	Range	Percent Above	Range	Percent Above
Chloride (mg/L)	Max 19/ Max 11	58.24 – 9,800	100/100	0.02 – 11,600	99/ 98	64.39 – 397.71	100/100	60 – 8,840	100/100
Nitrate (mg/L)	Maximum of 5	0.85 – 4.15	0	0.01 – 4.77	0	0.58 – 3.89	0	NA	-
Total Nitrogen (mg/L)	Maximum of 7	0.98 -4.33	0	0.22 – 66.2	5	0.89 – 4.3	0	0.03-4.3	0
Total Phosphorous (mg/L)	Maximum of .07	0.001 – 2.9	50	0.00119 – 0.45	7	0.01 – 0.08	2	0.006 – 0.7	0
Phosphate (mg/L)	none	0 – 0.14	-	0.0007 – 0.45	-	0.0023 – 0.05	-	0 – 0.16	-
Sulfate (mg/L)	none	15.97 - 33.45	-	0.4 – 66.2	-	21.81 - 29	-	NA	-
Dissolved Oxygen (mg/L)	Minimum of 5	0.7 – 17.97	94	3.3 – 20.85	99	8 - 8	100	1.09 – 15.71	87
Fecal Coliforms (mpn/100 mL)	Maximum of 200	4 - 300000	88	22 - 900000	86	NA	-	2 - 500000	97
Turbidity (NTU)	Maximum of 150	1.9 – 6.8	0	0.9 – 11.8	0	0.60 – 0.60	0	NA	-
Total Suspended Solids (mg/L)	none	0 - 250	-	0 - 535	-	0.5 – 106.3	-	0.7 - 70	-
Acid Neutralizing Capacity (µeq/L)	0- acid 0-200 mod. Buffered >200 Well Buffered	1359 - 1567	Well Buffered	1494 – 3635.7	Well Buffered	983.70 – 983.70	Well Buffered	NA	-
Dissolved Organic Carbon (mg/L)	none	2.7 – 8.3	-	0.62 - 4	-	1.33 – 1.33	-	NA	-
pH	6.5 to 8.5	5.59 – 9.11	1/2	4.94 – 9.59	0 / 3	6.66 – 8.98	12	6.05 – 8.9	1/2

Table 25: Summary of Chemical Water Quality Conditions for Use I Streams in the Project Study Corridor

Parameter	Standard or Threshold[1] acute/chronic	Jones Falls		Gwynns Falls		Herring Run		Baltimore Harbor	
		Range	Percent Above	Range	Percent Above	Range	Percent Above	Range	Percent Above
Temperature (°C)	Maximum of 32 °C	0.62 – 28.51	0	0 – 28.3	0	0.5 – 23.3	0	3.13 – 28.82	0
Conductivity (mS/cm)	none	221 - 26003	-	134 - 26350	-	352 – 352	-	430 – 25,500	-

Notes: [1]Threshold levels indicating biological stress levels developed using MBSS 2000-2009 data. Not regulated.
NA- sample not collected, -no water quality criteria exist
Source: MBSS, CBP, BES, BCDEP, BCDPW Websites

Because Dead Run is a Use IV waterway, data for Dead Run sites was examined separately to determine if the more stringent Use IV temperature criteria (23.9 °C) were met. Temperatures recorded in Dead Run ranged from -0.16°C to 28.3°C., exceeding the Use IV standard of 23.9°C in 8.60 percent of the readings.

The Jones Falls subwatershed had similar water quality conditions to those in the Gwynns Falls subwatershed. Fecal coliform bacteria measurements were above Maryland's state standards in over 88 percent of the readings, with the highest value exceeding the standard by 1,500 times. Levels of chloride were considerably outside what is allowed by water quality standards. The readings ranged from 58.24 to 9,800 mg/L, with 100 percent of the readings exceeding both the acute and chronic thresholds. Dissolved oxygen levels were below state minimum standards for six percent of the readings within the subwatershed. This may be due in part to the high levels of total phosphorus. Fifty percent of readings were above the MBSS threshold, which is much higher than in any other subwatershed sampled in the project study corridor. Acid neutralizing capacity levels show that the streams within this subwatershed are well buffered.

The Baltimore Harbor subwatershed had similar water quality conditions to its surrounding subwatersheds, Gwynns Falls and Jones Falls. Fecal coliform bacteria levels were above Maryland state standards in 97 percent of all readings, the highest out of all subwatersheds sampled. The value of these readings ranged from two to 500,000 mpn/100mL, with the highest value being 2,500 times the allowable level. Levels of chloride ranged from 60 to 8,840 mg/L, with 100 percent of the readings exceeding both the acute and chronic thresholds. Dissolved oxygen levels were below minimum state levels for 13 percent of the readings, which is the greatest out of all subwatersheds sampled. For the most part, pH levels were within the allowable range, with only one percent of readings dropping below the lower threshold and two percent of readings exceeding the upper threshold.

Unlike the other subwatersheds sampled within the project corridor, fecal coliform bacteria measurements were not available for the Herring Run subwatershed. However, levels of chloride were above the upper threshold. The readings ranged from 64.39 to 397.71 mg/L and 100 percent of the readings exceeded both the acute and chronic state standards. The pH readings were above the standard 12 percent of the time which can put stress on the resident fish and benthic communities inhabiting the area. Total phosphorus readings exceeded the designated threshold two percent of the time, but all other water quality parameters were within state standards. Acid neutralizing capacity levels show that this stream is well buffered.

Several WQLs have been identified by MDE under Section 303 of the CWA within the project study corridor and the status and results of the TMDL process are summarized below in **Table 26.**

Table 26: Status of TMDLs Within the Project Study Corridor

Watershed/Basin	Impairment	Status
Back River	Nutrients	Approved: June 29, 2005
	PCBs	Submitted: Sept. 30, 2011
Baltimore Harbor	Nutrients	Approved: Dec. 17, 2007
	Chlordane	Approved: March 23, 2001
	PCBs	Submitted: Sept. 30, 2011
Gwynns Falls	Non-tidal Bacteria	Approved: Dec. 4, 2007
	Sediments	Approved: March 10, 2010
Jones Falls	Non-tidal Bacteria	Approved: Feb. 21, 2008
	Sediments	Approved: Sept. 29, 2011

Source: MDE TMDL website (www.mde.state.md.us/Programs/WaterPrograms/TMDL)

7.2.2 Scenic and Wild Rivers

According to the DNR Scenic and Wild Rivers program website, no scenic and wild rivers are located within the project study corridor.
(www.dnr.maryland.gov/land/stewardship/scenicrivers)

7.2.3 Floodplains

Based on the 2008 FEMA FIRMs, 100-year non-tidal floodplains fall within the Red Line project study corridor along a tributary to Dead Run that flows through the I-695/I-70 Interchange and into the Social Security West property and along the Dead Run mainstem at the intersection of Security Boulevard and Ingleside Avenue. The Dead Run tributary floodplain is relatively confined because of the rolling topography and fill that was added to the landscape to accommodate highway ramps and parking areas. The Dead Run mainstem floodplain is somewhat broader; however, substantial floodplain encroachment has occurred for private development as well as city and county infrastructure, with numerous streets, sewer lines, and water mains crossing or paralleling designated floodplain areas. Despite these encroachments, the 100-year floodplains along Dead Run and its tributaries continue to provide floodplain values, including but not limited to moderation of floodflows, water quality benefits, and habitat for wildlife, though these values have been somewhat diminished by urbanization.

The 100-year non-tidal floodplain of the Gwynns Falls mainstem crosses beneath Edmondson Avenue and the Red Line corridor east of Hilton Parkway. However, in this area, the Preferred Alternative would be contained entirely within the limits of the new Edmondson Avenue Bridge to be built by the Baltimore City prior to construction of the Red Line, and the bridge-deck would be well above the limits of the 100-year floodplain. Consequently, the Gwynns Falls floodplain does not fall within the project limits, is not expected to be affected by the Preferred Alternative, and therefore would not be evaluated further in this document.

In addition to these non-tidal floodplains, the downtown portion of the Preferred Alternative is located in the broader tidal floodplains of the Jones Falls and the tidal Patapsco River. The Jones Falls floodplain crosses the project study corridor east of President Street; however, this portion of the Jones Falls is tidal and is confined by the city street grid. All of the floodplain

areas of the Jones Falls and tidal Patapsco River within the project study corridor are currently developed.

7.2.4 Navigable Waterways

Based on coordination with the USACE, the tidal portion of the Jones Falls crossed by the project corridor between East Lombard and East Pratt Streets, west of South President Street, is a Navigable Waterway as defined in 33 C.F.R. Part 329. As such, the Preferred Alternative crossing of the Jones Falls would be regulated by the USACE under Section 10 of the Rivers and Harbors Act of 1899.

7.3 Environmental Effects

The No-Build Alternative would not result in changes to the natural environment and no short and long-term project-related effects are anticipated A discussion of the impacts from the Preferred Alternative follows.

7.3.1 Chemical Water Quality/Total Maximum Daily Loads

a. Long-Term and Short-Term Effects

The Preferred Alternative has the potential to increase levels of certain contaminants within the affected subwatersheds on both a long and short-term basis. These increases would be expected to be greatly minimized with the use of approved sediment and erosion control during construction and implementation of stormwater Environmental Site Design (ESD) BMPs over the long-term as required by MDE. However, some degree of chemical water quality impairment could still occur, exacerbating problems within subwatersheds where contaminant levels are already elevated.

Potential short-term impacts during construction include physical disturbances or alterations, accidental spills, and sediment releases that can affect aquatic life. During construction, large areas of exposed soil can be severely eroded by wind and rain when the vegetation and naturally occurring soil stabilizers are removed. Erosion of these exposed soils can considerably increase the sediment load to receiving waters (Barrett, 1995).

Long-term water quality impacts associated with the operation of the Preferred Alternative after construction, are mainly based on the potential for contamination of surface waters by run-off from new impervious surfaces. Impervious surface runoff constituents can include numerous individual chemicals but can generally be grouped as heavy metals, salt, organic molecules, and nutrients (Trombulak, 1999).

Because the Preferred Alternative would largely be located within currently paved areas along already existing roadways or in below-grade tunnels not subject to rainfall, the trackbed would not be expected to increase impervious surface-related contaminants to surface waters to an appreciable degree. However, other project elements such as station areas and maintenance facilities would, in some cases, add larger areas of new pavement in currently undeveloped areas or introduce additional potential contaminants used for track and vehicle maintenance. These areas would have the potential to negatively affect water quality because of increased

contaminant runoff to surface waters. However, as described in **Subsection b. Avoidance and Minimization** below, increases in impervious surfaces have been greatly minimized during the design of the Preferred Alternative. Current designs result in a net impervious increase of approximately seven acres over the entire length of the project. Additionally, potential water quality effects would be minimized during construction through strict adherence to MDE approved sediment and erosion control plans; while long-term effects would be minimized through MDE approved and ESD-based stormwater management. In addition to water quality impacts, increased site imperviousness associated with the Preferred Alternative could result in increased site runoff volumes and downstream peak discharge rates. Management of peak discharge rates is discussed in **Subsection b. Avoidance and Minimization**.

New storm drains and appurtenances would be required to convey stormwater runoff from impacted areas throughout the project study corridor. All storm drain conveyance systems such as pipes and culverts would be designed in accordance with SHA (as adopted by MTA), and/or Baltimore City or Baltimore County criteria, and would maintain current drainage patterns. Site disturbance would be minimized by maintaining and utilizing segments of the existing storm drain network as practicable.

Although the Preferred Alternative has the potential to increase levels of contaminants in the project study corridor watersheds, it is unlikely that they would impact TMDL management plans. Nine TMDLs exist for the project study corridor. The Baltimore Harbor and Back River are impaired because of chlordane, nutrients, and PCBs. Chlordane is a pesticide that is no longer in use but that likely reached waterways through household non-point sources. Currently, the primary source for the contaminant within Back River and Baltimore Harbor is the bottom sediments. It is highly unlikely that the Preferred Alternative would result in higher levels of chlordane within these two waterways. The majority of the nutrient inputs into the Baltimore Harbor and Back River are from municipal wastewater treatment plants (MDE 2006). Approximately one quarter of the nutrients are related to urban stormwater runoff (MDE 2006). Because of the highly developed nature of the project study corridor and the existing stormwater infrastructure, increases in nutrient levels from the implementation of the Preferred Alternative would unlikely to affect TMDL management. The TMDL documents for PCBs in Back River and the Baltimore Harbor are still under development; and, therefore, source allocation of the contaminant is not clear. Several sources of PCBs are associated with roadways, but these are minimal and incorporated in the TMDL plan for urban stormwater sources of PCBs.

The Gwynns Falls, Jones Falls, and Herring Run are considered impaired for non-tidal bacteria. The primary sources of bacteria are animal waste, leaking septic and sewer systems, stormwater outfalls, and sanitary sewer overflows. It is unlikely that the Preferred Alternative would substantially increase any of these sources and therefore have little impact on the TMDL management. In addition, the Gwynns Falls and Jones Falls are considered impaired by sediment. The primary sources of sediment include urbanized land use and stormwater non-point sources, a municipal water filtration plant, mining operations, cropland, forest, and pasture. Sources of sediments are associated with imperviousness; however, existing and

proposed stormwater management would likely be minimal and would be incorporated in the TMDL plan for urban stormwater sources.

Although the potential for effects to TMDL management are minimal, any potential effects would be addressed through the MDE stormwater and sediment and erosion control permitting process as required under Maryland's Sediment and Erosion Control (COMAR 26.17.01) and Stormwater Management regulations (COMAR 26.17.02).

b. Avoidance and Minimization

As mentioned above, both short- and long-term water quality effects have been minimized to a great extent through the selection and design of a Preferred Alternative that makes use of existing paved areas and below-grade tunnels for a large percentage of its length. During construction, the potential for water quality impacts would be minimized further through strict adherence to MDE approved sediment and erosion controls plans, which would include best management practices such as super silt fence, straw bales, sediment basins, and other methods to capture potential sediment from exposed soils. In addition to treatment of sediment laden runoff resulting from surface construction activities, Portable Sediment Tanks (PSTs) or other acceptable filtration devices would be required to filter discharge pumped from subsurface activities such as tunnel boring and station construction.

Long-term negative effects to water quality, including TMDLs, would be further reduced by implementation of ESD-based stormwater management maintained over the life of the Red Line's operation. While detailed stormwater management planning and design typically occurs later in the project design process, MTA has initiated stormwater management planning and coordination during the FEIS phase of the Red Line Project to ensure that project designs anticipate the right-of-way requirements, potential impacts, and technical challenges of required stormwater management. A summary of stormwater requirements and project approach are summarized below.

c. Stormwater Management

Potential effects will be addressed by MTA through the MDE stormwater and sediment and erosion control permitting process as required under Maryland's Erosion and Sediment Control (E&SC) (COMAR 26.17.01) and Stormwater Management regulations (COMAR 26.17.02) at all Points of Investigation (POIs) for surface segments where drainage leaves the project limits. Approximately 46 POIs have been identified throughout the project corridor using a combination of aerial mapping, GIS mapping provided by Baltimore City and County, as-built plans, and field investigation. Regulatory development conditions were established for each individual POI to determine upslope stormwater management requirements per the Stormwater Management Act of 2007.

To determine stormwater management requirements throughout the project study corridor, a comprehensive impervious area inventory was performed within each POI's drainage area by overlaying proposed and existing conditions to identify new impervious area, removed impervious area, maintained impervious area, and reconstructed impervious area:

- *New Impervious* areas are locations where impervious surfaces (e.g., sidewalks, roadways, rooftops, etc.) are proposed over existing pervious (e.g., grass or landscaped) areas.
- *Removed Impervious* areas are locations where existing impervious surfaces are proposed to be replaced with grass medians, stormwater management facilities, or landscaping features.
- *Maintained Impervious* areas are locations where impervious surfaces would not be disturbed (e.g. existing sidewalks, driveways, rooftops, etc.) or with anticipated impacts limited to milling and overlay, re-striping, or other typical roadway maintenance activities that would not require exposure of the existing subgrade.
- *Reconstructed Impervious* areas are locations where full depth replacement is anticipated for existing roadway sections, or existing impervious surfaces are replaced with impervious surfaces with a different land use (e.g. existing sidewalk to roadway, or existing roadway to railway track bed).

Currently, drainage along the Preferred Alternative alignment is captured by an existing storm drain network and discharges to open channels within the Gwynns Falls, Jones Falls, or Herring Run watersheds, or directly to the Baltimore Harbor. Stormwater management facilities will be required to address water quality and quantity requirements associated with new development and redevelopment activities consistent with ESD criteria to the maximum extent practicable established by the Stormwater Management Act of 2007. In addition to these requirements, increases to peak 100-year discharge rates resulting from increases in impervious areas associated with construction of the Preferred Alternative must be attenuated within the Jones Falls, Gwynns Falls, and Herring Run inter-jurisdictional waterways. Increases to the peak discharge rates and subsequent storage requirements are determined using the Natural Resources Conservation Service's Technical Release 55 (TR-55), Urban Hydrology for Small Watersheds.

The Preferred Alternative results in approximately:

- 300 acres of transit alignment;
- 95.7 acres of undisturbed or maintained impervious area (e.g., roadway re-striping, mill and overlay, undisturbed impervious, etc);
- 60.1 acres of reconstructed impervious area (e.g., full depth roadway replacement, or existing impervious area replaced with different proposed land use such as sidewalk to roadway, or roadway to transitway track bed);
- 23.1 acres of impervious area removal; and
- 30.5 acres of new impervious area, resulting in a net increase of 7.4 acres of impervious area throughout the project corridor.

Based on current MDE SWM Guidelines, an estimated 63 acres of impervious surface would need to be treated to meet stormwater management requirements. Increases in site imperviousness have the potential to increase levels of certain contaminants within the affected surface waters and increase peak discharge rates at certain outfalls in the project corridor. Stormwater management would be required to intercept, filter, and attenuate runoff from project disturbances through a combination of linear bioretention and underground quantity management.

Per current MDE stormwater permit requirements, water quality treatment must be provided through ESD practices to the maximum extent practicable to manage site runoff generated from the first inch of rainfall from all net increases in site imperviousness, and for a minimum of 50 percent of existing impervious area redeveloped through construction activities. ESD facilities would be implemented to provide temporary storage and filtration of the contaminants from surface runoff. Additionally, increases in impervious area are being minimized through removal of existing pavement where practicable for proposed stormwater management features, grass medians, or landscaping amenities, as well as consideration of green tracks. Furthermore, additional benefit is anticipated through increased transitway ridership and subsequent reduction of vehicle miles traveled, avoiding considerable roadway related pollutants from entering receiving waters. Efforts to quantify water quality benefits associated with reduction of vehicle miles traveled is on-going and would continue into the Final Design phase.

Increases to peak discharge rates associated with high frequency storm events would be managed through implementation of ESD features as practicable to mimic pre-development hydrology as required by current stormwater regulations. Increases to 100-year peak discharge rates would be managed in inter-jurisdictional waterways through on-site detention as required by COMAR and the Maryland Annotated Code. However, the Preferred Alternative could still result in minimal increased site runoff and peak discharge rates, potentially exacerbating problems within subwatersheds where known flooding issues exist.

A total of approximately 80 potential surface SWM/BMP facilities have been identified and located within the project right-of-way. The total combined footprint of these facilities is approximately 6.4 acres. Facilities would include ESD practices and Low Impact Development techniques such as rain gardens, bioretention facilities, water quality inlets, vegetative buffers, and manufactured BMPs, as well as other structural BMPs such as underground detention vaults, sand filters, and surface extended detention basins. Because of the highly developed nature of the project study corridor and limited available space, surface water quality treatment is anticipated primarily through linear micro-bioretention planter boxes. The micro-bioretention facilities provide landscaped areas to temporarily store and filter impervious runoff through the planting media prior to introduction to the closed pipe storm drain network. Micro-bioretention planter boxes are generally proposed within the existing public right-of-way between the curb and sidewalk or sidewalk and right-of-way. Examples of micro-bioretention planter boxes applied to a streetscape in the public right-of-way are provided below.

Planter Boxes

Potential planter box locations were identified up-slope of storm drain inlets to allow by-pass and capture of flows exceeding treatment requirements in locations with sufficient footprint to manage runoff from the first inch of rainfall at a minimum. Additionally, site constraints were considered such as slopes, existing utilities, and vegetation to maximize treatment potential while minimizing site impacts.

Water quality and quantity requirements are determined on an outfall by outfall basis throughout the project corridor. To determine stormwater management requirements throughout the corridor, Points of Investigation (POIs) were established for surface segments wherever drainage leaves the project limits. Regulatory water quality and quantity volumes are determined for the contributing area to each POI based on existing and proposed areas of impervious cover. Per discussions with MDE during a January 27, 2011 meeting, if water quality volume provided within the drainage area to any POI exceeds that required by current stormwater regulations, the additional volume may be applied to address water quality deficits

for POIs elsewhere in the project corridor, If water quality volume provided within the drainage area to any POI is less than that required by current stormwater regulations, off-site facilities would be required within the project watershed for additional mitigation. Off-site water quality mitigation may be implemented outside of the project right-of-way and would require coordination with local jurisdictions. Off-site mitigation opportunities would be identified within the public right-of-way and implemented with no impacts to natural resources, cultural resources, or residential property.

Water quantity requirements must be addressed at the points of impact; if quantity management provided within the drainage area to any POI exceeds that required by current stormwater regulations, the additional volume may not be applied elsewhere in the alignment and deficitits may not be addressed off-site. Water quantity volume, as well as 100-year peak discharge attenuation not provided through ESD practices would be addressed through underground storage vaults within the project right-of-way. Underground storage vaults would provide temporary storage of stormwater runoff and manage peak discharge rates through an outlet control weir or orifice. An example of a typical underground vault is shown in the photo below.

Underground Storage Vault

Approximately 35 underground storage vaults are proposed within the public right-of-way. Locations were identified based upon capture of adequate drainage area to off-set net increases in site imperviousness while minimizing impacts to existing underground utilities. Underground storage vaults are proposed upslope of storm drain trunk lines to permit connection of outlet pipes to the downslope storm drain network.

Proposed quality and quantity management facilities would require regular maintenance per guidance provided by MDE. A Memorandum of Understanding (MOU) would be prepared between MTA and Baltimore City, as well as Baltimore County, for any facility owned and operated by MTA within the project study corridor.

In addition to micro-bioretention and underground structural stormwater management facilities, opportunities for removal of additional existing impervious surfaces are being investigated to partially offset net increases in impervious area throughout the corridor. Green tracks are also being considered as an alternative surface to reduce runoff and filter rainfall that lands within the track bed. Finally, additional research is being conducted to determine the net impacts and benefits resulting from reduction of vehicular traffic associated with construction of a mass transit system in order to quantify equivalency of water quality treatment.

7.3.2 Scenic and Wild Rivers

There are no designated scenic and wild rivers within the Red Line project study corridor; therefore, no long- or short-term effects would occur.

7.3.3 Floodplains

a. Long-Term and Short-Term Effects

The acres of combined long and short-term floodplain impacts for each segment of the Preferred Alternative are shown in **Table 27**. Floodplain impacts presented below represent the estimated footprint of temporary construction access and long-term fill areas associated with construction of the project. Effects required for access during construction (e.g. to install culver extensions) would be short-term and have been accounted for within the extents of the limit of disturbance. Actual analysis of potential project related changes to hydraulic function and elevation of the 100-year floodplain would be determined using hydraulic and hydrologic floodplain modeling as part of the engineering process for each structure in later phases of design. In general, the majority of the floodplain encroachments would be from traverse crossings of floodplains. Longitudinal crossings are expressly discouraged pursuant to DOT Order 5650.2, and have been avoided because they would result in more floodplain fill, reducing conveyance and floodplain storage.

Table 27: Summary of Short and Long-Term Floodplain Impacts

Project Segment	Non-tidal 100-Year Floodplain (Acres)	Tidal 100-Year Floodplain (Acres)
West	0. 7	-
Downtown Tunnel	-	0.8
East	-	0.2
Total	**0. 7**	**1.0**

Filling of the 100-year floodplain would occur within three project segments; West, Downtown Tunnel, and East. West segment floodplain impacts would total 0.7 acre, and would be associated with construction of the track across a tributary to Dead Run and proposed sidewalk improvements within the 100-year floodplain of the Dead Run mainstem at North Forest Park Avenue and Security Boulevard. Culvert extensions for the crossings of the Dead Run tributary would require that fill be placed in the 100-year floodplain to accommodate the transitway. At the Dead Run mainstem, impacts have been included in the impact figures for the current phase of engineering because the project limits of disturbance fall within the 100-year

floodplain. However, the sidewalk improvements proposed in the floodplain are unlikely to result in any measurable affect to floodplain elevation or function.

In the tidal Patapsco River floodplain, placement of substantial amounts of fill is not anticipated, and existing grades would remain largely unchanged. However, within this Downtown Tunnel segment two underground stations are proposed within the 100-year tidal floodplain: the Inner Harbor Station at the corner of Light and Lombard Streets and the Harbor East Station at South Central Avenue and Fleet Street. The entrances for these two underground stations would result in approximately 0.8 acre of 100-year floodplain impact, including the footprint of all construction activities and surface elements such as the entrance itself, signage, pavement treatments, etc. Other project-related activities in the tidal floodplains in the downtown area include, vent shafts and tunnel portals. A preliminary flood protection analysis has been conducted for five underground stations (Poppleton Station, Howard Street/University Center Station, Inner Harbor Station, Harbor East Station, and Fell's Point Station) and four tunnel portals (Cooks Lane Tunnel Portal, Edmondson Avenue Tunnel Portal, Route 40 Tunnel Portal, and Boston Street Tunnel Portal) within the project study corridor. The results of the preliminary flood protection analysis show that the five underground stations, including the Inner Harbor and Harbor East Stations mentioned above are not expected to have a negative effect on flood levels or alter floodplain boundaries.

The East segment floodplain effects would total 0.2 acre. The impact would occur from construction of the track along Boston Street where the Red Line emerges from the Downtown Tunnel segment. This impact would also be to the tidal Patapsco River floodplain.

b. Avoidance and Minimization

In accordance with Executive Order 11988 and USDOT Order 5650.2, the Preferred Alternative avoids the majority of the potential floodplain impacts within the project study corridor. The largest areas of 100-year floodplain within the project study corridor occur along the tidal Patapsco River at the Inner Harbor and at the crossing of Gwynns Falls. Within the tidal Patapsco Basin, much of the alignment lies within a tunnel segment, except for two surface entrances to underground stations and a number of vent shafts and tunnel portals. This portion of the floodplain is completely developed, with natural vegetation occurring only as street trees and patches of lawn. The crossing of the Gwynns Falls is on a high bridge, well outside the 100-year floodplain. Other minimization efforts include a perpendicular track crossing of a tributary to Dead Run, and only minimal sidewalk improvements proposed in the Dead Run mainstem floodplain.

Further tidal floodplain impact avoidance and minimization is difficult, as the few surface elements in the Downtown Tunnel segment are necessary for station access and operation of the tunnel, and the alignment exits the Downtown Tunnel segment on Boston Street, paralleling the tidal Patapsco Basin. Techniques that would be investigated to further minimize or avoid impacts to the nontidal floodplain of Dead Run may include alignment shifts to ensure the narrowest possible crossing to further reduce encroachment and allow for unrestricted passage of floodwaters.

c. Mitigation

Hydraulic and hydrologic studies will be performed if necessary to determine if any floodplain encroachments would have negative effects on storage areas for floodwaters or alter flooding characteristics during Final Design. If these studies determine that flood elevation changes would occur, floodplain storage mitigation may be required to meet regulatory compliance standards and would be determined at that time. All construction occurring within the FEMA designated 100-year floodplain must comply with FEMA approved local floodplain construction requirements. These requirements consider structural evaluations, fill levels, and grading elevations. If, after compliance with the requirements of Executive Order 11988 and US DOT Order 5650.2, new construction of structures or facilities are to be located in a floodplain, accepted flood proofing and other flood protection measures shall be applied to new construction or rehabilitation. To achieve flood protection, wherever practicable, structures should be elevated above the base flood level rather than filling for culvert placement.

Construction within the 100-year floodplain of non-tidal streams would require a Waterway Construction Permit from the MDE. All transit facilities located within the floodplain would be designed to comply with Maryland floodplain regulations. Impacts required for access during construction (e.g., to install culvert extensions) would be short-term and have been accounted for within the extents of the limit of disturbance.

7.3.4 Navigable Waterways

a. Long-Term and Short-Term Effects

No short- or long-term impacts to navigable waters are anticipated from the Preferred Alternative. The Jones Falls, the only designated navigable waterway within the project study corridor, is not anticipated to be affected.

While no impacts are anticipated to the Jones Falls because of the tunnel, the Red Line project will require authorization under Section 10 of the Rivers and Harbors Act, which states that authorization is required for any activities “in, upon, over, and/or under navigable waters of the US”. The Downtown Tunnel segment of the project passes beneath this navigable water and is therefore subject to the USACE's navigable waters permitting requirements. This authorization would be issued by the USACE as part of the overall Section 404 CWA permitting process for wetlands and waterways.

b. Avoidance and Minimization

Impacts to the Jones Falls would be avoided by the Preferred Alternative through the construction of the Downtown Tunnel. The portion of the Downtown Tunnel that would pass beneath the Jones Falls would be constructed using a Tunnel Boring Machine (TBM) entirely below ground in this area. The top of the proposed tunnel would be located approximately 40 feet below the bottom of the Jones Falls, with approximately 10-15 feet of bedrock located immediately above the tunnel. In addition, there are no above ground project elements proposed in the immediate vicinity that would affect the Jones Falls, or its designation as a Navigable Waterway.

8. Groundwater

8.1 Background and Methodology

Information on groundwater resources within the Red Line project study corridor was gathered from available published data sources, including the United States Geological Survey (USGS), Maryland Geological Survey (MGS), and Maryland Department of the Environment (MDE).

8.2 Existing Conditions

The availability of groundwater is largely controlled by the geology of an area. Based on published data sources, the project study corridor includes two different types of aquifers; one in the Coastal Plain, and one in the Piedmont. An aquifer is a geologic formation such as fractured rock or coarse sand, which possesses the porosity required to store and transmit water in usable quantities. The portion of the project study corridor west of Gwynns Falls is underlain by the Crystalline-Rock aquifers of the Piedmont while the eastern portion is underlain by the Potomac Aquifer of the Coastal Plain.

The Piedmont Physiographic Province, which characterizes the western portion of the project study corridor, is underlain by bedrock that is almost impermeable, but yields some water from secondary porosity and permeability provided by fractures. Three types of bedrock aquifers underlay the Piedmont as a whole, but the Crystalline-Rock Aquifer is the only one located within the project study corridor. Groundwater recharge is highly variable within the Piedmont and depends heavily on the local precipitation, runoff, and the capacity of the land surface to accept infiltrating water. In crystalline-rock areas, the groundwater movement is predominately along short flow paths from areas of infiltration to the nearest stream. The water quality typically found in the Crystalline-Rock Aquifers is appropriate for fresh water uses, but iron, dissolved solids, manganese, and sulfate can occur locally in high concentrations. The water is also considered to be soft and slightly acidic (USGS, 2000).

The Coastal Plain Province has six aquifers that consist mostly of semi-consolidated rocks. The project study corridor falls within only one of these; the Potomac Aquifer. The Potomac Aquifer consists mostly of permeable sands but has some confining layers of clay and sandy clay restricting the vertical flow of water in the aquifer. The aquifers and confining units that underlie the Coastal Plain vary considerably in thickness from sea level to approximately 3,800 feet. The Potomac Aquifer varies in thickness in Maryland from 800 to 3,800 feet (USGS, 2000).

Table 28 shows groundwater use for all of Baltimore City and Baltimore County. Although portions of Baltimore County outside of the project study corridor rely on groundwater for drinking water, the project study corridor is entirely located in the Greater Baltimore area that relies on surface water withdrawals for drinking water. Groundwater withdrawals that do occur in the project study corridor occur primarily for industrial uses.

Table 28: Groundwater Withdrawals by Type for Baltimore City and Baltimore County in Millions of Gallons per Day

	Public Supply	Domestic	Self-Supplied Industrial	Irrigation	Livestock	Mining	Total Withdrawals
Baltimore City	0.00	0.00	0.09	0.00	0.00	0.00	0.09
Baltimore County	0.08	4.72	5.7	0.54	0.10	0.00	11.45

Source: USGS 2005, Estimated Use of Water in the United States County-Level Data

Two monitoring wells are located within close proximity to the project study corridor and show the extreme high and low levels in feet below surface that the groundwater has been recorded (**Table 29**).

Table 29: Extreme High and Low Levels of Groundwater in Feet Below Land Surface

Location	Aquifer	Lat/Long	Well Number	Type	Extreme High Levels (ft)	Extreme Low Levels (ft)
Baltimore City at Latrobe Park	Potomac	39°16’00”/ 76°35’33”	3S2E-5	Ground-water Level Monitoring Network Well	3.33	17.71
Baltimore County at Granite	Crystalline-Rock	39°20’45”/ 76°51’25”	BA Ea 18	Drilled, unused, water table well	13.94	28.24

Sources: USGS Water Resources Data Maryland, Delaware, and Washington, D.C. Water Year 2005.

Groundwater quality is often dependent on how people use the overlying land because of the shallow nature of the aquifers and their recharge characteristics. Well head protection programs have been implemented throughout the state to improve the quality of infiltrating water including regulating proper sewage disposal. There are no designated well head protection areas within the project study corridor. However, the fall zone, where the Piedmont meets the Coastal Plain, crosses the project study corridor in the vicinity of Gwynns Falls Park. Much of the recharge for Coastal Plain aquifers occurs in or near the fall zone, where the aquifers are nearer to the ground surface. The Maryland legislature adopted a comprehensive groundwater protection strategy for the state in 1985, and the MDE coordinates these efforts to regulate quantity and quality. Pumping rates are particularly important for the Coastal Plain aquifers to prevent the intrusion of salt water. The Potomac Aquifer has experienced saline water encroachment in several places, including around the Baltimore Harbor.

8.3 Environmental Effects

The No-Build Alternative would not result in changes to the natural environment and no short and long-term effects are anticipated. A discussion of the impacts from the Preferred Alternative follows.

8.3.1 Long-Term and Short-Term Effects

Where aboveground, the Preferred Alternative would primarily occupy existing paved surfaces and other existing transportation rights-of-way. Neither short or long-term impacts to groundwater resources are not anticipated in these highly urbanized, areas, as runoff would be directed to surface waters through stormwater management or treated as it is being infiltrated into the local groundwater through ESD stormwater facilities. Where forest clearing and replacement with paved surfaces is proposed, small but permanent (long-term) changes in local water tables may result, although significant changes in the quantity or quality of groundwater discharged to receiving streams are not expected. Stormwater runoff originating from these surfaces will be managed in accordance with MDE guidelines. The Preferred Alternative would intercept groundwater resources where the Cooks Lane and Downtown underground tunnels are being constructed in the Cooks Lane Tunnel and Downtown Tunnel segments. These tunnels, which would reach a maximum depth of 80 feet below existing grade, could cause permanent but localized changes to groundwater flowpaths. The proposed Cooks Lane tunnel lies in the Piedmont physiographic province, and is composed of overburden consisting of fill and residual soil, underlain by mafic or felsic rock. These materials, which include a transitional zone typified by weathered rock, generally have low permeabilities, with the exception of the interconnected fault/fracture zones where permeabilities may be higher (Red Line Technical Memorandum, Cooks Lane Tunnel, Groundwater Control During Excavation, January 2012). Since these materials transmit lower amounts of groundwater because of their inherently lower permeabilities, impacts associated with the Cooks Lane Tunnel would likely only affect local movements, and not the quantity or quality, of groundwater resources. Land use in the vicinity of the tunnel is residential; therefore some of the precipitation infiltrating vegetated areas such as lawns and hedgerows may follow altered flowpaths before reaching the groundwater table, following construction of the tunnel. Again, although long-term, these changes are not expected to have significant ramifications for groundwater resources beyond the vicinity of the Cooks Lane Tunnel area.

Groundwater impacts associated with the proposed Downtown Tunnel may manifest differently than the Cooks Lane Tunnel, since the downtown area is characterized both by a heavily manipulated subsurface and highly variable stratigraphy. The Downtown Tunnel segment lies on the Fall Line separating the Piedmont and Coastal Plain physiographic provinces; consequently both unconsolidated sediments and varying degrees of weathered rock, as well as bedrock, are present. These materials are intermingled with layers of historic fill and buried stream channels, further complicating groundwater flowpaths. This portion of the alignment is topographically low, with elevations ranging from nearly at sea level to approximately 80 feet above sea level. As such, shallow groundwater tables are near the surface over much of the designated tunnel zone. Where unconsolidated sediments predominate, significant yields of groundwater are typical since these areas typically serve as

unconfined aquifers when located near tidal waters. Although the tunnel is likely to intercept diffuse groundwater flows from these varied sources, significant effects to the quantity or quality of groundwater are not expected to occur to a substantial degree.

8.3.2 Avoidance, Minimization and Mitigation

Construction of both tunnel segments may require some level of pumping of groundwater discharge during the boring process. Although inflow is expected to be low because of the use of an earth pressure balance system on the boring machine, a general permit granted by MDE dictates any contaminated groundwater collected from the tunnel must be treated on-site prior to disposal into the city sewer system. A groundwater testing program using a series of wells has been initiated as part of the Preferred Alternative's hazardous materials studies to identify locations of potentially contaminated groundwater within the designated tunnel corridor. Final results of this study are pending, but the information collected to date can be found in the Red Line Supplemental Hazardous Materials Technical Report. If contaminants are identified, tunnel designs and construction methods would incorporate environmental safeguards to both protect workers and provide for remediation of contaminants before any discharge of groundwater to surface waters.

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Appendix A
Agency Responses

DEPARTMENT OF THE ARMY
BALTIMORE DISTRICT, U.S. ARMY CORPS OF ENGINEERS
P.O. BOX 1715
BALTIMORE, MD 21203-1715

REPLY TO
ATTENTION OF

NOV 0 1 2012

Operations Division

Ms. Gail McFadden-Roberts
Federal Transit Administration
1760 Market Street, Suite 500
Philadelphia, Pennsylvania 19103

Dear Ms. McFadden-Roberts:

The U.S. Army Corps of Engineers, Baltimore District (Corps) is in receipt of the October 16, 2012 Draft Phase I Conceptual Mitigation Plan for the Maryland Transit Administration Baltimore Red Line project, located in Baltimore City and Baltimore County, Maryland. We are pleased to provide Corps comments on the conceptual mitigation plan.

The Corps has reviewed the conceptual mitigation plan for the Baltimore Red Line project. The Corps has determined that it is acceptable for inclusion and evaluation in the Federal Transit Administration (FTA) Final Environmental Impact Statement for the Baltimore Red Line project. The mitigation report documents that acceptable sites and opportunities are available to adequately mitigate for the anticipated impacts to waters of the U.S., including jurisdictional wetlands, associated with the construction of the Baltimore Red Line. Please be reminded that in accordance with the Clean Water Act Section 404(b)(1) Guidelines, the Corps considers compensatory mitigation only after impacts to waters of the U.S., including jurisdictional wetlands, are avoided and minimized to the maximum extent practicable.

We look forward to working with FTA as the review of the project proceeds. A copy of this letter is being forwarded to Ms. Katie Grasty, U.S. Department of Transportation, Ms. Sarah Williamson, Coastal Resources, Inc., and Mr. Josh Tiralla, Maryland Department of the Environment, for informational purposes. If you have any questions, please call me at (410) 962-5691, or your staff may call Mr. Jon Romeo of this office at (410) 962-6079.

Sincerely,

Joseph P. DaVia
Chief, Maryland Section Northern

UNITED STATES DEPARTMENT OF COMMERCE
National Oceanic and Atmospheric Administration
NATIONAL MARINE FISHERIES SERVICE
Habitat Conservation Division
Chesapeake Bay Program Office
410 Severn Ave., Suite 107A
Annapolis, Maryland 21403

December 30, 2011

MEMORANDUM TO: Gail McFadden-Roberts
Federal Transit Administration, Philadelphia Office

FROM: John Nichols JSN

SUBJECT: Red Line Light Rail

This pertains to your inquiry to National Marine Fisheries Service (NMFS) Protected Resources Division in Gloucester, MA, dated December 16, 2011, regarding NMFS trust resources and their important habitats that may be affected by the proposed Red Line Light Rail Transit Project in Baltimore City, Maryland. In regard to federally managed fish species and their important prey (managed under the Magnuson-Stevens Fishery Conservation & Management Act) that occur in the Patapsco River watershed, I offer the following resource information.

Although a NMFS Habitat Conservation Division representative provided verbal comments on the Red Line proposal at a Maryland State Highway Administration Monthly Interagency Agency meeting, held several years ago, we were unable to provide written comments on the Alternatives Analysis (AA) and Draft Environmental Impact Statement (DEIS). NMFS resource impact concerns are limited to the proposed crossing of the Gwynns Falls near U.S. 40. The Gwynns Falls is probable spawning and nursery ground for migratory white perch (*Morone americana*), and yellow perch (*Perca flavescens*), both species being important prey for mobile federally managed predators, such as bluefish (*Pomatomus saltatrix*),in the Chesapeake Bay. The Gwynns Falls mainstem is passable for both migratory perch species upstream to its confluence with Dead Run, which is upstream of the proposed Red Line crossing.

The proposed Red Line will also cross the Jones Falls near its confluence with the Patapsco River. The Jones Falls in the area of the crossing is an enclosed urban tributary, and is not used by NMFS resources.

If not already addressed in the DEIS and AA, the following issues pertaining to the proposed Gwynns Falls crossing should be covered in the current environmental review.

1. Minimizing direct impacts to instream and riparian habitats. Alternatives that include use of an existing crossing structure, bridging a new crossing, locating bridge piers outside instream habitat, and avoiding removal of riparian woody vegetation should be given strong consideration.

2. Quantitative and qualitative treatment of surface water run-off generated from existing or newly proposed structures, to minimize degradation of spawning/nursery habitat.

If you have additional information requirements, please contact me at (410) 829-6663 (cell#), or John.Nichols@NOAA.GOV.

MARYLAND
DEPARTMENT OF
NATURAL RESOURCES

Martin O'Malley, Governor
Anthony G. Brown, Lt. Governor
John R. Griffin, Secretary
Joseph P. Gill, Deputy Secretary

Coordination Sheet for Maryland Department of Natural Resources, Environmental Review Unit information on fisheries resources, including anadromous fish, related to project locations and study areas

DATE OF REQUEST: 12/19/2011 NAME: John Newton PHONE: 410-539-3497

PROJECT NAME / LOCATION / DESCRIPTION: Red Line Light Rail 14.5 mile transit Project, Baltimore, MD

NAME OF STREAM(S) (and MDE Use Classification) WITHIN THE STUDY AREA: Gwynns Falls, (Use I), Jones Falls (Use I), and Dead Run (Use IV)

SUB-BASIN (6 digit watershed): 02-13-09 (Patapsco River Area)

DNR RESPONSE (sections below to be completed by MD DNR):

____X___ Generally, no instream work is permitted in Use I streams during the period of March 1 through June 15, inclusive, during any year.

___X___Generally, no instream work should be conducted in Use IV streams during the period March 1 through May 31 inclusive, during any year.

ADDITIONAL FISHERIES RESOURCE NOTES:

Fish species documented by DNR in locations in proximity to the project work area include Blacknose Dace, Longnose Dace, and Green Sunfish among others.

ADDITIONAL COMMENTS ON BEST MANAGEMENT PRACTICES:

Areas designated for the access of equipment and for the removal or disposal of material required to support construction should avoid impacts to these three stream systems and associated riparian vegetation. Any temporarily disturbed areas should be restored and re-vegetated. Any use of concrete or grouting required to construct improvements should be managed to assure curing processes do not impact these stream systems or modify PH.

Any expected potential fish species should be adequately protected by the Use I and IV work prohibition time of year restriction referenced above, through sediment and erosion control measures, and application of other Best Management Practices.

MD DNR, Environmental Review Unit signature

DATE: --------1-9-2011----------

UNITED STATES DEPARTMENT OF COMMERCE
National Oceanic and Atmospheric Administration
NATIONAL MARINE FISHERIES SERVICE
NORTHEAST REGION
55 Great Republic Drive
Gloucester, MA 01930-2276

DEC 16 2011

Brigid Hynes-Cherin
Acting Regional Administrator
US Department of Transportation
Federal Transit Administration
Region III
1760 Market Street, Suite 500
Philadelphia, Pennsylvania 19103-4124

RE: Red Line Light Rail Transit Project

Dear Ms. Hynes-Cherin,

Your letter dated December 16, 2011, requests information on the presence of threatened or endangered plant or animal species in the proposed Red Line Light Rail Transit project corridor in Baltimore, Maryland. It is my understanding that coordination regarding Essential Fish Habitat and the Fish and Wildlife Coordination Act is currently ongoing between you and our Habitat Conservation Division.

The proposed Red Line is a 14.5 mile, east-west transit line to be located near Baltimore. This project was identified as a high priority infrastructure project in an August 2011 Presidential Memorandum. The project will cross the Gwynns Falls and the Jones Falls.

The Protected Resources Division of NOAA's National Marine Fisheries Service (NMFS PRD) oversees programs for species listed as threatened and/or endangered under our jurisdiction. The federally endangered shortnose sturgeon occurs in Chesapeake Bay and several of its tidal tributaries. Additionally, Atlantic sturgeon, which are proposed for listing as five Distinct Population Segments, occur in Chesapeake Bay and several of its tidal tributaries. However, neither sturgeon species occurs along the project corridor or in the Gwynns Falls or Jones Falls. NMFS PRD does not intend to offer additional comments on the NEPA documentation prepared for this project. Should you have any questions regarding these comments, please contact Julie Crocker of my staff at (978)282-8480.

Sincerely,

for Mary A. Colligan
Assistant Regional Administrator
for Protected Resources

EC: Crocker - F/NER3
Nichols, Boelke - F/NER4
Conant - F/PR5

File Code: Sec 7 no species present 2011

DEC 21 2011

United States Department of the Interior
U.S. Fish & Wildlife Service
Chesapeake Bay Field Office
177 Admiral Cochrane Drive
Annapolis, MD 21401
410/573 4575

Online Certification Letter

Today's date: 11/15/11

Project: Redline Corridor Transit Study -
A 14 mile, east-west transit line from west of I-695
through downtown Baltimore,to the Hopkins Bayview Med.

Dear Applicant for online certification:

Thank you for choosing to use the U.S. Fish and Wildlife Service Chesapeake Bay Field Office online list request certification resource. This letter confirms that you have reviewed the conditions in which this online service can be used. On our website (www.fws.gov/chesapeakebay) are the USGS topographic map areas where **no** federally proposed or listed endangered or threatened species are known to occur in Maryland, Washington D.C. and Delaware.

You have indicated that your project is located on the following USGS topographic map
Ellicott City, Baltimore West, and Baltimore East
Based on this information and in accordance with section 7 of the Endangered Species Act (87 Stat. 884, as amended; 16 U.S.C. 1531 *et seq.*), we certify that except for occasional transient individuals, no federally proposed or listed endangered or threatened species are known to exist within the project area. Therefore, no Biological Assessment or further section 7 consultation with the U.S. Fish and Wildlife Service is required. Should project plans change, or if additional information on the distribution of listed or proposed species becomes available, this determination may be reconsidered.

This response relates only to federally protected threatened or endangered species under our jurisdiction. For additional information on threatened or endangered species in Maryland, you should contact the Maryland Wildlife and Heritage Division at (410) 260-8540. For information in Delaware you should contact the Delaware Natural Heritage and Endangered Species Program, at (302) 653-2880. For information in the District of Columbia, you should contact the National Park Service at (202) 535-1739.

The U.S. Fish and Wildlife Service also works with other Federal agencies and states to minimize loss of wetlands, reduce impacts to fish and migratory birds, including bald eagles, and restore habitat for wildlife. Information on these conservation issues and how development projects can avoid affecting these resources can be found on our website (www.fws.gov/chesapeakebay).

We appreciate the opportunity to provide information relative to fish and wildlife issues, and thank you for your interest in these resources. If you have any questions or need further

assistance, please contact Chesapeake Bay Field Office Threatened and Endangered Species program at (410) 573-4531.

Sincerely,

Leopoldo Miranda
Field Supervisor

MARYLAND
DEPARTMENT OF
NATURAL RESOURCES

Martin O'Malley, Governor
Anthony G. Brown, Lt. Governor
John R. Griffin, Secretary
Joseph P. Gill, Deputy Secretary

July 6, 2010

Ms. Kelly Lyles
Maryland Department of Transportation
Maryland Transit Administration
6 Saint Paul Street
Baltimore, MD 21202-1614

RE: Environmental Review for Red Line Transit – Locally Preferred Alternative from Woodlawn to Johns Hopkins Bayview Medical Campus, Baltimore City and County

Dear Ms. Lyles:

The Wildlife and Heritage Service's database indicates that there is a nest site for the American Peregrine Falcon (*Falco peregrinus anatum*) occurring within the study area of this project site. This site is located on a window ledge of the Legg Mason Building in Baltimore City and is unlikely to be disturbed by this proposed project unless there is heavy construction proposed for the immediate area of this building. If that is the case we would like the opportunity to review project details at this site so that potential adverse impacts to the American Peregrine Falcon, a species with In Need of Conservation status in Maryland, can be avoided during its nesting season.

Thank you for allowing us the opportunity to review this project. If you should have any further questions regarding this information, please contact me at (410) 260-8573.

Sincerely,

Lori A. Byrne

Lori A. Byrne
Environmental Review Coordinator
Wildlife and Heritage Service
MD Dept. of Natural Resources

ER # 2009.2012.babc
Cc: D. Brinker, DNR

RECEIVED
JUL 12 2010
OFFICE OF PLANNING
PROJECT DEVELOPMENT

United States Department of the Interior

FISH AND WILDLIFE SERVICE
Chesapeake Bay Field Office
177 Admiral Cochrane Drive
Annapolis, MD 21401
410/573-4575

January 21, 2010

RECEIVED
JAN 25 2010
DIRECTOR'S OFFICE
OFFICE OF PLANNING

Maryland Transit Administration
Maryland Department of Transportation
6 Saint Paul Street
Baltimore, MD 21202-1614

RE: Red Line Transit Baltimore County and Baltimore city

Dear: Kelly Lyles

This responds to your letter, received December 03, 2009, requesting information on the presence of species which are federally listed or proposed for listing as endangered or threatened within the vicinity of the above reference project area. We have reviewed the information you enclosed and are providing comments in accordance with section 7 of the Endangered Species Act (87 Stat. 884, as amended; 16 U.S.C. 1531 *et seq.*).

Except for occasional transient individuals, no federally proposed or listed endangered or threatened species are known to exist within the project impact area. Therefore, no Biological Assessment or further section 7 Consultation with the U.S. Fish and Wildlife Service is required. Should project plans change, or if additional information on the distribution of listed or proposed species becomes available, this determination may be reconsidered.

This response relates only to federally protected threatened or endangered species under our jurisdiction. For information on the presence of other rare species, you should contact Lori Byrne of the Maryland Wildlife and Heritage Division at (410) 260-8573.

Effective August 8, 2007, under the authority of the Endangered Species Act of 1973, as amended, the U.S. Fish and Wildlife Service (Service) removed (delist) the bald eagle in the lower 48 States of the United States from the Federal List of Endangered and Threatened Wildlife. However, the bald eagle will still be protected by the Bald and Golden Eagle Protection Act, Lacey Act and the Migratory Bird Treaty Act. As a result, starting on August 8, 2007, if your project may cause "disturbance" to the bald eagle, please consult the "National Bald Eagle Management Guidelines" dated May 2007.

If any planned or ongoing activities cannot be conducted in compliance with the National Bald Eagle Management Guidelines (Eagle Management Guidelines), please contact the Chesapeake Bay Ecological Services Field Office at 410-573-4573 for technical assistance. The Eagle

Management Guidelines can be found at:
http://www.fws.gov/migratorybirds/issues/BaldEagle/NationalBaldEagleManagementGuidelines.pdf.

In the future, if your project can not avoid disturbance to the bald eagle by complying with the Eagle Management Guidelines, you will be able to apply for a permit that authorizes the take of bald and golden eagles under the Bald and Golden Eagle Protection Act, generally where the take to be authorized is associated with otherwise lawful activities. This proposed permit process will not be available until the Service issues a final rule for the issuance of these take permits under the Bald and Golden Eagle Protection Act.

An additional concern of the Service is wetlands protection. Federal and state partners of the Chesapeake Bay Program have adopted an interim goal of no overall net loss of the Basin's remaining wetlands, and the long term goal of increasing the quality and quantity of the Basin's wetlands resource base. Because of this policy and the functions and values wetlands perform, the Service recommends avoiding wetland impacts. All wetlands within the project area should be identified, and if construction in wetlands is proposed, the U.S. Army Corps of Engineers, Baltimore District, should be contacted for permit requirements. They can be reached at (410) 962-3670.

We appreciate the opportunity to provide information relative to fish and wildlife issues, and thank you for your interests in these resources. If you have any questions or need further assistance, please contact Devin Ray at (410) 573-4531.

Sincerely,

Leopoldo Miranda
Field Supervisor

Appendix B
Conversation Records

BALTIMORE RED LINE
General Engineering Consultant Team
100 South Charles Street, Tower 1, 10th Floor ■ Baltimore, MD 21201
P: 410-727-5050 ■ F: 410-727-4608

CONVERSATION RECORD	Time 11:30 AM	Date 10/19/11

Type:
☐ Visit ☐ Conference ☒ Telephone
☐ Incoming
☒ Outgoing

Location of visit, or conference:

Routing	
Name	Dept

Name of contact or person contacted:	Organization:
Jon Romeo (410-962-6079)	USACE

Subject:
US Army Corps of Engineers (USACE) Wetlands/Waters Coordination: Pre-appl. Mtg. & JD

Summary

- Jon Romeo will be the USACE contact for the Red Line Project.
- Jon will be involved in the pre-application meeting.
- He recommends an informal/preliminary JD (jurisdictional determination), where he will verify lines and look at questionable areas after delineation completion and application submittal.
- We should keep Jon posted on the schedule, but otherwise, we do not need to engage Jon until the pre-application meeting.

Action Required
- Keep Jon Romeo posted on project schedule related to the JPA.

Person documenting conversation	Signature	Date
Greg O'Hare		11/9/11

Action Taken

Signature	Title	Date
		Click here to enter a date.

BALTIMORE RED LINE
General Engineering Consultant Team
100 South Charles Street, Tower 1, 10th Floor ■ Baltimore, MD 21201
P: 410-727-5050 ■ F: 410-727-4608

CONVERSATION RECORD	Time 10:00 AM	Date 10/21/11		
Type: ☐ Visit ☐ Conference ☒ Telephone ☐ Incoming ☒ Outgoing Location of visit, or conference:			Routing	
			Name	Dept
Name of contact or person contacted: Gary Letteron (410-396-4369)	Organization: Balt. City Dept. of Planning			
Subject: City Tree Review/Requirements				

Summary

- Survey ≥ 20" DBH and noteworthy trees within and 50' outside of the LOD (City specimen trees are ≥ 20" DBH).
- Survey all street trees regardless of size.
- Replace city trees on a dbh inch for inch basis, unless the impacted tree is already dead.
- Gary will be the lead City environmental reviewer, but we still need to follow-up with Erik Dihle of City Recreation & Parks (R&P) for street tree and parks impacts.
- We'll investigate Red Line Parks impacts and follow-up with Gary prior to conducting inventory on Parks property. Gary will coordinate with R&P and request ≥ 20" dbh tree survey only on Parks property.
- Most City Parks have Tree Master Plans, which should be easy to plug into for mitigation.

Action Required

- Look into Parks impacts and let Gary know.
- Continue trying to follow-up with Erik Dihle of City Recreation & Parks.

Person documenting conversation	Signature	Date
Greg O'Hare		11/9/11

Action Taken

Signature	Title	Date
		Click here to enter a date.

BALTIMORE RED LINE
General Engineering Consultant Team
100 South Charles Street, Tower 1, 10th Floor ■ Baltimore, MD 21201
P: 410-727-5050 ■ F: 410-727-4608

CONVERSATION RECORD	Time 9:45 AM	Date 10/21/11

Type:
☐ Visit ☐ Conference ☒ Telephone
☐ Incoming
☒ Outgoing

Location of visit, or conference:

Routing	
Name	Dept

Name of contact or person contacted:	Organization:
Tod Ericson (410-836-4568)	MD DNR Forest Service

Subject:
State Forest Conservation Review/Requirements

Summary

- Follow state FSD & FCP process (forested areas & specimen trees regulated).
- FSD plot points are not required. Characterize the forest within the LOD and 50'outside the LOD only.
- A variance will be required for removal of any specimen tree. Coordinate with DNR and Baltimore City on specimen tree variances.
- Inventory trees in open areas, and note brushy areas with tree lines and a brief description.
- Copy Tod on forest/tree correspondence with the City.
- Tod will update Baltimore County on Red Line Project, when we submit to the FSD and FCP packages to DNR.

NOTE: State specimen trees are ≥ 30" DBH or ≥ 75% of the size of the state champion for that species.

Action Required
- Copy Tod on forest/tree correspondence with the City.

Person documenting conversation	Signature	Date
Greg O'Hare		11/9/11

Action Taken

Signature	Title	Date
		Click here to enter a date.

BALTIMORE RED LINE
General Engineering Consultant Team
100 South Charles Street, Tower 1, 10th Floor ■ Baltimore, MD 21201
P: 410-727-5050 ■ F: 410-727-4608

CONVERSATION RECORD	Time 9:45 AM	Date 12/6/11

Type:
☐ Visit ☐ Conference ☒ Telephone
☐ Incoming
☒ Outgoing

Location of visit, or conference:

Routing	
Name	Dept

Name of contact or person contacted:	Organization:
Erik Dihle (443-986-7576) – City Arborist	Balt. City Dept. of Recreation & Parks (R&P)

Subject:
City Recreation & Parks Tree Review/Requirements

Summary

- The Red Line Project GEC/PMC will coordinate Baltimore City street tree and parkland tree/forest inventory and permitting efforts (street tree removal and replacement permit) through Erik's (R&P) and Gary Letteron's (Baltimore City Planning) offices. The project-wide forest conservation approval will be obtained from Maryland DNR, since the Red Line is an MTA project. We'll send Erik and Gary Letteron copies of all DNR FSD and FCP submittals, for review and comment on the alignment within City limits.
- The Red Line GEC/PMC will keep Erik in the loop on Baltimore City tree/parkland related project issues and notify Erik's office prior to agency field reviews for attendance by Erik and/or his staff.
- The Red Line GEC expects to conduct tree/forest inventory field efforts within the transit corridor during winter 2011-2012. Tree inventory will be conducted within the LOD and 50' beyond the LOD, including all street trees regardless of size, and specimen trees (>20" dbh) and noteworthy trees <20" dbh (based on best professional judgment) outside of the public road right of way within Baltimore City limits.
- Parkland forest/tree impact (<20" dbh) mitigation is 3:1. Street tree and specimen tree mitigation is inch for inch dbh replacement (unless dead). ***It was agreed during the 5/1/12 Red Line Forest/Tree Agency Field Tour that forest/tree impacts on parkland will be mitigated at 1:1/inch for inch, respectively.***
- The Red Line GEC/PMC will coordinate with Erik's office regarding any potential forest mitigation sites on City parkland.

Action Required

- Continue to coordinate project tree/parkland related issues with Erik Dihle of City Recreation & Parks.

Person documenting conversation	Signature	Date
Greg O'Hare		12/16/11

Action Taken

Signature	Title	Date
		Click here to enter a date.

BALTIMORE RED LINE
General Engineering Consultant Team
100 South Charles Street, Tower 1, 10th Floor ■ Baltimore, MD 21201
P: 410-727-5050 ■ F: 410-727-4608

CONVERSATION RECORD	Time 8:40 AM	Date 4/11/12		
Type: ☐ Visit ☐ Conference ☒ Telephone ☐ Incoming ☒ Outgoing Location of visit, or conference:			Routing	
			Name	Dept
Name of contact or person contacted: Tod Ericson (410-836-4568)	Organization: MD DNR Forest Service			
Subject: State Forest Conservation Review/Requirements				

Summary

- Hedgerow areas do not count toward the forest impact totals for the forest conservation worksheet, since the FCA regulates forest and specimen trees only.
- Hedgerow and roadside tree impacts in Baltimore County will be covered under LOD calculations for the forest conservation worksheet.
- Inch for inch (dbh) tree replacement for tree removals within City ROW, per City requirements.
- Tree and forest replacement should be on-site first and then off-site, if all mitigation requirements cannot be met within the transit corridor.
- Tod agreed with individual tree survey on private property and 20" dbh or greater specimen tree survey within wooded areas in Baltimore City, per City requirements.
- Tod suggested that we invite a Baltimore County DEPS representative to the Red Line Forest/Tree Agency Tour in April/May 2012.
- Tod did not feel that he needed to attend the 4/18 Red Line IRM. Send him a copy of the minutes when available.

Action Required

- Contact DEPS about attending April/May 2012 Red Line Forest/Tree Agency Tour
- Copy Tod on 4/18 Red Line IRM minutes.

Person documenting conversation	Signature	Date
Greg O'Hare		4/11/12

Action Taken

Signature	Title	Date
		Click here to enter a date.

BALTIMORE RED LINE
General Engineering Consultant Team
100 South Charles Street, Tower 1, 10th Floor ■ Baltimore, MD 21201
P: 410-727-5050 ■ F: 410-727-4608

CONVERSATION RECORD	Time 1:20 PM	Date 4/18/12		
Type: ☐ Visit ☐ Conference ☒ Telephone ☐ Incoming ☒ Outgoing Location of visit, or conference:			Routing	
			Name	Dept
Name of contact or person contacted: Glenn Shaffer (410-887-3980)	Organization: Baltimore County DEPS			
Subject: Baltimore County DEPS coordination for Red Line Project				

Summary

- The Red Line Team contacted Baltimore County Department of Environmental Protection and Sustainability (DEPS) regarding staff attendance at the Red Line Forest/Tree Agency Tour on 5/1/12 and the Red Line Wetlands Agency Field Tour on 5/9/12.
- Mr. Shaffer indicated that DEPS staff would not be attending either field meeting, since DEPS does not have jurisdiction over state projects and would not be part of the environmental agency review of the Red Line Project.
- Mr. Shaffer mentioned that the Red Line Team would have to coordinate with County staff (Rob Ryan), if disturbance to any of the County's recent water quality retrofit projects was proposed.
- The Red Line Team may contact DEPS in the future to discuss potential mitigation opportunities in Baltimore County.

Action Required

- Contact Rob Ryan of Baltimore County, if disturbance to any of the County's recent water quality retrofit projects is proposed.

Person documenting conversation	Signature	Date
Greg O'Hare		4/11/12

Action Taken

Signature	Title	Date
		Click here to enter a date.

Appendix D
Wetlands and Waters Datasheets

RLWL-1

WETLAND DETERMINATION DATA FORM – Eastern Mountains and Piedmont

Project/Site: Red Line City/County: Baltimore Sampling Date: 1-30-12

Applicant/Owner: MTA State: MD Sampling Point: WTP-1-1

Investigator(s): SAW, DWR, AC Section, Township, Range: _____

Landform (hillslope, terrace, etc.): ditch Local relief (concave, convex, none): concave Slope (%): _____

Subregion (LRR or MLRA): MLRA 148 Lat: _____ Long: _____ Datum: _____

Soil Map Unit Name: Jackland-Urban land complex NWI classification: PEM1C

Are climatic / hydrologic conditions on the site typical for this time of year? Yes ✓ No _____ (If no, explain in Remarks.)

Are Vegetation ✓, Soil _____, or Hydrology _____ significantly disturbed? Are "Normal Circumstances" present? Yes ✓ No _____

Are Vegetation _____, Soil _____, or Hydrology _____ naturally problematic? No (If needed, explain any answers in Remarks.)

SUMMARY OF FINDINGS – Attach site map showing sampling point locations, transects, important features, etc.

Hydrophytic Vegetation Present?	Yes ✓	No _____	**Is the Sampled Area within a Wetland?** Yes ✓ No _____
Hydric Soil Present?	Yes ✓	No _____	
Wetland Hydrology Present?	Yes ✓	No _____	

Remarks:

ditch along end of Security Blvd w/ mowed vegetation
drains to culvert @ N end of wetland

HYDROLOGY

Wetland Hydrology Indicators:

Primary Indicators (minimum of one is required; check all that apply)

- ✓ Surface Water (A1)
- ✓ High Water Table (A2)
- ✓ Saturation (A3)
- ___ Water Marks (B1)
- ___ Sediment Deposits (B2)
- ___ Drift Deposits (B3)
- ___ Algal Mat or Crust (B4)
- ___ Iron Deposits (B5)
- ✓ Inundation Visible on Aerial Imagery (B7)
- ✓ Water-Stained Leaves (B9)
- ___ Aquatic Fauna (B13)
- ___ True Aquatic Plants (B14)
- ___ Hydrogen Sulfide Odor (C1)
- ___ Oxidized Rhizospheres on Living Roots (C3)
- ___ Presence of Reduced Iron (C4)
- ___ Recent Iron Reduction in Tilled Soils (C6)
- ___ Thin Muck Surface (C7)
- ___ Other (Explain in Remarks)

Secondary Indicators (minimum of two required)

- ___ Surface Soil Cracks (B6)
- ___ Sparsely Vegetated Concave Surface (B8)
- ___ Drainage Patterns (B10)
- ___ Moss Trim Lines (B16)
- ___ Dry-Season Water Table (C2)
- ___ Crayfish Burrows (C8)
- ___ Saturation Visible on Aerial Imagery (C9)
- ___ Stunted or Stressed Plants (D1)
- ✓ Geomorphic Position (D2)
- ___ Shallow Aquitard (D3)
- ___ Microtopographic Relief (D4)
- ___ FAC-Neutral Test (D5)

Field Observations:

Surface Water Present?	Yes ✓	No _____	Depth (inches): 0-4
Water Table Present?	Yes ✓	No _____	Depth (inches): 0
Saturation Present? (includes capillary fringe)	Yes ✓	No _____	Depth (inches): 0

Wetland Hydrology Present? Yes ✓ No _____

Describe Recorded Data (stream gauge, monitoring well, aerial photos, previous inspections), if available:

Remarks:

VEGETATION (Four Strata) – Use scientific names of plants.

Sampling Point: WTP-1-1

Tree Stratum (Plot size: _____)	Absolute % Cover	Dominant Species?	Indicator Status
1.			
2.			
3.			
4.			
5.			
6.			
7.			
8.			
	= Total Cover		
Sapling/Shrub Stratum (Plot size: _____)			
1. Fraxinus pennsylvanica	3		FACW
2.			
3.			
4.			
5.			
6.			
7.			
8.			
9.			
10.			
	3 = Total Cover		
Herb Stratum (Plot size: _____)			
1. Scirpus atrovirens	8	Y	OBL
2. Juncus effusus	5	Y	FACW
3.			
4.			
5.			
6.			
7.			
8.			
9.			
10.			
11.			
12.			
	13 = Total Cover		
Woody Vine Stratum (Plot size: _____)			
1.			
2.			
3.			
4.			
5.			
6.			
	= Total Cover		

Dominance Test worksheet:

Number of Dominant Species That Are OBL, FACW, or FAC: 2 (A)

Total Number of Dominant Species Across All Strata: 2 (B)

Percent of Dominant Species That Are OBL, FACW, or FAC: 100 (A/B)

Prevalence Index worksheet:

Total % Cover of:		Multiply by:
OBL species		x 1 =
FACW species		x 2 =
FAC species		x 3 =
FACU species		x 4 =
UPL species		x 5 =
Column Totals:	(A)	(B)

Prevalence Index = B/A = _____

Hydrophytic Vegetation Indicators:

✓ 1 - Rapid Test for Hydrophytic Vegetation

✓ 2 - Dominance Test is >50%

___ 3 - Prevalence Index is ≤3.0[1]

___ 4 - Morphological Adaptations[1] (Provide supporting data in Remarks or on a separate sheet)

___ Problematic Hydrophytic Vegetation[1] (Explain)

[1]Indicators of hydric soil and wetland hydrology must be present, unless disturbed or problematic.

Definitions of Four Vegetation Strata:

Tree – Woody plants, excluding vines, 3 in. (7.6 cm) or more in diameter at breast height (DBH), regardless of height.

Sapling/Shrub – Woody plants, excluding vines, less than 3 in. DBH and greater than 3.28 ft (1 m) tall.

Herb – All herbaceous (non-woody) plants, regardless of size, and woody plants less than 3.28 ft tall.

Woody vine – All woody vines greater than 3.28 ft in height.

Hydrophytic Vegetation Present? Yes ✓ No ___

Remarks: (Include photo numbers here or on a separate sheet.)

Sampling Point: WTP-1-1

escription: (Describe to the depth needed to document the indicator or confirm the absence of indicators.)

(Inches)	Matrix Color (moist)	Matrix %	Redox Features Color (moist)	Redox %	Type[1]	Loc[2]	Texture	Remarks
0-3	2.5Y4/4						sicl	mixed w/ organics
3-8	2.5Y4/2	92	7.5YR4/6	8	C	M	cl	
8+	2.5Y4/2	58	7.5YR4/6	2	C	M	c	w/ gravel
	2.5Y3/2	40						

[1]Type: C=Concentration, D=Depletion, RM=Reduced Matrix, MS=Masked Sand Grains. [2]Location: PL=Pore Lining, M=Matrix.

Hydric Soil Indicators:

- ___ Histosol (A1)
- ___ Histic Epipedon (A2)
- ___ Black Histic (A3)
- ___ Hydrogen Sulfide (A4)
- ___ Stratified Layers (A5)
- ___ 2 cm Muck (A10) **(LRR N)**
- ___ Depleted Below Dark Surface (A11)
- ___ Thick Dark Surface (A12)
- ___ Sandy Mucky Mineral (S1) **(LRR N, MLRA 147, 148)**
- ___ Sandy Gleyed Matrix (S4)
- ___ Sandy Redox (S5)
- ___ Stripped Matrix (S6)
- ___ Dark Surface (S7)
- ___ Polyvalue Below Surface (S8) **(MLRA 147, 148)**
- ___ Thin Dark Surface (S9) **(MLRA 147, 148)**
- ___ Loamy Gleyed Matrix (F2)
- ✓ Depleted Matrix (F3)
- ___ Redox Dark Surface (F6)
- ___ Depleted Dark Surface (F7)
- ___ Redox Depressions (F8)
- ___ Iron-Manganese Masses (F12) **(LRR N, MLRA 136)**
- ___ Umbric Surface (F13) **(MLRA 136, 122)**
- ___ Piedmont Floodplain Soils (F19) **(MLRA 148)**

Indicators for Problematic Hydric Soils[3]:

- ___ 2 cm Muck (A10) **(MLRA 147)**
- ___ Coast Prairie Redox (A16) **(MLRA 147, 148)**
- ___ Piedmont Floodplain Soils (F19) **(MLRA 136, 147)**
- ___ Red Parent Material (TF2)
- ___ Very Shallow Dark Surface (TF12)
- ___ Other (Explain in Remarks)

[3]Indicators of hydrophytic vegetation and wetland hydrology must be present, unless disturbed or problematic.

Restrictive Layer (if observed):

Type: _____

Depth (inches): _____

Hydric Soil Present? Yes ✓ No ___

Remarks:

WETLAND DETERMINATION DATA FORM – Eastern Mountains and Piedmont

Project/Site: Red Line City/County: Baltimore Sampling Date: 1/30/12
Applicant/Owner: MTA State: MD Sampling Point: UTP1-1
Investigator(s): SAW, DR, AC Section, Township, Range: _____
Landform (hillslope, terrace, etc.): flat Local relief (concave, convex, none): convex Slope (%): _____
Subregion (LRR or MLRA): MLRA 148 Lat: _____ Long: _____ Datum: _____
Soil Map Unit Name: Jackland-Urban land complex NWI classification: upland
Are climatic / hydrologic conditions on the site typical for this time of year? Yes ✓ No _____ (If no, explain in Remarks.)
Are Vegetation _____, Soil _____, or Hydrology _____ significantly disturbed? No Are "Normal Circumstances" present? Yes ✓ No _____
Are Vegetation _____, Soil _____, or Hydrology _____ naturally problematic? No (If needed, explain any answers in Remarks.)

SUMMARY OF FINDINGS – Attach site map showing sampling point locations, transects, important features, etc.

Hydrophytic Vegetation Present?	Yes ✓	No _____	**Is the Sampled Area within a Wetland?** Yes _____ No _____
Hydric Soil Present?	Yes _____	No ✓	
Wetland Hydrology Present?	Yes ✓	No _____	

Remarks:

HYDROLOGY

Wetland Hydrology Indicators:

Primary Indicators (minimum of one is required; check all that apply)

- ✓ Surface Water (A1)
- ___ High Water Table (A2)
- ___ Saturation (A3)
- ___ Water Marks (B1)
- ___ Sediment Deposits (B2)
- ___ Drift Deposits (B3)
- ___ Algal Mat or Crust (B4)
- ___ Iron Deposits (B5)
- ___ Inundation Visible on Aerial Imagery (B7)
- ___ Water-Stained Leaves (B9)
- ___ Aquatic Fauna (B13)
- ___ True Aquatic Plants (B14)
- ___ Hydrogen Sulfide Odor (C1)
- ___ Oxidized Rhizospheres on Living Roots (C3)
- ___ Presence of Reduced Iron (C4)
- ___ Recent Iron Reduction in Tilled Soils (C6)
- ___ Thin Muck Surface (C7)
- ___ Other (Explain in Remarks)

Secondary Indicators (minimum of two required)

- ___ Surface Soil Cracks (B6)
- ___ Sparsely Vegetated Concave Surface (B8)
- ___ Drainage Patterns (B10)
- ___ Moss Trim Lines (B16)
- ___ Dry-Season Water Table (C2)
- ___ Crayfish Burrows (C8)
- ___ Saturation Visible on Aerial Imagery (C9)
- ___ Stunted or Stressed Plants (D1)
- ___ Geomorphic Position (D2)
- ___ Shallow Aquitard (D3)
- ___ Microtopographic Relief (D4)
- ___ FAC-Neutral Test (D5)

Field Observations:

Surface Water Present?	Yes ✓	No _____	Depth (inches): <1"
Water Table Present?	Yes _____	No ✓	Depth (inches): —
Saturation Present? (includes capillary fringe)	Yes _____	No ✓	Depth (inches): —

Wetland Hydrology Present? Yes ✓ No _____

Describe Recorded Data (stream gauge, monitoring well, aerial photos, previous inspections), if available:

Remarks:

Perched rainwater, but no water table
- high landscape position
- Somewhat disturbed

VEGETATION (Four Strata) – Use scientific names of plants.

Sampling Point: UTP-1-1

Tree Stratum (Plot size: _____)	Absolute % Cover	Dominant Species?	Indicator Status
1. Pinus virginiana	20	Y	UPL
2. Acer rubrum	45	Y	FAC
3. Fraxinus pennsylvanica	15		FACW
4. Quercus palustris	10		FACW
5.			
6.			
7.			
8.			
	90	= Total Cover	

Sapling/Shrub Stratum (Plot size: _____)			
1. Viburnum dentatum	30	Y	FAC
2. Juniperus virginiana	1		FACU
3. Diospyros virginiana	5		FACU
4. Vaccinium corymbosum	5		FACW
5.			
6.			
7.			
8.			
9.			
10.			
	41	= Total Cover	

Herb Stratum (Plot size: _____)			
1. Allium vineale	3		FACU
2.			
3.			
4.			
5.			
6.			
7.			
8.			
9.			
10.			
11.			
12.			
	3	= Total Cover	

Woody Vine Stratum (Plot size: _____)			
1. Lonicera japonica	8	Y	FAC
2. Toxicodendron radicans	5	Y	FAC
3. Smilax rotundifolia	10	Y	FAC
4.			
5.			
6.			
	23	= Total Cover	

Dominance Test worksheet:

Number of Dominant Species That Are OBL, FACW, or FAC: 5 (A)

Total Number of Dominant Species Across All Strata: 6 (B)

Percent of Dominant Species That Are OBL, FACW, or FAC: 83 (A/B)

Prevalence Index worksheet:

Total % Cover of:		Multiply by:
OBL species		x 1 =
FACW species		x 2 =
FAC species		x 3 =
FACU species		x 4 =
UPL species		x 5 =
Column Totals:	(A)	(B)

Prevalence Index = B/A = _____

Hydrophytic Vegetation Indicators:

- ___ 1 - Rapid Test for Hydrophytic Vegetation
- ✓ 2 - Dominance Test is >50%
- ___ 3 - Prevalence Index is ≤3.0[1]
- ___ 4 - Morphological Adaptations[1] (Provide supporting data in Remarks or on a separate sheet)
- ___ Problematic Hydrophytic Vegetation[1] (Explain)

[1]Indicators of hydric soil and wetland hydrology must be present, unless disturbed or problematic.

Definitions of Four Vegetation Strata:

Tree – Woody plants, excluding vines, 3 in. (7.6 cm) or more in diameter at breast height (DBH), regardless of height.

Sapling/Shrub – Woody plants, excluding vines, less than 3 in. DBH and greater than 3.28 ft (1 m) tall.

Herb – All herbaceous (non-woody) plants, regardless of size, and woody plants less than 3.28 ft tall.

Woody vine – All woody vines greater than 3.28 ft in height.

Hydrophytic Vegetation Present? Yes ✓ No ____

Remarks: (Include photo numbers here or on a separate sheet.)

SOIL

Sampling Point: UTP-1-1

Profile Description: (Describe to the depth needed to document the indicator or confirm the absence of indicators.)

Depth (inches)	Matrix Color (moist)	Matrix %	Redox Features Color (moist)	Redox %	Type[1]	Loc[2]	Texture	Remarks
0-2	10YR3/2	100	—	—	—		SiCL	many rootlets.
2-6	2.5Y5/4	95	2.5Y6/6	5%	C	M	SiCL	moist
6-14	2.5Y6/6	65	2.5Y5/4	35%	D	M	SiCL	tight

[1]Type: C=Concentration, D=Depletion, RM=Reduced Matrix, MS=Masked Sand Grains. [2]Location: PL=Pore Lining, M=Matrix.

Hydric Soil Indicators:

- ___ Histosol (A1)
- ___ Histic Epipedon (A2)
- ___ Black Histic (A3)
- ___ Hydrogen Sulfide (A4)
- ___ Stratified Layers (A5)
- ___ 2 cm Muck (A10) **(LRR N)**
- ___ Depleted Below Dark Surface (A11)
- ___ Thick Dark Surface (A12)
- ___ Sandy Mucky Mineral (S1) **(LRR N, MLRA 147, 148)**
- ___ Sandy Gleyed Matrix (S4)
- ___ Sandy Redox (S5)
- ___ Stripped Matrix (S6)
- ___ Dark Surface (S7)
- ___ Polyvalue Below Surface (S8) **(MLRA 147, 148)**
- ___ Thin Dark Surface (S9) **(MLRA 147, 148)**
- ___ Loamy Gleyed Matrix (F2)
- ___ Depleted Matrix (F3)
- ___ Redox Dark Surface (F6)
- ___ Depleted Dark Surface (F7)
- ___ Redox Depressions (F8)
- ___ Iron-Manganese Masses (F12) **(LRR N, MLRA 136)**
- ___ Umbric Surface (F13) **(MLRA 136, 122)**
- ___ Piedmont Floodplain Soils (F19) **(MLRA 148)**

Indicators for Problematic Hydric Soils[3]:

- ___ 2 cm Muck (A10) **(MLRA 147)**
- ___ Coast Prairie Redox (A16) **(MLRA 147, 148)**
- ___ Piedmont Floodplain Soils (F19) **(MLRA 136, 147)**
- ___ Red Parent Material (TF2)
- ___ Very Shallow Dark Surface (TF12)
- ___ Other (Explain in Remarks)

[3]Indicators of hydrophytic vegetation and wetland hydrology must be present, unless disturbed or problematic.

Restrictive Layer (if observed):

Type: _____

Depth (inches): _____

Hydric Soil Present? Yes _____ No ✓

Remarks:

moist between 2+6

WETLAND DETERMINATION DATA FORM – Eastern Mountains and Piedmont

Project/Site: Red Line City/County: Baltimore Sampling Date: 1/30/11

Applicant/Owner: MTA State: MD Sampling Point: UTP-1-2

Investigator(s): SW, AC, DR Section, Township, Range: _____

Landform (hillslope, terrace, etc.): flat Local relief (concave, convex, none): slightly conc. Slope (%): _____

Subregion (LRR or MLRA): MLRA 148 Lat: _____ Long: _____ Datum: _____

Soil Map Unit Name: Jackland-Urban land complex NWI classification: upland

Are climatic / hydrologic conditions on the site typical for this time of year? Yes ✓ No _____ (If no, explain in Remarks.)

Are Vegetation _____, Soil _____, or Hydrology _____ significantly disturbed? No Are "Normal Circumstances" present? Yes ✓ No _____

Are Vegetation _____, Soil _____, or Hydrology _____ naturally problematic? No (If needed, explain any answers in Remarks.)

SUMMARY OF FINDINGS – Attach site map showing sampling point locations, transects, important features, etc.

Hydrophytic Vegetation Present?	Yes ✓	No _____	**Is the Sampled Area within a Wetland?** Yes ✓ No _____
Hydric Soil Present?	Yes _____	No ✓	
Wetland Hydrology Present?	Yes ✓	No _____	

Remarks:

HYDROLOGY

Wetland Hydrology Indicators:

Primary Indicators (minimum of one is required; check all that apply)

- ✓ Surface Water (A1)
- ___ High Water Table (A2)
- ___ Saturation (A3)
- ___ Water Marks (B1)
- ___ Sediment Deposits (B2)
- ___ Drift Deposits (B3)
- ___ Algal Mat or Crust (B4)
- ___ Iron Deposits (B5)
- ___ Inundation Visible on Aerial Imagery (B7)
- ___ Water-Stained Leaves (B9)
- ___ Aquatic Fauna (B13)
- ___ True Aquatic Plants (B14)
- ___ Hydrogen Sulfide Odor (C1)
- ___ Oxidized Rhizospheres on Living Roots (C3)
- ___ Presence of Reduced Iron (C4)
- ___ Recent Iron Reduction in Tilled Soils (C6)
- ___ Thin Muck Surface (C7)
- ___ Other (Explain in Remarks)

Secondary Indicators (minimum of two required)

- ___ Surface Soil Cracks (B6)
- ___ Sparsely Vegetated Concave Surface (B8)
- ___ Drainage Patterns (B10)
- ___ Moss Trim Lines (B16)
- ___ Dry-Season Water Table (C2)
- ___ Crayfish Burrows (C8)
- ___ Saturation Visible on Aerial Imagery (C9)
- ___ Stunted or Stressed Plants (D1)
- ___ Geomorphic Position (D2)
- ___ Shallow Aquitard (D3)
- ___ Microtopographic Relief (D4)
- ___ FAC-Neutral Test (D5)

Field Observations:

Surface Water Present?	Yes ✓	No _____	Depth (inches): 0.5
Water Table Present?	Yes _____	No ✓	Depth (inches): 0
Saturation Present? (includes capillary fringe)	Yes _____	No ✓	Depth (inches): _____

Wetland Hydrology Present? Yes ✓ No _____

Describe Recorded Data (stream gauge, monitoring well, aerial photos, previous inspections), if available:

Remarks:

VEGETATION (Four Strata) – Use scientific names of plants.

Sampling Point: UTP-1-2

Tree Stratum (Plot size: _____)	Absolute % Cover	Dominant Species?	Indicator Status
1. Fraxinus pennsylvanica	10		FACW
2. Quercus palustris	10		FACW
3. Ulmus rubra	25	Y	FAC
4. Acer rubrum	60	Y	FAC
5.			
6.			
7.			
8.			
	105	= Total Cover	

Sapling/Shrub Stratum (Plot size: _____)	Absolute % Cover	Dominant Species?	Indicator Status
1. Viburnum prunifolium	15	Y	FACU
2. Vaccinium corymbosum	10	Y	FACW
3. Viburnum dentatum	10	Y	FAC
4.			
5.			
6.			
7.			
8.			
9.			
10.			
	35	= Total Cover	

Herb Stratum (Plot size: _____)	Absolute % Cover	Dominant Species?	Indicator Status
1. Allium vineale	5	Y	FACU
2.			
3.			
4.			
5.			
6.			
7.			
8.			
9.			
10.			
11.			
12.			
	5	= Total Cover	

Woody Vine Stratum (Plot size: _____)	Absolute % Cover	Dominant Species?	Indicator Status
1. Lonicera japonica	10	Y	FAC
2. Toxicodendron radicans	35	Y	FAC
3.			
4.			
5.			
6.			
	45	= Total Cover	

Dominance Test worksheet:

Number of Dominant Species That Are OBL, FACW, or FAC: 6 (A)

Total Number of Dominant Species Across All Strata: 8 (B)

Percent of Dominant Species That Are OBL, FACW, or FAC: 75 (A/B)

Prevalence Index worksheet:

Total % Cover of:		Multiply by:
OBL species		x 1 =
FACW species		x 2 =
FAC species		x 3 =
FACU species		x 4 =
UPL species		x 5 =
Column Totals:	(A)	(B)

Prevalence Index = B/A = _____

Hydrophytic Vegetation Indicators:

- ✓ 1 - Rapid Test for Hydrophytic Vegetation
- ✓ 2 - Dominance Test is >50%
- 3 - Prevalence Index is ≤3.0[1]
- 4 - Morphological Adaptations[1] (Provide supporting data in Remarks or on a separate sheet)
- Problematic Hydrophytic Vegetation[1] (Explain)

[1]Indicators of hydric soil and wetland hydrology must be present, unless disturbed or problematic.

Definitions of Four Vegetation Strata:

Tree – Woody plants, excluding vines, 3 in. (7.6 cm) or more in diameter at breast height (DBH), regardless of height.

Sapling/Shrub – Woody plants, excluding vines, less than 3 in. DBH and greater than 3.28 ft (1 m) tall.

Herb – All herbaceous (non-woody) plants, regardless of size, and woody plants less than 3.28 ft tall.

Woody vine – All woody vines greater than 3.28 ft in height.

Hydrophytic Vegetation Present? Yes ✓ No _____

Remarks: (Include photo numbers here or on a separate sheet.)

SOIL

Sampling Point: UTP-1-2

Profile Description: (Describe to the depth needed to document the indicator or confirm the absence of indicators.)

Depth (inches)	Matrix Color (moist)	Matrix %	Redox Features Color (moist)	Redox Features %	Type[1]	Loc[2]	Texture	Remarks
0-8	2.5Y 5/3	75%	7.5YR 4/6	25	C	M	SiCL	

[1]Type: C=Concentration, D=Depletion, RM=Reduced Matrix, MS=Masked Sand Grains. [2]Location: PL=Pore Lining, M=Matrix.

Hydric Soil Indicators:

- ___ Histosol (A1)
- ___ Histic Epipedon (A2)
- ___ Black Histic (A3)
- ___ Hydrogen Sulfide (A4)
- ___ Stratified Layers (A5)
- ___ 2 cm Muck (A10) **(LRR N)**
- ___ Depleted Below Dark Surface (A11)
- ___ Thick Dark Surface (A12)
- ___ Sandy Mucky Mineral (S1) **(LRR N, MLRA 147, 148)**
- ___ Sandy Gleyed Matrix (S4)
- ___ Sandy Redox (S5)
- ___ Stripped Matrix (S6)
- ___ Dark Surface (S7)
- ___ Polyvalue Below Surface (S8) **(MLRA 147, 148)**
- ___ Thin Dark Surface (S9) **(MLRA 147, 148)**
- ___ Loamy Gleyed Matrix (F2)
- ___ Depleted Matrix (F3)
- ___ Redox Dark Surface (F6)
- ___ Depleted Dark Surface (F7)
- ___ Redox Depressions (F8)
- ___ Iron-Manganese Masses (F12) **(LRR N, MLRA 136)**
- ___ Umbric Surface (F13) **(MLRA 136, 122)**
- ___ Piedmont Floodplain Soils (F19) **(MLRA 148)**

Indicators for Problematic Hydric Soils[3]:

- ___ 2 cm Muck (A10) **(MLRA 147)**
- ___ Coast Prairie Redox (A16) **(MLRA 147, 148)**
- ___ Piedmont Floodplain Soils (F19) **(MLRA 136, 147)**
- ___ Red Parent Material (TF2)
- ___ Very Shallow Dark Surface (TF12)
- ___ Other (Explain in Remarks)

[3]Indicators of hydrophytic vegetation and wetland hydrology must be present, unless disturbed or problematic.

Restrictive Layer (if observed):

Type: _____

Depth (inches): _____

Hydric Soil Present? **Yes** _____ **No** _____

Remarks:

Compacted area at top of landscape
- perches water in winter - likely gone @ leaf out

RLWL-2

WETLAND DETERMINATION DATA FORM – Eastern Mountains and Piedmont

Project/Site: Red Line City/County: Baltimore Sampling Date: 1/30/12

Applicant/Owner: MTA State: MD Sampling Point: WTP-2-1

Investigator(s): SAW + DR Section, Township, Range: _____

Landform (hillslope, terrace, etc.): wooded/maintained swale Local relief (concave, convex, none): concave Slope (%): _____

Subregion (LRR or MLRA): MLRA 148 Lat: _____ Long: _____ Datum: _____

Soil Map Unit Name: Jackland-Urban land complex NWI classification: PEM1A

Are climatic / hydrologic conditions on the site typical for this time of year? Yes ✓ No _____ (If no, explain in Remarks.)

Are Vegetation ✓, Soil _____, or Hydrology _____ significantly disturbed? Are "Normal Circumstances" present? Yes ✓ No _____

Are Vegetation _____, Soil _____, or Hydrology _____ naturally problematic? No (If needed, explain any answers in Remarks.)

SUMMARY OF FINDINGS – Attach site map showing sampling point locations, transects, important features, etc.

Hydrophytic Vegetation Present?	Yes _____	No _____	**Is the Sampled Area within a Wetland?** Yes ✓ No _____
Hydric Soil Present?	Yes _____	No ✓	
Wetland Hydrology Present?	Yes ✓	No _____	

Remarks:

HYDROLOGY

Wetland Hydrology Indicators:

Primary Indicators (minimum of one is required; check all that apply)

- ✓ Surface Water (A1)
- ___ High Water Table (A2)
- ___ Saturation (A3)
- ___ Water Marks (B1)
- ___ Sediment Deposits (B2)
- ___ Drift Deposits (B3)
- ___ Algal Mat or Crust (B4)
- ___ Iron Deposits (B5)
- ___ Inundation Visible on Aerial Imagery (B7)
- ✓ Water-Stained Leaves (B9)
- ___ Aquatic Fauna (B13)
- ___ True Aquatic Plants (B14)
- ___ Hydrogen Sulfide Odor (C1)
- ___ Oxidized Rhizospheres on Living Roots (C3)
- ___ Presence of Reduced Iron (C4)
- ___ Recent Iron Reduction in Tilled Soils (C6)
- ___ Thin Muck Surface (C7)
- ___ Other (Explain in Remarks)

Secondary Indicators (minimum of two required)

- ___ Surface Soil Cracks (B6)
- ✓ Sparsely Vegetated Concave Surface (B8)
- ___ Drainage Patterns (B10)
- ___ Moss Trim Lines (B16)
- ___ Dry-Season Water Table (C2)
- ___ Crayfish Burrows (C8)
- ___ Saturation Visible on Aerial Imagery (C9)
- ___ Stunted or Stressed Plants (D1)
- ___ Geomorphic Position (D2)
- ___ Shallow Aquitard (D3)
- ___ Microtopographic Relief (D4)
- ___ FAC-Neutral Test (D5)

Field Observations:

Surface Water Present?	Yes ✓	No _____	Depth (inches): 0-4"
Water Table Present?	Yes ✓	No _____	Depth (inches): 0"
Saturation Present? (includes capillary fringe)	Yes ✓	No _____	Depth (inches): 0"

Wetland Hydrology Present? Yes ✓ No _____

Describe Recorded Data (stream gauge, monitoring well, aerial photos, previous inspections), if available:

Remarks:

perched depressional area in compacted gas line R.O.W.

veg. is regularly mowed

VEGETATION (Four Strata) – Use scientific names of plants.

Sampling Point: WTP-2-1

Tree Stratum (Plot size: _____)	Absolute % Cover	Dominant Species?	Indicator Status
1.			
2.			
3.			
4.			
5.			
6.			
7.			
8.			
	= Total Cover		

Sapling/Shrub Stratum (Plot size: _____)			
1.			
2.			
3.			
4.			
5.			
6.			
7.			
8.			
9.			
10.			
	= Total Cover		

Herb Stratum (Plot size: _____)			
1. Juncus effusus	3	Y	FACW
2. Scirpus atrovirens	5	Y	OBL
3.			
4.			
5.			
6.			
7.			
8.			
9.			
10.			
11.			
12.			
	8 = Total Cover		

Woody Vine Stratum (Plot size: _____)			
1.			
2.			
3.			
4.			
5.			
6.			
	= Total Cover		

Dominance Test worksheet:

Number of Dominant Species That Are OBL, FACW, or FAC: 2 (A)

Total Number of Dominant Species Across All Strata: 2 (B)

Percent of Dominant Species That Are OBL, FACW, or FAC: 100 (A/B)

Prevalence Index worksheet:

Total % Cover of:		Multiply by:
OBL species		x 1 =
FACW species		x 2 =
FAC species		x 3 =
FACU species		x 4 =
UPL species		x 5 =
Column Totals:	(A)	(B)

Prevalence Index = B/A = _____

Hydrophytic Vegetation Indicators:

✓ 1 - Rapid Test for Hydrophytic Vegetation

✓ 2 - Dominance Test is >50%

___ 3 - Prevalence Index is ≤3.0[1]

___ 4 - Morphological Adaptations[1] (Provide supporting data in Remarks or on a separate sheet)

___ Problematic Hydrophytic Vegetation[1] (Explain)

[1]Indicators of hydric soil and wetland hydrology must be present, unless disturbed or problematic.

Definitions of Four Vegetation Strata:

Tree – Woody plants, excluding vines, 3 in. (7.6 cm) or more in diameter at breast height (DBH), regardless of height.

Sapling/Shrub – Woody plants, excluding vines, less than 3 in. DBH and greater than 3.28 ft (1 m) tall.

Herb – All herbaceous (non-woody) plants, regardless of size, and woody plants less than 3.28 ft tall.

Woody vine – All woody vines greater than 3.28 ft in height.

Hydrophytic Vegetation Present? Yes ✓ No ___

Remarks: (Include photo numbers here or on a separate sheet.)

veg. is mowed regularly

SOIL

Sampling Point: WTP-2-1

Profile Description: (Describe to the depth needed to document the indicator or confirm the absence of indicators.)

Depth (inches)	Matrix Color (moist)	Matrix %	Redox Features Color (moist)	Redox %	Type[1]	Loc[2]	Texture	Remarks
0-2	2.5Y 3/3	100	—	—				SiL + organics
2-8	2.5Y 4/2	90	7.5YR 4/6	10%	C	M	SiCL	Concretions w/depth
8-12	10YR 5/6	100%	—	—			CL	very tight

[1]Type: C=Concentration, D=Depletion, RM=Reduced Matrix, MS=Masked Sand Grains. [2]Location: PL=Pore Lining, M=Matrix.

Hydric Soil Indicators:

- ___ Histosol (A1)
- ___ Histic Epipedon (A2)
- ___ Black Histic (A3)
- ___ Hydrogen Sulfide (A4)
- ___ Stratified Layers (A5)
- ___ 2 cm Muck (A10) **(LRR N)**
- ___ Depleted Below Dark Surface (A11)
- ___ Thick Dark Surface (A12)
- ___ Sandy Mucky Mineral (S1) **(LRR N, MLRA 147, 148)**
- ___ Sandy Gleyed Matrix (S4)
- ___ Sandy Redox (S5)
- ___ Stripped Matrix (S6)
- ___ Dark Surface (S7)
- ___ Polyvalue Below Surface (S8) **(MLRA 147, 148)**
- ___ Thin Dark Surface (S9) **(MLRA 147, 148)**
- ___ Loamy Gleyed Matrix (F2)
- ✓ Depleted Matrix (F3)
- ___ Redox Dark Surface (F6)
- ___ Depleted Dark Surface (F7)
- ___ Redox Depressions (F8)
- ___ Iron-Manganese Masses (F12) **(LRR N, MLRA 136)**
- ___ Umbric Surface (F13) **(MLRA 136, 122)**
- ___ Piedmont Floodplain Soils (F19) **(MLRA 148)**

Indicators for Problematic Hydric Soils[3]:

- ___ 2 cm Muck (A10) **(MLRA 147)**
- ___ Coast Prairie Redox (A16) **(MLRA 147, 148)**
- ___ Piedmont Floodplain Soils (F19) **(MLRA 136, 147)**
- ___ Red Parent Material (TF2)
- ___ Very Shallow Dark Surface (TF12)
- ___ Other (Explain in Remarks)

[3]Indicators of hydrophytic vegetation and wetland hydrology must be present, unless disturbed or problematic.

Restrictive Layer (if observed):

Type: _____

Depth (inches): _____

Hydric Soil Present? Yes ✓ No ___

Remarks:

RLWL-2

WETLAND DETERMINATION DATA FORM – Eastern Mountains and Piedmont

Project/Site: Red Line City/County: Baltimore Sampling Date: 1/30/12

Applicant/Owner: MTA State: MD Sampling Point: UTP-22

Investigator(s): SAW, DBR Section, Township, Range: _____

Landform (hillslope, terrace, etc.): wooded swale Local relief (concave, convex, none): concave Slope (%): _____

Subregion (LRR or MLRA): MLRA 148 Lat: _____ Long: _____ Datum: _____

Soil Map Unit Name: Jackland-Urban land complex NWI classification: PFO1A

Are climatic / hydrologic conditions on the site typical for this time of year? Yes ✓ No _____ (If no, explain in Remarks.)

Are Vegetation _____, Soil _____, or Hydrology _____ significantly disturbed? No Are "Normal Circumstances" present? Yes ✓ No _____

Are Vegetation _____, Soil _____, or Hydrology _____ naturally problematic? No (If needed, explain any answers in Remarks.)

SUMMARY OF FINDINGS – Attach site map showing sampling point locations, transects, important features, etc.

Hydrophytic Vegetation Present?	Yes ✓	No _____	**Is the Sampled Area within a Wetland?** Yes ✓ No _____
Hydric Soil Present?	Yes ✓	No _____	
Wetland Hydrology Present?	Yes ✓	No _____	

Remarks:

HYDROLOGY

Wetland Hydrology Indicators:

Primary Indicators (minimum of one is required; check all that apply)

- ✓ Surface Water (A1)
- ✓ High Water Table (A2)
- ✓ Saturation (A3)
- ___ Water Marks (B1)
- ✓ Sediment Deposits (B2)
- ___ Drift Deposits (B3)
- ___ Algal Mat or Crust (B4)
- ___ Iron Deposits (B5)
- ___ Inundation Visible on Aerial Imagery (B7)
- ___ Water-Stained Leaves (B9)
- ___ Aquatic Fauna (B13)
- ___ True Aquatic Plants (B14)
- ___ Hydrogen Sulfide Odor (C1)
- ___ Oxidized Rhizospheres on Living Roots (C3)
- ___ Presence of Reduced Iron (C4)
- ___ Recent Iron Reduction in Tilled Soils (C6)
- ___ Thin Muck Surface (C7)
- ___ Other (Explain in Remarks)

Secondary Indicators (minimum of two required)

- ___ Surface Soil Cracks (B6)
- ___ Sparsely Vegetated Concave Surface (B8)
- ___ Drainage Patterns (B10)
- ___ Moss Trim Lines (B16)
- ___ Dry-Season Water Table (C2)
- ___ Crayfish Burrows (C8)
- ___ Saturation Visible on Aerial Imagery (C9)
- ___ Stunted or Stressed Plants (D1)
- ___ Geomorphic Position (D2)
- ___ Shallow Aquitard (D3)
- ___ Microtopographic Relief (D4)
- ___ FAC-Neutral Test (D5)

Field Observations:

Surface Water Present?	Yes ✓	No _____	Depth (inches): 0.5
Water Table Present?	Yes ✓	No _____	Depth (inches): 8"
Saturation Present? (includes capillary fringe)	Yes ✓	No _____	Depth (inches): 0

Wetland Hydrology Present? Yes ✓ No _____

Describe Recorded Data (stream gauge, monitoring well, aerial photos, previous inspections), if available:

Remarks:

VEGETATION (Four Strata) – Use scientific names of plants.

Sampling Point: WTP-2-2

Tree Stratum (Plot size:)	Absolute % Cover	Dominant Species?	Indicator Status
1. Ulmus rubra	70	Y	FAC
2. Quercus palustris	10		FACW
3. Acer rubrum	12		FAC
4.			
5.			
6.			
7.			
8.			
	92 = Total Cover		

Sapling/Shrub Stratum (Plot size:)			
1. Viburnum prunifolium	5	Y	FACU
2. Cornus amomum	8	Y	FACW
3. Juniperus virginiana	3		FACU
4.			
5.			
6.			
7.			
8.			
9.			
10.			
	16 = Total Cover		

Herb Stratum (Plot size:)			
1. Allium vineale	3		FACU
2.			
3.			
4.			
5.			
6.			
7.			
8.			
9.			
10.			
11.			
12.			
	3 = Total Cover		

Woody Vine Stratum (Plot size:)			
1. Lonicera japonica	25	Y	FAC
2.			
3.			
4.			
5.			
6.			
	25 = Total Cover		

Dominance Test worksheet:

Number of Dominant Species That Are OBL, FACW, or FAC: 3 (A)

Total Number of Dominant Species Across All Strata: 4 (B)

Percent of Dominant Species That Are OBL, FACW, or FAC: 75 (A/B)

Prevalence Index worksheet:

Total % Cover of:		Multiply by:
OBL species		x 1 =
FACW species		x 2 =
FAC species		x 3 =
FACU species		x 4 =
UPL species		x 5 =
Column Totals:	(A)	(B)

Prevalence Index = B/A =

Hydrophytic Vegetation Indicators:

- ___ 1 - Rapid Test for Hydrophytic Vegetation
- ✓ 2 - Dominance Test is >50%
- ___ 3 - Prevalence Index is ≤3.0[1]
- ___ 4 - Morphological Adaptations[1] (Provide supporting data in Remarks or on a separate sheet)
- ___ Problematic Hydrophytic Vegetation[1] (Explain)

[1]Indicators of hydric soil and wetland hydrology must be present, unless disturbed or problematic.

Definitions of Four Vegetation Strata:

Tree – Woody plants, excluding vines, 3 in. (7.6 cm) or more in diameter at breast height (DBH), regardless of height.

Sapling/Shrub – Woody plants, excluding vines, less than 3 in. DBH and greater than 3.28 ft (1 m) tall.

Herb – All herbaceous (non-woody) plants, regardless of size, and woody plants less than 3.28 ft tall.

Woody vine – All woody vines greater than 3.28 ft in height.

Hydrophytic Vegetation Present? Yes ✓ No ___

Remarks: (Include photo numbers here or on a separate sheet.)

SOIL

Sampling Point: WTP-2-2

Profile Description: (Describe to the depth needed to document the indicator or confirm the absence of indicators.)

Depth (inches)	Matrix Color (moist)	Matrix %	Redox Features Color (moist)	Redox Features %	Type[1]	Loc[2]	Texture	Remarks
0-2	2.5YR3/2	95	10YR4/6	5	C	M	L	
2-4	2.5Y4/2	60	10YR4/6	35	C	M	SiL	5% Manganese Concretions
4-10	2.5Y5/3	75%	7.5YR4/6	25%	C	M	SiL	

[1]Type: C=Concentration, D=Depletion, RM=Reduced Matrix, MS=Masked Sand Grains. [2]Location: PL=Pore Lining, M=Matrix.

Hydric Soil Indicators:

- ___ Histosol (A1)
- ___ Histic Epipedon (A2)
- ___ Black Histic (A3)
- ___ Hydrogen Sulfide (A4)
- ___ Stratified Layers (A5)
- ___ 2 cm Muck (A10) **(LRR N)**
- ___ Depleted Below Dark Surface (A11)
- ___ Thick Dark Surface (A12)
- ___ Sandy Mucky Mineral (S1) **(LRR N, MLRA 147, 148)**
- ___ Sandy Gleyed Matrix (S4)
- ___ Sandy Redox (S5)
- ___ Stripped Matrix (S6)
- ___ Dark Surface (S7)
- ___ Polyvalue Below Surface (S8) **(MLRA 147, 148)**
- ___ Thin Dark Surface (S9) **(MLRA 147, 148)**
- ___ Loamy Gleyed Matrix (F2)
- ✓ Depleted Matrix (F3)
- ___ Redox Dark Surface (F6)
- ___ Depleted Dark Surface (F7)
- ___ Redox Depressions (F8)
- ___ Iron-Manganese Masses (F12) **(LRR N, MLRA 136)**
- ___ Umbric Surface (F13) **(MLRA 136, 122)**
- ___ Piedmont Floodplain Soils (F19) **(MLRA 148)**

Indicators for Problematic Hydric Soils[3]:

- ___ 2 cm Muck (A10) **(MLRA 147)**
- ___ Coast Prairie Redox (A16) **(MLRA 147, 148)**
- ___ Piedmont Floodplain Soils (F19) **(MLRA 136, 147)**
- ___ Red Parent Material (TF2)
- ___ Very Shallow Dark Surface (TF12)
- ___ Other (Explain in Remarks)

[3]Indicators of hydrophytic vegetation and wetland hydrology must be present, unless disturbed or problematic.

Restrictive Layer (if observed):

Type: _____

Depth (inches): _____

Hydric Soil Present? Yes ✓ No ___

Remarks:

Soils tighter w/ depth and more friable
percolating water

RLWL-3

WETLAND DETERMINATION DATA FORM – Eastern Mountains and Piedmont

Project/Site: Red Line City/County: Woodlawn/Baltimore Sampling Date: 1-30-12

Applicant/Owner: MTA State: _____ Sampling Point: WTP-3-1

Investigator(s): DR, SW, AC Section, Township, Range: _____

Landform (hillslope, terrace, etc.): SWM basin Local relief (concave, convex, none): Concave Slope (%): _____

Subregion (LRR or MLRA): MLRA 148 Lat: _____ Long: _____ Datum: _____

Soil Map Unit Name: Urban land NWI classification: PEM2C

Are climatic / hydrologic conditions on the site typical for this time of year? Yes ✓ No _____ (If no, explain in Remarks.)

Are Vegetation _____, Soil _____, or Hydrology _____ significantly disturbed? No Are "Normal Circumstances" present? Yes ✓ No _____

Are Vegetation _____, Soil _____, or Hydrology _____ naturally problematic? No (If needed, explain any answers in Remarks.)

SUMMARY OF FINDINGS – Attach site map showing sampling point locations, transects, important features, etc.

Hydrophytic Vegetation Present?	Yes ✓	No _____	**Is the Sampled Area within a Wetland?** Yes ✓ No _____
Hydric Soil Present?	Yes ✓	No _____	
Wetland Hydrology Present?	Yes ✓	No _____	

Remarks:

SWM pond

HYDROLOGY

Wetland Hydrology Indicators:

Primary Indicators (minimum of one is required; check all that apply)

- ✓ Surface Water (A1)
- ✓ High Water Table (A2)
- ✓ Saturation (A3)
- ___ Water Marks (B1)
- ___ Sediment Deposits (B2)
- ___ Drift Deposits (B3)
- ___ Algal Mat or Crust (B4)
- ___ Iron Deposits (B5)
- ___ Inundation Visible on Aerial Imagery (B7)
- ✓ Water-Stained Leaves (B9)
- ___ Aquatic Fauna (B13)
- ___ True Aquatic Plants (B14)
- ___ Hydrogen Sulfide Odor (C1)
- ___ Oxidized Rhizospheres on Living Roots (C3)
- ___ Presence of Reduced Iron (C4)
- ___ Recent Iron Reduction in Tilled Soils (C6)
- ___ Thin Muck Surface (C7)
- ___ Other (Explain in Remarks)

Secondary Indicators (minimum of two required)

- ___ Surface Soil Cracks (B6)
- ___ Sparsely Vegetated Concave Surface (B8)
- ___ Drainage Patterns (B10)
- ___ Moss Trim Lines (B16)
- ___ Dry-Season Water Table (C2)
- ___ Crayfish Burrows (C8)
- ___ Saturation Visible on Aerial Imagery (C9)
- ___ Stunted or Stressed Plants (D1)
- ✓ Geomorphic Position (D2)
- ___ Shallow Aquitard (D3)
- ___ Microtopographic Relief (D4)
- ___ FAC-Neutral Test (D5)

Field Observations:

Surface Water Present?	Yes ✓	No _____	Depth (inches): <1"
Water Table Present?	Yes ✓	No _____	Depth (inches): 0
Saturation Present? (includes capillary fringe)	Yes ✓	No _____	Depth (inches): 0

Wetland Hydrology Present? Yes ✓ No _____

Describe Recorded Data (stream gauge, monitoring well, aerial photos, previous inspections), if available:

Remarks:

VEGETATION (Four Strata) – Use scientific names of plants.

Sampling Point: WTP-3-1

Tree Stratum (Plot size: _____)	Absolute % Cover	Dominant Species?	Indicator Status
1.			
2.			
3.			
4.			
5.			
6.			
7.			
8.			
	= Total Cover		

Sapling/Shrub Stratum (Plot size: _____)			
1.			
2.			
3.			
4.			
5.			
6.			
7.			
8.			
9.			
10.			
	= Total Cover		

Herb Stratum (Plot size: _____)			
1. Typha angustifolia	90	Y	OBL
2. Polygonum cespitosum	10		FACU
3.			
4.			
5.			
6.			
7.			
8.			
9.			
10.			
11.			
12.			
	100 = Total Cover		

Woody Vine Stratum (Plot size: _____)			
1.			
2.			
3.			
4.			
5.			
6.			
	= Total Cover		

Dominance Test worksheet:

Number of Dominant Species That Are OBL, FACW, or FAC: 1 (A)

Total Number of Dominant Species Across All Strata: 1 (B)

Percent of Dominant Species That Are OBL, FACW, or FAC: 100 (A/B)

Prevalence Index worksheet:

Total % Cover of:		Multiply by:
OBL species		x 1 =
FACW species		x 2 =
FAC species		x 3 =
FACU species		x 4 =
UPL species		x 5 =
Column Totals:	(A)	(B)

Prevalence Index = B/A = _____

Hydrophytic Vegetation Indicators:

- ___ 1 - Rapid Test for Hydrophytic Vegetation
- ✓ 2 - Dominance Test is >50%
- ___ 3 - Prevalence Index is ≤3.0[1]
- ___ 4 - Morphological Adaptations[1] (Provide supporting data in Remarks or on a separate sheet)
- ___ Problematic Hydrophytic Vegetation[1] (Explain)

[1]Indicators of hydric soil and wetland hydrology must be present, unless disturbed or problematic.

Definitions of Four Vegetation Strata:

Tree – Woody plants, excluding vines, 3 in. (7.6 cm) or more in diameter at breast height (DBH), regardless of height.

Sapling/Shrub – Woody plants, excluding vines, less than 3 in. DBH and greater than 3.28 ft (1 m) tall.

Herb – All herbaceous (non-woody) plants, regardless of size, and woody plants less than 3.28 ft tall.

Woody vine – All woody vines greater than 3.28 ft in height.

Hydrophytic Vegetation Present? Yes ✓ No _____

Remarks: (Include photo numbers here or on a separate sheet.)

SOIL

Sampling Point: WTP-3-1

Profile Description: (Describe to the depth needed to document the indicator or confirm the absence of indicators.)

Depth (inches)	Matrix Color (moist)	Matrix %	Redox Features Color (moist)	Redox %	Type[1]	Loc[2]	Texture	Remarks
0-4	10YR2/1						sil	w/ muck
4-8	10YR3/1	95	7.5YR4/6	5	C	PL	sil	
8	10YR5/4	75	7.5YR5/8	20	C	M	cl	
			10YR6/1	5	D	M		

[1]Type: C=Concentration, D=Depletion, RM=Reduced Matrix, MS=Masked Sand Grains. [2]Location: PL=Pore Lining, M=Matrix.

Hydric Soil Indicators:

- ___ Histosol (A1)
- ___ Histic Epipedon (A2)
- ___ Black Histic (A3)
- ___ Hydrogen Sulfide (A4)
- ___ Stratified Layers (A5)
- ___ 2 cm Muck (A10) **(LRR N)**
- ___ Depleted Below Dark Surface (A11)
- ___ Thick Dark Surface (A12)
- ___ Sandy Mucky Mineral (S1) **(LRR N, MLRA 147, 148)**
- ___ Sandy Gleyed Matrix (S4)
- ___ Sandy Redox (S5)
- ___ Stripped Matrix (S6)
- ___ Dark Surface (S7)
- ___ Polyvalue Below Surface (S8) **(MLRA 147, 148)**
- ___ Thin Dark Surface (S9) **(MLRA 147, 148)**
- ___ Loamy Gleyed Matrix (F2)
- ___ Depleted Matrix (F3)
- ✓ Redox Dark Surface (F6)
- ___ Depleted Dark Surface (F7)
- ___ Redox Depressions (F8)
- ___ Iron-Manganese Masses (F12) **(LRR N, MLRA 136)**
- ___ Umbric Surface (F13) **(MLRA 136, 122)**
- ___ Piedmont Floodplain Soils (F19) **(MLRA 148)**

Indicators for Problematic Hydric Soils[3]:

- ___ 2 cm Muck (A10) **(MLRA 147)**
- ___ Coast Prairie Redox (A16) **(MLRA 147, 148)**
- ___ Piedmont Floodplain Soils (F19) **(MLRA 136, 147)**
- ___ Red Parent Material (TF2)
- ___ Very Shallow Dark Surface (TF12)
- ___ Other (Explain in Remarks)

[3]Indicators of hydrophytic vegetation and wetland hydrology must be present, unless disturbed or problematic.

Restrictive Layer (if observed):

Type: _____

Depth (inches): _____

Hydric Soil Present? Yes ✓ No ___

Remarks:

water in bore hole @ surface

Stream Features
Field Sheet

Date: 1/30/12 Project Site: Red Line WUS #: RLWUS – 4

Observer(s) SAW, DWR, AMC

Stream Flow:

Perennial: ✓ Intermittent _____ Ephemeral _____

Gradient: _____ Classification: R3RB2

Channel Characteristics:

Natural _____ Artificial (man-made) _____ Manipulated (man-altered) ✓

Explain: natural stream channelized next to highway

Channel Has (check all that apply):

- [x] Bed and Banks
- [ ] OHWM
  - [ ] clear, natural line impressed on the bank
  - [ ] changes in character of soil
  - [ ] shelving
  - [ ] vegetation matted down, bent, or absent
  - [ ] leaf litter disturbed or washed away
  - [ ] sediment deposition
  - [ ] water staining
  - [ ] the presence of litter and debris
  - [ ] destruction of terrestrial vegetation
  - [ ] thre presence of wrack line
  - [ ] sediment sorting
  - [ ] scour
  - [ ] multiple observed or predicted flow events
  - [ ] abrupt change in plant community
  - [ ] other (list): _____
- [ ] Discontinuous OHWM (explain): _____

Morphology:

Avg. Channel Width 4' Depth 1' Avg. Water Depth 6"

Has stream morphometry been altered? yes Describe: Channelized Stream from culvert under ramp to I-20 + along Ramp to 695

Habitat and Pollutants:

Substrate (predominant type (s)): Concrete + rock – Some mud

Habitat Complexity (characterize): very low

Bank Erosion: Severe _____ Moderate _____ Minor ✓

Describe: Channel riprapped

Silt Deposition: moderate

Pollutants (observation / potential sources): Storm waters, oil + grease, trash – hwy dage

Stormwater Outfalls: yes – from ramps

Biological Habitat For (check all that apply):

Federally Listed species _____ Fish Spawn Areas _____

Other Environmentally-Sensitive Species _____ Aquatic/Wildlife Diversity _____

Explain Findings: no habitat present

Riparian Zone:

Development: _____

Riparian vegetation: Forest ✓ Shrubs ✓ Herbs _____

Dominant Species: Lonicera tatarica, Rosa multiflora, Quercus palustris

Riparian Buffer Width: ~40 ft

Approximate % Shading by Woody Species: 80

Notes: _____

RLWL-5

WETLAND DETERMINATION DATA FORM – Eastern Mountains and Piedmont

Project/Site: Red Line City/County: Balt. Sampling Date: 1/30/12

Applicant/Owner: MTA State: MD Sampling Point: WTP-5-1

Investigator(s): STW, DWR, AMC Section, Township, Range: _____

Landform (hillslope, terrace, etc.): ditch Local relief (concave, convex, none): concave Slope (%): _____

Subregion (LRR or MLRA): MLRA 148 Lat: _____ Long: _____ Datum: _____

Soil Map Unit Name: Udorthents, highway NWI classification: PEM2A

Are climatic / hydrologic conditions on the site typical for this time of year? Yes ✓ No _____ (If no, explain in Remarks.)

Are Vegetation _____, Soil _____, or Hydrology _____ significantly disturbed? No Are "Normal Circumstances" present? Yes ✓ No _____

Are Vegetation _____, Soil _____, or Hydrology _____ naturally problematic? No (If needed, explain any answers in Remarks.)

SUMMARY OF FINDINGS – Attach site map showing sampling point locations, transects, important features, etc.

Hydrophytic Vegetation Present?	Yes ✓	No _____	**Is the Sampled Area within a Wetland?** Yes ✓ No _____
Hydric Soil Present?	Yes ✓	No _____	
Wetland Hydrology Present?	Yes ✓	No _____	

Remarks:

HYDROLOGY

Wetland Hydrology Indicators:

Primary Indicators (minimum of one is required; check all that apply)

- ✓ Surface Water (A1)
- ✓ High Water Table (A2)
- ✓ Saturation (A3)
- ___ Water Marks (B1)
- ___ Sediment Deposits (B2)
- ✓ Drift Deposits (B3)
- ___ Algal Mat or Crust (B4)
- ___ Iron Deposits (B5)
- ___ Inundation Visible on Aerial Imagery (B7)
- ✓ Water-Stained Leaves (B9)
- ___ Aquatic Fauna (B13)
- ___ True Aquatic Plants (B14)
- ___ Hydrogen Sulfide Odor (C1)
- ___ Oxidized Rhizospheres on Living Roots (C3)
- ___ Presence of Reduced Iron (C4)
- ___ Recent Iron Reduction in Tilled Soils (C6)
- ___ Thin Muck Surface (C7)
- ___ Other (Explain in Remarks)

Secondary Indicators (minimum of two required)

- ___ Surface Soil Cracks (B6)
- ___ Sparsely Vegetated Concave Surface (B8)
- ✓ Drainage Patterns (B10)
- ___ Moss Trim Lines (B16)
- ___ Dry-Season Water Table (C2)
- ___ Crayfish Burrows (C8)
- ___ Saturation Visible on Aerial Imagery (C9)
- ___ Stunted or Stressed Plants (D1)
- ___ Geomorphic Position (D2)
- ___ Shallow Aquitard (D3)
- ___ Microtopographic Relief (D4)
- ___ FAC-Neutral Test (D5)

Field Observations:

Surface Water Present?	Yes ✓	No _____	Depth (inches): 0-2
Water Table Present?	Yes ✓	No _____	Depth (inches): 0"
Saturation Present? (includes capillary fringe)	Yes ✓	No _____	Depth (inches): 0"

Wetland Hydrology Present? Yes ✓ No _____

Describe Recorded Data (stream gauge, monitoring well, aerial photos, previous inspections), if available:

Remarks:

Roadside ditch carries runoff from road + culvert to stream

VEGETATION (Four Strata) – Use scientific names of plants.

Sampling Point: WTP-5-1

Tree Stratum (Plot size: _____)	Absolute % Cover	Dominant Species?	Indicator Status
1.			
2.			
3.			
4.			
5.			
6.			
7.			
8.			
	= Total Cover		

Sapling/Shrub Stratum (Plot size: _____)			
1.			
2.			
3.			
4.			
5.			
6.			
7.			
8.			
9.			
10.			
	= Total Cover		

Herb Stratum (Plot size: _____)			
1. Xanthium strumarium	65	Y	FAC
2. Typha latifolia	20	Y	OBL
3. Scirpus atrovirens	5		OBL
4.			
5.			
6.			
7.			
8.			
9.			
10.			
11.			
12.			
	90 = Total Cover		

Woody Vine Stratum (Plot size: _____)			
1.			
2.			
3.			
4.			
5.			
6.			
	= Total Cover		

Dominance Test worksheet:

Number of Dominant Species That Are OBL, FACW, or FAC: 2 (A)

Total Number of Dominant Species Across All Strata: 2 (B)

Percent of Dominant Species That Are OBL, FACW, or FAC: 100 (A/B)

Prevalence Index worksheet:

Total % Cover of:		Multiply by:
OBL species	_____	x 1 = _____
FACW species	_____	x 2 = _____
FAC species	_____	x 3 = _____
FACU species	_____	x 4 = _____
UPL species	_____	x 5 = _____
Column Totals:	_____ (A)	_____ (B)

Prevalence Index = B/A = _____

Hydrophytic Vegetation Indicators:

- ✓ 1 - Rapid Test for Hydrophytic Vegetation
- ✓ 2 - Dominance Test is >50%
- ___ 3 - Prevalence Index is ≤3.0[1]
- ___ 4 - Morphological Adaptations[1] (Provide supporting data in Remarks or on a separate sheet)
- ___ Problematic Hydrophytic Vegetation[1] (Explain)

[1]Indicators of hydric soil and wetland hydrology must be present, unless disturbed or problematic.

Definitions of Four Vegetation Strata:

Tree – Woody plants, excluding vines, 3 in. (7.6 cm) or more in diameter at breast height (DBH), regardless of height.

Sapling/Shrub – Woody plants, excluding vines, less than 3 in. DBH and greater than 3.28 ft (1 m) tall.

Herb – All herbaceous (non-woody) plants, regardless of size, and woody plants less than 3.28 ft tall.

Woody vine – All woody vines greater than 3.28 ft in height.

Hydrophytic Vegetation Present? Yes ✓ No ___

Remarks: (Include photo numbers here or on a separate sheet.)

SOIL

Sampling Point: WTP-5-1

Profile Description: (Describe to the depth needed to document the indicator or confirm the absence of indicators.)

Depth (inches)	Matrix Color (moist)	Matrix %	Redox Features Color (moist)	Redox %	Type[1]	Loc[2]	Texture	Remarks
0-4	10YR3-1	100					SiL + organic Mix K	
4-8	10YR3-1	100					SCL + alluvium	

[1]Type: C=Concentration, D=Depletion, RM=Reduced Matrix, MS=Masked Sand Grains. [2]Location: PL=Pore Lining, M=Matrix.

Hydric Soil Indicators:

- ___ Histosol (A1)
- ___ Histic Epipedon (A2)
- ___ Black Histic (A3)
- ___ Hydrogen Sulfide (A4)
- ✓ Stratified Layers (A5)
- ___ 2 cm Muck (A10) **(LRR N)**
- ___ Depleted Below Dark Surface (A11)
- ___ Thick Dark Surface (A12)
- ___ Sandy Mucky Mineral (S1) **(LRR N, MLRA 147, 148)**
- ___ Sandy Gleyed Matrix (S4)
- ___ Sandy Redox (S5)
- ___ Stripped Matrix (S6)
- ___ Dark Surface (S7)
- ___ Polyvalue Below Surface (S8) **(MLRA 147, 148)**
- ___ Thin Dark Surface (S9) **(MLRA 147, 148)**
- ___ Loamy Gleyed Matrix (F2)
- ___ Depleted Matrix (F3)
- ___ Redox Dark Surface (F6)
- ___ Depleted Dark Surface (F7)
- ___ Redox Depressions (F8)
- ___ Iron-Manganese Masses (F12) **(LRR N, MLRA 136)**
- ___ Umbric Surface (F13) **(MLRA 136, 122)**
- ___ Piedmont Floodplain Soils (F19) **(MLRA 148)**

Indicators for Problematic Hydric Soils[3]:

- ___ 2 cm Muck (A10) **(MLRA 147)**
- ___ Coast Prairie Redox (A16) **(MLRA 147, 148)**
- ___ Piedmont Floodplain Soils (F19) **(MLRA 136, 147)**
- ___ Red Parent Material (TF2)
- ___ Very Shallow Dark Surface (TF12)
- ___ Other (Explain in Remarks)

[3]Indicators of hydrophytic vegetation and wetland hydrology must be present, unless disturbed or problematic.

Restrictive Layer (if observed):

Type: _____

Depth (inches): _____

Hydric Soil Present? Yes ✓ No ___

Remarks:

8-10" of organics + alluvium on top of Concrete

RLWL-6

WETLAND DETERMINATION DATA FORM – Eastern Mountains and Piedmont

Project/Site: Red Line City/County: Woodlawn/Baltimore Sampling Date: 1/31/12
Applicant/Owner: MTA State: MD Sampling Point: WTP-6-1
Investigator(s): SW, DR, AC Section, Township, Range: _____
Landform (hillslope, terrace, etc.): wooded swale Local relief (concave, convex, none): concave Slope (%): _____
Subregion (LRR or MLRA): MLRA 148 Lat: _____ Long: _____ Datum: _____
Soil Map Unit Name: Urban land, Udorthents (highway) NWI classification: PFO1A
Are climatic / hydrologic conditions on the site typical for this time of year? Yes ✓ No _____ (If no, explain in Remarks.)
Are Vegetation _____, Soil _____, or Hydrology _____ significantly disturbed? No Are "Normal Circumstances" present? Yes ✓ No _____
Are Vegetation _____, Soil _____, or Hydrology _____ naturally problematic? No (If needed, explain any answers in Remarks.)

SUMMARY OF FINDINGS – Attach site map showing sampling point locations, transects, important features, etc.

Hydrophytic Vegetation Present?	Yes ✓	No _____	**Is the Sampled Area within a Wetland?** **Yes** ✓ **No** _____
Hydric Soil Present?	Yes ✓	No _____	
Wetland Hydrology Present?	Yes ✓	No _____	

Remarks:

HYDROLOGY

Wetland Hydrology Indicators:

Primary Indicators (minimum of one is required; check all that apply)

- ✓ Surface Water (A1)
- ✓ High Water Table (A2)
- ✓ Saturation (A3)
- ___ Water Marks (B1)
- ___ Sediment Deposits (B2)
- ___ Drift Deposits (B3)
- ___ Algal Mat or Crust (B4)
- ___ Iron Deposits (B5)
- ___ Inundation Visible on Aerial Imagery (B7)
- ✓ Water-Stained Leaves (B9)
- ___ Aquatic Fauna (B13)
- ___ True Aquatic Plants (B14)
- ___ Hydrogen Sulfide Odor (C1)
- ___ Oxidized Rhizospheres on Living Roots (C3)
- ___ Presence of Reduced Iron (C4)
- ___ Recent Iron Reduction in Tilled Soils (C6)
- ___ Thin Muck Surface (C7)
- ___ Other (Explain in Remarks)

Secondary Indicators (minimum of two required)

- ___ Surface Soil Cracks (B6)
- ✓ Sparsely Vegetated Concave Surface (B8)
- ___ Drainage Patterns (B10)
- ___ Moss Trim Lines (B16)
- ___ Dry-Season Water Table (C2)
- ___ Crayfish Burrows (C8)
- ___ Saturation Visible on Aerial Imagery (C9)
- ___ Stunted or Stressed Plants (D1)
- ___ Geomorphic Position (D2)
- ___ Shallow Aquitard (D3)
- ___ Microtopographic Relief (D4)
- ___ FAC-Neutral Test (D5)

Field Observations:

Surface Water Present?	Yes ✓	No _____	Depth (inches): <1 inch
Water Table Present?	Yes ✓	No _____	Depth (inches): 0 inches
Saturation Present? (includes capillary fringe)	Yes ✓	No _____	Depth (inches): 0 in.

Wetland Hydrology Present? **Yes** ✓ **No** _____

Describe Recorded Data (stream gauge, monitoring well, aerial photos, previous inspections), if available:

Remarks:

VEGETATION (Four Strata) – Use scientific names of plants.

Sampling Point: WTP-6-1

Tree Stratum (Plot size: _____)	Absolute % Cover	Dominant Species?	Indicator Status
1. Fraxinus pennsylvanica	35	Y	FACW
2. Quercus palustris	20	Y	FACW
3. Quercus acutissima	4		NI
4.			
5.			
6.			
7.			
8.			
	59	= Total Cover	

Sapling/Shrub Stratum (Plot size: _____)			
1. Lonicera tatarica	10	Y	FACU
2. Fraxinus pennsylvanica	4	Y	FACW
3.			
4.			
5.			
6.			
7.			
8.			
9.			
10.			
	14	= Total Cover	

Herb Stratum (Plot size: _____)			
1. Schedonorus pratensis	60	Y	FACU
2.			
3.			
4.			
5.			
6.			
7.			
8.			
9.			
10.			
11.			
12.			
	60	= Total Cover	

Woody Vine Stratum (Plot size: _____)			
1. Lonicera japonica	2		FAC
2. Toxicodendron radicans	25	Y	FAC
3.			
4.			
5.			
6.			
	27	= Total Cover	

Dominance Test worksheet:

Number of Dominant Species That Are OBL, FACW, or FAC: 4 (A)

Total Number of Dominant Species Across All Strata: 6 (B)

Percent of Dominant Species That Are OBL, FACW, or FAC: 67 (A/B)

Prevalence Index worksheet:

Total % Cover of:		Multiply by:
OBL species		x 1 =
FACW species		x 2 =
FAC species		x 3 =
FACU species		x 4 =
UPL species		x 5 =
Column Totals:	(A)	(B)

Prevalence Index = B/A = _____

Hydrophytic Vegetation Indicators:

- ___ 1 - Rapid Test for Hydrophytic Vegetation
- ✓ 2 - Dominance Test is >50%
- ___ 3 - Prevalence Index is ≤3.0[1]
- ___ 4 - Morphological Adaptations[1] (Provide supporting data in Remarks or on a separate sheet)
- ___ Problematic Hydrophytic Vegetation[1] (Explain)

[1]Indicators of hydric soil and wetland hydrology must be present, unless disturbed or problematic.

Definitions of Four Vegetation Strata:

Tree – Woody plants, excluding vines, 3 in. (7.6 cm) or more in diameter at breast height (DBH), regardless of height.

Sapling/Shrub – Woody plants, excluding vines, less than 3 in. DBH and greater than 3.28 ft (1 m) tall.

Herb – All herbaceous (non-woody) plants, regardless of size, and woody plants less than 3.28 ft tall.

Woody vine – All woody vines greater than 3.28 ft in height.

Hydrophytic Vegetation Present? Yes ✓ No _____

Remarks: (Include photo numbers here or on a separate sheet.)

SOIL

Sampling Point: WTP-6-1

Profile Description: (Describe to the depth needed to document the indicator or confirm the absence of indicators.)

Depth (inches)	Matrix Color (moist)	Matrix %	Redox Features Color (moist)	Redox %	Type[1]	Loc[2]	Texture	Remarks
0-3	2.5Y 3/1	100	—	—	—	—	SCL	
3-9	2.5Y 4/2	75	7.5YR 4/6	25%	C	M	SiCL	
9-12	2.5Y 4/3	80	10YR 5/6	20%	C	PL	CL	

[1]Type: C=Concentration, D=Depletion, RM=Reduced Matrix, MS=Masked Sand Grains. [2]Location: PL=Pore Lining, M=Matrix.

Hydric Soil Indicators:

- ___ Histosol (A1)
- ___ Histic Epipedon (A2)
- ___ Black Histic (A3)
- ___ Hydrogen Sulfide (A4)
- ___ Stratified Layers (A5)
- ___ 2 cm Muck (A10) **(LRR N)**
- ___ Depleted Below Dark Surface (A11)
- ___ Thick Dark Surface (A12)
- ___ Sandy Mucky Mineral (S1) **(LRR N, MLRA 147, 148)**
- ___ Sandy Gleyed Matrix (S4)
- ___ Sandy Redox (S5)
- ___ Stripped Matrix (S6)
- ___ Dark Surface (S7)
- ___ Polyvalue Below Surface (S8) **(MLRA 147, 148)**
- ___ Thin Dark Surface (S9) **(MLRA 147, 148)**
- ✓ Loamy Gleyed Matrix (F2)
- ✓ Depleted Matrix (F3)
- ___ Redox Dark Surface (F6)
- ___ Depleted Dark Surface (F7)
- ___ Redox Depressions (F8)
- ___ Iron-Manganese Masses (F12) **(LRR N, MLRA 136)**
- ___ Umbric Surface (F13) **(MLRA 136, 122)**
- ___ Piedmont Floodplain Soils (F19) **(MLRA 148)**

Indicators for Problematic Hydric Soils[3]:

- ___ 2 cm Muck (A10) **(MLRA 147)**
- ___ Coast Prairie Redox (A16) **(MLRA 147, 148)**
- ___ Piedmont Floodplain Soils (F19) **(MLRA 136, 147)**
- ___ Red Parent Material (TF2)
- ___ Very Shallow Dark Surface (TF12)
- ___ Other (Explain in Remarks)

[3]Indicators of hydrophytic vegetation and wetland hydrology must be present, unless disturbed or problematic.

Restrictive Layer (if observed):

Type: _____

Depth (inches): _____

Hydric Soil Present? Yes ✓ No ___

Remarks: At road berm clogged culvert & typha angustifolia, no hydric soils / chroma 4

WETLAND DETERMINATION DATA FORM – Eastern Mountains and Piedmont

Project/Site: Red Line City/County: Woodlawn/Baltimore Sampling Date: 1-31-12

Applicant/Owner: MTA State: MD Sampling Point: UTP-6-1

Investigator(s): SW, DR, AC Section, Township, Range: _____

Landform (hillslope, terrace, etc.): flat Local relief (concave, convex, none): convex Slope (%): _____

Subregion (LRR or MLRA): MLRA-148 Lat: _____ Long: _____ Datum: _____

Soil Map Unit Name: Urban land NWI classification: upland

Are climatic / hydrologic conditions on the site typical for this time of year? Yes ✓ No _____ (If no, explain in Remarks.)

Are Vegetation _____, Soil _____, or Hydrology _____ significantly disturbed? No Are "Normal Circumstances" present? Yes ✓ No _____

Are Vegetation _____, Soil _____, or Hydrology _____ naturally problematic? No (If needed, explain any answers in Remarks.)

SUMMARY OF FINDINGS – Attach site map showing sampling point locations, transects, important features, etc.

Hydrophytic Vegetation Present?	Yes _____	No ✓	**Is the Sampled Area within a Wetland?** **Yes** _____ **No** ✓
Hydric Soil Present?	Yes _____	No ✓	
Wetland Hydrology Present?	Yes _____	No ✓	

Remarks:

HYDROLOGY

Wetland Hydrology Indicators:

Primary Indicators (minimum of one is required; check all that apply)

- ___ Surface Water (A1)
- ___ High Water Table (A2)
- ___ Saturation (A3)
- ___ Water Marks (B1)
- ___ Sediment Deposits (B2)
- ___ Drift Deposits (B3)
- ___ Algal Mat or Crust (B4)
- ___ Iron Deposits (B5)
- ___ Inundation Visible on Aerial Imagery (B7)
- ___ Water-Stained Leaves (B9)
- ___ Aquatic Fauna (B13)
- ___ True Aquatic Plants (B14)
- ___ Hydrogen Sulfide Odor (C1)
- ___ Oxidized Rhizospheres on Living Roots (C3)
- ___ Presence of Reduced Iron (C4)
- ___ Recent Iron Reduction in Tilled Soils (C6)
- ___ Thin Muck Surface (C7)
- ___ Other (Explain in Remarks)

Secondary Indicators (minimum of two required)

- ___ Surface Soil Cracks (B6)
- ___ Sparsely Vegetated Concave Surface (B8)
- ___ Drainage Patterns (B10)
- ___ Moss Trim Lines (B16)
- ___ Dry-Season Water Table (C2)
- ___ Crayfish Burrows (C8)
- ___ Saturation Visible on Aerial Imagery (C9)
- ___ Stunted or Stressed Plants (D1)
- ___ Geomorphic Position (D2)
- ___ Shallow Aquitard (D3)
- ___ Microtopographic Relief (D4)
- ___ FAC-Neutral Test (D5)

Field Observations:

Surface Water Present?	Yes _____	No _____	Depth (inches): _____
Water Table Present?	Yes _____	No _____	Depth (inches): _____
Saturation Present? (includes capillary fringe)	Yes _____	No _____	Depth (inches): _____

Wetland Hydrology Present? **Yes** _____ **No** ✓

Describe Recorded Data (stream gauge, monitoring well, aerial photos, previous inspections), if available:

Remarks:

No hydrologic indicators observed

VEGETATION (Four Strata) – Use scientific names of plants.

Sampling Point: UTP-6-1

Tree Stratum (Plot size: ____)	Absolute % Cover	Dominant Species?	Indicator Status
1. Quercus alba	65	Y	FACU
2. Quercus rubra	20	Y	FACU
3. Carya glabra	5		FACU
4. Fraxinus pennsylvanica	10		FACW
5.			
6.			
7.			
8.			
	100	= Total Cover	

Sapling/Shrub Stratum (Plot size: ____)			
1. Fraxinus pennsylvanica	25	Y	FACW
2.			
3.			
4.			
5.			
6.			
7.			
8.			
9.			
10.			
	25	= Total Cover	

Herb Stratum (Plot size: ____)			
1.			
2.			
3.			
4.			
5.			
6.			
7.			
8.			
9.			
10.			
11.			
12.			
		= Total Cover	

Woody Vine Stratum (Plot size: ____)			
1. Lonicera japonica	30	Y	FAC
2. Smilax rotundifolia	3		FAC
3.			
4.			
5.			
6.			
	33	= Total Cover	

Dominance Test worksheet:

Number of Dominant Species That Are OBL, FACW, or FAC: 2 (A)

Total Number of Dominant Species Across All Strata: 4 (B)

Percent of Dominant Species That Are OBL, FACW, or FAC: 50 (A/B)

Prevalence Index worksheet:

Total % Cover of:		Multiply by:	
OBL species		x 1 =	
FACW species	35	x 2 =	70
FAC species	33	x 3 =	99
FACU species	90	x 4 =	360
UPL species		x 5 =	
Column Totals:	158 (A)		529 (B)

Prevalence Index = B/A = 3.35

Hydrophytic Vegetation Indicators:

___ 1 - Rapid Test for Hydrophytic Vegetation

___ 2 - Dominance Test is >50%

___ 3 - Prevalence Index is ≤3.0[1]

___ 4 - Morphological Adaptations[1] (Provide supporting data in Remarks or on a separate sheet)

___ Problematic Hydrophytic Vegetation[1] (Explain)

[1]Indicators of hydric soil and wetland hydrology must be present, unless disturbed or problematic.

Definitions of Four Vegetation Strata:

Tree – Woody plants, excluding vines, 3 in. (7.6 cm) or more in diameter at breast height (DBH), regardless of height.

Sapling/Shrub – Woody plants, excluding vines, less than 3 in. DBH and greater than 3.28 ft (1 m) tall.

Herb – All herbaceous (non-woody) plants, regardless of size, and woody plants less than 3.28 ft tall.

Woody vine – All woody vines greater than 3.28 ft in height.

Hydrophytic Vegetation Present? Yes ____ No ✓

Remarks: (Include photo numbers here or on a separate sheet.)

SOIL

Sampling Point: TP-6-1

Profile Description: (Describe to the depth needed to document the indicator or confirm the absence of indicators.)

Depth (inches)	Matrix Color (moist)	Matrix %	Redox Features Color (moist)	Redox %	Type[1]	Loc[2]	Texture	Remarks
0-3	2.5Y 3/3	100					SiL	
3-14	2.5Y 5/4	100					CL	

[1]Type: C=Concentration, D=Depletion, RM=Reduced Matrix, MS=Masked Sand Grains. [2]Location: PL=Pore Lining, M=Matrix.

Hydric Soil Indicators:

- ___ Histosol (A1)
- ___ Histic Epipedon (A2)
- ___ Black Histic (A3)
- ___ Hydrogen Sulfide (A4)
- ___ Stratified Layers (A5)
- ___ 2 cm Muck (A10) **(LRR N)**
- ___ Depleted Below Dark Surface (A11)
- ___ Thick Dark Surface (A12)
- ___ Sandy Mucky Mineral (S1) **(LRR N, MLRA 147, 148)**
- ___ Sandy Gleyed Matrix (S4)
- ___ Sandy Redox (S5)
- ___ Stripped Matrix (S6)
- ___ Dark Surface (S7)
- ___ Polyvalue Below Surface (S8) **(MLRA 147, 148)**
- ___ Thin Dark Surface (S9) **(MLRA 147, 148)**
- ___ Loamy Gleyed Matrix (F2)
- ___ Depleted Matrix (F3)
- ___ Redox Dark Surface (F6)
- ___ Depleted Dark Surface (F7)
- ___ Redox Depressions (F8)
- ___ Iron-Manganese Masses (F12) **(LRR N, MLRA 136)**
- ___ Umbric Surface (F13) **(MLRA 136, 122)**
- ___ Piedmont Floodplain Soils (F19) **(MLRA 148)**

Indicators for Problematic Hydric Soils[3]:

- ___ 2 cm Muck (A10) **(MLRA 147)**
- ___ Coast Prairie Redox (A16) **(MLRA 147, 148)**
- ___ Piedmont Floodplain Soils (F19) **(MLRA 136, 147)**
- ___ Red Parent Material (TF2)
- ___ Very Shallow Dark Surface (TF12)
- ___ Other (Explain in Remarks)

[3]Indicators of hydrophytic vegetation and wetland hydrology must be present, unless disturbed or problematic.

Restrictive Layer (if observed):

Type: _____

Depth (inches): _____

Hydric Soil Present? Yes _____ No ✓

Remarks:

Stream Features
Field Sheet

Date: 1/31/12 Project Site: Red Line WUS #: RLWS-7

Observer(s) SAW, DWR, AMC

Stream Flow:

Perennial: _____ Intermittent _____ Ephemeral ✓

Gradient: _____ Classification: _____

Channel Characteristics:

Natural ✓ Artificial (man-made) _____ Manipulated (man-altered) _____

Explain: Shallow natural channel carries excess flows from uphill wetland outside of study area

Channel Has (check all that apply):

- [x] Bed and Banks
- [x] OHWM
  - [x] clear, natural line impressed on the bank
  - [ ] changes in character of soil
  - [ ] shelving
  - [x] vegetation matted down, bent, or absent
  - [x] leaf litter disturbed or washed away
  - [ ] sediment deposition
  - [ ] water staining
  - [ ] the presence of litter and debris
  - [ ] destruction of terrestrial vegetation
  - [ ] thre presence of wrack line
  - [ ] sediment sorting
  - [ ] scour
  - [ ] multiple observed or predicted flow events
  - [ ] abrupt change in plant community
  - [ ] other (list): _____
- [ ] Discontinuous OHWM (explain): _____

Morphology:

Avg. Channel Width 1' Depth 4-6" Avg. Water Depth .05

Has stream morphometry been altered? No Describe: natural shallow flow path

Habitat and Pollutants:

Substrate (predominant type (s)): mud + gravel

Habitat Complexity (characterize): Low - No flow

Bank Erosion: Severe _____ Moderate _____ Minor ✓

Describe: _____

Silt Deposition: very little

Pollutants (observation / potential sources): None observed beyon trash

Stormwater Outfalls: No

Biological Habitat For (check all that apply):

Federally Listed species _____ Fish Spawn Areas _____

Other Environmentally-Sensitive Species _____ Aquatic/Wildlife Diversity _____

Explain Findings: no habitat present

Riparian Zone:

Development: _____

Riparian vegetation: Forest _____ Shrubs ✓ Herbs ✓

Dominant Species: Juniperus virginiana, Rosa multiflora, Solidago sp.

Riparian Buffer Width: ~60 ft on both banks

Approximate % Shading by Woody Species: ~25%

Notes: _____

Stream Features
Field Sheet

Date: 1/31/12 Project Site: Red line WUS # : RLWUS-8

Observer(s) SAW, DWR, AMC

Stream Flow:

Perennial: _____ Intermittent ✓ Ephemeral _____

Gradient: _____ Classification: R4UB1

Channel Characteristics:

Natural _____ Artificial (man-made) _____ Manipulated (man-altered) ✓

Explain: Channelized stream in clover leaf

Channel Has (check all that apply):

- [x] Bed and Banks
- [ ] OHWM
  - [ ] clear, natural line impressed on the bank
  - [ ] changes in character of soil
  - [ ] shelving
  - [ ] vegetation matted down, bent, or absent
  - [ ] leaf litter disturbed or washed away
  - [ ] sediment deposition
  - [ ] water staining
  - [ ] the presence of litter and debris
  - [ ] destruction of terrestrial vegetation
  - [ ] the presence of wrack line
  - [ ] sediment sorting
  - [ ] scour
  - [ ] multiple observed or predicted flow events
  - [ ] abrupt change in plant community
  - [ ] other (list): _____
- [ ] Discontinuous OHWM (explain): _____

Morphology:

Avg. Channel Width 2 ft. Depth 1 ft. Avg. Water Depth 2-3 in.

Has stream morphometry been altered? yes Describe : Channelized

Habitat and Pollutants:

Substrate (predominant type (s)): cobble gravel

Habitat Complexity (characterize): Low, due to very low flows

Bank Erosion: Severe _____ Moderate _____ Minor ✓

Describe: _____

Silt Deposition: Minor

Pollutants (observation / potential sources): Trash, carries runoff from highway

Stormwater Outfalls: _____

Biological Habitat For (check all that apply):

Federally Listed species N/A Fish Spawn Areas N/A

Other Environmentally-Sensitive Species N/A Aquatic/Wildlife Diversity low

Explain Findings: Highly manipulated int. Channel

Riparian Zone:

Development: Surranded by road ramps

Riparian vegetation: Forest _____ Shrubs ✓ Herbs ✓

Dominant Species: Shrubs- cedar & bush Honey suckle

Herbs - Golden rod

Riparian Buffer Width: 50 ft.

Approximate % Shading by Woody Species: 55 %

Notes: _____

Stream Features
Field Sheet

Date: 1/3/12 Project Site: RL WUS #: RLWS9

Observer(s) SdW, DWR, AMC

Stream Flow:

Perennial: ✓ Intermittent _____ Ephemeral _____

Gradient: _____ Classification: R2-UB1

Channel Characteristics:

Natural _____ Artificial (man-made) _____ Manipulated (man-altered) ✓

Explain: Channelized banks, Culvert

Channel Has (check all that apply):

- [x] Bed and Banks
- [ ] OHWM
  - [ ] clear, natural line impressed on the bank
  - [ ] changes in character of soil
  - [ ] shelving
  - [ ] vegetation matted down, bent, or absent
  - [ ] leaf litter disturbed or washed away
  - [ ] sediment deposition
  - [ ] water staining
  - [ ] the presence of litter and debris
  - [ ] destruction of terrestrial vegetation
  - [ ] thre presence of wrack line
  - [ ] sediment sorting
  - [ ] scour
  - [ ] multiple observed or predicted flow events
  - [ ] abrupt change in plant community
  - [ ] other (list): _____
- [ ] Discontinuous OHWM (explain): _____

Morphology:

Avg. Channel Width 10 ft. Depth 2 ft. Avg. Water Depth 3-6 in

Has stream morphometry been altered? yes Describe: straightened

Habitat and Pollutants:

Substrate (predominant type (s)): cobble, gravel, sand

Habitat Complexity (characterize): relatively low, lack of cover, & depth diversity

Bank Erosion: Severe _____ Moderate _____ Minor ✓

Describe: boulder rip/rap on bank

Silt Deposition: Minor → heavy algae

Pollutants (observation / potential sources): Trash, oil, grease

Stormwater Outfalls: yes from adjacent parking

Biological Habitat For (check all that apply):

Federally Listed species N/A

Fish Spawn Areas N/A

Other Environmentally-Sensitive Species N/A

Aquatic/Wildlife Diversity ✓

Explain Findings: some fish observed

Riparian Zone:

Development: Parking lots on both sides of stream

Riparian vegetation: Forest ✓ Shrubs ✓ Herbs

Dominant Species: Elm, Acer, bush honeysuckle, Ash

Riparian Buffer Width: 50ft. w/ many buffer breaks

Approximate % Shading by Woody Species: 90%

Notes:

WETLAND DETERMINATION DATA FORM – Eastern Mountains and Piedmont RLWL-1D

Project/Site: Red Line City/County: Woodlawn/Baltimore Sampling Date: 1/31/12
Applicant/Owner: MTA State: MD Sampling Point: WTP-10-1
Investigator(s): DR, SW, AC Section, Township, Range: _____
Landform (hillslope, terrace, etc.): ditch Local relief (concave, convex, none): concave Slope (%): _____
Subregion (LRR or MLRA): MLRA 148 Lat: _____ Long: _____ Datum: _____
Soil Map Unit Name: Urban land, Udorthents (highway) NWI classification: PEM-2A
Are climatic / hydrologic conditions on the site typical for this time of year? Yes _____ No _____ (If no, explain in Remarks.)
Are Vegetation _____, Soil _____, or Hydrology _____ significantly disturbed? No Are "Normal Circumstances" present? Yes ✓ No _____
Are Vegetation _____, Soil _____, or Hydrology _____ naturally problematic? No (If needed, explain any answers in Remarks.)

SUMMARY OF FINDINGS – Attach site map showing sampling point locations, transects, important features, etc.

Hydrophytic Vegetation Present?	Yes ✓	No _____	**Is the Sampled Area within a Wetland?** Yes ✓ No _____
Hydric Soil Present?	Yes ✓	No _____	
Wetland Hydrology Present?	Yes ✓	No _____	

Remarks:

HYDROLOGY

Wetland Hydrology Indicators:

Primary Indicators (minimum of one is required; check all that apply)

- ✓ Surface Water (A1)
- ✓ High Water Table (A2)
- ✓ Saturation (A3)
- ___ Water Marks (B1)
- ___ Sediment Deposits (B2)
- ___ Drift Deposits (B3)
- ___ Algal Mat or Crust (B4)
- ___ Iron Deposits (B5)
- ___ Inundation Visible on Aerial Imagery (B7)
- ✓ Water-Stained Leaves (B9)
- ___ Aquatic Fauna (B13)
- ___ True Aquatic Plants (B14)
- ___ Hydrogen Sulfide Odor (C1)
- ___ Oxidized Rhizospheres on Living Roots (C3)
- ___ Presence of Reduced Iron (C4)
- ___ Recent Iron Reduction in Tilled Soils (C6)
- ___ Thin Muck Surface (C7)
- ___ Other (Explain in Remarks)

Secondary Indicators (minimum of two required)

- ___ Surface Soil Cracks (B6)
- ___ Sparsely Vegetated Concave Surface (B8)
- ___ Drainage Patterns (B10)
- ___ Moss Trim Lines (B16)
- ___ Dry-Season Water Table (C2)
- ___ Crayfish Burrows (C8)
- ___ Saturation Visible on Aerial Imagery (C9)
- ___ Stunted or Stressed Plants (D1)
- ___ Geomorphic Position (D2)
- ___ Shallow Aquitard (D3)
- ___ Microtopographic Relief (D4)
- ___ FAC-Neutral Test (D5)

Field Observations:

Surface Water Present?	Yes ✓	No _____	Depth (inches): 0-2 in	
Water Table Present?	Yes ✓	No _____	Depth (inches): 0	
Saturation Present? (includes capillary fringe)	Yes ✓	No _____	Depth (inches): 0	**Wetland Hydrology Present?** Yes ✓ No _____

Describe Recorded Data (stream gauge, monitoring well, aerial photos, previous inspections), if available:

Remarks:

VEGETATION (Four Strata) – Use scientific names of plants.

Sampling Point: WTP-10-1

Tree Stratum (Plot size: _____)	Absolute % Cover	Dominant Species?	Indicator Status
1.			
2.			
3.			
4.			
5.			
6.			
7.			
8.			
	= Total Cover		

Sapling/Shrub Stratum (Plot size: _____)			
1.			
2.			
3.			
4.			
5.			
6.			
7.			
8.			
9.			
10.			
	= Total Cover		

Herb Stratum (Plot size: _____)			
1. Phragmites Australis	80%	Y	FACW
2. Polygonum cespitsosum	5		FACU
3.			
4.			
5.			
6.			
7.			
8.			
9.			
10.			
11.			
12.			
	85 = Total Cover		

Woody Vine Stratum (Plot size: _____)			
1.			
2.			
3.			
4.			
5.			
6.			
	= Total Cover		

Dominance Test worksheet:

Number of Dominant Species That Are OBL, FACW, or FAC: 1 (A)

Total Number of Dominant Species Across All Strata: 1 (B)

Percent of Dominant Species That Are OBL, FACW, or FAC: 100 (A/B)

Prevalence Index worksheet:

Total % Cover of:		Multiply by:
OBL species		x 1 =
FACW species		x 2 =
FAC species		x 3 =
FACU species		x 4 =
UPL species		x 5 =
Column Totals:	(A)	(B)

Prevalence Index = B/A = _____

Hydrophytic Vegetation Indicators:

- ___ 1 - Rapid Test for Hydrophytic Vegetation
- ✓ 2 - Dominance Test is >50%
- ___ 3 - Prevalence Index is ≤3.0[1]
- ___ 4 - Morphological Adaptations[1] (Provide supporting data in Remarks or on a separate sheet)
- ___ Problematic Hydrophytic Vegetation[1] (Explain)

[1]Indicators of hydric soil and wetland hydrology must be present, unless disturbed or problematic.

Definitions of Four Vegetation Strata:

Tree – Woody plants, excluding vines, 3 in. (7.6 cm) or more in diameter at breast height (DBH), regardless of height.

Sapling/Shrub – Woody plants, excluding vines, less than 3 in. DBH and greater than 3.28 ft (1 m) tall.

Herb – All herbaceous (non-woody) plants, regardless of size, and woody plants less than 3.28 ft tall.

Woody vine – All woody vines greater than 3.28 ft in height.

Hydrophytic Vegetation Present? Yes ✓ No ___

Remarks: (Include photo numbers here or on a separate sheet.)

SOIL ☆ Move points x-y 1ft.

Sampling Point: WTP-10-1

Profile Description: (Describe to the depth needed to document the indicator or confirm the absence of indicators.)

Depth (inches)	Matrix Color (moist)	Matrix %	Redox Features Color (moist)	Redox %	Type[1]	Loc[2]	Texture	Remarks
0-3	10YR 2/2	100					←	SL gravel
3-6	10YR 3/2	100					←	SL w/ organics
6-14	5Y 3/2	90	10YR 4/6	10			←	SiCL

[1]Type: C=Concentration, D=Depletion, RM=Reduced Matrix, MS=Masked Sand Grains. [2]Location: PL=Pore Lining, M=Matrix.

Hydric Soil Indicators:

- ___ Histosol (A1)
- ___ Histic Epipedon (A2)
- ___ Black Histic (A3)
- ___ Hydrogen Sulfide (A4)
- ___ Stratified Layers (A5)
- ___ 2 cm Muck (A10) (**LRR N**)
- ___ Depleted Below Dark Surface (A11)
- ___ Thick Dark Surface (A12)
- ___ Sandy Mucky Mineral (S1) **(LRR N, MLRA 147, 148)**
- ___ Sandy Gleyed Matrix (S4)
- ___ Sandy Redox (S5)
- ___ Stripped Matrix (S6)
- ___ Dark Surface (S7)
- ___ Polyvalue Below Surface (S8) **(MLRA 147, 148)**
- ___ Thin Dark Surface (S9) **(MLRA 147, 148)**
- ___ Loamy Gleyed Matrix (F2)
- ___ Depleted Matrix (F3)
- ✓ Redox Dark Surface (F6)
- ___ Depleted Dark Surface (F7)
- ___ Redox Depressions (F8)
- ___ Iron-Manganese Masses (F12) **(LRR N, MLRA 136)**
- ___ Umbric Surface (F13) **(MLRA 136, 122)**
- ___ Piedmont Floodplain Soils (F19) **(MLRA 148)**

Indicators for Problematic Hydric Soils[3]:

- ___ 2 cm Muck (A10) **(MLRA 147)**
- ___ Coast Prairie Redox (A16) **(MLRA 147, 148)**
- ___ Piedmont Floodplain Soils (F19) **(MLRA 136, 147)**
- ___ Red Parent Material (TF2)
- ___ Very Shallow Dark Surface (TF12)
- ___ Other (Explain in Remarks)

[3]Indicators of hydrophytic vegetation and wetland hydrology must be present, unless disturbed or problematic.

Restrictive Layer (if observed):

Type: _____

Depth (inches): _____

Hydric Soil Present? **Yes** ✓ **No** ___

Remarks:

WETLAND DETERMINATION DATA FORM – Eastern Mountains and Piedmont

Project/Site: Red Line Study City/County: Baltimore Sampling Date: 4/2/12

Applicant/Owner: MTA State: _____ Sampling Point: UTR 10-1

Investigator(s): SAW, DR, MN Section, Township, Range: _____

Landform (hillslope, terrace, etc.): upland Local relief (concave, convex, none): convex Slope (%): _____

Subregion (LRR or MLRA): MLRA-148 Lat: _____ Long: _____ Datum: _____

Soil Map Unit Name: Urban landuse NWI classification: UPL

Are climatic / hydrologic conditions on the site typical for this time of year? Yes ✓ No _____ (If no, explain in Remarks.)

Are Vegetation ✓, Soil _____, or Hydrology _____ significantly disturbed? Are "Normal Circumstances" present? Yes ✓ No _____

Are Vegetation _____, Soil _____, or Hydrology _____ naturally problematic? No (If needed, explain any answers in Remarks.)

SUMMARY OF FINDINGS – Attach site map showing sampling point locations, transects, important features, etc.

Hydrophytic Vegetation Present?	Yes ✓	No _____	**Is the Sampled Area within a Wetland?** Yes _____ No ✓
Hydric Soil Present?	Yes _____	No ✓	
Wetland Hydrology Present?	Yes _____	No ✓	

Remarks:

HYDROLOGY

Wetland Hydrology Indicators:

Primary Indicators (minimum of one is required; check all that apply)

- ___ Surface Water (A1)
- ___ High Water Table (A2)
- ___ Saturation (A3)
- ___ Water Marks (B1)
- ___ Sediment Deposits (B2)
- ___ Drift Deposits (B3)
- ___ Algal Mat or Crust (B4)
- ___ Iron Deposits (B5)
- ___ Inundation Visible on Aerial Imagery (B7)
- ___ Water-Stained Leaves (B9)
- ___ Aquatic Fauna (B13)
- ___ True Aquatic Plants (B14)
- ___ Hydrogen Sulfide Odor (C1)
- ___ Oxidized Rhizospheres on Living Roots (C3)
- ___ Presence of Reduced Iron (C4)
- ___ Recent Iron Reduction in Tilled Soils (C6)
- ___ Thin Muck Surface (C7)
- ___ Other (Explain in Remarks)

Secondary Indicators (minimum of two required)

- ___ Surface Soil Cracks (B6)
- ___ Sparsely Vegetated Concave Surface (B8)
- ___ Drainage Patterns (B10)
- ___ Moss Trim Lines (B16)
- ___ Dry-Season Water Table (C2)
- ___ Crayfish Burrows (C8)
- ___ Saturation Visible on Aerial Imagery (C9)
- ___ Stunted or Stressed Plants (D1)
- ___ Geomorphic Position (D2)
- ___ Shallow Aquitard (D3)
- ___ Microtopographic Relief (D4)
- ___ FAC-Neutral Test (D5)

Field Observations:

Surface Water Present?	Yes _____	No ✓	Depth (inches): _____
Water Table Present?	Yes _____	No ✓	Depth (inches): _____
Saturation Present? (includes capillary fringe)	Yes _____	No ✓	Depth (inches): _____

Wetland Hydrology Present? Yes _____ No ✓

Describe Recorded Data (stream gauge, monitoring well, aerial photos, previous inspections), if available:

Remarks:

no indicators of hydrology evident

VEGETATION (Four Strata) – Use scientific names of plants.

Sampling Point: UTP-10

Tree Stratum (Plot size:)	Absolute % Cover	Dominant Species?	Indicator Status
1. N/A			
2.			
3.			
4.			
5.			
6.			
7.			
8.			
	= Total Cover		

Sapling/Shrub Stratum (Plot size:)			
1.			
2.			
3.			
4.			
5.			
6.			
7.			
8.			
9.			
10.			
	= Total Cover		

Herb Stratum (Plot size:)			
1. Phragmites australis	15	Y	FACW
2. Schedonorus pratensis	40	Y	FACU
3. Rumex crispus	10		FACU
4. Plantago major	5		FACU
5. Juniperus virginiana	2		FACU
6. Dipsacus fullonum	2		NI
7.			
8.			
9.			
10.			
11.			
12.			
	74 = Total Cover		

Woody Vine Stratum (Plot size:)			
1. Lonicera japonica	20	Y	FAC
2.			
3.			
4.			
5.			
6.			
	20 = Total Cover		

Dominance Test worksheet:

Number of Dominant Species That Are OBL, FACW, or FAC: 2 (A)

Total Number of Dominant Species Across All Strata: 3 (B)

Percent of Dominant Species That Are OBL, FACW, or FAC: 67 (A/B)

Prevalence Index worksheet:

Total % Cover of:		Multiply by:	
OBL species		x 1 =	
FACW species	15	x 2 =	30
FAC species	20	x 3 =	60
FACU species	57	x 4 =	228
UPL species		x 5 =	
Column Totals:	92 (A)		318 (B)

Prevalence Index = B/A = 3.46

Hydrophytic Vegetation Indicators:

- ___ 1 - Rapid Test for Hydrophytic Vegetation
- ✓ 2 - Dominance Test is >50%
- ___ 3 - Prevalence Index is ≤3.0[1]
- ___ 4 - Morphological Adaptations[1] (Provide supporting data in Remarks or on a separate sheet)
- ___ Problematic Hydrophytic Vegetation[1] (Explain)

[1]Indicators of hydric soil and wetland hydrology must be present, unless disturbed or problematic.

Definitions of Four Vegetation Strata:

Tree – Woody plants, excluding vines, 3 in. (7.6 cm) or more in diameter at breast height (DBH), regardless of height.

Sapling/Shrub – Woody plants, excluding vines, less than 3 in. DBH and greater than 3.28 ft (1 m) tall.

Herb – All herbaceous (non-woody) plants, regardless of size, and woody plants less than 3.28 ft tall.

Woody vine – All woody vines greater than 3.28 ft in height.

Hydrophytic Vegetation Present? Yes ✓ No ___

Remarks: (Include photo numbers here or on a separate sheet.)

Vegetation routinely mowed, but mostly recognizable

SOIL

Sampling Point: UTP-10

Profile Description: (Describe to the depth needed to document the indicator or confirm the absence of indicators.)

Depth (inches)	Matrix Color (moist)	Matrix %	Redox Features Color (moist)	Redox %	Type[1]	Loc[2]	Texture	Remarks
0-6	2.5Y 3/3	90	10YR 5/6	10	C	M	SiCL	
6-13	5Y 4/3	85	10YR 4/6	15	C	M	SiL	
13-16	10YR 3/4	100	—	—	—	—	L	

[1]Type: C=Concentration, D=Depletion, RM=Reduced Matrix, MS=Masked Sand Grains. [2]Location: PL=Pore Lining, M=Matrix.

Hydric Soil Indicators:

- ___ Histosol (A1)
- ___ Histic Epipedon (A2)
- ___ Black Histic (A3)
- ___ Hydrogen Sulfide (A4)
- ___ Stratified Layers (A5)
- ___ 2 cm Muck (A10) **(LRR N)**
- ___ Depleted Below Dark Surface (A11)
- ___ Thick Dark Surface (A12)
- ___ Sandy Mucky Mineral (S1) **(LRR N, MLRA 147, 148)**
- ___ Sandy Gleyed Matrix (S4)
- ___ Sandy Redox (S5)
- ___ Stripped Matrix (S6)
- ___ Dark Surface (S7)
- ___ Polyvalue Below Surface (S8) **(MLRA 147, 148)**
- ___ Thin Dark Surface (S9) **(MLRA 147, 148)**
- ___ Loamy Gleyed Matrix (F2)
- ___ Depleted Matrix (F3)
- ___ Redox Dark Surface (F6)
- ___ Depleted Dark Surface (F7)
- ___ Redox Depressions (F8)
- ___ Iron-Manganese Masses (F12) **(LRR N, MLRA 136)**
- ___ Umbric Surface (F13) **(MLRA 136, 122)**
- ___ Piedmont Floodplain Soils (F19) **(MLRA 148)**

Indicators for Problematic Hydric Soils[3]:

- ___ 2 cm Muck (A10) **(MLRA 147)**
- ___ Coast Prairie Redox (A16) **(MLRA 147, 148)**
- ___ Piedmont Floodplain Soils (F19) **(MLRA 136, 147)**
- ___ Red Parent Material (TF2)
- ___ Very Shallow Dark Surface (TF12)
- ___ Other (Explain in Remarks)

[3]Indicators of hydrophytic vegetation and wetland hydrology must be present, unless disturbed or problematic.

Restrictive Layer (if observed):

Type: _____

Depth (inches): _____

Hydric Soil Present? **Yes** _____ **No** ✓

Remarks:

Stream Features
Field Sheet

Date: 2/7/12 Project Site: Redline WUS #: RLWUS-11

Observer(s) SAW / Derek R.

Stream Flow:

Perennial: ✓ Intermittent ____ Ephemeral ✓ ← Small ephemeral draining in

Gradient: ____ Classification: R3UB1

Channel Characteristics:

Natural ____ Artificial (man-made) ____ Manipulated (man-altered) ✓

Explain: perennial Stream - Straightened -

Channel Has (check all that apply):

- [x] Bed and Banks perennial
- [x] OHWM - ephemeral
  - [ ] clear, natural line impressed on the bank
  - [ ] changes in character of soil
  - [ ] shelving
  - [ ] vegetation matted down, bent, or absent
  - [x] leaf litter disturbed or washed away
  - [ ] sediment deposition
  - [ ] water staining
  - [ ] the presence of litter and debris
  - [ ] destruction of terrestrial vegetation
  - [ ] the presence of wrack line
  - [ ] sediment sorting
  - [ ] scour
  - [ ] multiple observed or predicted flow events
  - [ ] abrupt change in plant community
  - [ ] other (list): ____
- [ ] Discontinuous OHWM (explain): ____

Morphology:

Avg. Channel Width 15' Depth 2-3' Avg. Water Depth 4-6" ephemeral 1' wide

Has stream morphometry been altered? yes Describe: Stream culverted under I-70 & Parallel drive - open channel is Straightened.

Habitat and Pollutants:

Substrate (predominant type (s)): Cobble

Habitat Complexity (characterize): moderate riffle run with pool at culvert outfall - little Cover in pool - hvy algae

Bank Erosion: Severe ____ Moderate ____ Minor ✓

Describe: a little at US culvert out fall

Silt Deposition: minor / moderate

Pollutants (observation / potential sources): heavy algae - trash,

Stormwater Outfalls: ditch from highway

Biological Habitat For (check all that apply):

Federally Listed species NO Fish Spawn Areas No

Other Environmentally-Sensitive Species NO Aquatic/Wildlife Diversity low

Explain Findings: tolerant species only expected due to impaired habitat

Riparian Zone:

Development: roads at upstream/ds ends but wooded banks

Riparian vegetation: Forest ✓ Shrubs ✓ Herbs

Dominant Species: elm, Sycamore, red maple, greenbriar mf. rose, Cornus amomum

Riparian Buffer Width: > 50' RB, 25 LB

Approximate % Shading by Woody Species: 80

Notes:

Stream Features
Field Sheet

Date: 2/7/12 Project Site: Red Line WUS # : RLWUS-12

Observer(s) SAW, DWR, AMC

Stream Flow:

Perennial: _____ Intermittent ✓ Ephemeral _____

Gradient: _____ Classification: R4UB1/3

Channel Characteristics:

Natural ✓ Artificial (man-made) _____ Manipulated (man-altered) _____

Explain: _____

Channel Has (check all that apply):

- [x] Bed and Banks
- [ ] OHWM
  - [ ] clear, natural line impressed on the bank
  - [ ] changes in character of soil
  - [ ] shelving
  - [ ] vegetation matted down, bent, or absent
  - [ ] leaf litter disturbed or washed away
  - [ ] sediment deposition
  - [ ] water staining
  - [ ] the presence of litter and debris
  - [ ] destruction of terrestrial vegetation
  - [ ] the presence of wrack line
  - [ ] sediment sorting
  - [ ] scour
  - [ ] multiple observed or predicted flow events
  - [ ] abrupt change in plant community
  - [ ] other (list): _____
- [ ] Discontinuous OHWM (explain): _____

Morphology:

Avg. Channel Width 6' Depth <1' Avg. Water Depth 3"

Has stream morphometry been altered? No Describe : _____

Habitat and Pollutants:

Substrate (predominant type (s)): cobble-gravel

Habitat Complexity (characterize): low, embedded substrate & lack of perennial flow are limiting

Bank Erosion: Severe _____ Moderate _____ Minor ✓

Describe: _____

Silt Deposition: low

Pollutants (observation / potential sources): roadway contaminants from Parallel Rd.

Stormwater Outfalls: none

Biological Habitat For (check all that apply):

Federally Listed species _____ Fish Spawn Areas _____

Other Environmentally-Sensitive Species _____ Aquatic/Wildlife Diversity _____

Explain Findings: _____

Riparian Zone:

Development: 40 ft on N bank, ~100 ft on S bank

Riparian vegetation: Forest ✓ Shrubs ✓ Herbs ✓

Dominant Species: red maple, black willow, multiflora rose, grapevine, Japanese honeysuckle

Riparian Buffer Width: ~150 ft

Approximate % Shading by Woody Species: 80

Notes: _____

RLWL-13

WETLAND DETERMINATION DATA FORM – Eastern Mountains and Piedmont

Project/Site: Red Line City/County: Baltimore Sampling Date: 2/7/12

Applicant/Owner: MTA State: MD Sampling Point: WTP13-1

Investigator(s): SAW / DWR / AMC Section, Township, Range: _____

Landform (hillslope, terrace, etc.): gentle slope → swale Local relief (concave, convex, none): convex/concave Slope (%): _____

Subregion (LRR or MLRA): MLRA 148 Lat: _____ Long: _____ Datum: _____

Soil Map Unit Name: Legore-Montalto-Urban land complex, 0-8% slopes NWI classification: PFO1A-C

Are climatic / hydrologic conditions on the site typical for this time of year? Yes ✓ No _____ (If no, explain in Remarks.)

Are Vegetation _____, Soil _____, or Hydrology _____ significantly disturbed? No Are "Normal Circumstances" present? Yes ✓ No _____

Are Vegetation _____, Soil _____, or Hydrology _____ naturally problematic? No (If needed, explain any answers in Remarks.)

SUMMARY OF FINDINGS – Attach site map showing sampling point locations, transects, important features, etc.

Hydrophytic Vegetation Present?	Yes ✓	No _____	**Is the Sampled Area within a Wetland?** Yes ✓ No _____
Hydric Soil Present?	Yes ✓	No _____	
Wetland Hydrology Present?	Yes ✓	No _____	

Remarks:

HYDROLOGY

Wetland Hydrology Indicators:

Primary Indicators (minimum of one is required; check all that apply)

- ✓ Surface Water (A1)
- ✓ High Water Table (A2)
- ✓ Saturation (A3)
- ___ Water Marks (B1)
- ___ Sediment Deposits (B2)
- ___ Drift Deposits (B3)
- ___ Algal Mat or Crust (B4)
- ___ Iron Deposits (B5)
- ___ Inundation Visible on Aerial Imagery (B7)
- ✓ Water-Stained Leaves (B9)
- ___ Aquatic Fauna (B13)
- ___ True Aquatic Plants (B14)
- ___ Hydrogen Sulfide Odor (C1)
- ___ Oxidized Rhizospheres on Living Roots (C3)
- ___ Presence of Reduced Iron (C4)
- ___ Recent Iron Reduction in Tilled Soils (C6)
- ___ Thin Muck Surface (C7)
- ___ Other (Explain in Remarks)

Secondary Indicators (minimum of two required)

- ___ Surface Soil Cracks (B6)
- ___ Sparsely Vegetated Concave Surface (B8)
- ___ Drainage Patterns (B10)
- ___ Moss Trim Lines (B16)
- ___ Dry-Season Water Table (C2)
- ___ Crayfish Burrows (C8)
- ___ Saturation Visible on Aerial Imagery (C9)
- ___ Stunted or Stressed Plants (D1)
- ___ Geomorphic Position (D2)
- ✓ Shallow Aquitard (D3)
- ✓ Microtopographic Relief (D4)
- ___ FAC-Neutral Test (D5)

Field Observations:

Surface Water Present?	Yes ✓	No _____	Depth (inches): 1"
Water Table Present?	Yes ✓	No _____	Depth (inches): 0"
Saturation Present? (includes capillary fringe)	Yes ✓	No _____	Depth (inches): 0

Wetland Hydrology Present? Yes ✓ No _____

Describe Recorded Data (stream gauge, monitoring well, aerial photos, previous inspections), if available:

Remarks:

VEGETATION (Four Strata) – Use scientific names of plants.

Sampling Point: WTP-13-1

Tree Stratum (Plot size:)	Absolute % Cover	Dominant Species?	Indicator Status
1. Acer rubrum	20		FAC
2. Salix nigra	20		FACW
3. Fraxinus pennsylvanica	25	Y	FACW
4. Nyssa sylvatica	10		FAC
5. Quercus alba	45	Y	FACU
6. Carpinus Caroliniana	5		FACW
7.			
8.			
	125 = Total Cover		

Sapling/Shrub Stratum (Plot size:)			
1. Viburnum prunifolium	5		FACU
2. Fraxinus pennsylvanica	15	Y	FACW
3. Cornus amomum	10	Y	FACW
4. Viburnum dentatum	3		FAC
5.			
6.			
7.			
8.			
9.			
10.			
	33 = Total Cover		

Herb Stratum (Plot size:)			
1. Cinna arundinacea	30	Y	FACW
2.			
3.			
4.			
5.			
6.			
7.			
8.			
9.			
10.			
11.			
12.			
	30 = Total Cover		

Woody Vine Stratum (Plot size:)			
1. Smilax rotundifolia	25	Y	FAC
2. Toxicodendron radicans	3		FAC
3.			
4.			
5.			
6.			
	28 = Total Cover		

Dominance Test worksheet:

Number of Dominant Species That Are OBL, FACW, or FAC: 5 (A)

Total Number of Dominant Species Across All Strata: 6 (B)

Percent of Dominant Species That Are OBL, FACW, or FAC: 83 (A/B)

Prevalence Index worksheet:

Total % Cover of:		Multiply by:
OBL species		x 1 =
FACW species		x 2 =
FAC species		x 3 =
FACU species		x 4 =
UPL species		x 5 =
Column Totals:	(A)	(B)

Prevalence Index = B/A =

Hydrophytic Vegetation Indicators:

- ___ 1 - Rapid Test for Hydrophytic Vegetation
- ✓ 2 - Dominance Test is >50%
- ___ 3 - Prevalence Index is ≤3.0[1]
- ___ 4 - Morphological Adaptations[1] (Provide supporting data in Remarks or on a separate sheet)
- ___ Problematic Hydrophytic Vegetation[1] (Explain)

[1]Indicators of hydric soil and wetland hydrology must be present, unless disturbed or problematic.

Definitions of Four Vegetation Strata:

Tree – Woody plants, excluding vines, 3 in. (7.6 cm) or more in diameter at breast height (DBH), regardless of height.

Sapling/Shrub – Woody plants, excluding vines, less than 3 in. DBH and greater than 3.28 ft (1 m) tall.

Herb – All herbaceous (non-woody) plants, regardless of size, and woody plants less than 3.28 ft tall.

Woody vine – All woody vines greater than 3.28 ft in height.

Hydrophytic Vegetation Present? Yes ✓ No ___

Remarks: (Include photo numbers here or on a separate sheet.)

SOIL

Sampling Point: WTP-13-1

Profile Description: (Describe to the depth needed to document the indicator or confirm the absence of indicators.)

Depth (inches)	Matrix Color (moist)	Matrix %	Redox Features Color (moist)	Redox Features %	Type[1]	Loc[2]	Texture	Remarks
0-5	2.5Y 3/2	95	10YR 4/6	5	C	M	SiCL	
Rock refusal @ 5"								

[1]Type: C=Concentration, D=Depletion, RM=Reduced Matrix, MS=Masked Sand Grains. [2]Location: PL=Pore Lining, M=Matrix.

Hydric Soil Indicators:

- ___ Histosol (A1)
- ___ Histic Epipedon (A2)
- ___ Black Histic (A3)
- ___ Hydrogen Sulfide (A4)
- ___ Stratified Layers (A5)
- ___ 2 cm Muck (A10) **(LRR N)**
- ___ Depleted Below Dark Surface (A11)
- ___ Thick Dark Surface (A12)
- ___ Sandy Mucky Mineral (S1) **(LRR N, MLRA 147, 148)**
- ___ Sandy Gleyed Matrix (S4)
- ___ Sandy Redox (S5)
- ___ Stripped Matrix (S6)
- ___ Dark Surface (S7)
- ___ Polyvalue Below Surface (S8) **(MLRA 147, 148)**
- ___ Thin Dark Surface (S9) **(MLRA 147, 148)**
- ___ Loamy Gleyed Matrix (F2)
- ___ Depleted Matrix (F3)
- ✓ Redox Dark Surface (F6)
- ___ Depleted Dark Surface (F7)
- ___ Redox Depressions (F8)
- ___ Iron-Manganese Masses (F12) **(LRR N, MLRA 136)**
- ___ Umbric Surface (F13) **(MLRA 136, 122)**
- ___ Piedmont Floodplain Soils (F19) **(MLRA 148)**

Indicators for Problematic Hydric Soils[3]:

- ___ 2 cm Muck (A10) **(MLRA 147)**
- ___ Coast Prairie Redox (A16) **(MLRA 147, 148)**
- ___ Piedmont Floodplain Soils (F19) **(MLRA 136, 147)**
- ___ Red Parent Material (TF2)
- ___ Very Shallow Dark Surface (TF12)
- ___ Other (Explain in Remarks)

[3]Indicators of hydrophytic vegetation and wetland hydrology must be present, unless disturbed or problematic.

Restrictive Layer (if observed):

Type: _____

Depth (inches): _____

Hydric Soil Present? Yes ✓ No _____

Remarks:

Wetland Function-Value Evaluation Form

Total area of wetland 0.37 acres Human made? N Is wetland part of a wildlife corridor? Y or a "habitat island"? N

Adjacent land use road, parking lots Distance to nearest roadway or other development adj

Dominant wetland systems present PFO Contiguous undeveloped buffer zone present N

Is the wetland a separate hydraulic system? N If not, where does the wetland lie in the drainage basin? 1st order stream, seep

How many tributaries contribute to the wetland? 1 Wildlife & vegetation diversity/abundance (see attached list)

Wetland I.D. RL-WL13

Latitude _____ Longitude _____

Prepared by: DWR Date 5/7/12

Wetland Impact:
Type _____ Area _____

Evaluation based on:
Office ✓ Field ✓

Corps manual wetland delineation completed? Y ✓ N _____

Function/Value	Suitability Y	Suitability N	Rationale (Reference #)*	Principal Function(s)/Value(s)	Comments
Groundwater Recharge/Discharge	✓		6,7,8,9,10,13,15	✓	7/14 - WL is slope seep w/ recharge + discharge occurring
Floodflow Alteration	✓		3,4,5,7,9,11,13,15		8/18
Fish and Shellfish Habitat		✓			No permanent aquatic habitat in wetland
Sediment/Toxicant Retention	✓		1,4,7,8,10,13,14		7/15
Nutrient Removal	✓		4,7,11,12,13,14,15	✓	7/14 - nutrient source not well defined, but WL likely provides this function
Production Export	✓		1,2,3,4,5,10,12,	✓	7/14
Sediment/Shoreline Stabilization	✓		2,3,4,6,8,9,14		7/15
Wildlife Habitat	✓		1,3,6,8,11,18,19,21		8/21 - WL likely provides habitat to urban wildlife
Recreation		✓	12		1/12
Educational/Scientific Value	✓		2,4,9,10,11,13		6/16
Uniqueness/Heritage	✓		1,5,8,10,11,15,16,17,19,22,		10/31
Visual Quality/Aesthetics	✓		3,4,6,7,9,11	✓	6/12
ES Endangered Species Habitat		✓			
Other					

Notes:

* Refer to backup list of numbered considerations.

WETLAND DETERMINATION DATA FORM – Eastern Mountains and Piedmont

Project/Site: Red Line City/County: Baltimore Sampling Date: 2/7/12

Applicant/Owner: MTA State: MD Sampling Point: UTP-13-1

Investigator(s): SAW, DWR, AMC Section, Township, Range: _____

Landform (hillslope, terrace, etc.): upland Local relief (concave, convex, none): Convex Slope (%): _____

Subregion (LRR or MLRA): MLRA-148 Lat: _____ Long: _____ Datum: _____

Soil Map Unit Name: Legore-Montalto Urban land complex NWI classification: upland

Are climatic / hydrologic conditions on the site typical for this time of year? Yes _____ No _____ (If no, explain in Remarks.)

Are Vegetation _____, Soil _____, or Hydrology _____ significantly disturbed? No Are "Normal Circumstances" present? Yes _____ No _____

Are Vegetation _____, Soil _____, or Hydrology _____ naturally problematic? No (If needed, explain any answers in Remarks.)

SUMMARY OF FINDINGS – Attach site map showing sampling point locations, transects, important features, etc.

Hydrophytic Vegetation Present?	Yes _____	No ✓	**Is the Sampled Area within a Wetland?** Yes _____ No ✓
Hydric Soil Present?	Yes _____	No ✓	
Wetland Hydrology Present?	Yes _____	No ✓	

Remarks:

HYDROLOGY

Wetland Hydrology Indicators:

Primary Indicators (minimum of one is required; check all that apply)

- ___ Surface Water (A1)
- ___ High Water Table (A2)
- ___ Saturation (A3)
- ___ Water Marks (B1)
- ___ Sediment Deposits (B2)
- ___ Drift Deposits (B3)
- ___ Algal Mat or Crust (B4)
- ___ Iron Deposits (B5)
- ___ Inundation Visible on Aerial Imagery (B7)
- ___ Water-Stained Leaves (B9)
- ___ Aquatic Fauna (B13)
- ___ True Aquatic Plants (B14)
- ___ Hydrogen Sulfide Odor (C1)
- ___ Oxidized Rhizospheres on Living Roots (C3)
- ___ Presence of Reduced Iron (C4)
- ___ Recent Iron Reduction in Tilled Soils (C6)
- ___ Thin Muck Surface (C7)
- ___ Other (Explain in Remarks)

Secondary Indicators (minimum of two required)

- ___ Surface Soil Cracks (B6)
- ___ Sparsely Vegetated Concave Surface (B8)
- ___ Drainage Patterns (B10)
- ___ Moss Trim Lines (B16)
- ___ Dry-Season Water Table (C2)
- ___ Crayfish Burrows (C8)
- ___ Saturation Visible on Aerial Imagery (C9)
- ___ Stunted or Stressed Plants (D1)
- ___ Geomorphic Position (D2)
- ___ Shallow Aquitard (D3)
- ___ Microtopographic Relief (D4)
- ___ FAC-Neutral Test (D5)

Field Observations:

Surface Water Present?	Yes _____	No _____	Depth (inches): _____
Water Table Present?	Yes _____	No _____	Depth (inches): _____
Saturation Present? (includes capillary fringe)	Yes _____	No _____	Depth (inches): _____

Wetland Hydrology Present? Yes _____ No ✓

Describe Recorded Data (stream gauge, monitoring well, aerial photos, previous inspections), if available:

Remarks:

VEGETATION (Four Strata) – Use scientific names of plants.

Sampling Point: LMP-13-1

Tree Stratum (Plot size:)	Absolute % Cover	Dominant Species?	Indicator Status
1. Quercus alba	75	Y	FACU
2. Fraxinus americana	15		FACU
3. Quercus rubra	8		FACU
4. Quercus palustris	5		FACW
5. Acer rubrum	20		FAC
6.			
7.			
8.			
	123	= Total Cover	

Sapling/Shrub Stratum (Plot size:)			
1. Liriodendron tulipifera	3	Y	FACU
2. Viburnum prunifolium	2	Y	FACU
3.			
4.			
5.			
6.			
7.			
8.			
9.			
10.			
	5	= Total Cover	

Herb Stratum (Plot size:)			
1.			
2.			
3.			
4.			
5.			
6.			
7.			
8.			
9.			
10.			
11.			
12.			
		= Total Cover	

Woody Vine Stratum (Plot size:)			
1. Smilax rotundifolia	15	Y	FAC
2. Lonicera japonica	25	Y	FAC
3.			
4.			
5.			
6.			
	40	= Total Cover	

Dominance Test worksheet:

Number of Dominant Species That Are OBL, FACW, or FAC: 2 (A)

Total Number of Dominant Species Across All Strata: 5 (B)

Percent of Dominant Species That Are OBL, FACW, or FAC: 40 (A/B)

Prevalence Index worksheet:

Total % Cover of:		Multiply by:
OBL species		x 1 =
FACW species		x 2 =
FAC species		x 3 =
FACU species		x 4 =
UPL species		x 5 =
Column Totals:	(A)	(B)

Prevalence Index = B/A =

Hydrophytic Vegetation Indicators:

___ 1 - Rapid Test for Hydrophytic Vegetation

___ 2 - Dominance Test is >50%

___ 3 - Prevalence Index is ≤3.0[1]

___ 4 - Morphological Adaptations[1] (Provide supporting data in Remarks or on a separate sheet)

___ Problematic Hydrophytic Vegetation[1] (Explain)

[1]Indicators of hydric soil and wetland hydrology must be present, unless disturbed or problematic.

Definitions of Four Vegetation Strata:

Tree – Woody plants, excluding vines, 3 in. (7.6 cm) or more in diameter at breast height (DBH), regardless of height.

Sapling/Shrub – Woody plants, excluding vines, less than 3 in. DBH and greater than 3.28 ft (1 m) tall.

Herb – All herbaceous (non-woody) plants, regardless of size, and woody plants less than 3.28 ft tall.

Woody vine – All woody vines greater than 3.28 ft in height.

Hydrophytic Vegetation Present? Yes ____ No ✓

Remarks: (Include photo numbers here or on a separate sheet.)

SOIL

Sampling Point: UTP-13-1

Profile Description: (Describe to the depth needed to document the indicator or confirm the absence of indicators.)

Depth (inches)	Matrix Color (moist)	Matrix %	Redox Features Color (moist)	Redox %	Type[1]	Loc[2]	Texture	Remarks
0-10	2.5Y3/1		—				sil	
10-14	10YR4/2		—				scl	moist

[1]Type: C=Concentration, D=Depletion, RM=Reduced Matrix, MS=Masked Sand Grains. [2]Location: PL=Pore Lining, M=Matrix.

Hydric Soil Indicators:

- ___ Histosol (A1)
- ___ Histic Epipedon (A2)
- ___ Black Histic (A3)
- ___ Hydrogen Sulfide (A4)
- ___ Stratified Layers (A5)
- ___ 2 cm Muck (A10) **(LRR N)**
- ___ Depleted Below Dark Surface (A11)
- ___ Thick Dark Surface (A12)
- ___ Sandy Mucky Mineral (S1) **(LRR N, MLRA 147, 148)**
- ___ Sandy Gleyed Matrix (S4)
- ___ Sandy Redox (S5)
- ___ Stripped Matrix (S6)
- ___ Dark Surface (S7)
- ___ Polyvalue Below Surface (S8) **(MLRA 147, 148)**
- ___ Thin Dark Surface (S9) **(MLRA 147, 148)**
- ___ Loamy Gleyed Matrix (F2)
- ___ Depleted Matrix (F3)
- ___ Redox Dark Surface (F6)
- ___ Depleted Dark Surface (F7)
- ___ Redox Depressions (F8)
- ___ Iron-Manganese Masses (F12) **(LRR N, MLRA 136)**
- ___ Umbric Surface (F13) **(MLRA 136, 122)**
- ___ Piedmont Floodplain Soils (F19) **(MLRA 148)**

Indicators for Problematic Hydric Soils[3]:

- ___ 2 cm Muck (A10) **(MLRA 147)**
- ___ Coast Prairie Redox (A16) **(MLRA 147, 148)**
- ___ Piedmont Floodplain Soils (F19) **(MLRA 136, 147)**
- ___ Red Parent Material (TF2)
- ___ Very Shallow Dark Surface (TF12)
- ___ Other (Explain in Remarks)

[3]Indicators of hydrophytic vegetation and wetland hydrology must be present, unless disturbed or problematic.

Restrictive Layer (if observed):

Type: _____

Depth (inches): _____

Hydric Soil Present? **Yes** _____ **No** ✓

Remarks:

Stream Features
Field Sheet

Date: 2/7/12 Project Site: RedLine WUS # : RLWUS-14

Observer(s) SAW DWR AMC

Stream Flow:

Perennial: _____ Intermittent _____ Ephemeral ✓

Gradient: _____ Classification: _____

Channel Characteristics:

Natural _____ Artificial (man-made) _____ Manipulated (man-altered) ✓

Explain: _____

Channel Has (check all that apply):

- ☐ Bed and Banks
- ☑ OHWM
  - ☐ clear, natural line impressed on the bank
  - ☐ changes in character of soil
  - ☐ shelving
  - ☑ vegetation matted down, bent, or absent
  - ☐ leaf litter disturbed or washed away
  - ☑ sediment deposition
  - ☐ water staining
  - ☑ the presence of litter and debris
  - ☐ destruction of terrestrial vegetation
  - ☐ the presence of wrack line
  - ☐ sediment sorting
  - ☐ scour
  - ☐ multiple observed or predicted flow events
  - ☐ abrupt change in plant community
  - ☐ other (list): _____
- ☐ Discontinuous OHWM (explain): _____

Morphology:

Avg. Channel Width 6' Depth 6" Avg. Water Depth 0

Has stream morphometry been altered? yes Describe : Channelized Storm flows from parallel Drive to I-70 culvert

Habitat and Pollutants:

Substrate (predominant type (s)): mud

Habitat Complexity (characterize): None - no flow

Bank Erosion: Severe _____ Moderate _____ Minor ✓

Describe: Very little

Silt Deposition: _____

Pollutants (observation / potential sources): trash + SW

Stormwater Outfalls: yes from parallel Drive

Biological Habitat For (check all that apply):

Federally Listed species _____ Fish Spawn Areas _____

Other Environmentally-Sensitive Species _____ Aquatic/Wildlife Diversity _____

Explain Findings: None – No flow

Riparian Zone:

Development: Culverts @ either end + highway – Top 50' forested

Riparian vegetation: Forest ✓ Shrubs ✓ Herbs ✓

Dominant Species: _____

Riparian Buffer Width: <25 for 75% of channel

Approximate % Shading by Woody Species: 25%

Notes: _____

RLWL-15

WETLAND DETERMINATION DATA FORM – Eastern Mountains and Piedmont

Project/Site: Red Line City/County: Woodlawn / Baltimore Sampling Date: 2/9/12

Applicant/Owner: MTA State: MD Sampling Point: WTP-15-1

Investigator(s): SW, DR, AC Section, Township, Range: _____

Landform (hillslope, terrace, etc.): ditch Local relief (concave, convex, none): concave Slope (%): _____

Subregion (LRR or MLRA): MLRA 148 Lat: _____ Long: _____ Datum: _____

Soil Map Unit Name: Udorthents, highway NWI classification: PEM1C

Are climatic / hydrologic conditions on the site typical for this time of year? Yes ✓ No _____ (If no, explain in Remarks.)

Are Vegetation ✓, Soil _____, or Hydrology _____ significantly disturbed? Are "Normal Circumstances" present? Yes ✓ No _____

Are Vegetation _____, Soil _____, or Hydrology _____ naturally problematic? No (If needed, explain any answers in Remarks.)

SUMMARY OF FINDINGS – Attach site map showing sampling point locations, transects, important features, etc.

Hydrophytic Vegetation Present?	Yes ✓	No _____	**Is the Sampled Area within a Wetland?** Yes ✓ No _____
Hydric Soil Present?	Yes ✓	No _____	
Wetland Hydrology Present?	Yes ✓	No _____	

Remarks:

vegetation mowed

HYDROLOGY

Wetland Hydrology Indicators:

Primary Indicators (minimum of one is required; check all that apply)

- ✓ Surface Water (A1)
- ✓ High Water Table (A2)
- ✓ Saturation (A3)
- ___ Water Marks (B1)
- ___ Sediment Deposits (B2)
- ___ Drift Deposits (B3)
- ___ Algal Mat or Crust (B4)
- ___ Iron Deposits (B5)
- ___ Inundation Visible on Aerial Imagery (B7)
- ✓ Water-Stained Leaves (B9)
- ___ Aquatic Fauna (B13)
- ___ True Aquatic Plants (B14)
- ___ Hydrogen Sulfide Odor (C1)
- ___ Oxidized Rhizospheres on Living Roots (C3)
- ___ Presence of Reduced Iron (C4)
- ___ Recent Iron Reduction in Tilled Soils (C6)
- ___ Thin Muck Surface (C7)
- ___ Other (Explain in Remarks)

Secondary Indicators (minimum of two required)

- ___ Surface Soil Cracks (B6)
- ___ Sparsely Vegetated Concave Surface (B8)
- ✓ Drainage Patterns (B10)
- ___ Moss Trim Lines (B16)
- ___ Dry-Season Water Table (C2)
- ___ Crayfish Burrows (C8)
- ___ Saturation Visible on Aerial Imagery (C9)
- ___ Stunted or Stressed Plants (D1)
- ___ Geomorphic Position (D2)
- ___ Shallow Aquitard (D3)
- ___ Microtopographic Relief (D4)
- ___ FAC-Neutral Test (D5)

Field Observations:

Surface Water Present?	Yes ✓	No _____	Depth (inches): 0-4"
Water Table Present?	Yes ✓	No _____	Depth (inches): 0
Saturation Present? (includes capillary fringe)	Yes ✓	No _____	Depth (inches): 0

Wetland Hydrology Present? Yes ✓ No _____

Describe Recorded Data (stream gauge, monitoring well, aerial photos, previous inspections), if available:

Remarks:

VEGETATION (Four Strata) – Use scientific names of plants.

Sampling Point: WTP-15-1

Tree Stratum (Plot size: _____)	Absolute % Cover	Dominant Species?	Indicator Status
1.			
2.			
3.			
4.			
5.			
6.			
7.			
8.			
	= Total Cover		

Sapling/Shrub Stratum (Plot size: _____)			
1.			
2.			
3.			
4.			
5.			
6.			
7.			
8.			
9.			
10.			
	= Total Cover		

Herb Stratum (Plot size: _____)			
1. Typha angustifolia	30	Y	OBL
2. Juncus tenuis	8		FAC
3. Agrostis stolonifera	15	Y	FACW
4.			
5.			
6.			
7.			
8.			
9.			
10.			
11.			
12.			
	53 = Total Cover		

Woody Vine Stratum (Plot size: _____)			
1.			
2.			
3.			
4.			
5.			
6.			
	= Total Cover		

Dominance Test worksheet:

Number of Dominant Species That Are OBL, FACW, or FAC: 2 (A)

Total Number of Dominant Species Across All Strata: 2 (B)

Percent of Dominant Species That Are OBL, FACW, or FAC: 100 (A/B)

Prevalence Index worksheet:

Total % Cover of:		Multiply by:
OBL species		x 1 =
FACW species		x 2 =
FAC species		x 3 =
FACU species		x 4 =
UPL species		x 5 =
Column Totals:	(A)	(B)

Prevalence Index = B/A = _____

Hydrophytic Vegetation Indicators:

✓ 1 - Rapid Test for Hydrophytic Vegetation

✓ 2 - Dominance Test is >50%

___ 3 - Prevalence Index is ≤3.0[1]

___ 4 - Morphological Adaptations[1] (Provide supporting data in Remarks or on a separate sheet)

___ Problematic Hydrophytic Vegetation[1] (Explain)

[1]Indicators of hydric soil and wetland hydrology must be present, unless disturbed or problematic.

Definitions of Four Vegetation Strata:

Tree – Woody plants, excluding vines, 3 in. (7.6 cm) or more in diameter at breast height (DBH), regardless of height.

Sapling/Shrub – Woody plants, excluding vines, less than 3 in. DBH and greater than 3.28 ft (1 m) tall.

Herb – All herbaceous (non-woody) plants, regardless of size, and woody plants less than 3.28 ft tall.

Woody vine – All woody vines greater than 3.28 ft in height.

Hydrophytic Vegetation Present? Yes ✓ No ___

Remarks: (Include photo numbers here or on a separate sheet.)

SOIL

Sampling Point: WTP-15-1

Profile Description: (Describe to the depth needed to document the indicator or confirm the absence of indicators.)

Depth (inches)	Matrix Color (moist)	Matrix %	Redox Features Color (moist)	Redox %	Type[1]	Loc[2]	Texture	Remarks
0-4	5Y4/1	90	7.5YR4/6	10	C	M	scl	
4-12	10YR4/3						scl	gravel present

[1]Type: C=Concentration, D=Depletion, RM=Reduced Matrix, MS=Masked Sand Grains. [2]Location: PL=Pore Lining, M=Matrix.

Hydric Soil Indicators:

- ___ Histosol (A1)
- ___ Histic Epipedon (A2)
- ___ Black Histic (A3)
- ___ Hydrogen Sulfide (A4)
- ___ Stratified Layers (A5)
- ___ 2 cm Muck (A10) **(LRR N)**
- ___ Depleted Below Dark Surface (A11)
- ___ Thick Dark Surface (A12)
- ___ Sandy Mucky Mineral (S1) **(LRR N, MLRA 147, 148)**
- ___ Sandy Gleyed Matrix (S4)
- ___ Sandy Redox (S5)
- ___ Stripped Matrix (S6)
- ___ Dark Surface (S7)
- ___ Polyvalue Below Surface (S8) **(MLRA 147, 148)**
- ___ Thin Dark Surface (S9) **(MLRA 147, 148)**
- ✓ Loamy Gleyed Matrix (F2)
- ✓ Depleted Matrix (F3)
- ___ Redox Dark Surface (F6)
- ___ Depleted Dark Surface (F7)
- ___ Redox Depressions (F8)
- ___ Iron-Manganese Masses (F12) **(LRR N, MLRA 136)**
- ___ Umbric Surface (F13) **(MLRA 136, 122)**
- ___ Piedmont Floodplain Soils (F19) **(MLRA 148)**

Indicators for Problematic Hydric Soils[3]:

- ___ 2 cm Muck (A10) **(MLRA 147)**
- ___ Coast Prairie Redox (A16) **(MLRA 147, 148)**
- ___ Piedmont Floodplain Soils (F19) **(MLRA 136, 147)**
- ___ Red Parent Material (TF2)
- ___ Very Shallow Dark Surface (TF12)
- ___ Other (Explain in Remarks)

[3]Indicators of hydrophytic vegetation and wetland hydrology must be present, unless disturbed or problematic.

Restrictive Layer (If observed):

Type: _____

Depth (inches): _____

Hydric Soil Present? Yes ✓ No ___

Remarks:

Stream Features
Field Sheet

Date: _____ Project Site: Red Line WUS # RLWUS16

Observer(s) SMJ, DWR, AMC

Stream Flow:
Perennial: ✓ Intermittent ✓ Ephemeral _____

Intermittent part is concrete channel along heavy berm 4' wide 1' deep water 2"

Gradient: _____ Classification: R3UB1/3

Channel Characteristics:
Natural ✓ Artificial (man-made) _____ Manipulated (man-altered) _____

Explain: Shallow perennial stream

Channel Has (check all that apply):

- [x] Bed and Banks
- [ ] OHWM
  - [ ] clear, natural line impressed on the bank
  - [ ] changes in character of soil
  - [ ] shelving
  - [ ] vegetation matted down, bent, or absent
  - [ ] leaf litter disturbed or washed away
  - [ ] sediment deposition
  - [ ] water staining
  - [ ] the presence of litter and debris
  - [ ] destruction of terrestrial vegetation
  - [ ] the presence of wrack line
  - [ ] sediment sorting
  - [ ] scour
  - [ ] multiple observed or predicted flow events
  - [ ] abrupt change in plant community
  - [ ] other (list): _____
- [ ] Discontinuous OHWM (explain): _____

Morphology:
Avg. Channel Width 4' Depth 1' Avg. Water Depth 4-6"

Has stream morphometry been altered? NO Describe : _____

perennial stream

Habitat and Pollutants:
Substrate (predominant type (s)): cobble-gravel, mud

Habitat Complexity (characterize): low, highly embedded, no riffles or deep pools

Bank Erosion: Severe _____ Moderate _____ Minor ✓

Describe: _____

Silt Deposition: high

Pollutants (observation / potential sources): adjacent roadway

Stormwater Outfalls: —

Biological Habitat For (check all that apply):

Federally Listed species _____ Fish Spawn Areas _____

Other Environmentally-Sensitive Species _____ Aquatic/Wildlife Diversity _____

Explain Findings: n/a

Riparian Zone:

Development: ~100 ft on RB, ~200 ft on LB

Riparian vegetation: Forest ✓ Shrubs ✓ Herbs ✓

Dominant Species: Am. beech, green ash, spicebush, honeysuckle shrubs, black cherry

Riparian Buffer Width: total width >300 ft

Approximate % Shading by Woody Species: 90 %

Notes: _____

Stream Features
Field Sheet

Date: 2/09/12 Project Site: Red Line WUS # : RLWUS17

Observer(s) SAW, DWR, AMC

Stream Flow:

Perennial: _____ Intermittent ✓ Ephemeral _____

Gradient: _____ Classification: R4SB mud

Channel Characteristics:

Natural _____ Artificial (man-made) _____ Manipulated (man-altered) ✓

Explain: Straightened along highway berm

Channel Has (check all that apply):

- [x] Bed and Banks — ephemeral at top
- [ ] OHWM
  - [ ] clear, natural line impressed on the bank
  - [ ] changes in character of soil
  - [ ] shelving
  - [x] vegetation matted down, bent, or absent
  - [x] leaf litter disturbed or washed away
  - [ ] sediment deposition
  - [ ] water staining
  - [ ] the presence of litter and debris
  - [ ] destruction of terrestrial vegetation
  - [ ] the presence of wrack line
  - [ ] sediment sorting
  - [ ] scour
  - [ ] multiple observed or predicted flow events
  - [ ] abrupt change in plant community
  - [ ] other (list): _____
- [ ] Discontinuous OHWM (explain): _____

Morphology:

Avg. Channel Width 2-3' Depth 1' Avg. Water Depth 4"

Has stream morphometry been altered? yes Describe : Straightened along berm

Habitat and Pollutants:

Substrate (predominant type (s)): Sand + mud - w/ Some Cobble

Habitat Complexity (characterize): low due to shallow flows + lack of Cover + complexity

Bank Erosion: Severe _____ Moderate _____ Minor ✓

Describe: _____

Silt Deposition: moderate silt

Pollutants (observation / potential sources): trash, SW runoff

Stormwater Outfalls: at top of stream + outfalls from neighborhood

Biological Habitat For (check all that apply):

Federally Listed species _____ Fish Spawn Areas _____

Other Environmentally-Sensitive Species _____ Aquatic/Wildlife Diversity low

Explain Findings: disturbed Setting

Riparian Zone:

Development: RB road berm + - LB Forested

Riparian vegetation: Forest ✓ Shrubs ✓ Herbs _____

Dominant Species: Elm, Ash, red maple

Riparian Buffer Width: RB-20' LB-50'

Approximate % Shading by Woody Species: 90%

Notes: _____

WETLAND DETERMINATION DATA FORM – Eastern Mountains and Piedmont

RLWL-18

Project/Site: Red Line City/County: Baltimore Sampling Date: 2/9/12

Applicant/Owner: MTA State: MD Sampling Point: WTP-18-1

Investigator(s): SAW, DWR, AMC Section, Township, Range: _____

Landform (hillslope, terrace, etc.): floodplain Local relief (concave, convex, none): concave Slope (%): _____

Subregion (LRR or MLRA): MLRA 148 Lat: _____ Long: _____ Datum: _____

Soil Map Unit Name: Watchung silt loam, 3-8% slopes NWI classification: PFO1A

Are climatic / hydrologic conditions on the site typical for this time of year? Yes ✓ No _____ (If no, explain in Remarks.)

Are Vegetation _____, Soil _____, or Hydrology _____ significantly disturbed? No Are "Normal Circumstances" present? Yes ✓ No _____

Are Vegetation _____, Soil _____, or Hydrology _____ naturally problematic? No (If needed, explain any answers in Remarks.)

SUMMARY OF FINDINGS – Attach site map showing sampling point locations, transects, important features, etc.

Hydrophytic Vegetation Present?	Yes ✓	No _____	**Is the Sampled Area within a Wetland?** Yes ✓ No _____
Hydric Soil Present?	Yes ✓	No _____	
Wetland Hydrology Present?	Yes ✓	No _____	

Remarks:

HYDROLOGY

Wetland Hydrology Indicators:

Primary Indicators (minimum of one is required; check all that apply)

- ___ Surface Water (A1)
- ___ High Water Table (A2)
- ___ Saturation (A3)
- ___ Water Marks (B1)
- ___ Sediment Deposits (B2)
- ✓ Drift Deposits (B3)
- ___ Algal Mat or Crust (B4)
- ___ Iron Deposits (B5)
- ___ Inundation Visible on Aerial Imagery (B7)
- ✓ Water-Stained Leaves (B9)
- ___ Aquatic Fauna (B13)
- ___ True Aquatic Plants (B14)
- ___ Hydrogen Sulfide Odor (C1)
- ___ Oxidized Rhizospheres on Living Roots (C3)
- ___ Presence of Reduced Iron (C4)
- ___ Recent Iron Reduction in Tilled Soils (C6)
- ___ Thin Muck Surface (C7)
- ___ Other (Explain in Remarks)

Secondary Indicators (minimum of two required)

- ___ Surface Soil Cracks (B6)
- ___ Sparsely Vegetated Concave Surface (B8)
- ✓ Drainage Patterns (B10)
- ___ Moss Trim Lines (B16)
- ___ Dry-Season Water Table (C2)
- ___ Crayfish Burrows (C8)
- ___ Saturation Visible on Aerial Imagery (C9)
- ___ Stunted or Stressed Plants (D1)
- ___ Geomorphic Position (D2)
- ___ Shallow Aquitard (D3)
- ___ Microtopographic Relief (D4)
- ___ FAC-Neutral Test (D5)

Field Observations:

Surface Water Present?	Yes _____	No ✓	Depth (inches): _____
Water Table Present?	Yes _____	No ✓	Depth (inches): _____
Saturation Present? (includes capillary fringe)	Yes _____	No ✓	Depth (inches): _____

Wetland Hydrology Present? Yes ✓ No _____

Describe Recorded Data (stream gauge, monitoring well, aerial photos, previous inspections), if available:

Remarks:

VEGETATION (Four Strata) – Use scientific names of plants.

Sampling Point: WTP-18-1

Tree Stratum (Plot size: _____)	Absolute % Cover	Dominant Species?	Indicator Status
1. Fraxinus pennsylvanica	95	Y	FACW
2. Ulmus rubra	10		FAC
3.			
4.			
5.			
6.			
7.			
8.			
	105	= Total Cover	

Sapling/Shrub Stratum (Plot size: _____)	Absolute % Cover	Dominant Species?	Indicator Status
1. Lindera benzoin	30	Y	FACW
2. Rosa multiflora	15	Y	FACU
3. Ligustum sinense	10		FACU
4. Acer rubrum	5		FAC
5. Viburnum prunifolium	5		FACU
6.			
7.			
8.			
9.			
10.			
	65	= Total Cover	

Herb Stratum (Plot size: _____)	Absolute % Cover	Dominant Species?	Indicator Status
1. Ranunculas ficaria	75	Y	n/a
2. Juncus effusus	5		FACW
3. Carex sp.	5		n/a
4.			
5.			
6.			
7.			
8.			
9.			
10.			
11.			
12.			
	85	= Total Cover	

Woody Vine Stratum (Plot size: _____)	Absolute % Cover	Dominant Species?	Indicator Status
1. Lonicera japonica	20	Y	FAC
2.			
3.			
4.			
5.			
6.			
	20	= Total Cover	

Dominance Test worksheet:

Number of Dominant Species That Are OBL, FACW, or FAC: 3 (A)

Total Number of Dominant Species Across All Strata: 4 (B)

Percent of Dominant Species That Are OBL, FACW, or FAC: 75 (A/B)

Prevalence Index worksheet:

Total % Cover of:		Multiply by:	
OBL species		x 1 =	
FACW species		x 2 =	
FAC species		x 3 =	
FACU species		x 4 =	
UPL species		x 5 =	
Column Totals:	(A)		(B)

Prevalence Index = B/A = _____

Hydrophytic Vegetation Indicators:

- ___ 1 - Rapid Test for Hydrophytic Vegetation
- ✓ 2 - Dominance Test is >50%
- ___ 3 - Prevalence Index is ≤3.0[1]
- ___ 4 - Morphological Adaptations[1] (Provide supporting data in Remarks or on a separate sheet)
- ___ Problematic Hydrophytic Vegetation[1] (Explain)

[1]Indicators of hydric soil and wetland hydrology must be present, unless disturbed or problematic.

Definitions of Four Vegetation Strata:

Tree – Woody plants, excluding vines, 3 in. (7.6 cm) or more in diameter at breast height (DBH), regardless of height.

Sapling/Shrub – Woody plants, excluding vines, less than 3 in. DBH and greater than 3.28 ft (1 m) tall.

Herb – All herbaceous (non-woody) plants, regardless of size, and woody plants less than 3.28 ft tall.

Woody vine – All woody vines greater than 3.28 ft in height.

Hydrophytic Vegetation Present? Yes ✓ No _____

Remarks: (Include photo numbers here or on a separate sheet.)

SOIL

Sampling Point: WTP-18-1

Profile Description: (Describe to the depth needed to document the indicator or confirm the absence of indicators.)

Depth (inches)	Matrix Color (moist)	Matrix %	Redox Features Color (moist)	Redox Features %	Type[1]	Loc[2]	Texture	Remarks
0-5	10YR3/2	98	10YR4/4	2	C	M	SiL	
5-10	10YR3/2	90	10YR4/4	10	C	M	SiL	
10-14	10YR3/2	70	10YR4/4	30	C	M	LS	

[1]Type: C=Concentration, D=Depletion, RM=Reduced Matrix, MS=Masked Sand Grains. [2]Location: PL=Pore Lining, M=Matrix.

Hydric Soil Indicators:

- ___ Histosol (A1)
- ___ Histic Epipedon (A2)
- ___ Black Histic (A3)
- ___ Hydrogen Sulfide (A4)
- ___ Stratified Layers (A5)
- ___ 2 cm Muck (A10) (**LRR N**)
- ___ Depleted Below Dark Surface (A11)
- ___ Thick Dark Surface (A12)
- ___ Sandy Mucky Mineral (S1) (**LRR N, MLRA 147, 148**)
- ___ Sandy Gleyed Matrix (S4)
- ___ Sandy Redox (S5)
- ___ Stripped Matrix (S6)
- ___ Dark Surface (S7)
- ___ Polyvalue Below Surface (S8) (**MLRA 147, 148**)
- ___ Thin Dark Surface (S9) (**MLRA 147, 148**)
- ___ Loamy Gleyed Matrix (F2)
- ___ Depleted Matrix (F3)
- ✓ Redox Dark Surface (F6)
- ___ Depleted Dark Surface (F7)
- ___ Redox Depressions (F8)
- ___ Iron-Manganese Masses (F12) (**LRR N, MLRA 136**)
- ___ Umbric Surface (F13) (**MLRA 136, 122**)
- ___ Piedmont Floodplain Soils (F19) (**MLRA 148**)

Indicators for Problematic Hydric Soils[3]:

- ___ 2 cm Muck (A10) (**MLRA 147**)
- ___ Coast Prairie Redox (A16) (**MLRA 147, 148**)
- ___ Piedmont Floodplain Soils (F19) (**MLRA 136, 147**)
- ___ Red Parent Material (TF2)
- ___ Very Shallow Dark Surface (TF12)
- ___ Other (Explain in Remarks)

[3]Indicators of hydrophytic vegetation and wetland hydrology must be present, unless disturbed or problematic.

Restrictive Layer (if observed):

Type: _____

Depth (inches): _____

Hydric Soil Present? Yes ✓ No ___

Remarks:

WETLAND DETERMINATION DATA FORM – Eastern Mountains and Piedmont RLWL-18

Project/Site: Red Line City/County: Woodlawn Sampling Date: 2/9/12

Applicant/Owner: MTA State: MD Sampling Point: WTP-18-2

Investigator(s): SW, DR, AC Section, Township, Range: _____

Landform (hillslope, terrace, etc.): floodplain-seep Local relief (concave, convex, none): concave Slope (%): _____

Subregion (LRR or MLRA): MLRA-148 Lat: _____ Long: _____ Datum: _____

Soil Map Unit Name: Legore-Montalto-Urban land complex NWI classification: PFO1B/C

Are climatic / hydrologic conditions on the site typical for this time of year? Yes ✓ No _____ (If no, explain in Remarks.)

Are Vegetation _____, Soil _____, or Hydrology _____ significantly disturbed? No Are "Normal Circumstances" present? Yes ✓ No _____

Are Vegetation _____, Soil _____, or Hydrology _____ naturally problematic? No (If needed, explain any answers in Remarks.)

SUMMARY OF FINDINGS – Attach site map showing sampling point locations, transects, important features, etc.

Hydrophytic Vegetation Present?	Yes ✓	No _____	**Is the Sampled Area within a Wetland?** Yes ✓ No _____
Hydric Soil Present?	Yes ✓	No _____	
Wetland Hydrology Present?	Yes ✓	No _____	

Remarks:

HYDROLOGY

Wetland Hydrology Indicators:

Primary Indicators (minimum of one is required; check all that apply)

- ___ Surface Water (A1)
- ✓ High Water Table (A2)
- ✓ Saturation (A3)
- ___ Water Marks (B1)
- ___ Sediment Deposits (B2)
- ___ Drift Deposits (B3)
- ___ Algal Mat or Crust (B4)
- ___ Iron Deposits (B5)
- ___ Inundation Visible on Aerial Imagery (B7)
- ✓ Water-Stained Leaves (B9)
- ___ Aquatic Fauna (B13)
- ___ True Aquatic Plants (B14)
- ___ Hydrogen Sulfide Odor (C1)
- ___ Oxidized Rhizospheres on Living Roots (C3)
- ___ Presence of Reduced Iron (C4)
- ___ Recent Iron Reduction in Tilled Soils (C6)
- ___ Thin Muck Surface (C7)
- ___ Other (Explain in Remarks)

Secondary Indicators (minimum of two required)

- ___ Surface Soil Cracks (B6)
- ___ Sparsely Vegetated Concave Surface (B8)
- ___ Drainage Patterns (B10)
- ___ Moss Trim Lines (B16)
- ___ Dry-Season Water Table (C2)
- ___ Crayfish Burrows (C8)
- ___ Saturation Visible on Aerial Imagery (C9)
- ___ Stunted or Stressed Plants (D1)
- ___ Geomorphic Position (D2)
- ___ Shallow Aquitard (D3)
- ___ Microtopographic Relief (D4)
- ___ FAC-Neutral Test (D5)

Field Observations:

Surface Water Present?	Yes _____	No ✓	Depth (inches): _____
Water Table Present?	Yes ✓	No _____	Depth (inches): 3
Saturation Present? (includes capillary fringe)	Yes ✓	No _____	Depth (inches): 0

Wetland Hydrology Present? Yes ✓ No _____

Describe Recorded Data (stream gauge, monitoring well, aerial photos, previous inspections), if available:

Remarks:

VEGETATION (Four Strata) – Use scientific names of plants.

Sampling Point: WTP-18-2

Tree Stratum (Plot size: _____)	Absolute % Cover	Dominant Species?	Indicator Status
1. Acer rubrum	40	Y	FAC
2. Fraxinus pennsylvanica	45	Y	FACW
3.			
4.			
5.			
6.			
7.			
8.			
	85 = Total Cover		

Sapling/Shrub Stratum (Plot size: _____)			
1. Lindera benzoin	7		FACW
2. Cornus amomum	35	Y	FACW
3. Rosa multiflora	8		FACU
4.			
5.			
6.			
7.			
8.			
9.			
10.			
	50 = Total Cover		

Herb Stratum (Plot size: _____)			
1. Cornus amomum	10	Y	FACW
2. Glyceria striata	5	Y	OBL
3.			
4.			
5.			
6.			
7.			
8.			
9.			
10.			
11.			
12.			
	15 = Total Cover		

Woody Vine Stratum (Plot size: _____)			
1. Lonicera japonica	15	Y	FAC
2. Vitis sp.	7	Y	n/a
3.			
4.			
5.			
6.			
	22 = Total Cover		

Dominance Test worksheet:

Number of Dominant Species That Are OBL, FACW, or FAC: 6 (A)

Total Number of Dominant Species Across All Strata: 6 (B)

Percent of Dominant Species That Are OBL, FACW, or FAC: 100 (A/B)

Prevalence Index worksheet:

Total % Cover of:		Multiply by:
OBL species	_____	x 1 = _____
FACW species	_____	x 2 = _____
FAC species	_____	x 3 = _____
FACU species	_____	x 4 = _____
UPL species	_____	x 5 = _____
Column Totals:	_____ (A)	_____ (B)

Prevalence Index = B/A = _____

Hydrophytic Vegetation Indicators:

- ✓ 1 - Rapid Test for Hydrophytic Vegetation
- ✓ 2 - Dominance Test is >50%
- ___ 3 - Prevalence Index is ≤3.0[1]
- ___ 4 - Morphological Adaptations[1] (Provide supporting data in Remarks or on a separate sheet)
- ___ Problematic Hydrophytic Vegetation[1] (Explain)

[1]Indicators of hydric soil and wetland hydrology must be present, unless disturbed or problematic.

Definitions of Four Vegetation Strata:

Tree – Woody plants, excluding vines, 3 in. (7.6 cm) or more in diameter at breast height (DBH), regardless of height.

Sapling/Shrub – Woody plants, excluding vines, less than 3 in. DBH and greater than 3.28 ft (1 m) tall.

Herb – All herbaceous (non-woody) plants, regardless of size, and woody plants less than 3.28 ft tall.

Woody vine – All woody vines greater than 3.28 ft in height.

Hydrophytic Vegetation Present? Yes ✓ No _____

Remarks: (Include photo numbers here or on a separate sheet.)

SOIL

Sampling Point: WTP-18-2

Profile Description: (Describe to the depth needed to document the indicator or confirm the absence of indicators.)

Depth (inches)	Matrix Color (moist)	Matrix %	Redox Features Color (moist)	Redox %	Type[1]	Loc[2]	Texture	Remarks
0-3	10YR3/1						Sil	
3-8	2.5Y3/2	90	7.5YR3/4	10	C	M	Sil	
8+	5Y3/1	70	7.5YR4/4	30	C	M	Scl	

[1]Type: C=Concentration, D=Depletion, RM=Reduced Matrix, MS=Masked Sand Grains. [2]Location: PL=Pore Lining, M=Matrix.

Hydric Soil Indicators:

- ___ Histosol (A1)
- ___ Histic Epipedon (A2)
- ___ Black Histic (A3)
- ___ Hydrogen Sulfide (A4)
- ___ Stratified Layers (A5)
- ___ 2 cm Muck (A10) **(LRR N)**
- ___ Depleted Below Dark Surface (A11)
- ___ Thick Dark Surface (A12)
- ___ Sandy Mucky Mineral (S1) **(LRR N, MLRA 147, 148)**
- ___ Sandy Gleyed Matrix (S4)
- ___ Sandy Redox (S5)
- ___ Stripped Matrix (S6)
- ___ Dark Surface (S7)
- ___ Polyvalue Below Surface (S8) **(MLRA 147, 148)**
- ___ Thin Dark Surface (S9) **(MLRA 147, 148)**
- ___ Loamy Gleyed Matrix (F2)
- ✓ Depleted Matrix (F3)
- ✓ Redox Dark Surface (F6)
- ___ Depleted Dark Surface (F7)
- ___ Redox Depressions (F8)
- ___ Iron-Manganese Masses (F12) **(LRR N, MLRA 136)**
- ___ Umbric Surface (F13) **(MLRA 136, 122)**
- ___ Piedmont Floodplain Soils (F19) **(MLRA 148)**

Indicators for Problematic Hydric Soils[3]:

- ___ 2 cm Muck (A10) **(MLRA 147)**
- ___ Coast Prairie Redox (A16) **(MLRA 147, 148)**
- ___ Piedmont Floodplain Soils (F19) **(MLRA 136, 147)**
- ___ Red Parent Material (TF2)
- ___ Very Shallow Dark Surface (TF12)
- ___ Other (Explain in Remarks)

[3]Indicators of hydrophytic vegetation and wetland hydrology must be present, unless disturbed or problematic.

Restrictive Layer (if observed):

Type: _____

Depth (inches): _____

Hydric Soil Present? **Yes** ✓ **No** ___

Remarks:

WETLAND DETERMINATION DATA FORM – Eastern Mountains and Piedmont

Project/Site: Red Line City/County: Baltimore Sampling Date: 2/9/12

Applicant/Owner: MTA State: MD Sampling Point: UTP-18-1

Investigator(s): SAW, DWR, AMC Section, Township, Range: _____

Landform (hillslope, terrace, etc.): upland Local relief (concave, convex, none): convex Slope (%): _____

Subregion (LRR or MLRA): MLRA 148 Lat: _____ Long: _____ Datum: _____

Soil Map Unit Name: Legore-Montalto-Urban land complex NWI classification: upland

Are climatic / hydrologic conditions on the site typical for this time of year? Yes ✓ No _____ (If no, explain in Remarks.)

Are Vegetation _____, Soil _____, or Hydrology _____ significantly disturbed? No Are "Normal Circumstances" present? Yes ✓ No _____

Are Vegetation _____, Soil _____, or Hydrology _____ naturally problematic? No (If needed, explain any answers in Remarks.)

SUMMARY OF FINDINGS – Attach site map showing sampling point locations, transects, important features, etc.

Hydrophytic Vegetation Present?	Yes ✓	No ✓	**Is the Sampled Area within a Wetland?** Yes _____ No ✓
Hydric Soil Present?	Yes ✓	No ✓	
Wetland Hydrology Present?	Yes ✓	No _____	

Remarks:

HYDROLOGY

Wetland Hydrology Indicators:

Primary Indicators (minimum of one is required; check all that apply)

- ___ Surface Water (A1)
- ✓ High Water Table (A2)
- ✓ Saturation (A3)
- ___ Water Marks (B1)
- ___ Sediment Deposits (B2)
- ___ Drift Deposits (B3)
- ___ Algal Mat or Crust (B4)
- ___ Iron Deposits (B5)
- ___ Inundation Visible on Aerial Imagery (B7)
- ___ Water-Stained Leaves (B9)
- ___ Aquatic Fauna (B13)
- ___ True Aquatic Plants (B14)
- ___ Hydrogen Sulfide Odor (C1)
- ___ Oxidized Rhizospheres on Living Roots (C3)
- ___ Presence of Reduced Iron (C4)
- ___ Recent Iron Reduction in Tilled Soils (C6)
- ___ Thin Muck Surface (C7)
- ___ Other (Explain in Remarks)

Secondary Indicators (minimum of two required)

- ___ Surface Soil Cracks (B6)
- ___ Sparsely Vegetated Concave Surface (B8)
- ___ Drainage Patterns (B10)
- ___ Moss Trim Lines (B16)
- ___ Dry-Season Water Table (C2)
- ___ Crayfish Burrows (C8)
- ___ Saturation Visible on Aerial Imagery (C9)
- ___ Stunted or Stressed Plants (D1)
- ___ Geomorphic Position (D2)
- ___ Shallow Aquitard (D3)
- ___ Microtopographic Relief (D4)
- ___ FAC-Neutral Test (D5)

Field Observations:

Surface Water Present?	Yes _____	No ✓	Depth (inches): _____
Water Table Present?	Yes _____	No ✓	Depth (inches): _____
Saturation Present? (includes capillary fringe)	Yes ✓	No _____	Depth (inches): 12"

Wetland Hydrology Present? Yes ✓ No _____

Describe Recorded Data (stream gauge, monitoring well, aerial photos, previous inspections), if available:

Remarks:

VEGETATION (Four Strata) – Use scientific names of plants.

Sampling Point: UTP-18-1

Tree Stratum (Plot size:)	Absolute % Cover	Dominant Species?	Indicator Status
1. Acer rubrum	35	Y	FAC
2. Ulmus rubra	30	Y	FAC
3. Fraxinus pennsylvanica	25	Y	FACW
4.			
5.			
6.			
7.			
8.			
	90	= Total Cover	

Sapling/Shrub Stratum (Plot size:)			
1. Rosa multiflora	8	Y	FACU
2. Ulmus rubra	8	Y	FAC
3.			
4.			
5.			
6.			
7.			
8.			
9.			
10.			
	16	= Total Cover	

Herb Stratum (Plot size:)			
1. Allium vineale	12	Y	FACU
2.			
3.			
4.			
5.			
6.			
7.			
8.			
9.			
10.			
11.			
12.			
	12	= Total Cover	

Woody Vine Stratum (Plot size:)			
1. Lonicera japonica	25	Y	FAC
2. Toxicodendron radicans	60	Y	FAC
3.			
4.			
5.			
6.			
	85	= Total Cover	

Dominance Test worksheet:

Number of Dominant Species That Are OBL, FACW, or FAC: 6 (A)

Total Number of Dominant Species Across All Strata: 8 (B)

Percent of Dominant Species That Are OBL, FACW, or FAC: 75 (A/B)

Prevalence Index worksheet:

Total % Cover of:		Multiply by:
OBL species		x 1 =
FACW species		x 2 =
FAC species		x 3 =
FACU species		x 4 =
UPL species		x 5 =
Column Totals:	(A)	(B)

Prevalence Index = B/A =

Hydrophytic Vegetation Indicators:

- ✓ 1 - Rapid Test for Hydrophytic Vegetation
- ✓ 2 - Dominance Test is >50%
- 3 - Prevalence Index is ≤3.0[1]
- 4 - Morphological Adaptations[1] (Provide supporting data in Remarks or on a separate sheet)
- Problematic Hydrophytic Vegetation[1] (Explain)

[1]Indicators of hydric soil and wetland hydrology must be present, unless disturbed or problematic.

Definitions of Four Vegetation Strata:

Tree – Woody plants, excluding vines, 3 in. (7.6 cm) or more in diameter at breast height (DBH), regardless of height.

Sapling/Shrub – Woody plants, excluding vines, less than 3 in. DBH and greater than 3.28 ft (1 m) tall.

Herb – All herbaceous (non-woody) plants, regardless of size, and woody plants less than 3.28 ft tall.

Woody vine – All woody vines greater than 3.28 ft in height.

Hydrophytic Vegetation Present? Yes ✓ No

Remarks: (Include photo numbers here or on a separate sheet.)

SOIL

Sampling Point: UTP-18-Y

Profile Description: (Describe to the depth needed to document the indicator or confirm the absence of indicators.)

Depth (inches)	Matrix Color (moist)	Matrix %	Redox Features Color (moist)	Redox %	Type[1]	Loc[2]	Texture	Remarks
0-6	10YR3/2	100	—	—	—	—	SiCL	
6-10	10YR4/3	75	10YR6/6	15	C	m	SiCL	
			10YR6/2	10	D	m	—	
10-12	10YR5/8	60	10YR7/1	40	D	M	SiC	

[1]Type: C=Concentration, D=Depletion, RM=Reduced Matrix, MS=Masked Sand Grains. [2]Location: PL=Pore Lining, M=Matrix.

Hydric Soil Indicators:

- ___ Histosol (A1)
- ___ Histic Epipedon (A2)
- ___ Black Histic (A3)
- ___ Hydrogen Sulfide (A4)
- ___ Stratified Layers (A5)
- ___ 2 cm Muck (A10) **(LRR N)**
- ___ Depleted Below Dark Surface (A11)
- ___ Thick Dark Surface (A12)
- ___ Sandy Mucky Mineral (S1) **(LRR N, MLRA 147, 148)**
- ___ Sandy Gleyed Matrix (S4)
- ___ Sandy Redox (S5)
- ___ Stripped Matrix (S6)
- ___ Dark Surface (S7)
- ___ Polyvalue Below Surface (S8) **(MLRA 147, 148)**
- ___ Thin Dark Surface (S9) **(MLRA 147, 148)**
- ___ Loamy Gleyed Matrix (F2)
- ___ Depleted Matrix (F3)
- ___ Redox Dark Surface (F6)
- ___ Depleted Dark Surface (F7)
- ___ Redox Depressions (F8)
- ___ Iron-Manganese Masses (F12) **(LRR N, MLRA 136)**
- ___ Umbric Surface (F13) **(MLRA 136, 122)**
- ___ Piedmont Floodplain Soils (F19) **(MLRA 148)**

Indicators for Problematic Hydric Soils[3]:

- ___ 2 cm Muck (A10) **(MLRA 147)**
- ___ Coast Prairie Redox (A16) **(MLRA 147, 148)**
- ___ Piedmont Floodplain Soils (F19) **(MLRA 136, 147)**
- ___ Red Parent Material (TF2)
- ___ Very Shallow Dark Surface (TF12)
- ___ Other (Explain in Remarks)

[3]Indicators of hydrophytic vegetation and wetland hydrology must be present, unless disturbed or problematic.

Restrictive Layer (if observed):

Type: _____

Depth (inches): _____

Hydric Soil Present? **Yes** _____ **No** ✓

Remarks:

WETLAND DETERMINATION DATA FORM – Eastern Mountains and Piedmont RLWL-19

Project/Site: Red Line City/County: Woodlawn/Baltimore Sampling Date: 2/9/12
Applicant/Owner: MTA State: MD Sampling Point: WTP-19-1
Investigator(s): SW, DR, AC Section, Township, Range: _____
Landform (hillslope, terrace, etc.): roadside ditch Local relief (concave, convex, none): Concave Slope (%): _____
Subregion (LRR or MLRA): MLRA-148 Lat: _____ Long: _____ Datum: _____
Soil Map Unit Name: Legore-Montalto-Urban land complex NWI classification: PEM2B
Are climatic / hydrologic conditions on the site typical for this time of year? Yes ✓ No _____ (If no, explain in Remarks.)
Are Vegetation ✓, Soil _____, or Hydrology _____ significantly disturbed? Are "Normal Circumstances" present? Yes ✓ No _____
Are Vegetation _____, Soil _____, or Hydrology _____ naturally problematic? No (If needed, explain any answers in Remarks.)

SUMMARY OF FINDINGS – Attach site map showing sampling point locations, transects, important features, etc.

Hydrophytic Vegetation Present?	Yes ✓	No _____	**Is the Sampled Area within a Wetland?** Yes ✓ No _____
Hydric Soil Present?	Yes ✓	No _____	
Wetland Hydrology Present?	Yes ✓	No _____	

Remarks:
roadsite ditch w/ groundwater discharge observed

HYDROLOGY

Wetland Hydrology Indicators:

Primary Indicators (minimum of one is required; check all that apply)

- ✓ Surface Water (A1)
- ✓ High Water Table (A2)
- ✓ Saturation (A3)
- ___ Water Marks (B1)
- ___ Sediment Deposits (B2)
- ___ Drift Deposits (B3)
- ___ Algal Mat or Crust (B4)
- ___ Iron Deposits (B5)
- ___ Inundation Visible on Aerial Imagery (B7)
- ___ Water-Stained Leaves (B9)
- ___ Aquatic Fauna (B13)
- ___ True Aquatic Plants (B14)
- ___ Hydrogen Sulfide Odor (C1)
- ___ Oxidized Rhizospheres on Living Roots (C3)
- ___ Presence of Reduced Iron (C4)
- ___ Recent Iron Reduction in Tilled Soils (C6)
- ___ Thin Muck Surface (C7)
- ___ Other (Explain in Remarks)

Secondary Indicators (minimum of two required)

- ___ Surface Soil Cracks (B6)
- ___ Sparsely Vegetated Concave Surface (B8)
- ___ Drainage Patterns (B10)
- ___ Moss Trim Lines (B16)
- ___ Dry-Season Water Table (C2)
- ___ Crayfish Burrows (C8)
- ___ Saturation Visible on Aerial Imagery (C9)
- ___ Stunted or Stressed Plants (D1)
- ___ Geomorphic Position (D2)
- ___ Shallow Aquitard (D3)
- ___ Microtopographic Relief (D4)
- ___ FAC-Neutral Test (D5)

Field Observations:

Surface Water Present?	Yes ✓	No _____	Depth (inches): 2
Water Table Present?	Yes ✓	No _____	Depth (inches): 0
Saturation Present? (includes capillary fringe)	Yes ✓	No _____	Depth (inches): 0

Wetland Hydrology Present? Yes ✓ No _____

Describe Recorded Data (stream gauge, monitoring well, aerial photos, previous inspections), if available:

Remarks:

VEGETATION (Four Strata) – Use scientific names of plants.

Sampling Point: WTP-19-C

Tree Stratum (Plot size: _____)	Absolute % Cover	Dominant Species?	Indicator Status
1.			
2.			
3.			
4.			
5.			
6.			
7.			
8.			
	= Total Cover		

Sapling/Shrub Stratum (Plot size: _____)			
1.			
2.			
3.			
4.			
5.			
6.			
7.			
8.			
9.			
10.			
	= Total Cover		

Herb Stratum (Plot size: _____)			
1. Nasturtium officinale	80	Y	OBL
2. Typha latifolia	10		OBL
3.			
4.			
5.			
6.			
7.			
8.			
9.			
10.			
11.			
12.			
	90 = Total Cover		

Woody Vine Stratum (Plot size: _____)			
1.			
2.			
3.			
4.			
5.			
6.			
	= Total Cover		

Dominance Test worksheet:

Number of Dominant Species That Are OBL, FACW, or FAC: 1 (A)

Total Number of Dominant Species Across All Strata: 1 (B)

Percent of Dominant Species That Are OBL, FACW, or FAC: 100 (A/B)

Prevalence Index worksheet:

Total % Cover of:		Multiply by:
OBL species		x 1 =
FACW species		x 2 =
FAC species		x 3 =
FACU species		x 4 =
UPL species		x 5 =
Column Totals:	(A)	(B)

Prevalence Index = B/A = _____

Hydrophytic Vegetation Indicators:

✓ 1 - Rapid Test for Hydrophytic Vegetation

✓ 2 - Dominance Test is >50%

___ 3 - Prevalence Index is ≤3.0[1]

___ 4 - Morphological Adaptations[1] (Provide supporting data in Remarks or on a separate sheet)

___ Problematic Hydrophytic Vegetation[1] (Explain)

[1]Indicators of hydric soil and wetland hydrology must be present, unless disturbed or problematic.

Definitions of Four Vegetation Strata:

Tree – Woody plants, excluding vines, 3 in. (7.6 cm) or more in diameter at breast height (DBH), regardless of height.

Sapling/Shrub – Woody plants, excluding vines, less than 3 in. DBH and greater than 3.28 ft (1 m) tall.

Herb – All herbaceous (non-woody) plants, regardless of size, and woody plants less than 3.28 ft tall.

Woody vine – All woody vines greater than 3.28 ft in height.

Hydrophytic Vegetation Present? Yes ✓ No ___

Remarks: (Include photo numbers here or on a separate sheet.)

SOIL

Sampling Point: WTP-19-1

Profile Description: (Describe to the depth needed to document the indicator or confirm the absence of indicators.)

Depth (inches)	Matrix Color (moist)	Matrix %	Redox Features Color (moist)	Redox %	Type[1]	Loc[2]	Texture	Remarks
0-2	10YR2/2	95	10YR5/8	5	C	M	SL	muck present
2-4	5Y4/2	85	10YR4/6	15	C	M	SL	
4-10	variable color						SL	
	(disturbed soil layer)							

[1]Type: C=Concentration, D=Depletion, RM=Reduced Matrix, MS=Masked Sand Grains. [2]Location: PL=Pore Lining, M=Matrix.

Hydric Soil Indicators:

- ___ Histosol (A1)
- ___ Histic Epipedon (A2)
- ___ Black Histic (A3)
- ___ Hydrogen Sulfide (A4)
- ___ Stratified Layers (A5)
- ___ 2 cm Muck (A10) **(LRR N)**
- ___ Depleted Below Dark Surface (A11)
- ___ Thick Dark Surface (A12)
- ___ Sandy Mucky Mineral (S1) **(LRR N, MLRA 147, 148)**
- ___ Sandy Gleyed Matrix (S4)
- ___ Sandy Redox (S5)
- ___ Stripped Matrix (S6)
- ___ Dark Surface (S7)
- ___ Polyvalue Below Surface (S8) **(MLRA 147, 148)**
- ___ Thin Dark Surface (S9) **(MLRA 147, 148)**
- ___ Loamy Gleyed Matrix (F2)
- ✓ Depleted Matrix (F3)
- ___ Redox Dark Surface (F6)
- ___ Depleted Dark Surface (F7)
- ___ Redox Depressions (F8)
- ___ Iron-Manganese Masses (F12) **(LRR N, MLRA 136)**
- ___ Umbric Surface (F13) **(MLRA 136, 122)**
- ___ Piedmont Floodplain Soils (F19) **(MLRA 148)**

Indicators for Problematic Hydric Soils[3]:

- ___ 2 cm Muck (A10) **(MLRA 147)**
- ___ Coast Prairie Redox (A16) **(MLRA 147, 148)**
- ___ Piedmont Floodplain Soils (F19) **(MLRA 136, 147)**
- ___ Red Parent Material (TF2)
- ___ Very Shallow Dark Surface (TF12)
- ___ Other (Explain in Remarks)

[3]Indicators of hydrophytic vegetation and wetland hydrology must be present, unless disturbed or problematic.

Restrictive Layer (if observed):

Type: _____

Depth (inches): _____

Hydric Soil Present? Yes ✓ No ___

Remarks:

Stream Features
Field Sheet

Date: 2/08/12 Project Site: Red Line WUS #: RLWUS-20

Observer(s) SAW, DNR, AMC

Stream Flow:

Perennial: ✓ Intermittent _____ Ephemeral _____

Gradient: _____ Classification: R3 Concrete Channel

Channel Characteristics:

Natural _____ Artificial (man-made) _____ Manipulated (man-altered) ✓

Explain: Spring driven perennial stream in Concrete Channel

Channel Has (check all that apply):

- [x] Bed and Banks
- [ ] OHWM
  - [ ] clear, natural line impressed on the bank
  - [ ] changes in character of soil
  - [ ] shelving
  - [ ] vegetation matted down, bent, or absent
  - [ ] leaf litter disturbed or washed away
  - [ ] sediment deposition
  - [ ] water staining
  - [ ] the presence of litter and debris
  - [ ] destruction of terrestrial vegetation
  - [ ] the presence of wrack line
  - [ ] sediment sorting
  - [ ] scour
  - [ ] multiple observed or predicted flow events
  - [ ] abrupt change in plant community
  - [ ] other (list): _____
- [ ] Discontinuous OHWM (explain): _____

Morphology:

Avg. Channel Width 4' Depth 1' Avg. Water Depth 2"

Has stream morphometry been altered? yes Describe: Completely enclosed in Concrete Channel

Habitat and Pollutants:

Substrate (predominant type (s)): Concrete

Habitat Complexity (characterize): None - trapezoidal Channel

Bank Erosion: Severe _____ Moderate _____ Minor _____

Describe: None

Silt Deposition: minor - very algae coverage

Pollutants (observation / potential sources): _____

Stormwater Outfalls: from highway

Biological Habitat For (check all that apply):

Federally Listed species _____ Fish Spawn Areas _____

Other Environmentally-Sensitive Species _____ Aquatic/Wildlife Diversity _____

Explain Findings: _____

Riparian Zone:

Development: wooded but development within 100'

Riparian vegetation: Forest ✓ Shrubs ✓ Herbs _____

Dominant Species: elm, ash, maple

Riparian Buffer Width: 30' LB – 50 RB – narrower at bottom

Approximate % Shading by Woody Species: 100%

Notes: _____

WETLAND DETERMINATION DATA FORM – Eastern Mountains and Piedmont

Project/Site: Red Line City/County: Baltimore Sampling Date: 2-24-12

Applicant/Owner: MTA State: MD Sampling Point: WTP21-1

Investigator(s): H. Speagas, D. Rodgers Section, Township, Range: _____

Landform (hillslope, terrace, etc.): seep Local relief (concave, convex, none): concave Slope (%): _____

Subregion (LRR or MLRA): MLRA 148 Lat: _____ Long: _____ Datum: _____

Soil Map Unit Name: Legore-Montalto-Urban land complex NWI classification: PFO1E

Are climatic / hydrologic conditions on the site typical for this time of year? Yes X No _____ (If no, explain in Remarks.)

Are Vegetation _____, Soil _____, or Hydrology _____ significantly disturbed? No Are "Normal Circumstances" present? Yes X No _____

Are Vegetation _____, Soil _____, or Hydrology _____ naturally problematic? No (If needed, explain any answers in Remarks.)

SUMMARY OF FINDINGS – Attach site map showing sampling point locations, transects, important features, etc.

Hydrophytic Vegetation Present?	Yes X	No _____	**Is the Sampled Area within a Wetland?** Yes X No _____
Hydric Soil Present?	Yes X	No _____	
Wetland Hydrology Present?	Yes X	No _____	

Remarks:

HYDROLOGY

Wetland Hydrology Indicators:

Primary Indicators (minimum of one is required; check all that apply)

- X Surface Water (A1)
- X High Water Table (A2)
- X Saturation (A3)
- X Water Marks (B1)
- ___ Sediment Deposits (B2)
- ___ Drift Deposits (B3)
- ___ Algal Mat or Crust (B4)
- ___ Iron Deposits (B5)
- ___ Inundation Visible on Aerial Imagery (B7)
- X Water-Stained Leaves (B9)
- ___ Aquatic Fauna (B13)
- ___ True Aquatic Plants (B14)
- ___ Hydrogen Sulfide Odor (C1)
- ___ Oxidized Rhizospheres on Living Roots (C3)
- ___ Presence of Reduced Iron (C4)
- ___ Recent Iron Reduction in Tilled Soils (C6)
- ___ Thin Muck Surface (C7)
- ___ Other (Explain in Remarks)

Secondary Indicators (minimum of two required)

- ___ Surface Soil Cracks (B6)
- ___ Sparsely Vegetated Concave Surface (B8)
- X Drainage Patterns (B10)
- ___ Moss Trim Lines (B16)
- ___ Dry-Season Water Table (C2)
- ___ Crayfish Burrows (C8)
- ___ Saturation Visible on Aerial Imagery (C9)
- ___ Stunted or Stressed Plants (D1)
- ___ Geomorphic Position (D2)
- ___ Shallow Aquitard (D3)
- ___ Microtopographic Relief (D4)
- ___ FAC-Neutral Test (D5)

Field Observations:

Surface Water Present?	Yes X	No _____	Depth (inches): 0-1
Water Table Present?	Yes X	No _____	Depth (inches): 7
Saturation Present? (includes capillary fringe)	Yes X	No _____	Depth (inches): 0

Wetland Hydrology Present? Yes X No _____

Describe Recorded Data (stream gauge, monitoring well, aerial photos, previous inspections), if available:

Remarks:

raining during site visit.

Seep wetland

VEGETATION (Four Strata) – Use scientific names of plants.

Sampling Point: WTP21-1

Tree Stratum (Plot size:)	Absolute % Cover	Dominant Species?	Indicator Status
1. Fraxinus pennsylvanica	65	Y	FACW
2. Acer negundo	15		FAC
3. Salix nigra	10		FACW
4. Acer rubrum	25	Y	FAC
5.			
6.			
7.			
8.			
	115	= Total Cover	

Sapling/Shrub Stratum (Plot size:)	Absolute % Cover	Dominant Species?	Indicator Status
1. Lindera benzoin	15		FACW
2. Cornus amomum	55	Y	FACW
3. Acer negundo	5		FAC
4. Rosa multiflora	15		FACU
5. Alnus serrulata	10		OBL
6.			
7.			
8.			
9.			
10.			
	100	= Total Cover	

Herb Stratum (Plot size:)	Absolute % Cover	Dominant Species?	Indicator Status
1. Symplocarpus foetidus	50	Y	OBL
2. Cinna arundinacea	5		FACW
3.			
4.			
5.			
6.			
7.			
8.			
9.			
10.			
11.			
12.			
	55	= Total Cover	

Woody Vine Stratum (Plot size:)	Absolute % Cover	Dominant Species?	Indicator Status
1. Lonicera japonica	10	Y	FAC
2.			
3.			
4.			
5.			
6.			
	10	= Total Cover	

Dominance Test worksheet:

Number of Dominant Species That Are OBL, FACW, or FAC: 5 (A)

Total Number of Dominant Species Across All Strata: 5 (B)

Percent of Dominant Species That Are OBL, FACW, or FAC: 100 (A/B)

Prevalence Index worksheet:

Total % Cover of:	Multiply by:
OBL species	x 1 =
FACW species	x 2 =
FAC species	x 3 =
FACU species	x 4 =
UPL species	x 5 =
Column Totals: (A)	(B)

Prevalence Index = B/A =

Hydrophytic Vegetation Indicators:

- ___ 1 - Rapid Test for Hydrophytic Vegetation
- ✓ 2 - Dominance Test is >50%
- ___ 3 - Prevalence Index is ≤3.0[1]
- ___ 4 - Morphological Adaptations[1] (Provide supporting data in Remarks or on a separate sheet)
- ___ Problematic Hydrophytic Vegetation[1] (Explain)

[1]Indicators of hydric soil and wetland hydrology must be present, unless disturbed or problematic.

Definitions of Four Vegetation Strata:

Tree – Woody plants, excluding vines, 3 in. (7.6 cm) or more in diameter at breast height (DBH), regardless of height.

Sapling/Shrub – Woody plants, excluding vines, less than 3 in. DBH and greater than 3.28 ft (1 m) tall.

Herb – All herbaceous (non-woody) plants, regardless of size, and woody plants less than 3.28 ft tall.

Woody vine – All woody vines greater than 3.28 ft in height.

Hydrophytic Vegetation Present? Yes ✓ No ___

Remarks: (Include photo numbers here or on a separate sheet.)

SOIL

Sampling Point: WTP21-1

Profile Description: (Describe to the depth needed to document the indicator or confirm the absence of indicators.)

Depth (inches)	Matrix Color (moist)	Matrix %	Redox Features Color (moist)	Redox %	Type[1]	Loc[2]	Texture	Remarks
0-2	10YR2/2	100					sil	muck present
2-10	10YR3/2	85	10YR3/6	15	C	M	sicl	
10+ refusal by bedrock								

[1]Type: C=Concentration, D=Depletion, RM=Reduced Matrix, MS=Masked Sand Grains. [2]Location: PL=Pore Lining, M=Matrix.

Hydric Soil Indicators:

- ___ Histosol (A1)
- ___ Histic Epipedon (A2)
- ___ Black Histic (A3)
- ___ Hydrogen Sulfide (A4)
- ___ Stratified Layers (A5)
- ___ 2 cm Muck (A10) **(LRR N)**
- ___ Depleted Below Dark Surface (A11)
- ___ Thick Dark Surface (A12)
- ___ Sandy Mucky Mineral (S1) **(LRR N, MLRA 147, 148)**
- ___ Sandy Gleyed Matrix (S4)
- ___ Sandy Redox (S5)
- ___ Stripped Matrix (S6)
- ___ Dark Surface (S7)
- ___ Polyvalue Below Surface (S8) **(MLRA 147, 148)**
- ___ Thin Dark Surface (S9) **(MLRA 147, 148)**
- ___ Loamy Gleyed Matrix (F2)
- ___ Depleted Matrix (F3)
- X Redox Dark Surface (F6)
- ___ Depleted Dark Surface (F7)
- ___ Redox Depressions (F8)
- ___ Iron-Manganese Masses (F12) **(LRR N, MLRA 136)**
- ___ Umbric Surface (F13) **(MLRA 136, 122)**
- ___ Piedmont Floodplain Soils (F19) **(MLRA 148)**

Indicators for Problematic Hydric Soils[3]:

- ___ 2 cm Muck (A10) **(MLRA 147)**
- ___ Coast Prairie Redox (A16) **(MLRA 147, 148)**
- ___ Piedmont Floodplain Soils (F19) **(MLRA 136, 147)**
- ___ Red Parent Material (TF2)
- ___ Very Shallow Dark Surface (TF12)
- ___ Other (Explain in Remarks)

[3]Indicators of hydrophytic vegetation and wetland hydrology must be present, unless disturbed or problematic.

Restrictive Layer (if observed):

Type: bedrock

Depth (inches): 10"

Hydric Soil Present? Yes X No ___

Remarks:

WETLAND DETERMINATION DATA FORM – Eastern Mountains and Piedmont

Project/Site: Red Line City/County: Baltimore Sampling Date: 2-24-12

Applicant/Owner: MTA State: MD Sampling Point: UTP21

Investigator(s): H. Spearyas, D. Rodgers Section, Township, Range: _____

Landform (hillslope, terrace, etc.): upland berm Local relief (concave, convex, none): convex Slope (%): _____

Subregion (LRR or MLRA): MLRA 148 Lat: _____ Long: _____ Datum: _____

Soil Map Unit Name: Legore-Montalto-Urban land complex NWI classification: Upland

Are climatic / hydrologic conditions on the site typical for this time of year? Yes X No _____ (If no, explain in Remarks.)

Are Vegetation _____, Soil _____, or Hydrology _____ significantly disturbed? No Are "Normal Circumstances" present? Yes X No _____

Are Vegetation _____, Soil _____, or Hydrology _____ naturally problematic? No (If needed, explain any answers in Remarks.)

SUMMARY OF FINDINGS – Attach site map showing sampling point locations, transects, important features, etc.

Hydrophytic Vegetation Present?	Yes _____	No X	**Is the Sampled Area within a Wetland?** Yes _____ No X
Hydric Soil Present?	Yes _____	No X	
Wetland Hydrology Present?	Yes _____	No X	

Remarks:

HYDROLOGY

Wetland Hydrology Indicators:

Primary Indicators (minimum of one is required; check all that apply)

- ___ Surface Water (A1)
- ___ High Water Table (A2)
- ___ Saturation (A3)
- ___ Water Marks (B1)
- ___ Sediment Deposits (B2)
- ___ Drift Deposits (B3)
- ___ Algal Mat or Crust (B4)
- ___ Iron Deposits (B5)
- ___ Inundation Visible on Aerial Imagery (B7)
- ___ Water-Stained Leaves (B9)
- ___ Aquatic Fauna (B13)
- ___ True Aquatic Plants (B14)
- ___ Hydrogen Sulfide Odor (C1)
- ___ Oxidized Rhizospheres on Living Roots (C3)
- ___ Presence of Reduced Iron (C4)
- ___ Recent Iron Reduction in Tilled Soils (C6)
- ___ Thin Muck Surface (C7)
- ___ Other (Explain in Remarks)

Secondary Indicators (minimum of two required)

- ___ Surface Soil Cracks (B6)
- ___ Sparsely Vegetated Concave Surface (B8)
- ___ Drainage Patterns (B10)
- ___ Moss Trim Lines (B16)
- ___ Dry-Season Water Table (C2)
- ___ Crayfish Burrows (C8)
- ___ Saturation Visible on Aerial Imagery (C9)
- ___ Stunted or Stressed Plants (D1)
- ___ Geomorphic Position (D2)
- ___ Shallow Aquitard (D3)
- ___ Microtopographic Relief (D4)
- ___ FAC-Neutral Test (D5)

Field Observations:

Surface Water Present?	Yes _____	No X	Depth (inches): _____
Water Table Present?	Yes _____	No X	Depth (inches): _____
Saturation Present? (includes capillary fringe)	Yes _____	No X	Depth (inches): _____

Wetland Hydrology Present? Yes _____ No X

Describe Recorded Data (stream gauge, monitoring well, aerial photos, previous inspections), if available:

Remarks:

raining

upland berm

VEGETATION (Four Strata) – Use scientific names of plants.

Sampling Point: UTP21

Tree Stratum (Plot size: _____)	Absolute % Cover	Dominant Species?	Indicator Status
1. Fraxinus pennsylvanica	40	Y	FACW
2.			
3.			
4.			
5.			
6.			
7.			
8.			
	40 = Total Cover		

Sapling/Shrub Stratum (Plot size: _____)			
1. Rosa multiflora	35	Y	FACU
2. Lonicera tartarica	40	Y	FACU
3. Fraxinus pennsylvanica	15		FACW
4.			
5.			
6.			
7.			
8.			
9.			
10.			
	90 = Total Cover		

Herb Stratum (Plot size: _____)			
1. Euonymus fortunei	15	Y	n/a
2. Hedera helix	30	Y	UPL
3. Duchesnea indica	10		FACU-
4.			
5.			
6.			
7.			
8.			
9.			
10.			
11.			
12.			
	55 = Total Cover		

Woody Vine Stratum (Plot size: _____)			
1. Lonicera japonica.	15	Y	FAC
2.			
3.			
4.			
5.			
6.			
	15 = Total Cover		

Dominance Test worksheet:

Number of Dominant Species That Are OBL, FACW, or FAC: 2 (A)

Total Number of Dominant Species Across All Strata: 5 (B)

Percent of Dominant Species That Are OBL, FACW, or FAC: 40 (A/B)

Prevalence Index worksheet:

Total % Cover of:		Multiply by:
OBL species		x 1 =
FACW species		x 2 =
FAC species		x 3 =
FACU species		x 4 =
UPL species		x 5 =
Column Totals:	(A)	(B)

Prevalence Index = B/A = _____

Hydrophytic Vegetation Indicators:

___ 1 - Rapid Test for Hydrophytic Vegetation

___ 2 - Dominance Test is >50%

___ 3 - Prevalence Index is ≤3.0[1]

___ 4 - Morphological Adaptations[1] (Provide supporting data in Remarks or on a separate sheet)

___ Problematic Hydrophytic Vegetation[1] (Explain)

[1]Indicators of hydric soil and wetland hydrology must be present, unless disturbed or problematic.

Definitions of Four Vegetation Strata:

Tree – Woody plants, excluding vines, 3 in. (7.6 cm) or more in diameter at breast height (DBH), regardless of height.

Sapling/Shrub – Woody plants, excluding vines, less than 3 in. DBH and greater than 3.28 ft (1 m) tall.

Herb – All herbaceous (non-woody) plants, regardless of size, and woody plants less than 3.28 ft tall.

Woody vine – All woody vines greater than 3.28 ft in height.

Hydrophytic Vegetation Present? Yes _____ No ✓

Remarks: (Include photo numbers here or on a separate sheet.)

SOIL

Sampling Point: UTP21

Profile Description: (Describe to the depth needed to document the indicator or confirm the absence of indicators.)

Depth (inches)	Matrix Color (moist)	Matrix %	Redox Features Color (moist)	Redox %	Type[1]	Loc[2]	Texture	Remarks
0-8	10YR3/4	100					sicl.	w/rock fragments
8+	disturbed, fill material, variable color						scl	

[1]Type: C=Concentration, D=Depletion, RM=Reduced Matrix, MS=Masked Sand Grains. [2]Location: PL=Pore Lining, M=Matrix.

Hydric Soil Indicators:

- ___ Histosol (A1)
- ___ Histic Epipedon (A2)
- ___ Black Histic (A3)
- ___ Hydrogen Sulfide (A4)
- ___ Stratified Layers (A5)
- ___ 2 cm Muck (A10) **(LRR N)**
- ___ Depleted Below Dark Surface (A11)
- ___ Thick Dark Surface (A12)
- ___ Sandy Mucky Mineral (S1) **(LRR N, MLRA 147, 148)**
- ___ Sandy Gleyed Matrix (S4)
- ___ Sandy Redox (S5)
- ___ Stripped Matrix (S6)
- ___ Dark Surface (S7)
- ___ Polyvalue Below Surface (S8) **(MLRA 147, 148)**
- ___ Thin Dark Surface (S9) **(MLRA 147, 148)**
- ___ Loamy Gleyed Matrix (F2)
- ___ Depleted Matrix (F3)
- ___ Redox Dark Surface (F6)
- ___ Depleted Dark Surface (F7)
- ___ Redox Depressions (F8)
- ___ Iron-Manganese Masses (F12) **(LRR N, MLRA 136)**
- ___ Umbric Surface (F13) **(MLRA 136, 122)**
- ___ Piedmont Floodplain Soils (F19) **(MLRA 148)**

Indicators for Problematic Hydric Soils[3]:

- ___ 2 cm Muck (A10) **(MLRA 147)**
- ___ Coast Prairie Redox (A16) **(MLRA 147, 148)**
- ___ Piedmont Floodplain Soils (F19) **(MLRA 136, 147)**
- ___ Red Parent Material (TF2)
- ___ Very Shallow Dark Surface (TF12)
- ___ Other (Explain in Remarks)

[3]Indicators of hydrophytic vegetation and wetland hydrology must be present, unless disturbed or problematic.

Restrictive Layer (if observed):

Type: _____

Depth (inches): _____

Hydric Soil Present? Yes _____ No X

Remarks:

RLWVS22-017A
" -015 } end flags

Stream Features
Field Sheet

Date: 2-24-12 Project Site: Red Line WUS # : RLWVS 22

Observer(s) DR, AT, HS

Stream Flow:

Perennial: ✓ Intermittent _____ Ephemeral _____

Gradient: _____ Classification: R3UB1 (ephemeral trib @ N end) → cobble-veg substrate, 2' wide, 1' deep, no water except plunge pool @ drain

Channel Characteristics:

Natural _____ Artificial (man-made) _____ Manipulated (man-altered) ✓

Explain: straightened and stabilized w/ riprap, culvert under Parallel Dr and

Channel Has (check all that apply):

- [x] Bed and Banks
- [ ] OHWM
  - [ ] clear, natural line impressed on the bank
  - [ ] changes in character of soil
  - [ ] shelving
  - [ ] vegetation matted down, bent, or absent
  - [ ] leaf litter disturbed or washed away
  - [ ] sediment deposition
  - [ ] water staining
  - [ ] the presence of litter and debris
  - [ ] destruction of terrestrial vegetation
  - [ ] the presence of wrack line
  - [ ] sediment sorting
  - [ ] scour
  - [ ] multiple observed or predicted flow events
  - [ ] abrupt change in plant community
  - [ ] other (list): _____
- [ ] Discontinuous OHWM (explain): _____

Morphology:

Avg. Channel Width US- DS - 15' Depth US- DS-3' Avg. Water Depth US DS - 4"

Has stream morphometry been altered? yes Describe : retaining wall @ DS end

Habitat and Pollutants:

Substrate (predominant type (s)): sand-gravel, w/ some rip rap

Habitat Complexity (characterize): poor, highly embedded, no stable habitat

Bank Erosion: Severe _____ Moderate ✓ Minor _____

Describe: steep banks w/ exposed areas

Silt Deposition: high

Pollutants (observation / potential sources): trash, road runoff

Stormwater Outfalls: ephemeral trib on right bank @ N end
another ephemeral on right bank near flag 15A

Biological Habitat For (check all that apply):

Federally Listed species _____ Fish Spawn Areas _____

Other Environmentally-Sensitive Species _____ Aquatic/Wildlife Diversity _____

Explain Findings: _____

Riparian Zone:

Development: well developed, but disturbed

Riparian vegetation: Forest ✓ Shrubs ✓ Herbs ✓

Dominant Species: silver maple, Am. holly, tatarian honeysuckle, English ivy

Riparian Buffer Width: >100 ft on LB, ~70 ft on RB

Approximate % Shading by Woody Species: 70

Notes: _____

Note: there are a total of 5 ephemeral channels conveying runoff from uplands + paved surfaces to WUS-22

WETLAND DETERMINATION DATA FORM – Eastern Mountains and Piedmont RLWL-23

Project/Site: Red Line City/County: Baltimore Sampling Date: 2-24-12

Applicant/Owner: MTA State: MD Sampling Point: WTP-23-1

Investigator(s): H. Spargus D. Rodgers Section, Township, Range: _____

Landform (hillslope, terrace, etc.): Floodplain Local relief (concave, convex, none): concave Slope (%): _____

Subregion (LRR or MLRA): MLRA-148 Lat: _____ Long: _____ Datum: _____

Soil Map Unit Name: Codorus silt loam, 0-3% slopes NWI classification: PFO1E

Are climatic / hydrologic conditions on the site typical for this time of year? Yes X No _____ (If no, explain in Remarks.)

Are Vegetation _____, Soil _____, or Hydrology _____ significantly disturbed? No Are "Normal Circumstances" present? Yes X No _____

Are Vegetation _____, Soil _____, or Hydrology _____ naturally problematic? No (If needed, explain any answers in Remarks.)

SUMMARY OF FINDINGS – Attach site map showing sampling point locations, transects, important features, etc.

Hydrophytic Vegetation Present?	Yes X	No _____	**Is the Sampled Area within a Wetland?** Yes X No _____
Hydric Soil Present?	Yes X	No _____	
Wetland Hydrology Present?	Yes X	No _____	

Remarks:

HYDROLOGY

Wetland Hydrology Indicators:

Primary Indicators (minimum of one is required; check all that apply)

- ___ Surface Water (A1)
- ___ High Water Table (A2)
- X Saturation (A3)
- ___ Water Marks (B1)
- ___ Sediment Deposits (B2)
- ___ Drift Deposits (B3)
- ___ Algal Mat or Crust (B4)
- ___ Iron Deposits (B5)
- ___ Inundation Visible on Aerial Imagery (B7)
- X Water-Stained Leaves (B9)
- ___ Aquatic Fauna (B13)
- ___ True Aquatic Plants (B14)
- ___ Hydrogen Sulfide Odor (C1)
- ___ Oxidized Rhizospheres on Living Roots (C3)
- ___ Presence of Reduced Iron (C4)
- ___ Recent Iron Reduction in Tilled Soils (C6)
- ___ Thin Muck Surface (C7)
- ___ Other (Explain in Remarks)

Secondary Indicators (minimum of two required)

- ___ Surface Soil Cracks (B6)
- ___ Sparsely Vegetated Concave Surface (B8)
- ___ Drainage Patterns (B10)
- ___ Moss Trim Lines (B16)
- ___ Dry-Season Water Table (C2)
- ___ Crayfish Burrows (C8)
- ___ Saturation Visible on Aerial Imagery (C9)
- ___ Stunted or Stressed Plants (D1)
- ___ Geomorphic Position (D2)
- ___ Shallow Aquitard (D3)
- ___ Microtopographic Relief (D4)
- ___ FAC-Neutral Test (D5)

Field Observations:

Surface Water Present?	Yes _____	No X	Depth (inches): _____
Water Table Present?	Yes _____	No X	Depth (inches): _____
Saturation Present? (includes capillary fringe)	Yes X	No _____	Depth (inches): 8

Wetland Hydrology Present? Yes X No _____

Describe Recorded Data (stream gauge, monitoring well, aerial photos, previous inspections), if available:

Remarks:

VEGETATION (Four Strata) – Use scientific names of plants.

Sampling Point: WTP-23-1

Tree Stratum (Plot size:)	Absolute % Cover	Dominant Species?	Indicator Status
1. Ulmus americanus	60	Y	FACW
2. Acer rubrum	30	Y	FAC
3. Fraxinus pennsylvanica	10		FACW
4.			
5.			
6.			
7.			
8.			
	100	= Total Cover	

Sapling/Shrub Stratum (Plot size:)	Absolute % Cover	Dominant Species?	Indicator Status
1. Lindera benzoin	5	Y	FACW
2. Lonicera tatarica	5	Y	FACU
3.			
4.			
5.			
6.			
7.			
8.			
9.			
10.			
	10	= Total Cover	

Herb Stratum (Plot size:)	Absolute % Cover	Dominant Species?	Indicator Status
1. Ranunculus ficaria	20	Y	FAC*
2.			
3.			
4.			
5.			
6.			
7.			
8.			
9.			
10.			
11.			
12.			
	20	= Total Cover	

Woody Vine Stratum (Plot size:)	Absolute % Cover	Dominant Species?	Indicator Status
1. Vitis sp.	3	Y	n/a
2. Lonicera japonica	5	Y	FAC
3.			
4.			
5.			
6.			
	8	= Total Cover	

Dominance Test worksheet:

Number of Dominant Species That Are OBL, FACW, or FAC: 5 (A)

Total Number of Dominant Species Across All Strata: 6 (B)

Percent of Dominant Species That Are OBL, FACW, or FAC: _____ (A/B)

Prevalence Index worksheet:

Total % Cover of:		Multiply by:
OBL species		x 1 =
FACW species		x 2 =
FAC species		x 3 =
FACU species		x 4 =
UPL species		x 5 =
Column Totals:	(A)	(B)

Prevalence Index = B/A = _____

Hydrophytic Vegetation Indicators:

- ___ 1 - Rapid Test for Hydrophytic Vegetation
- ✓ 2 - Dominance Test is >50%
- ___ 3 - Prevalence Index is ≤3.0[1]
- ___ 4 - Morphological Adaptations[1] (Provide supporting data in Remarks or on a separate sheet)
- ___ Problematic Hydrophytic Vegetation[1] (Explain)

[1]Indicators of hydric soil and wetland hydrology must be present, unless disturbed or problematic.

Definitions of Four Vegetation Strata:

Tree – Woody plants, excluding vines, 3 in. (7.6 cm) or more in diameter at breast height (DBH), regardless of height.

Sapling/Shrub – Woody plants, excluding vines, less than 3 in. DBH and greater than 3.28 ft (1 m) tall.

Herb – All herbaceous (non-woody) plants, regardless of size, and woody plants less than 3.28 ft tall.

Woody vine – All woody vines greater than 3.28 ft in height.

Hydrophytic Vegetation Present? Yes ✓ No ___

Remarks: (Include photo numbers here or on a separate sheet.)

* status taken from 1996 Plant List

SOIL

Sampling Point: WTP23-1

Profile Description: (Describe to the depth needed to document the indicator or confirm the absence of indicators.)

Depth (inches)	Matrix Color (moist)	Matrix %	Redox Features Color (moist)	Redox %	Type[1]	Loc[2]	Texture	Remarks
0-3	10YR3/2	100					Sil	
3-10	10YR3/2	80	10YR5/6	20	C	M	SiCl	
10-12+	2.5Y5/1		10YR5/6	10	C	M	Sl	w/ course fragments

[1]Type: C=Concentration, D=Depletion, RM=Reduced Matrix, MS=Masked Sand Grains. [2]Location: PL=Pore Lining, M=Matrix.

Hydric Soil Indicators:

- ___ Histosol (A1)
- ___ Histic Epipedon (A2)
- ___ Black Histic (A3)
- ___ Hydrogen Sulfide (A4)
- ___ Stratified Layers (A5)
- ___ 2 cm Muck (A10) **(LRR N)**
- ___ Depleted Below Dark Surface (A11)
- ___ Thick Dark Surface (A12)
- ___ Sandy Mucky Mineral (S1) **(LRR N, MLRA 147, 148)**
- ___ Sandy Gleyed Matrix (S4)
- ___ Sandy Redox (S5)
- ___ Stripped Matrix (S6)
- ___ Dark Surface (S7)
- ___ Polyvalue Below Surface (S8) **(MLRA 147, 148)**
- ___ Thin Dark Surface (S9) **(MLRA 147, 148)**
- ___ Loamy Gleyed Matrix (F2)
- ___ Depleted Matrix (F3)
- ✓ Redox Dark Surface (F6)
- ___ Depleted Dark Surface (F7)
- ___ Redox Depressions (F8)
- ___ Iron-Manganese Masses (F12) **(LRR N, MLRA 136)**
- ___ Umbric Surface (F13) **(MLRA 136, 122)**
- ___ Piedmont Floodplain Soils (F19) **(MLRA 148)**

Indicators for Problematic Hydric Soils[3]:

- ___ 2 cm Muck (A10) **(MLRA 147)**
- ___ Coast Prairie Redox (A16) **(MLRA 147, 148)**
- ___ Piedmont Floodplain Soils (F19) **(MLRA 136, 147)**
- ___ Red Parent Material (TF2)
- ___ Very Shallow Dark Surface (TF12)
- ___ Other (Explain in Remarks)

[3]Indicators of hydrophytic vegetation and wetland hydrology must be present, unless disturbed or problematic.

Restrictive Layer (if observed):

Type: _____

Depth (inches): _____

Hydric Soil Present? **Yes** ✓ **No** ___

Remarks:

WETLAND DETERMINATION DATA FORM – Eastern Mountains and Piedmont

Project/Site: Redline City/County: Woodlawn/Baltimore Sampling Date: 2-24-12

Applicant/Owner: MTA State: _____ Sampling Point: UTP-23

Investigator(s): DR, HS, AT Section, Township, Range: _____

Landform (hillslope, terrace, etc.): upland island Local relief (concave, convex, none): convex Slope (%): _____

Subregion (LRR or MLRA): MLRA 148 Lat: _____ Long: _____ Datum: _____

Soil Map Unit Name: Codorus silt loam, 0-3 % slopes NWI classification: upland

Are climatic / hydrologic conditions on the site typical for this time of year? Yes ✓ No _____ (If no, explain in Remarks.)

Are Vegetation _____, Soil _____, or Hydrology _____ significantly disturbed? No Are "Normal Circumstances" present? Yes ✓ No _____

Are Vegetation _____, Soil _____, or Hydrology _____ naturally problematic? No (If needed, explain any answers in Remarks.)

SUMMARY OF FINDINGS – Attach site map showing sampling point locations, transects, important features, etc.

Hydrophytic Vegetation Present?	Yes _____	No ✓	**Is the Sampled Area within a Wetland?** Yes _____ No ✓
Hydric Soil Present?	Yes _____	No ✓	
Wetland Hydrology Present?	Yes _____	No ✓	

Remarks:
upland is raised berm within wetland

HYDROLOGY

Wetland Hydrology Indicators:

Primary Indicators (minimum of one is required; check all that apply)

- ___ Surface Water (A1)
- ___ High Water Table (A2)
- ___ Saturation (A3)
- ___ Water Marks (B1)
- ___ Sediment Deposits (B2)
- ___ Drift Deposits (B3)
- ___ Algal Mat or Crust (B4)
- ___ Iron Deposits (B5)
- ___ Inundation Visible on Aerial Imagery (B7)
- ✓ Water-Stained Leaves (B9)
- ___ Aquatic Fauna (B13)
- ___ True Aquatic Plants (B14)
- ___ Hydrogen Sulfide Odor (C1)
- ___ Oxidized Rhizospheres on Living Roots (C3)
- ___ Presence of Reduced Iron (C4)
- ___ Recent Iron Reduction in Tilled Soils (C6)
- ___ Thin Muck Surface (C7)
- ___ Other (Explain in Remarks)

Secondary Indicators (minimum of two required)

- ___ Surface Soil Cracks (B6)
- ___ Sparsely Vegetated Concave Surface (B8)
- ___ Drainage Patterns (B10)
- ___ Moss Trim Lines (B16)
- ___ Dry-Season Water Table (C2)
- ___ Crayfish Burrows (C8)
- ___ Saturation Visible on Aerial Imagery (C9)
- ___ Stunted or Stressed Plants (D1)
- ___ Geomorphic Position (D2)
- ___ Shallow Aquitard (D3)
- ___ Microtopographic Relief (D4)
- ___ FAC-Neutral Test (D5)

Field Observations:

Surface Water Present?	Yes _____	No ✓	Depth (inches): _____
Water Table Present?	Yes _____	No ✓	Depth (inches): _____
Saturation Present? (includes capillary fringe)	Yes _____	No ✓	Depth (inches): _____

Wetland Hydrology Present? Yes _____ No ✓

Describe Recorded Data (stream gauge, monitoring well, aerial photos, previous inspections), if available:

Remarks:

VEGETATION (Four Strata) – Use scientific names of plants.

Sampling Point: WTP-23

Tree Stratum (Plot size: ____)	Absolute % Cover	Dominant Species?	Indicator Status
1. Prunus serotina	50	Y	FACU
2. Diospyros virginiana	10		FAC
3. Fraxinus pennsylvanica	45	Y	FACW
4.			
5.			
6.			
7.			
8.			
	105	= Total Cover	

Sapling/Shrub Stratum (Plot size: ____)			
1. Ligustrum sinense	20	Y	FACU
2. Fraxinus pennsylvanica	30	Y	FACW
3.			
4.			
5.			
6.			
7.			
8.			
9.			
10.			
	50	= Total Cover	

Herb Stratum (Plot size: ____)			
1.			
2.			
3.			
4.			
5.			
6.			
7.			
8.			
9.			
10.			
11.			
12.			
		= Total Cover	

Woody Vine Stratum (Plot size: ____)			
1. Lonicera japonica	65	Y	FAC
2. Vitis sp.	5		n/a
3. Hedera helix	70	Y	UPL
4.			
5.			
6.			
	140	= Total Cover	

Dominance Test worksheet:

Number of Dominant Species That Are OBL, FACW, or FAC: 3 (A)

Total Number of Dominant Species Across All Strata: 6 (B)

Percent of Dominant Species That Are OBL, FACW, or FAC: 50 (A/B)

Prevalence Index worksheet:

Total % Cover of:		Multiply by:
OBL species		x 1 =
FACW species	75	x 2 = 150
FAC species	75	x 3 = 225
FACU species	70	x 4 = 280
UPL species	70	x 5 = 350
Column Totals:	290 (A)	1005 (B)

Prevalence Index = B/A = 3.47

Hydrophytic Vegetation Indicators:

- ___ 1 - Rapid Test for Hydrophytic Vegetation
- ✓ 2 - Dominance Test is >50%
- ___ 3 - Prevalence Index is ≤3.0[1]
- ___ 4 - Morphological Adaptations[1] (Provide supporting data in Remarks or on a separate sheet)
- ___ Problematic Hydrophytic Vegetation[1] (Explain)

[1]Indicators of hydric soil and wetland hydrology must be present, unless disturbed or problematic.

Definitions of Four Vegetation Strata:

Tree – Woody plants, excluding vines, 3 in. (7.6 cm) or more in diameter at breast height (DBH), regardless of height.

Sapling/Shrub – Woody plants, excluding vines, less than 3 in. DBH and greater than 3.28 ft (1 m) tall.

Herb – All herbaceous (non-woody) plants, regardless of size, and woody plants less than 3.28 ft tall.

Woody vine – All woody vines greater than 3.28 ft in height.

Hydrophytic Vegetation Present? Yes ____ No ✓

Remarks: (Include photo numbers here or on a separate sheet.)

SOIL

Sampling Point: UTP-23

Profile Description: (Describe to the depth needed to document the indicator or confirm the absence of indicators.)

Depth (inches)	Matrix Color (moist)	Matrix %	Redox Features Color (moist)	Redox %	Type[1]	Loc[2]	Texture	Remarks
0-6	2.5Y3/3						sicl	
6-	10YR3/4						sicl	

[1]Type: C=Concentration, D=Depletion, RM=Reduced Matrix, MS=Masked Sand Grains. [2]Location: PL=Pore Lining, M=Matrix.

Hydric Soil Indicators:

- ___ Histosol (A1)
- ___ Histic Epipedon (A2)
- ___ Black Histic (A3)
- ___ Hydrogen Sulfide (A4)
- ___ Stratified Layers (A5)
- ___ 2 cm Muck (A10) **(LRR N)**
- ___ Depleted Below Dark Surface (A11)
- ___ Thick Dark Surface (A12)
- ___ Sandy Mucky Mineral (S1) **(LRR N, MLRA 147, 148)**
- ___ Sandy Gleyed Matrix (S4)
- ___ Sandy Redox (S5)
- ___ Stripped Matrix (S6)
- ___ Dark Surface (S7)
- ___ Polyvalue Below Surface (S8) **(MLRA 147, 148)**
- ___ Thin Dark Surface (S9) **(MLRA 147, 148)**
- ___ Loamy Gleyed Matrix (F2)
- ___ Depleted Matrix (F3)
- ___ Redox Dark Surface (F6)
- ___ Depleted Dark Surface (F7)
- ___ Redox Depressions (F8)
- ___ Iron-Manganese Masses (F12) **(LRR N, MLRA 136)**
- ___ Umbric Surface (F13) **(MLRA 136, 122)**
- ___ Piedmont Floodplain Soils (F19) **(MLRA 148)**

Indicators for Problematic Hydric Soils[3]:

- ___ 2 cm Muck (A10) **(MLRA 147)**
- ___ Coast Prairie Redox (A16) **(MLRA 147, 148)**
- ___ Piedmont Floodplain Soils (F19) **(MLRA 136, 147)**
- ___ Red Parent Material (TF2)
- ___ Very Shallow Dark Surface (TF12)
- ___ Other (Explain in Remarks)

[3]Indicators of hydrophytic vegetation and wetland hydrology must be present, unless disturbed or problematic.

Restrictive Layer (if observed):

Type: _____

Depth (inches): _____

Hydric Soil Present? **Yes** _____ **No** ✓

Remarks:

Stream Features
Field Sheet

Date: 2-28-12 Project Site: Red Line WUS #: RLWUS-24 (Dead Run mainstem)

Observer(s) DR, DRS, AC

Stream Flow:
Perennial: ✓ Intermittent ____ Ephemeral ____

Gradient: ____ Classification: R3UB1

Channel Characteristics:
Natural ✓ Artificial (man-made) ____ Manipulated (man-altered) ✓

Explain: sewer line revetment near US end, functioning as dam, fish blockage

Channel Has (check all that apply):

- [x] Bed and Banks
- [ ] OHWM
  - [ ] clear, natural line impressed on the bank
  - [ ] changes in character of soil
  - [ ] shelving
  - [ ] vegetation matted down, bent, or absent
  - [ ] leaf litter disturbed or washed away
  - [ ] sediment deposition
  - [ ] water staining
  - [ ] the presence of litter and debris
  - [ ] destruction of terrestrial vegetation
  - [ ] the presence of wrack line
  - [ ] sediment sorting
  - [ ] scour
  - [ ] multiple observed or predicted flow events
  - [ ] abrupt change in plant community
  - [ ] other (list): ____
- [ ] Discontinuous OHWM (explain): ____

Morphology:
Avg. Channel Width 70' Depth 8' Avg. Water Depth 10"

Has stream morphometry been altered? unknown Describe : ____

Habitat and Pollutants:
Substrate (predominant type (s)): cobble-gravel, boulders

Habitat Complexity (characterize): poor, lack of stable instream cover, highly embedded, some depth + flow diversity but no pool habitat

Bank Erosion: Severe ____ Moderate ____ Minor ✓

Describe: banks mostly vegetated, rocky

Silt Deposition: low, highly urbanized US catchment

Pollutants (observation / potential sources): road runoff, lots of trash, high nutrient inputs (algae very abundant)

Stormwater Outfalls: 1 (ephemeral channel carrying SW flows)

Biological Habitat For (check all that apply):

Federally Listed species _____ Fish Spawn Areas _____

Other Environmentally-Sensitive Species _____ Aquatic/Wildlife Diversity _____

Explain Findings: two-lined salamanders observed in tributary (WUS-22)

Riparian Zone:

Development: low, left bank is narrowly lined w/ small trees, RB mid-successional forest

Riparian vegetation: Forest ✓ Shrubs ✓ Herbs ✓

Dominant Species: green ash, Am. sycamore, black locust, multiflora rose, bush honeysuckle, fig buttercup, English ivy, grapevines

Riparian Buffer Width: LB = <10', RB = 70'

Approximate % Shading by Woody Species: 15%

Notes: Ephemeral 1 = width 5', depth 3', flowing water @ bottom, hydric soils near culvert scour present, debris near culvert

Stream Features
Field Sheet

Date: 2/28/12 Project Site: Red Line WUS # : RLWUS-25

Observer(s) DRS, DR, AC

Stream Flow:

Perennial: _____ Intermittent _____ Ephemeral ✓

Gradient: _____ Classification: ephemeral

Channel Characteristics:

Natural ✓ Artificial (man-made) _____ Manipulated (man-altered) ✓

Explain: natural swale receiving storm flows from drains @ US limit

Channel Has (check all that apply):

- [x] Bed and Banks
- [ ] OHWM
  - [ ] clear, natural line impressed on the bank
  - [ ] changes in character of soil
  - [ ] shelving
  - [ ] vegetation matted down, bent, or absent
  - [x] leaf litter disturbed or washed away
  - [x] sediment deposition
  - [ ] water staining
  - [x] the presence of litter and debris
  - [ ] destruction of terrestrial vegetation
  - [ ] the presence of wrack line
  - [ ] sediment sorting
  - [x] scour
  - [ ] multiple observed or predicted flow events
  - [ ] abrupt change in plant community
  - [ ] other (list): _____
- [ ] Discontinuous OHWM (explain): _____

Morphology:

Avg. Channel Width 4' Depth 2' Avg. Water Depth none observed

Has stream morphometry been altered? no Describe : _____

Habitat and Pollutants:

Substrate (predominant type (s)): cobble-gravel, sand

Habitat Complexity (characterize): low, no flow

Bank Erosion: Severe _____ Moderate ✓ Minor _____

Describe: highly incised, but tree roots anchor exposed banks

Silt Deposition: low, US catchment mostly paved

Pollutants (observation / potential sources): trash, roadway-associated contaminants

Stormwater Outfalls: 2 @ US limit

Biological Habitat For (check all that apply):

Federally Listed species _____ Fish Spawn Areas _____

Other Environmentally-Sensitive Species _____ Aquatic/Wildlife Diversity _____

Explain Findings: _____

Riparian Zone:

Development: well developed in general, but reduced near US end

Riparian vegetation: Forest ✓ Shrubs ✓ Herbs ✓

Dominant Species: boxelder, white oak, slippery elm, Oriental bittersweet, wine raspberry, Jap. honeysuckle

Riparian Buffer Width: >100 ft on LB, 10-50 ft on RB

Approximate % Shading by Woody Species: ~80% overall

Notes: _____

Stream Features
Field Sheet

Date: 2/28/12 Project Site: Red Line WUS # : RLWUS-26

Observer(s) DR, DS, AC

Stream Flow:
Perennial: ✓ Intermittent ____ Ephemeral ____

Gradient: ____ Classification: R3RB

Channel Characteristics:
Natural ✓ Artificial (man-made) ✓ Manipulated (man-altered) ____

Explain: channel was originally concrete-lined but is returning to natural state as concrete has degraded + broken up

Channel Has (check all that apply):

- [x] Bed and Banks
- [ ] OHWM
  - [ ] clear, natural line impressed on the bank
  - [ ] changes in character of soil
  - [ ] shelving
  - [ ] vegetation matted down, bent, or absent
  - [ ] leaf litter disturbed or washed away
  - [ ] sediment deposition
  - [ ] water staining
  - [ ] the presence of litter and debris
  - [ ] destruction of terrestrial vegetation
  - [ ] the presence of wrack line
  - [ ] sediment sorting
  - [ ] scour
  - [ ] multiple observed or predicted flow events
  - [ ] abrupt change in plant community
  - [ ] other (list): ____
- [ ] Discontinuous OHWM (explain): ____

Morphology:
Avg. Channel Width 20' Depth 6' Avg. Water Depth 12"

Has stream morphometry been altered? yes Describe : US portion is culverted and lined w/ concrete

Habitat and Pollutants:
Substrate (predominant type (s)): rock, rubble

Habitat Complexity (characterize): poor, stable cover absent although some pool habitat is present

Bank Erosion: Severe ____ Moderate ✓ Minor ____

Describe: some exposed banks on RB, some tree roots undermined

Silt Deposition: minor

Pollutants (observation / potential sources): roadway-associated contaminants, trash abundant, algae indicative of excess nutrient loads

Stormwater Outfalls: 1 near culvert

Biological Habitat For (check all that apply):

Federally Listed species _____ Fish Spawn Areas _____

Other Environmentally-Sensitive Species _____ Aquatic/Wildlife Diversity _____

Explain Findings: _____

Riparian Zone:

Development: good, mid-successional forest D.S portion

Riparian vegetation: Forest ✓ Shrubs ✓ Herbs ✓

Dominant Species: black locust, slippery elm, multiflora rose, Jap. honeysuckle, poison ivy, Chinese privet

Riparian Buffer Width: >100' both banks

Approximate % Shading by Woody Species: 65%

Notes: _____

Stream Features
Field Sheet

Date: 2/28/12 Project Site: Red Line WUS # : RLWS-27

Observer(s) DR, DS, AC

Stream Flow:

Perennial: _____ Intermittent ✓ Ephemeral _____

Gradient: _____ Classification: R4RB2

Channel Characteristics:

Natural _____ Artificial (man-made) ✓ Manipulated (man-altered) _____

Explain: concrete-lined

Channel Has (check all that apply):

- [x] Bed and Banks
- [ ] OHWM
  - [ ] clear, natural line impressed on the bank
  - [ ] changes in character of soil
  - [ ] shelving
  - [ ] vegetation matted down, bent, or absent
  - [ ] leaf litter disturbed or washed away
  - [ ] sediment deposition
  - [ ] water staining
  - [ ] the presence of litter and debris
  - [ ] destruction of terrestrial vegetation
  - [ ] the presence of wrack line
  - [ ] sediment sorting
  - [ ] scour
  - [ ] multiple observed or predicted flow events
  - [ ] abrupt change in plant community
  - [ ] other (list): _____
- [ ] Discontinuous OHWM (explain): _____

Morphology:

Avg. Channel Width 4' Depth 1' Avg. Water Depth <1"

Has stream morphometry been altered? yes Describe : concrete trapezoidal flume

Habitat and Pollutants:

Substrate (predominant type (s)): concrete (algae)

Habitat Complexity (characterize): very poor, lacking stable habitat & low flows

Bank Erosion: Severe _____ Moderate _____ Minor ✓

Describe: _____

Silt Deposition: none observed

Pollutants (observation / potential sources): roadway = assoc. contaminants

Stormwater Outfalls: 1 @ US end

Biological Habitat For (check all that apply):

Federally Listed species _____ Fish Spawn Areas _____

Other Environmentally-Sensitive Species _____ Aquatic/Wildlife Diversity _____

Explain Findings: _____

Riparian Zone:

Development: early successional

Riparian vegetation: Forest ✓ Shrubs ✓ Herbs ✓

Dominant Species: slippery elm, black locust, black walnut, tatarian honeysuckle, grapevine

Riparian Buffer Width: LB: 20', RB: >100'

Approximate % Shading by Woody Species: 50 %

Notes: groundwater in channel may be entering from leaks in contributing pipe

WETLAND DETERMINATION DATA FORM – Eastern Mountains and Piedmont RLWL-28

Project/Site: RedLine City/County: Woodlawn/Baltimore Sampling Date: 2/28/12

Applicant/Owner: MTA State: MD Sampling Point: WTP-28-1

Investigator(s): DR, DRS, AC Section, Township, Range: _____

Landform (hillslope, terrace, etc.): roadside ditch/seep Local relief (concave, convex, none): concave Slope (%): _____

Subregion (LRR or MLRA): MLRA-148 Lat: _____ Long: _____ Datum: _____

Soil Map Unit Name: Udorthents, highway NWI classification: PEM1E

Are climatic / hydrologic conditions on the site typical for this time of year? Yes ✓ No _____ (If no, explain in Remarks.)

Are Vegetation _____, Soil _____, or Hydrology _____ significantly disturbed? No Are "Normal Circumstances" present? Yes ✓ No _____

Are Vegetation _____, Soil _____, or Hydrology _____ naturally problematic? No (If needed, explain any answers in Remarks.)

SUMMARY OF FINDINGS – Attach site map showing sampling point locations, transects, important features, etc.

Hydrophytic Vegetation Present?	Yes ✓	No _____	**Is the Sampled Area within a Wetland?** Yes ✓ No _____
Hydric Soil Present?	Yes ✓	No _____	
Wetland Hydrology Present?	Yes ✓	No _____	

Remarks:

HYDROLOGY

Wetland Hydrology Indicators:

Primary Indicators (minimum of one is required; check all that apply)

- ✓ Surface Water (A1)
- ✓ High Water Table (A2)
- ✓ Saturation (A3)
- ___ Water Marks (B1)
- ___ Sediment Deposits (B2)
- ___ Drift Deposits (B3)
- ___ Algal Mat or Crust (B4)
- ___ Iron Deposits (B5)
- ___ Inundation Visible on Aerial Imagery (B7)
- ___ Water-Stained Leaves (B9)
- ___ Aquatic Fauna (B13)
- ___ True Aquatic Plants (B14)
- ___ Hydrogen Sulfide Odor (C1)
- ___ Oxidized Rhizospheres on Living Roots (C3)
- ___ Presence of Reduced Iron (C4)
- ___ Recent Iron Reduction in Tilled Soils (C6)
- ✓ Thin Muck Surface (C7)
- ___ Other (Explain in Remarks)

Secondary Indicators (minimum of two required)

- ___ Surface Soil Cracks (B6)
- ___ Sparsely Vegetated Concave Surface (B8)
- ✓ Drainage Patterns (B10)
- ___ Moss Trim Lines (B16)
- ___ Dry-Season Water Table (C2)
- ___ Crayfish Burrows (C8)
- ___ Saturation Visible on Aerial Imagery (C9)
- ___ Stunted or Stressed Plants (D1)
- ___ Geomorphic Position (D2)
- ___ Shallow Aquitard (D3)
- ___ Microtopographic Relief (D4)
- ___ FAC-Neutral Test (D5)

Field Observations:

Surface Water Present?	Yes ✓	No _____	Depth (inches): <1"
Water Table Present?	Yes ✓	No _____	Depth (inches): 0
Saturation Present? (includes capillary fringe)	Yes ✓	No _____	Depth (inches): 0

Wetland Hydrology Present? Yes ✓ No _____

Describe Recorded Data (stream gauge, monitoring well, aerial photos, previous inspections), if available:

Remarks:

VEGETATION (Four Strata) – Use scientific names of plants.

Sampling Point: WTP-28-1

Tree Stratum (Plot size: _____)	Absolute % Cover	Dominant Species?	Indicator Status
1.			
2.			
3.			
4.			
5.			
6.			
7.			
8.			
	_____ = Total Cover		

Sapling/Shrub Stratum (Plot size: _____)			
1.			
2.			
3.			
4.			
5.			
6.			
7.			
8.			
9.			
10.			
	_____ = Total Cover		

Herb Stratum (Plot size: _____)			
1. Agrostis stolonifera	12	Y	FACW
2. Juncus effusus	8	Y	FACW
3. Scirpus polyphyllus	15	Y	OBL
4. Nasturtium officinale	2		OBL
5.			
6.			
7.			
8.			
9.			
10.			
11.			
12.			
	37 = Total Cover		

Woody Vine Stratum (Plot size: _____)			
1. Lonicera japonica	8	Y	FAC
2.			
3.			
4.			
5.			
6.			
	8 = Total Cover		

Dominance Test worksheet:

Number of Dominant Species That Are OBL, FACW, or FAC: 4 (A)

Total Number of Dominant Species Across All Strata: 4 (B)

Percent of Dominant Species That Are OBL, FACW, or FAC: 100 (A/B)

Prevalence Index worksheet:

Total % Cover of:		Multiply by:
OBL species	_____	x 1 = _____
FACW species	_____	x 2 = _____
FAC species	_____	x 3 = _____
FACU species	_____	x 4 = _____
UPL species	_____	x 5 = _____
Column Totals:	_____ (A)	_____ (B)

Prevalence Index = B/A = _____

Hydrophytic Vegetation Indicators:

- ___ 1 - Rapid Test for Hydrophytic Vegetation
- ✓ 2 - Dominance Test is >50%
- ___ 3 - Prevalence Index is ≤3.0[1]
- ___ 4 - Morphological Adaptations[1] (Provide supporting data in Remarks or on a separate sheet)
- ___ Problematic Hydrophytic Vegetation[1] (Explain)

[1]Indicators of hydric soil and wetland hydrology must be present, unless disturbed or problematic.

Definitions of Four Vegetation Strata:

Tree – Woody plants, excluding vines, 3 in. (7.6 cm) or more in diameter at breast height (DBH), regardless of height.

Sapling/Shrub – Woody plants, excluding vines, less than 3 in. DBH and greater than 3.28 ft (1 m) tall.

Herb – All herbaceous (non-woody) plants, regardless of size, and woody plants less than 3.28 ft tall.

Woody vine – All woody vines greater than 3.28 ft in height.

Hydrophytic Vegetation Present? Yes ✓ No _____

Remarks: (Include photo numbers here or on a separate sheet.)

SOIL

Sampling Point: WTP-28-1

Profile Description: (Describe to the depth needed to document the indicator or confirm the absence of indicators.)

Depth (inches)	Matrix Color (moist)	Matrix %	Redox Features Color (moist)	Redox %	Type[1]	Loc[2]	Texture	Remarks
0-2	10YR3/2		—				sil	
2-6	5GY4/1	80	7.5YR4/6	20	C	M	cl	w/ coarse fragments

[1]Type: C=Concentration, D=Depletion, RM=Reduced Matrix, MS=Masked Sand Grains. [2]Location: PL=Pore Lining, M=Matrix.

Hydric Soil Indicators:

- ___ Histosol (A1)
- ___ Histic Epipedon (A2)
- ___ Black Histic (A3)
- ___ Hydrogen Sulfide (A4)
- ___ Stratified Layers (A5)
- ___ 2 cm Muck (A10) **(LRR N)**
- ___ Depleted Below Dark Surface (A11)
- ___ Thick Dark Surface (A12)
- ___ Sandy Mucky Mineral (S1) **(LRR N, MLRA 147, 148)**
- ___ Sandy Gleyed Matrix (S4)
- ___ Sandy Redox (S5)
- ___ Stripped Matrix (S6)
- ___ Dark Surface (S7)
- ___ Polyvalue Below Surface (S8) **(MLRA 147, 148)**
- ___ Thin Dark Surface (S9) **(MLRA 147, 148)**
- ___ Loamy Gleyed Matrix (F2)
- ✓ Depleted Matrix (F3)
- ___ Redox Dark Surface (F6)
- ___ Depleted Dark Surface (F7)
- ___ Redox Depressions (F8)
- ___ Iron-Manganese Masses (F12) **(LRR N, MLRA 136)**
- ___ Umbric Surface (F13) **(MLRA 136, 122)**
- ___ Piedmont Floodplain Soils (F19) **(MLRA 148)**

Indicators for Problematic Hydric Soils[3]:

- ___ 2 cm Muck (A10) **(MLRA 147)**
- ___ Coast Prairie Redox (A16) **(MLRA 147, 148)**
- ___ Piedmont Floodplain Soils (F19) **(MLRA 136, 147)**
- ___ Red Parent Material (TF2)
- ___ Very Shallow Dark Surface (TF12)
- ___ Other (Explain in Remarks)

[3]Indicators of hydrophytic vegetation and wetland hydrology must be present, unless disturbed or problematic.

Restrictive Layer (if observed):

Type: _____

Depth (inches): _____

Hydric Soil Present? Yes ✓ No ___

Remarks:

rejected by rock @ 6"
soil matrix color is not indicative of long-duration saturation
but rather green-grey parent material

WETLAND DETERMINATION DATA FORM – Eastern Mountains and Piedmont

Project/Site: Red Line City/County: Woodlawn/Baltimore Sampling Date: 2/28/12
Applicant/Owner: MTA State: MD Sampling Point: UTP-28-1
Investigator(s): DR, DRS, AC Section, Township, Range: _____
Landform (hillslope, terrace, etc.): grassy knoll Local relief (concave, convex, none): convex Slope (%): _____
Subregion (LRR or MLRA): MLRA-148 Lat: _____ Long: _____ Datum: _____
Soil Map Unit Name: Udorthents, highway NWI classification: upland
Are climatic / hydrologic conditions on the site typical for this time of year? Yes ✓ No _____ (If no, explain in Remarks.)
Are Vegetation ✓, Soil _____, or Hydrology _____ significantly disturbed? Are "Normal Circumstances" present? Yes ✓ No _____
Are Vegetation _____, Soil _____, or Hydrology _____ naturally problematic? No (If needed, explain any answers in Remarks.)

SUMMARY OF FINDINGS – Attach site map showing sampling point locations, transects, important features, etc.

Hydrophytic Vegetation Present?	Yes _____	No ✓	**Is the Sampled Area within a Wetland?** Yes _____ No ✓
Hydric Soil Present?	Yes _____	No ✓	
Wetland Hydrology Present?	Yes _____	No ✓	

Remarks:

HYDROLOGY

Wetland Hydrology Indicators:

Primary Indicators (minimum of one is required; check all that apply)

- ___ Surface Water (A1)
- ___ High Water Table (A2)
- ___ Saturation (A3)
- ___ Water Marks (B1)
- ___ Sediment Deposits (B2)
- ___ Drift Deposits (B3)
- ___ Algal Mat or Crust (B4)
- ___ Iron Deposits (B5)
- ___ Inundation Visible on Aerial Imagery (B7)
- ___ Water-Stained Leaves (B9)
- ___ Aquatic Fauna (B13)
- ___ True Aquatic Plants (B14)
- ___ Hydrogen Sulfide Odor (C1)
- ___ Oxidized Rhizospheres on Living Roots (C3)
- ___ Presence of Reduced Iron (C4)
- ___ Recent Iron Reduction in Tilled Soils (C6)
- ___ Thin Muck Surface (C7)
- ___ Other (Explain in Remarks)

Secondary Indicators (minimum of two required)

- ___ Surface Soil Cracks (B6)
- ___ Sparsely Vegetated Concave Surface (B8)
- ___ Drainage Patterns (B10)
- ___ Moss Trim Lines (B16)
- ___ Dry-Season Water Table (C2)
- ___ Crayfish Burrows (C8)
- ___ Saturation Visible on Aerial Imagery (C9)
- ___ Stunted or Stressed Plants (D1)
- ___ Geomorphic Position (D2)
- ___ Shallow Aquitard (D3)
- ___ Microtopographic Relief (D4)
- ___ FAC-Neutral Test (D5)

Field Observations:

Surface Water Present?	Yes _____	No _____	Depth (inches): _____
Water Table Present?	Yes _____	No _____	Depth (inches): _____
Saturation Present? (includes capillary fringe)	Yes _____	No _____	Depth (inches): _____

Wetland Hydrology Present? Yes _____ No ✓

Describe Recorded Data (stream gauge, monitoring well, aerial photos, previous inspections), if available:

Remarks:

no hydrologic indicators observed

VEGETATION (Four Strata) – Use scientific names of plants.

Sampling Point: UTP-28-1

Tree Stratum (Plot size: _____)	Absolute % Cover	Dominant Species?	Indicator Status
1.			
2.			
3.			
4.			
5.			
6.			
7.			
8.			
	= Total Cover		

Sapling/Shrub Stratum (Plot size: _____)			
1.			
2.			
3.			
4.			
5.			
6.			
7.			
8.			
9.			
10.			
	= Total Cover		

Herb Stratum (Plot size: _____)			
1. Schedonorus pratensis	95	Y	FACU
2. Cardamine hirsuta	15		FACU
3.			
4.			
5.			
6.			
7.			
8.			
9.			
10.			
11.			
12.			
	110 = Total Cover		

Woody Vine Stratum (Plot size: _____)			
1.			
2.			
3.			
4.			
5.			
6.			
	= Total Cover		

Dominance Test worksheet:

Number of Dominant Species That Are OBL, FACW, or FAC: 0 (A)

Total Number of Dominant Species Across All Strata: 2 (B)

Percent of Dominant Species That Are OBL, FACW, or FAC: 0 (A/B)

Prevalence Index worksheet:

Total % Cover of:		Multiply by:
OBL species		x 1 =
FACW species		x 2 =
FAC species		x 3 =
FACU species		x 4 =
UPL species		x 5 =
Column Totals:	(A)	(B)

Prevalence Index = B/A = _____

Hydrophytic Vegetation Indicators:

___ 1 - Rapid Test for Hydrophytic Vegetation

___ 2 - Dominance Test is >50%

___ 3 - Prevalence Index is ≤3.0[1]

___ 4 - Morphological Adaptations[1] (Provide supporting data in Remarks or on a separate sheet)

___ Problematic Hydrophytic Vegetation[1] (Explain)

[1]Indicators of hydric soil and wetland hydrology must be present, unless disturbed or problematic.

Definitions of Four Vegetation Strata:

Tree – Woody plants, excluding vines, 3 in. (7.6 cm) or more in diameter at breast height (DBH), regardless of height.

Sapling/Shrub – Woody plants, excluding vines, less than 3 in. DBH and greater than 3.28 ft (1 m) tall.

Herb – All herbaceous (non-woody) plants, regardless of size, and woody plants less than 3.28 ft tall.

Woody vine – All woody vines greater than 3.28 ft in height.

Hydrophytic Vegetation Present? Yes _____ No ✓

Remarks: (Include photo numbers here or on a separate sheet.)

vegetation is periodically mowed

SOIL

Sampling Point: UTP-28-1

Profile Description: (Describe to the depth needed to document the indicator or confirm the absence of indicators.)

Depth (inches)	Matrix Color (moist)	Matrix %	Redox Features Color (moist)	Redox %	Type[1]	Loc[2]	Texture	Remarks
0-4	10YR 3/3						cl	

[1]Type: C=Concentration, D=Depletion, RM=Reduced Matrix, MS=Masked Sand Grains. [2]Location: PL=Pore Lining, M=Matrix.

Hydric Soil Indicators:

- ___ Histosol (A1)
- ___ Histic Epipedon (A2)
- ___ Black Histic (A3)
- ___ Hydrogen Sulfide (A4)
- ___ Stratified Layers (A5)
- ___ 2 cm Muck (A10) **(LRR N)**
- ___ Depleted Below Dark Surface (A11)
- ___ Thick Dark Surface (A12)
- ___ Sandy Mucky Mineral (S1) **(LRR N, MLRA 147, 148)**
- ___ Sandy Gleyed Matrix (S4)
- ___ Sandy Redox (S5)
- ___ Stripped Matrix (S6)
- ___ Dark Surface (S7)
- ___ Polyvalue Below Surface (S8) **(MLRA 147, 148)**
- ___ Thin Dark Surface (S9) **(MLRA 147, 148)**
- ___ Loamy Gleyed Matrix (F2)
- ___ Depleted Matrix (F3)
- ___ Redox Dark Surface (F6)
- ___ Depleted Dark Surface (F7)
- ___ Redox Depressions (F8)
- ___ Iron-Manganese Masses (F12) **(LRR N, MLRA 136)**
- ___ Umbric Surface (F13) **(MLRA 136, 122)**
- ___ Piedmont Floodplain Soils (F19) **(MLRA 148)**

Indicators for Problematic Hydric Soils[3]:

- ___ 2 cm Muck (A10) **(MLRA 147)**
- ___ Coast Prairie Redox (A16) **(MLRA 147, 148)**
- ___ Piedmont Floodplain Soils (F19) **(MLRA 136, 147)**
- ___ Red Parent Material (TF2)
- ___ Very Shallow Dark Surface (TF12)
- ___ Other (Explain in Remarks)

[3]Indicators of hydrophytic vegetation and wetland hydrology must be present, unless disturbed or problematic.

Restrictive Layer (if observed):

Type: _____

Depth (inches): _____

Hydric Soil Present? **Yes** _____ **No** ✓

Remarks:

rejected by bed rock @ 4"

Stream Features
Field Sheet

Date: 3/1/12 Project Site: Red Line WUS #: R4WUS-29

Observer(s) DR, DRS, AC

Stream Flow:

Perennial: _____ Intermittent ✓ Ephemeral _____

Gradient: _____ Classification: R4RB2

Channel Characteristics:

Natural _____ Artificial (man-made) _____ Manipulated (man-altered) ✓

Explain: channel drains W28, some groundwater inflow is evident

Channel Has (check all that apply):

- [x] Bed and Banks — concrete trapezoidal channel
- [ ] OHWM
  - [ ] clear, natural line impressed on the bank
  - [ ] changes in character of soil
  - [ ] shelving
  - [ ] vegetation matted down, bent, or absent
  - [ ] leaf litter disturbed or washed away
  - [ ] sediment deposition
  - [ ] water staining
  - [ ] the presence of litter and debris
  - [ ] destruction of terrestrial vegetation
  - [ ] the presence of wrack line
  - [ ] sediment sorting
  - [ ] scour
  - [ ] multiple observed or predicted flow events
  - [ ] abrupt change in plant community
  - [ ] other (list): _____
- [ ] Discontinuous OHWM (explain): _____

Morphology:

Avg. Channel Width 4' Depth <1' Avg. Water Depth <1"

Has stream morphometry been altered? Y Describe: concrete channel

Habitat and Pollutants:

Substrate (predominant type (s)): Concrete

Habitat Complexity (characterize): absent

Bank Erosion: Severe _____ Moderate _____ Minor ✓

Describe: n/a

Silt Deposition: none apparent

Pollutants (observation / potential sources): roadway-assoc. chemicals

Stormwater Outfalls: 6

Biological Habitat For (check all that apply): n/a

Federally Listed species _____ Fish Spawn Areas _____

Other Environmentally-Sensitive Species _____ Aquatic/Wildlife Diversity _____

Explain Findings: _____

Riparian Zone:

Development: minimal riparian development

Riparian vegetation: Forest _____ Shrubs _____ Herbs ✓

Dominant Species: lawn, grasses + forbs

Riparian Buffer Width: ~15' grass buffer - both banks

Approximate % Shading by Woody Species: Ø

Notes: _____

WETLAND DETERMINATION DATA FORM – Eastern Mountains and Piedmont

RLWL-30

Project/Site: Red Line City/County: Baltimore Sampling Date: 2/28/12

Applicant/Owner: MTA State: MD Sampling Point: WTP-30-1

Investigator(s): DR, DRS, AC Section, Township, Range: _____

Landform (hillslope, terrace, etc.): ditch Local relief (concave, convex, none): concave Slope (%): _____

Subregion (LRR or MLRA): MLRA 148 Lat: _____ Long: _____ Datum: _____

Soil Map Unit Name: Legore-Urban land complex NWI classification: PEM1C

Are climatic / hydrologic conditions on the site typical for this time of year? Yes ✓ No _____ (If no, explain in Remarks.)

Are Vegetation _____, Soil _____, or Hydrology _____ significantly disturbed? No Are "Normal Circumstances" present? Yes ✓ No _____

Are Vegetation _____, Soil _____, or Hydrology _____ naturally problematic? No (If needed, explain any answers in Remarks.)

SUMMARY OF FINDINGS – Attach site map showing sampling point locations, transects, important features, etc.

Hydrophytic Vegetation Present?	Yes ✓	No _____	**Is the Sampled Area within a Wetland?** Yes ✓ No _____
Hydric Soil Present?	Yes ✓	No _____	
Wetland Hydrology Present?	Yes ✓	No _____	

Remarks:

HYDROLOGY

Wetland Hydrology Indicators:

Primary Indicators (minimum of one is required; check all that apply)

- ✓ Surface Water (A1)
- ✓ High Water Table (A2)
- ✓ Saturation (A3)
- ___ Water Marks (B1)
- ✓ Sediment Deposits (B2)
- ___ Drift Deposits (B3)
- ___ Algal Mat or Crust (B4)
- ___ Iron Deposits (B5)
- ✓ Inundation Visible on Aerial Imagery (B7)
- ✓ Water-Stained Leaves (B9)
- ___ Aquatic Fauna (B13)
- ___ True Aquatic Plants (B14)
- ___ Hydrogen Sulfide Odor (C1)
- ___ Oxidized Rhizospheres on Living Roots (C3)
- ___ Presence of Reduced Iron (C4)
- ___ Recent Iron Reduction in Tilled Soils (C6)
- ___ Thin Muck Surface (C7)
- ___ Other (Explain in Remarks)

Secondary Indicators (minimum of two required)

- ___ Surface Soil Cracks (B6)
- ✓ Sparsely Vegetated Concave Surface (B8)
- ___ Drainage Patterns (B10)
- ___ Moss Trim Lines (B16)
- ___ Dry-Season Water Table (C2)
- ___ Crayfish Burrows (C8)
- ___ Saturation Visible on Aerial Imagery (C9)
- ___ Stunted or Stressed Plants (D1)
- ___ Geomorphic Position (D2)
- ___ Shallow Aquitard (D3)
- ___ Microtopographic Relief (D4)
- ___ FAC-Neutral Test (D5)

Field Observations:

Surface Water Present?	Yes ✓	No _____	Depth (inches): ≤ 3"
Water Table Present?	Yes ✓	No _____	Depth (inches): _____
Saturation Present? (includes capillary fringe)	Yes ✓	No _____	Depth (inches): _____

Wetland Hydrology Present? Yes ✓ No _____

Describe Recorded Data (stream gauge, monitoring well, aerial photos, previous inspections), if available:

Remarks:

VEGETATION (Four Strata) – Use scientific names of plants.

Sampling Point: WTP-30

Tree Stratum (Plot size: _____)	Absolute % Cover	Dominant Species?	Indicator Status
1.			
2.			
3.			
4.			
5.			
6.			
7.			
8.			
	= Total Cover		

Sapling/Shrub Stratum (Plot size: _____)			
1.			
2.			
3.			
4.			
5.			
6.			
7.			
8.			
9.			
10.			
	= Total Cover		

Herb Stratum (Plot size: _____)			
1. Typha latifolia	5		OBL
2. Schoenoplectus tabernaemontani	25	Y	OBL
3.			
4.			
5.			
6.			
7.			
8.			
9.			
10.			
11.			
12.			
	30 = Total Cover		

Woody Vine Stratum (Plot size: _____)			
1.			
2.			
3.			
4.			
5.			
6.			
	= Total Cover		

Dominance Test worksheet:

Number of Dominant Species That Are OBL, FACW, or FAC: 1 (A)

Total Number of Dominant Species Across All Strata: 1 (B)

Percent of Dominant Species That Are OBL, FACW, or FAC: 100 (A/B)

Prevalence Index worksheet:

Total % Cover of:		Multiply by:
OBL species		x 1 =
FACW species		x 2 =
FAC species		x 3 =
FACU species		x 4 =
UPL species		x 5 =
Column Totals:	(A)	(B)

Prevalence Index = B/A = _____

Hydrophytic Vegetation Indicators:

✓ 1 - Rapid Test for Hydrophytic Vegetation

✓ 2 - Dominance Test is >50%

___ 3 - Prevalence Index is ≤3.0[1]

___ 4 - Morphological Adaptations[1] (Provide supporting data in Remarks or on a separate sheet)

___ Problematic Hydrophytic Vegetation[1] (Explain)

[1]Indicators of hydric soil and wetland hydrology must be present, unless disturbed or problematic.

Definitions of Four Vegetation Strata:

Tree – Woody plants, excluding vines, 3 in. (7.6 cm) or more in diameter at breast height (DBH), regardless of height.

Sapling/Shrub – Woody plants, excluding vines, less than 3 in. DBH and greater than 3.28 ft (1 m) tall.

Herb – All herbaceous (non-woody) plants, regardless of size, and woody plants less than 3.28 ft tall.

Woody vine – All woody vines greater than 3.28 ft in height.

Hydrophytic Vegetation Present? Yes ✓ No ___

Remarks: (Include photo numbers here or on a separate sheet.)

SOIL

Sampling Point: UJTP-30-1

Profile Description: (Describe to the depth needed to document the indicator or confirm the absence of indicators.)

Depth (inches)	Matrix Color (moist)	Matrix %	Redox Features Color (moist)	Redox %	Type[1]	Loc[2]	Texture	Remarks
0-3	5GY3/1	85	7.5YR4/4	15	C	M	loam	
3-6	5Y3/2	60	5Y4/4	40	C	M	sl	

[1]Type: C=Concentration, D=Depletion, RM=Reduced Matrix, MS=Masked Sand Grains. [2]Location: PL=Pore Lining, M=Matrix.

Hydric Soil Indicators:

- ___ Histosol (A1)
- ___ Histic Epipedon (A2)
- ___ Black Histic (A3)
- ___ Hydrogen Sulfide (A4)
- ___ Stratified Layers (A5)
- ___ 2 cm Muck (A10) **(LRR N)**
- ___ Depleted Below Dark Surface (A11)
- ___ Thick Dark Surface (A12)
- ___ Sandy Mucky Mineral (S1) **(LRR N, MLRA 147, 148)**
- ___ Sandy Gleyed Matrix (S4)
- ___ Sandy Redox (S5)
- ___ Stripped Matrix (S6)
- ___ Dark Surface (S7)
- ___ Polyvalue Below Surface (S8) **(MLRA 147, 148)**
- ___ Thin Dark Surface (S9) **(MLRA 147, 148)**
- ___ Loamy Gleyed Matrix (F2)
- ___ Depleted Matrix (F3)
- ✓ Redox Dark Surface (F6)
- ___ Depleted Dark Surface (F7)
- ___ Redox Depressions (F8)
- ___ Iron-Manganese Masses (F12) **(LRR N, MLRA 136)**
- ___ Umbric Surface (F13) **(MLRA 136, 122)**
- ___ Piedmont Floodplain Soils (F19) **(MLRA 148)**

Indicators for Problematic Hydric Soils[3]:

- ___ 2 cm Muck (A10) **(MLRA 147)**
- ___ Coast Prairie Redox (A16) **(MLRA 147, 148)**
- ___ Piedmont Floodplain Soils (F19) **(MLRA 136, 147)**
- ___ Red Parent Material (TF2)
- ___ Very Shallow Dark Surface (TF12)
- ___ Other (Explain in Remarks)

[3]Indicators of hydrophytic vegetation and wetland hydrology must be present, unless disturbed or problematic.

Restrictive Layer (if observed):

Type: _____

Depth (inches): _____

Hydric Soil Present? Yes ✓ No ___

Remarks:

rejected by rock @ 6"
soil matrix color is most likely indicative of parent material rather than highly saturated conditions typical of gleyed soils

Stream Features
Field Sheet

Date: 4/2/12 Project Site: _____ WUS # : RCWUS-32

Observer(s) SW, DR, MN

Stream Flow:

Perennial: _____ Intermittent ✓ Ephemeral _____

Gradient: 2% Classification: R4RB2

Channel Characteristics:

Natural _____ Artificial (man-made) _____ Manipulated (man-altered) ✓

Explain: natural drainage, straightened + rip-rapped

Channel Has (check all that apply):

- [x] Bed and Banks
- [ ] OHWM
  - [ ] clear, natural line impressed on the bank
  - [ ] changes in character of soil
  - [ ] shelving
  - [ ] vegetation matted down, bent, or absent
  - [ ] leaf litter disturbed or washed away
  - [ ] sediment deposition
  - [ ] water staining
  - [ ] the presence of litter and debris
  - [ ] destruction of terrestrial vegetation
  - [ ] the presence of wrack line
  - [ ] sediment sorting
  - [ ] scour
  - [ ] multiple observed or predicted flow events
  - [ ] abrupt change in plant community
  - [ ] other (list): _____
- [ ] Discontinuous OHWM (explain): _____

Morphology:

Avg. Channel Width 5' Depth 8" Avg. Water Depth 3"

Has stream morphometry been altered? yes Describe : straightened + stabilized with rip-rap

Habitat and Pollutants:

Substrate (predominant type (s)): rip-rap, cobble-sized

Habitat Complexity (characterize): low, shallow flows, algae extensive

Bank Erosion: Severe _____ Moderate _____ Minor ✓

Describe: _____

Silt Deposition: minor

Pollutants (observation / potential sources): stream flows from pipe, draining paved surfaces upstream

Stormwater Outfalls: _____

Biological Habitat For (check all that apply): N/A

Federally Listed species _____ Fish Spawn Areas _____

Other Environmentally-Sensitive Species _____ Aquatic/Wildlife Diversity _____

Explain Findings: _____

Riparian Zone:

Development: _____

Riparian vegetation: Forest _____ Shrubs _____ Herbs ✓

Dominant Species: mowed, vegetation mostly unrecognizable

Riparian Buffer Width: lawn buffer, 10' LB, >50' RB

Approximate % Shading by Woody Species: 0%

Notes: rain within 24 hrs, flow comes from surface water + groundwater inputs

WETLAND DETERMINATION DATA FORM – Eastern Mountains and Piedmont RLWL-31

Project/Site: Red Line City/County: Woodlawn/Baltimore Sampling Date: 4/2/12

Applicant/Owner: MTA State: MD Sampling Point: WTP-31

Investigator(s): SW, DR, MN Section, Township, Range: _____

Landform (hillslope, terrace, etc.): Slope seep Local relief (concave, convex, none): Convex Slope (%): _____

Subregion (LRR or MLRA): MLRA-148 Lat: _____ Long: _____ Datum: _____

Soil Map Unit Name: Urban land NWI classification: PEM1A

Are climatic / hydrologic conditions on the site typical for this time of year? Yes ✓ No _____ (If no, explain in Remarks.)

Are Vegetation ✓, Soil _____, or Hydrology _____ significantly disturbed? Are "Normal Circumstances" present? Yes ✓ No _____

Are Vegetation _____, Soil _____, or Hydrology _____ naturally problematic? (If needed, explain any answers in Remarks.)

SUMMARY OF FINDINGS – Attach site map showing sampling point locations, transects, important features, etc.

Hydrophytic Vegetation Present?	Yes ✓	No _____	**Is the Sampled Area within a Wetland?** Yes ✓ No _____
Hydric Soil Present?	Yes ✓	No _____	
Wetland Hydrology Present?	Yes ✓	No _____	

Remarks:

HYDROLOGY

Wetland Hydrology Indicators:

Primary Indicators (minimum of one is required; check all that apply)

- ___ Surface Water (A1)
- ✓ High Water Table (A2)
- ✓ Saturation (A3)
- ___ Water Marks (B1)
- ___ Sediment Deposits (B2)
- ___ Drift Deposits (B3)
- ___ Algal Mat or Crust (B4)
- ___ Iron Deposits (B5)
- ___ Inundation Visible on Aerial Imagery (B7)
- ___ Water-Stained Leaves (B9)
- ___ Aquatic Fauna (B13)
- ___ True Aquatic Plants (B14)
- ___ Hydrogen Sulfide Odor (C1)
- ___ Oxidized Rhizospheres on Living Roots (C3)
- ___ Presence of Reduced Iron (C4)
- ___ Recent Iron Reduction in Tilled Soils (C6)
- ___ Thin Muck Surface (C7)
- ___ Other (Explain in Remarks)

Secondary Indicators (minimum of two required)

- ___ Surface Soil Cracks (B6)
- ___ Sparsely Vegetated Concave Surface (B8)
- ___ Drainage Patterns (B10)
- ___ Moss Trim Lines (B16)
- ___ Dry-Season Water Table (C2)
- ___ Crayfish Burrows (C8)
- ___ Saturation Visible on Aerial Imagery (C9)
- ___ Stunted or Stressed Plants (D1)
- ___ Geomorphic Position (D2)
- ___ Shallow Aquitard (D3)
- ___ Microtopographic Relief (D4)
- ___ FAC-Neutral Test (D5)

Field Observations:

Surface Water Present?	Yes ✓	No _____	Depth (inches): <1"
Water Table Present?	Yes ✓	No _____	Depth (inches): 0
Saturation Present? (includes capillary fringe)	Yes ✓	No _____	Depth (inches): 0

Wetland Hydrology Present? Yes ✓ No _____

Describe Recorded Data (stream gauge, monitoring well, aerial photos, previous inspections), if available:

Remarks:

rain within 24 hrs

VEGETATION (Four Strata) – Use scientific names of plants.

Sampling Point: WTP-31-1

Tree Stratum (Plot size: _____)	Absolute % Cover	Dominant Species?	Indicator Status
1.			
2.			
3.			
4.			
5.			
6.			
7.			
8.			
	_____ = Total Cover		

Sapling/Shrub Stratum (Plot size: _____)			
1.			
2.			
3.			
4.			
5.			
6.			
7.			
8.			
9.			
10.			
	_____ = Total Cover		

Herb Stratum (Plot size: _____)			
1. Juncus effusus	30	Y	FACW
2.			
3.			
4.			
5.			
6.			
7.			
8.			
9.			
10.			
11.			
12.			
	30 = Total Cover		

Woody Vine Stratum (Plot size: _____)			
1.			
2.			
3.			
4.			
5.			
6.			
	_____ = Total Cover		

Dominance Test worksheet:

Number of Dominant Species That Are OBL, FACW, or FAC: 1 (A)

Total Number of Dominant Species Across All Strata: 1 (B)

Percent of Dominant Species That Are OBL, FACW, or FAC: 100 (A/B)

Prevalence Index worksheet:

Total % Cover of:		Multiply by:
OBL species	_____	x 1 = _____
FACW species	_____	x 2 = _____
FAC species	_____	x 3 = _____
FACU species	_____	x 4 = _____
UPL species	_____	x 5 = _____
Column Totals:	_____ (A)	_____ (B)

Prevalence Index = B/A = _____

Hydrophytic Vegetation Indicators:

___ 1 - Rapid Test for Hydrophytic Vegetation

___ 2 - Dominance Test is >50%

___ 3 - Prevalence Index is ≤3.0[1]

___ 4 - Morphological Adaptations[1] (Provide supporting data in Remarks or on a separate sheet)

___ Problematic Hydrophytic Vegetation[1] (Explain)

[1]Indicators of hydric soil and wetland hydrology must be present, unless disturbed or problematic.

Definitions of Four Vegetation Strata:

Tree – Woody plants, excluding vines, 3 in. (7.6 cm) or more in diameter at breast height (DBH), regardless of height.

Sapling/Shrub – Woody plants, excluding vines, less than 3 in. DBH and greater than 3.28 ft (1 m) tall.

Herb – All herbaceous (non-woody) plants, regardless of size, and woody plants less than 3.28 ft tall.

Woody vine – All woody vines greater than 3.28 ft in height.

Hydrophytic Vegetation Present? Yes ✓ No _____

Remarks: (Include photo numbers here or on a separate sheet.)

other veg present, but unrecognizable due to mowing of area

SOIL

Sampling Point: WTP-31

Profile Description: (Describe to the depth needed to document the indicator or confirm the absence of indicators.)

Depth (inches)	Matrix Color (moist)	Matrix %	Redox Features Color (moist)	Redox %	Type[1]	Loc[2]	Texture	Remarks
0-2	5Y3/2		—				sil	
2-7	2.5Y4/1	85	7.5YR4/6	15	C	M	sil	
7-11	5Y4/2	80	7.5YR4/6	20	C	M	sicl	
11-13+	2.5Y5/3		—				sil	

[1]Type: C=Concentration, D=Depletion, RM=Reduced Matrix, MS=Masked Sand Grains. [2]Location: PL=Pore Lining, M=Matrix.

Hydric Soil Indicators:

- ___ Histosol (A1)
- ___ Histic Epipedon (A2)
- ___ Black Histic (A3)
- ___ Hydrogen Sulfide (A4)
- ___ Stratified Layers (A5)
- ___ 2 cm Muck (A10) **(LRR N)**
- ___ Depleted Below Dark Surface (A11)
- ___ Thick Dark Surface (A12)
- ___ Sandy Mucky Mineral (S1) **(LRR N, MLRA 147, 148)**
- ___ Sandy Gleyed Matrix (S4)
- ___ Sandy Redox (S5)
- ___ Stripped Matrix (S6)
- ___ Dark Surface (S7)
- ___ Polyvalue Below Surface (S8) **(MLRA 147, 148)**
- ___ Thin Dark Surface (S9) **(MLRA 147, 148)**
- ___ Loamy Gleyed Matrix (F2)
- ✓ Depleted Matrix (F3)
- ___ Redox Dark Surface (F6)
- ___ Depleted Dark Surface (F7)
- ___ Redox Depressions (F8)
- ___ Iron-Manganese Masses (F12) **(LRR N, MLRA 136)**
- ___ Umbric Surface (F13) **(MLRA 136, 122)**
- ___ Piedmont Floodplain Soils (F19) **(MLRA 148)**

Indicators for Problematic Hydric Soils[3]:

- ___ 2 cm Muck (A10) **(MLRA 147)**
- ___ Coast Prairie Redox (A16) **(MLRA 147, 148)**
- ___ Piedmont Floodplain Soils (F19) **(MLRA 136, 147)**
- ___ Red Parent Material (TF2)
- ___ Very Shallow Dark Surface (TF12)
- ___ Other (Explain in Remarks)

[3]Indicators of hydrophytic vegetation and wetland hydrology must be present, unless disturbed or problematic.

Restrictive Layer (if observed):

Type: _____

Depth (inches): _____

Hydric Soil Present? Yes ✓ No ___

Remarks:

RLWL 33

WETLAND DETERMINATION DATA FORM – Atlantic and Gulf Coastal Plain Region

Project/Site: Redline City/County: Baltimore City Sampling Date: 8/23/12

Applicant/Owner: MTA State: MD Sampling Point: WL033-WTP-1

Investigator(s): D. Smith, D. Rodgers, A. Crosby Section, Township, Range: _____

Landform (hillslope, terrace, etc.): ditch Local relief (concave, convex, none): Concave Slope (%): 0–1

Subregion (LRR or MLRA): MLRA 149A Lat: _____ Long: _____ Datum: _____

Soil Map Unit Name: Urban Land, 0–15% Slopes NWI classification: PFO1B

Are climatic / hydrologic conditions on the site typical for this time of year? Yes ____ No ✓ (If no, explain in Remarks.)

Are Vegetation ____, Soil ____, or Hydrology ____ significantly disturbed? No Are "Normal Circumstances" present? Yes ✓ No ____

Are Vegetation ____, Soil ____, or Hydrology ____ naturally problematic? No (If needed, explain any answers in Remarks.)

SUMMARY OF FINDINGS – Attach site map showing sampling point locations, transects, important features, etc.

Hydrophytic Vegetation Present?	Yes ✓	No ____	Is the Sampled Area within a Wetland? Yes ✓ No ____
Hydric Soil Present?	Yes ✓	No ____	
Wetland Hydrology Present?	Yes ✓	No ____	

Remarks: moderate drought conditions

HYDROLOGY

Wetland Hydrology Indicators:

Primary Indicators (minimum of one is required; check all that apply)

- ✓ Surface Water (A1)
- ✓ High Water Table (A2)
- ___ Saturation (A3)
- ___ Water Marks (B1)
- ___ Sediment Deposits (B2)
- ___ Drift Deposits (B3)
- ___ Algal Mat or Crust (B4)
- ___ Iron Deposits (B5)
- ___ Inundation Visible on Aerial Imagery (B7)
- ✓ Water-Stained Leaves (B9)
- ___ Aquatic Fauna (B13)
- ___ Marl Deposits (B15) (LRR U)
- ___ Hydrogen Sulfide Odor (C1)
- ___ Oxidized Rhizospheres along Living Roots (C3)
- ___ Presence of Reduced Iron (C4)
- ___ Recent Iron Reduction in Tilled Soils (C6)
- ___ Thin Muck Surface (C7)
- ___ Other (Explain in Remarks)

Secondary Indicators (minimum of two required)

- ___ Surface Soil Cracks (B6)
- ✓ Sparsely Vegetated Concave Surface (B8)
- ✓ Drainage Patterns (B10)
- ___ Moss Trim Lines (B16)
- ✓ Dry-Season Water Table (C2)
- ___ Crayfish Burrows (C8)
- ___ Saturation Visible on Aerial Imagery (C9)
- ___ Geomorphic Position (D2)
- ___ Shallow Aquitard (D3)
- ___ FAC-Neutral Test (D5)
- ___ Sphagnum moss (D8) (LRR T, U)

Field Observations:

Surface Water Present?	Yes ✓	No ____	Depth (inches): <1"
Water Table Present?	Yes ✓	No ____	Depth (inches): 3
Saturation Present? (includes capillary fringe)	Yes ✓	No ____	Depth (inches): 0

Wetland Hydrology Present? Yes ✓ No ____

Describe Recorded Data (stream gauge, monitoring well, aerial photos, previous inspections), if available:

Remarks:

Water collects in inactive rail right-of-way from adjacent industrial land uses – roof + parking runoff

VEGETATION (Four Strata) – Use scientific names of plants.

Sampling Point: WL033-WTP-1

Tree Stratum (Plot size: 30)	Absolute % Cover	Dominant Species?	Indicator Status
1. Acer Saccharinum	40	Y	FAC
2.			
3.			
4.			
5.			
6.			
7.			
8.			
	= Total Cover		

50% of total cover: 20 20% of total cover: 8

Sapling/Shrub Stratum (Plot size:)			
1.			
2.			
3.			
4.			
5. N/A			
6.			
7.			
8.			
	= Total Cover		

50% of total cover: 20% of total cover:

Herb Stratum (Plot size: 30)			
1. Phragmites Australis	35	Y	FACW
2.			
3.			
4.			
5.			
6.			
7.			
8.			
9.			
10.			
11.			
12.			
	35 = Total Cover		

50% of total cover: 17.5 20% of total cover: 7

Woody Vine Stratum (Plot size: 30)			
1. Lonicera japonica	10	Y	FAC
2.			
3.			
4.			
5.			
	10 = Total Cover		

50% of total cover: 5 20% of total cover: 2

Dominance Test worksheet:

Number of Dominant Species That Are OBL, FACW, or FAC: 3 (A)

Total Number of Dominant Species Across All Strata: 3 (B)

Percent of Dominant Species That Are OBL, FACW, or FAC: 100% (A/B)

Prevalence Index worksheet:

Total % Cover of:		Multiply by:
OBL species		x 1 =
FACW species		x 2 =
FAC species		x 3 =
FACU species		x 4 =
UPL species		x 5 =
Column Totals:	(A)	(B)

Prevalence Index = B/A =

Hydrophytic Vegetation Indicators:

- ___ 1 - Rapid Test for Hydrophytic Vegetation
- ✓ 2 - Dominance Test is >50%
- ___ 3 - Prevalence Index is ≤3.0[1]
- ___ Problematic Hydrophytic Vegetation[1] (Explain)

[1]Indicators of hydric soil and wetland hydrology must be present, unless disturbed or problematic.

Definitions of Four Vegetation Strata:

Tree – Woody plants, excluding vines, 3 in. (7.6 cm) or more in diameter at breast height (DBH), regardless of height.

Sapling/Shrub – Woody plants, excluding vines, less than 3 in. DBH and greater than 3.28 ft (1 m) tall.

Herb – All herbaceous (non-woody) plants, regardless of size, and woody plants less than 3.28 ft tall.

Woody vine – All woody vines greater than 3.28 ft in height.

Hydrophytic Vegetation Present? Yes ✓ No ___

Remarks: (If observed, list morphological adaptations below).

SOIL

Sampling Point: WLa33-WTP-1

Profile Description: (Describe to the depth needed to document the indicator or confirm the absence of indicators.)

Depth (inches)	Matrix Color (moist)	Matrix %	Redox Features Color (moist)	Redox %	Type[1]	Loc[2]	Texture	Remarks
0-14	10YR2/1		—				Muck	
14-18	10YR2/1		—				gravelly loam	

[1]Type: C=Concentration, D=Depletion, RM=Reduced Matrix, MS=Masked Sand Grains. [2]Location: PL=Pore Lining, M=Matrix.

Hydric Soil Indicators: (Applicable to all LRRs, unless otherwise noted.)

- ___ Histosol (A1)
- ___ Histic Epipedon (A2)
- ✓ Black Histic (A3)
- ___ Hydrogen Sulfide (A4)
- ___ Stratified Layers (A5)
- ___ Organic Bodies (A6) **(LRR P, T, U)**
- ___ 5 cm Mucky Mineral (A7) **(LRR P, T, U)**
- ___ Muck Presence (A8) **(LRR U)**
- ___ 1 cm Muck (A9) **(LRR P, T)**
- ___ Depleted Below Dark Surface (A11)
- ___ Thick Dark Surface (A12)
- ___ Coast Prairie Redox (A16) **(MLRA 150A)**
- ___ Sandy Mucky Mineral (S1) **(LRR O, S)**
- ___ Sandy Gleyed Matrix (S4)
- ___ Sandy Redox (S5)
- ___ Stripped Matrix (S6)
- ___ Dark Surface (S7) **(LRR P, S, T, U)**
- ___ Polyvalue Below Surface (S8) **(LRR S, T, U)**
- ___ Thin Dark Surface (S9) **(LRR S, T, U)**
- ___ Loamy Mucky Mineral (F1) **(LRR O)**
- ___ Loamy Gleyed Matrix (F2)
- ___ Depleted Matrix (F3)
- ___ Redox Dark Surface (F6)
- ___ Depleted Dark Surface (F7)
- ___ Redox Depressions (F8)
- ___ Marl (F10) **(LRR U)**
- ___ Depleted Ochric (F11) **(MLRA 151)**
- ___ Iron-Manganese Masses (F12) **(LRR O, P, T)**
- ___ Umbric Surface (F13) **(LRR P, T, U)**
- ___ Delta Ochric (F17) **(MLRA 151)**
- ___ Reduced Vertic (F18) **(MLRA 150A, 150B)**
- ___ Piedmont Floodplain Soils (F19) **(MLRA 149A)**
- ___ Anomalous Bright Loamy Soils (F20) **(MLRA 149A, 153C, 153D)**

Indicators for Problematic Hydric Soils[3]:

- ___ 1 cm Muck (A9) **(LRR O)**
- ___ 2 cm Muck (A10) **(LRR S)**
- ___ Reduced Vertic (F18) **(outside MLRA 150A,B)**
- ___ Piedmont Floodplain Soils (F19) **(LRR P, S, T)**
- ___ Anomalous Bright Loamy Soils (F20) **(MLRA 153B)**
- ___ Red Parent Material (TF2)
- ___ Very Shallow Dark Surface (TF12)
- ___ Other (Explain in Remarks)

[3]Indicators of hydrophytic vegetation and wetland hydrology must be present, unless disturbed or problematic.

Restrictive Layer (if observed):

Type: _____

Depth (inches): _____

Hydric Soil Present? Yes ✓ No ___

Remarks:

RLWL-34

WETLAND DETERMINATION DATA FORM – Atlantic and Gulf Coastal Plain Region

Project/Site: RedLine City/County: Balt. City Sampling Date: 8-23-12

Applicant/Owner: MTA State: _____ Sampling Point: WL034-WTP-2

Investigator(s): DR, DS, AC Section, Township, Range: _____

Landform (hillslope, terrace, etc.): Swale Local relief (concave, convex, none): Concave Slope (%): _____

Subregion (LRR or MLRA): MLRA 149A of LRRS Lat: _____ Long: _____ Datum: _____

Soil Map Unit Name: Urban Land, 0-15% Slopes NWI classification: PFO1B

Are climatic / hydrologic conditions on the site typical for this time of year? Yes ✓ No _____ (If no, explain in Remarks.)

Are Vegetation _____, Soil _____, or Hydrology _____ significantly disturbed? No Are "Normal Circumstances" present? Yes ✓ No _____

Are Vegetation _____, Soil _____, or Hydrology _____ naturally problematic? No (If needed, explain any answers in Remarks.)

SUMMARY OF FINDINGS – Attach site map showing sampling point locations, transects, important features, etc.

Hydrophytic Vegetation Present?	Yes ✓	No _____	Is the Sampled Area within a Wetland? Yes ✓ No _____
Hydric Soil Present?	Yes ✓	No _____	
Wetland Hydrology Present?	Yes ✓	No _____	

Remarks:

HYDROLOGY

Wetland Hydrology Indicators:

Primary Indicators (minimum of one is required; check all that apply)

- ___ Surface Water (A1)
- ✓ High Water Table (A2)
- ✓ Saturation (A3)
- ___ Water Marks (B1)
- ___ Sediment Deposits (B2)
- ___ Drift Deposits (B3)
- ___ Algal Mat or Crust (B4)
- ___ Iron Deposits (B5)
- ___ Inundation Visible on Aerial Imagery (B7)
- ___ Water-Stained Leaves (B9)
- ___ Aquatic Fauna (B13)
- ___ Marl Deposits (B15) (LRR U)
- ___ Hydrogen Sulfide Odor (C1)
- ___ Oxidized Rhizospheres along Living Roots (C3)
- ___ Presence of Reduced Iron (C4)
- ___ Recent Iron Reduction in Tilled Soils (C6)
- ___ Thin Muck Surface (C7)
- ___ Other (Explain in Remarks)

Secondary Indicators (minimum of two required)

- ___ Surface Soil Cracks (B6)
- ___ Sparsely Vegetated Concave Surface (B8)
- ___ Drainage Patterns (B10)
- ___ Moss Trim Lines (B16)
- ___ Dry-Season Water Table (C2)
- ___ Crayfish Burrows (C8)
- ___ Saturation Visible on Aerial Imagery (C9)
- ___ Geomorphic Position (D2)
- ___ Shallow Aquitard (D3)
- ___ FAC-Neutral Test (D5)
- ___ Sphagnum moss (D8) (LRR T, U)

Field Observations:

Surface Water Present?	Yes _____	No ✓	Depth (inches): _____
Water Table Present?	Yes ✓	No _____	Depth (inches): 6"
Saturation Present? (includes capillary fringe)	Yes ✓	No _____	Depth (inches): 0"

Wetland Hydrology Present? Yes ✓ No _____

Describe Recorded Data (stream gauge, monitoring well, aerial photos, previous inspections), if available:

Remarks:

VEGETATION (Four Strata) – Use scientific names of plants.

Sampling Point: WL034-WTP-2

Tree Stratum (Plot size: 30')	Absolute % Cover	Dominant Species?	Indicator Status
1. Salix alba	55	Y	FACW
2.			
3.			
4.			
5.			
6.			
7.			
8.			
	55 = Total Cover		
50% of total cover: 27.5	20% of total cover: 11		

Sapling/Shrub Stratum (Plot size: 30')			
1. Acer negundo	8	Y	FAC
2.			
3.			
4.			
5.			
6.			
7.			
8.			
	8 = Total Cover		
50% of total cover: 4	20% of total cover: 1.6		

Herb Stratum (Plot size: 30')			
1. Phragmites australis	60	Y	FACW
2. Verbena urticifolia	5		FAC
3.			
4.			
5.			
6.			
7.			
8.			
9.			
10.			
11.			
12.			
	65 = Total Cover		
50% of total cover: 32.5	20% of total cover: 13		

Woody Vine Stratum (Plot size: 30')			
1. Toxicodendron radicans	30	Y	FAC
2. Parthenocissus quinquefolia	7		FACU
3. Vitis vulpina	25	Y	FAC
4.			
5.			
	62 = Total Cover		
50% of total cover: 31	20% of total cover: 12.4		

Dominance Test worksheet:

Number of Dominant Species That Are OBL, FACW, or FAC: 5 (A)

Total Number of Dominant Species Across All Strata: 5 (B)

Percent of Dominant Species That Are OBL, FACW, or FAC: 100% (A/B)

Prevalence Index worksheet:

Total % Cover of:		Multiply by:
OBL species		x 1 =
FACW species		x 2 =
FAC species		x 3 =
FACU species		x 4 =
UPL species		x 5 =
Column Totals:	(A)	(B)

Prevalence Index = B/A =

Hydrophytic Vegetation Indicators:

- ✓ 1 - Rapid Test for Hydrophytic Vegetation
- ✓ 2 - Dominance Test is >50%
- 3 - Prevalence Index is ≤3.0[1]
- Problematic Hydrophytic Vegetation[1] (Explain)

[1]Indicators of hydric soil and wetland hydrology must be present, unless disturbed or problematic.

Definitions of Four Vegetation Strata:

Tree – Woody plants, excluding vines, 3 in. (7.6 cm) or more in diameter at breast height (DBH), regardless of height.

Sapling/Shrub – Woody plants, excluding vines, less than 3 in. DBH and greater than 3.28 ft (1 m) tall.

Herb – All herbaceous (non-woody) plants, regardless of size, and woody plants less than 3.28 ft tall.

Woody vine – All woody vines greater than 3.28 ft in height.

Hydrophytic Vegetation Present? Yes ✓ No

Remarks: (If observed, list morphological adaptations below).

SOIL

Sampling Point: WL034-WTP-2

Profile Description: (Describe to the depth needed to document the indicator or confirm the absence of indicators.)

Depth (inches)	Matrix Color (moist)	Matrix %	Redox Features Color (moist)	Redox %	Type[1]	Loc[2]	Texture	Remarks
0-7							muck	Some fine rootlets

[1]Type: C=Concentration, D=Depletion, RM=Reduced Matrix, MS=Masked Sand Grains. [2]Location: PL=Pore Lining, M=Matrix.

Hydric Soil Indicators: (Applicable to all LRRs, unless otherwise noted.)

- ___ Histosol (A1)
- ___ Histic Epipedon (A2)
- ___ Black Histic (A3)
- ✓ Hydrogen Sulfide (A4)
- ___ Stratified Layers (A5)
- ___ Organic Bodies (A6) **(LRR P, T, U)**
- ___ 5 cm Mucky Mineral (A7) **(LRR P, T, U)**
- ___ Muck Presence (A8) **(LRR U)**
- ___ 1 cm Muck (A9) **(LRR P, T)**
- ___ Depleted Below Dark Surface (A11)
- ___ Thick Dark Surface (A12)
- ___ Coast Prairie Redox (A16) **(MLRA 150A)**
- ___ Sandy Mucky Mineral (S1) **(LRR O, S)**
- ___ Sandy Gleyed Matrix (S4)
- ___ Sandy Redox (S5)
- ___ Stripped Matrix (S6)
- ___ Dark Surface (S7) **(LRR P, S, T, U)**
- ___ Polyvalue Below Surface (S8) **(LRR S, T, U)**
- ___ Thin Dark Surface (S9) **(LRR S, T, U)**
- ___ Loamy Mucky Mineral (F1) **(LRR O)**
- ___ Loamy Gleyed Matrix (F2)
- ___ Depleted Matrix (F3)
- ___ Redox Dark Surface (F6)
- ___ Depleted Dark Surface (F7)
- ___ Redox Depressions (F8)
- ___ Marl (F10) **(LRR U)**
- ___ Depleted Ochric (F11) **(MLRA 151)**
- ___ Iron-Manganese Masses (F12) **(LRR O, P, T)**
- ___ Umbric Surface (F13) **(LRR P, T, U)**
- ___ Delta Ochric (F17) **(MLRA 151)**
- ___ Reduced Vertic (F18) **(MLRA 150A, 150B)**
- ___ Piedmont Floodplain Soils (F19) **(MLRA 149A)**
- ___ Anomalous Bright Loamy Soils (F20) **(MLRA 149A, 153C, 153D)**

Indicators for Problematic Hydric Soils[3]:

- ___ 1 cm Muck (A9) **(LRR O)**
- ✓ 2 cm Muck (A10) **(LRR S)**
- ___ Reduced Vertic (F18) **(outside MLRA 150A,B)**
- ___ Piedmont Floodplain Soils (F19) **(LRR P, S, T)**
- ___ Anomalous Bright Loamy Soils (F20) **(MLRA 153B)**
- ___ Red Parent Material (TF2)
- ___ Very Shallow Dark Surface (TF12)
- ___ Other (Explain in Remarks)

[3]Indicators of hydrophytic vegetation and wetland hydrology must be present, unless disturbed or problematic.

Restrictive Layer (If observed):

Type: ___

Depth (inches): ___

Hydric Soil Present? Yes ✓ No ___

Remarks:

Refused @ 7" - rock

RLWL-34

WETLAND DETERMINATION DATA FORM – Atlantic and Gulf Coastal Plain Region

Project/Site: Red Line (NS Row). City/County: Baltimore City Sampling Date: 8-23-12

Applicant/Owner: MTA State: MD Sampling Point: WL34 WTP-1

Investigator(s): D Rodgers, D. Smith, A. Crenske Section, Township, Range: _____

Landform (hillslope, terrace, etc.): Excavated ditch Local relief (concave, convex, none): Concave Slope (%): 1%

Subregion (LRR or MLRA): MLRA 149A of LRR S Lat: _____ Long: _____ Datum: _____

Soil Map Unit Name: Urban Land, 0-15% Slopes NWI classification: PEMIC

Are climatic / hydrologic conditions on the site typical for this time of year? Yes ✓ No _____ (If no, explain in Remarks.)

Are Vegetation _____, Soil _____, or Hydrology _____ significantly disturbed? N Are "Normal Circumstances" present? Yes ✓ No _____

Are Vegetation _____, Soil _____, or Hydrology _____ naturally problematic? N (If needed, explain any answers in Remarks.)

SUMMARY OF FINDINGS – Attach site map showing sampling point locations, transects, important features, etc.

Hydrophytic Vegetation Present?	Yes ✓ No _____	Is the Sampled Area within a Wetland?	Yes ✓ No _____
Hydric Soil Present?	Yes ✓ No _____		
Wetland Hydrology Present?	Yes ✓ No _____		

Remarks:

HYDROLOGY

Wetland Hydrology Indicators:

Primary Indicators (minimum of one is required; check all that apply)

- X Surface Water (A1)
- X High Water Table (A2)
- X Saturation (A3)
- ___ Water Marks (B1)
- ___ Sediment Deposits (B2)
- ___ Drift Deposits (B3)
- ___ Algal Mat or Crust (B4)
- ___ Iron Deposits (B5)
- ___ Inundation Visible on Aerial Imagery (B7)
- ___ Water-Stained Leaves (B9)
- ___ Aquatic Fauna (B13)
- ___ Marl Deposits (B15) (LRR U)
- ___ Hydrogen Sulfide Odor (C1)
- ___ Oxidized Rhizospheres along Living Roots (C3)
- ___ Presence of Reduced Iron (C4)
- ___ Recent Iron Reduction in Tilled Soils (C6)
- ___ Thin Muck Surface (C7)
- ___ Other (Explain in Remarks)

Secondary Indicators (minimum of two required)

- ___ Surface Soil Cracks (B6)
- ___ Sparsely Vegetated Concave Surface (B8)
- ___ Drainage Patterns (B10)
- ___ Moss Trim Lines (B16)
- ___ Dry-Season Water Table (C2)
- ___ Crayfish Burrows (C8)
- ___ Saturation Visible on Aerial Imagery (C9)
- ___ Geomorphic Position (D2)
- ___ Shallow Aquitard (D3)
- ___ FAC-Neutral Test (D5)
- ___ Sphagnum moss (D8) (LRR T, U)

Field Observations:

Surface Water Present?	Yes X	No _____	Depth (inches): 2"
Water Table Present?	Yes X	No _____	Depth (inches): 4"
Saturation Present? (includes capillary fringe)	Yes X	No _____	Depth (inches): 0"

Wetland Hydrology Present? Yes X No _____

Describe Recorded Data (stream gauge, monitoring well, aerial photos, previous inspections), if available:

Remarks:

Surface water covers ~10%

RLWL-34

VEGETATION (Four Strata) – Use scientific names of plants.

Sampling Point: WL34-WTP-1

Tree Stratum (Plot size: 30)	Absolute % Cover	Dominant Species?	Indicator Status
1.			
2.			
3.			
4.			
5.			
6.			
7.			
8.			
	= Total Cover		

N/A

50% of total cover: _____ 20% of total cover: _____

Sapling/Shrub Stratum (Plot size: 30)			
1. Salix nigra	10	Y	FACW
2.			
3.			
4.			
5.			
6.			
7.			
8.			
	10 = Total Cover		

50% of total cover: 5 20% of total cover: 2

Herb Stratum (Plot size: 30)			
1. Phragmites australis	100	Y	FACW
2. Persicaria pennsylvanica	3		FACW
3. Erigeron Canadensis	6		UPL
4. Persicaria maculosa	3		FACW
5. Cirsium arvense	4		FACW
6.			
7.			
8.			
9.			
10.			
11.			
12.			
	116 = Total Cover		

50% of total cover: 58 20% of total cover: 11.6

Woody Vine Stratum (Plot size: 30)			
1.			
2.			
3.			
4.			
5.			
	= Total Cover		

N/A

50% of total cover: _____ 20% of total cover: _____

Dominance Test worksheet:

Number of Dominant Species That Are OBL, FACW, or FAC: 2 (A)

Total Number of Dominant Species Across All Strata: 2 (B)

Percent of Dominant Species That Are OBL, FACW, or FAC: 100% (A/B)

Prevalence Index worksheet:

Total % Cover of:		Multiply by:
OBL species		x 1 =
FACW species		x 2 =
FAC species		x 3 =
FACU species		x 4 =
UPL species		x 5 =
Column Totals:	(A)	(B)

Prevalence Index = B/A = _____

Hydrophytic Vegetation Indicators:

___ 1 - Rapid Test for Hydrophytic Vegetation

___ 2 - Dominance Test is >50%

___ 3 - Prevalence Index is ≤3.0[1]

___ Problematic Hydrophytic Vegetation[1] (Explain)

[1]Indicators of hydric soil and wetland hydrology must be present, unless disturbed or problematic.

Definitions of Four Vegetation Strata:

Tree – Woody plants, excluding vines, 3 in. (7.6 cm) or more in diameter at breast height (DBH), regardless of height.

Sapling/Shrub – Woody plants, excluding vines, less than 3 in. DBH and greater than 3.28 ft (1 m) tall.

Herb – All herbaceous (non-woody) plants, regardless of size, and woody plants less than 3.28 ft tall.

Woody vine – All woody vines greater than 3.28 ft in height.

Hydrophytic Vegetation Present? Yes ✓ No ____

Remarks: (If observed, list morphological adaptations below).

SOIL

Sampling Point: WL34-WTP-1

Profile Description: (Describe to the depth needed to document the indicator or confirm the absence of indicators.)

Depth (inches)	Matrix Color (moist)	Matrix %	Redox Features Color (moist)	Redox %	Type[1]	Loc[2]	Texture	Remarks
0-6	10YR 4/2	95	10YR 5/6	5	C	M	SL	w/coarse fragments - peat

[1]Type: C=Concentration, D=Depletion, RM=Reduced Matrix, MS=Masked Sand Grains. [2]Location: PL=Pore Lining, M=Matrix.

Hydric Soil Indicators: (Applicable to all LRRs, unless otherwise noted.)

- ___ Histosol (A1)
- ___ Histic Epipedon (A2)
- ___ Black Histic (A3)
- ___ Hydrogen Sulfide (A4)
- ___ Stratified Layers (A5)
- ___ Organic Bodies (A6) **(LRR P, T, U)**
- ___ 5 cm Mucky Mineral (A7) **(LRR P, T, U)**
- ___ Muck Presence (A8) **(LRR U)**
- ___ 1 cm Muck (A9) **(LRR P, T)**
- ___ Depleted Below Dark Surface (A11)
- ___ Thick Dark Surface (A12)
- ___ Coast Prairie Redox (A16) **(MLRA 150A)**
- ___ Sandy Mucky Mineral (S1) **(LRR O, S)**
- ___ Sandy Gleyed Matrix (S4)
- ___ Sandy Redox (S5)
- ___ Stripped Matrix (S6)
- ___ Dark Surface (S7) **(LRR P, S, T, U)**
- ___ Polyvalue Below Surface (S8) **(LRR S, T, U)**
- ___ Thin Dark Surface (S9) **(LRR S, T, U)**
- ___ Loamy Mucky Mineral (F1) **(LRR O)**
- ___ Loamy Gleyed Matrix (F2)
- X Depleted Matrix (F3)
- ___ Redox Dark Surface (F6)
- ___ Depleted Dark Surface (F7)
- ___ Redox Depressions (F8)
- ___ Marl (F10) **(LRR U)**
- ___ Depleted Ochric (F11) **(MLRA 151)**
- ___ Iron-Manganese Masses (F12) **(LRR O, P, T)**
- ___ Umbric Surface (F13) **(LRR P, T, U)**
- ___ Delta Ochric (F17) **(MLRA 151)**
- ___ Reduced Vertic (F18) **(MLRA 150A, 150B)**
- ___ Piedmont Floodplain Soils (F19) **(MLRA 149A)**
- ___ Anomalous Bright Loamy Soils (F20) **(MLRA 149A, 153C, 153D)**

Indicators for Problematic Hydric Soils[3]:

- ___ 1 cm Muck (A9) **(LRR O)**
- ___ 2 cm Muck (A10) **(LRR S)**
- ___ Reduced Vertic (F18) **(outside MLRA 150A,B)**
- ___ Piedmont Floodplain Soils (F19) **(LRR P, S, T)**
- ___ Anomalous Bright Loamy Soils (F20) **(MLRA 153B)**
- ___ Red Parent Material (TF2)
- ___ Very Shallow Dark Surface (TF12)
- ___ Other (Explain in Remarks)

[3]Indicators of hydrophytic vegetation and wetland hydrology must be present, unless disturbed or problematic.

Restrictive Layer (if observed):

Type: _____

Depth (inches): _____

Hydric Soil Present? Yes ✓ No ___

Remarks:

RLWL-36

WETLAND DETERMINATION DATA FORM – Atlantic and Gulf Coastal Plain Region

Project/Site: Red Line City/County: Balt. City Sampling Date: 8-24-12

Applicant/Owner: MTA State: MD Sampling Point: RLWL036-Wet-1

Investigator(s): D. Rodgers, D. Smith, A. Crawford Section, Township, Range: _____

Landform (hillslope, terrace, etc.): Excavated Pond Local relief (concave, convex, none): Concave Slope (%): 1%

Subregion (LRR or MLRA): MLRA 149A of LRR S Lat: _____ Long: _____ Datum: _____

Soil Map Unit Name: Udorthents, Smoothed 0-35% Slopes NWI classification: PEM1A

Are climatic / hydrologic conditions on the site typical for this time of year? Yes ____ No ____ (If no, explain in Remarks.)

Are Vegetation ____, Soil X, or Hydrology ____ significantly disturbed? yes Are "Normal Circumstances" present? Yes ✓ No ____

Are Vegetation ____, Soil ____, or Hydrology ____ naturally problematic? no (If needed, explain any answers in Remarks.)

SUMMARY OF FINDINGS – Attach site map showing sampling point locations, transects, important features, etc.

Hydrophytic Vegetation Present?	Yes X	No ____
Hydric Soil Present?	Yes ____	No X
Wetland Hydrology Present?	Yes X	No ____

Is the Sampled Area within a Wetland? Yes X No ____

Remarks:

Old Constructed Swm/Sediment basin – not maintained –

HYDROLOGY

Wetland Hydrology Indicators:

Primary Indicators (minimum of one is required; check all that apply)

- ___ Surface Water (A1)
- ___ High Water Table (A2)
- ___ Saturation (A3)
- ___ Water Marks (B1)
- X Sediment Deposits (B2)
- ___ Drift Deposits (B3)
- ___ Algal Mat or Crust (B4)
- ___ Iron Deposits (B5)
- ___ Inundation Visible on Aerial Imagery (B7)
- X Water-Stained Leaves (B9)
- ___ Aquatic Fauna (B13)
- ___ Marl Deposits (B15) (LRR U)
- ___ Hydrogen Sulfide Odor (C1)
- ___ Oxidized Rhizospheres along Living Roots (C3)
- ___ Presence of Reduced Iron (C4)
- ___ Recent Iron Reduction in Tilled Soils (C6)
- ___ Thin Muck Surface (C7)
- ___ Other (Explain in Remarks)

Secondary Indicators (minimum of two required)

- ___ Surface Soil Cracks (B6)
- ___ Sparsely Vegetated Concave Surface (B8)
- ___ Drainage Patterns (B10)
- ___ Moss Trim Lines (B16)
- ___ Dry-Season Water Table (C2)
- ___ Crayfish Burrows (C8)
- ___ Saturation Visible on Aerial Imagery (C9)
- ___ Geomorphic Position (D2)
- ___ Shallow Aquitard (D3)
- ___ FAC-Neutral Test (D5)
- ___ Sphagnum moss (D8) (LRR T, U)

Field Observations:

Surface Water Present?	Yes ____	No X	Depth (inches): ____
Water Table Present?	Yes ____	No X	Depth (inches): ____
Saturation Present? (includes capillary fringe)	Yes ____	No X	Depth (inches): ____

Wetland Hydrology Present? Yes ✓ No ____

Describe Recorded Data (stream gauge, monitoring well, aerial photos, previous inspections), if available:

Remarks:

Soils moist – Some areas in interior Saturated @ Surface

VEGETATION (Four Strata) – Use scientific names of plants.

Sampling Point: RLWL036-wet-1

Tree Stratum (Plot size: _____)	Absolute % Cover	Dominant Species?	Indicator Status
1. Salix alba	10	Y	
2.			
3.			
4.			
5.			
6.			
7.			
8.			
	10 = Total Cover		
50% of total cover: _____	20% of total cover: _____		

Sapling/Shrub Stratum (Plot size: _____)			
1.			
2.			
3.			
4.			
5.			
6.			
7.			
8.			
	= Total Cover		
50% of total cover: _____	20% of total cover: _____		

Herb Stratum (Plot size: _____)			
1. Phragmites australis	100	Y	FACW
2.			
3.			
4.			
5.			
6.			
7.			
8.			
9.			
10.			
11.			
12.			
	100 = Total Cover		
50% of total cover: 50	20% of total cover: 20		

Woody Vine Stratum (Plot size: _____)			
1. Lonicera japonica	18	Y	FAC
2. Vitis aestivus	20	Y	FACU
3.			
4.			
5.			
	23 = Total Cover		
50% of total cover: 11.5	20% of total cover: 4.6		

Dominance Test worksheet:

Number of Dominant Species That Are OBL, FACW, or FAC: 3 (A)

Total Number of Dominant Species Across All Strata: 4 (B)

Percent of Dominant Species That Are OBL, FACW, or FAC: 75% (A/B)

Prevalence Index worksheet:

Total % Cover of:	Multiply by:
OBL species _____	x 1 = _____
FACW species _____	x 2 = _____
FAC species _____	x 3 = _____
FACU species _____	x 4 = _____
UPL species _____	x 5 = _____
Column Totals: _____ (A)	_____ (B)

Prevalence Index = B/A = _____

Hydrophytic Vegetation Indicators:

- ___ 1 - Rapid Test for Hydrophytic Vegetation
- ✓ 2 - Dominance Test is >50%
- ___ 3 - Prevalence Index is ≤3.0[1]
- ___ Problematic Hydrophytic Vegetation[1] (Explain)

[1]Indicators of hydric soil and wetland hydrology must be present, unless disturbed or problematic.

Definitions of Four Vegetation Strata:

Tree – Woody plants, excluding vines, 3 in. (7.6 cm) or more in diameter at breast height (DBH), regardless of height.

Sapling/Shrub – Woody plants, excluding vines, less than 3 in. DBH and greater than 3.28 ft (1 m) tall.

Herb – All herbaceous (non-woody) plants, regardless of size, and woody plants less than 3.28 ft tall.

Woody vine – All woody vines greater than 3.28 ft in height.

Hydrophytic Vegetation Present? Yes ✓ No ____

Remarks: (If observed, list morphological adaptations below).

RLWL36

SOIL

Sampling Point: RLWL036-wet-1

Profile Description: (Describe to the depth needed to document the indicator or confirm the absence of indicators.)

Depth (inches)	Matrix Color (moist)	Matrix %	Redox Features Color (moist)	Redox %	Type[1]	Loc[2]	Texture	Remarks
0-3	10YR3/1	70	2.5YR5/6	5	C	M	SiL	undecomposed organics
	10YR4/3	25						
3-12+	7.5YR5/4	100	7.5YR4/3	15	D	M	C	undecomposed organics
	2.5YR5/8	25						

[1]Type: C=Concentration, D=Depletion, RM=Reduced Matrix, MS=Masked Sand Grains. [2]Location: PL=Pore Lining, M=Matrix.

Hydric Soil Indicators: (Applicable to all LRRs, unless otherwise noted.)

- ___ Histosol (A1)
- ___ Histic Epipedon (A2)
- ___ Black Histic (A3)
- ___ Hydrogen Sulfide (A4)
- ___ Stratified Layers (A5)
- ___ Organic Bodies (A6) **(LRR P, T, U)**
- ___ 5 cm Mucky Mineral (A7) **(LRR P, T, U)**
- ___ Muck Presence (A8) **(LRR U)**
- ___ 1 cm Muck (A9) **(LRR P, T)**
- ___ Depleted Below Dark Surface (A11)
- ___ Thick Dark Surface (A12)
- ___ Coast Prairie Redox (A16) **(MLRA 150A)**
- ___ Sandy Mucky Mineral (S1) **(LRR O, S)**
- ___ Sandy Gleyed Matrix (S4)
- ___ Sandy Redox (S5)
- ___ Stripped Matrix (S6)
- ___ Dark Surface (S7) **(LRR P, S, T, U)**
- ___ Polyvalue Below Surface (S8) **(LRR S, T, U)**
- ___ Thin Dark Surface (S9) **(LRR S, T, U)**
- ___ Loamy Mucky Mineral (F1) **(LRR O)**
- ___ Loamy Gleyed Matrix (F2)
- ___ Depleted Matrix (F3)
- ___ Redox Dark Surface (F6)
- ___ Depleted Dark Surface (F7)
- ___ Redox Depressions (F8)
- ___ Marl (F10) **(LRR U)**
- ___ Depleted Ochric (F11) **(MLRA 151)**
- ___ Iron-Manganese Masses (F12) **(LRR O, P, T)**
- ___ Umbric Surface (F13) **(LRR P, T, U)**
- ___ Delta Ochric (F17) **(MLRA 151)**
- ___ Reduced Vertic (F18) **(MLRA 150A, 150B)**
- ___ Piedmont Floodplain Soils (F19) **(MLRA 149A)**
- ___ Anomalous Bright Loamy Soils (F20) **(MLRA 149A, 153C, 153D)**

Indicators for Problematic Hydric Soils[3]:

- ___ 1 cm Muck (A9) **(LRR O)**
- ___ 2 cm Muck (A10) **(LRR S)**
- ___ Reduced Vertic (F18) **(outside MLRA 150A,B)**
- ___ Piedmont Floodplain Soils (F19) **(LRR P, S, T)**
- ___ Anomalous Bright Loamy Soils (F20) **(MLRA 153B)**
- ___ Red Parent Material (TF2)
- ___ Very Shallow Dark Surface (TF12)
- ___ Other (Explain in Remarks)

[3]Indicators of hydrophytic vegetation and wetland hydrology must be present, unless disturbed or problematic.

Restrictive Layer (if observed):

Type: _____

Depth (inches): _____

Hydric Soil Present? Yes _____ No X

Remarks:

Constructed Sum basin – historically disturbed soils
but overgrown and unmaintained
– drains to intermittent channel off-site

Appendix E
Forests and Hedgerows Datasheets

FOREST STAND ANALYSIS TABLE

Applicant: MTA Project name: Red Line Submission No.: Segment 1

KEY	TYPE OF COMMUNITY	AREA*	SOIL INFORMATION			EXISTING VEGETATION (Dominant Species and Approx. %)	STAND CHARACTERISTICS		NOTES
			Soil Types	Typical Forest Cover	Habitat Value		Size (dbh) & Age	General Conditions	
FS1	VA Pine/Oak Assoc.					*Virginia Pine	8-14"	Fair Condition	scattered larger trees
						*Red Maple			
						*Green Ash			High invasives in understory
						*Pin Oak			
									Woody vine interference high
						Understory			
						White oak- mid canopy			Gas line through center of FS1
						American elm- under/mid canopy			w/ evidence of disturbance
						Persimmon - understory/mid canopy			
						Multiflora rose			Canopy Closure 80-90%
						Japanese honey Suckle			
						Oriental bittersweet			Photos 1879-1883
						Scattered red cedar			
						Black haw			Moderate to high DWD
						Poison ivy			
						Wild onion			Early successional
						Bush honeysuckle			
						Scattered arrowwood			
	* Dominant species								

* Area measured to the nearest 1/10 acre.

FOREST STAND ANALYSIS TABLE

Applicant: MTA Project name: Red Line Submission No.: Segment 1

KEY	TYPE OF COMMUNITY	AREA*	SOIL INFORMATION			EXISTING VEGETATION (Dominant Species and Approx. %)	STAND CHARACTERISTICS		NOTES
			Soil Types	Typical Forest Cover	Habitat Value		Size (dbh) & Age	General Conditions	
FS2	White Oak					*White Oak	12-20"	Good/Fair condition	DWD High
	Black Oak					*Black Oak			
	N. Red Oak Assoc.					*Northern Red Oak			Low/Mod Invasives
						*Southern Red Oak			
									Some canopy mortality of oaks
						Scattered in Canopy			
						Green Ash			Sub-Canopy Thin
						Hickory			
									Canopy Closure 60-80%
						Bush Honeysuckle			
						Black Cherry - Understory			Woody Vine int. low
						Poison Ivy			
						Flowering Dogwood			Regen. of canopy species moderate
						Black Haw			
						Greenbriar			Photo 1895-1897
						Japanese Honeysuckle			
									Mid Successional
	* Dominant species								

* Area measured to the nearest 1/10 acre.

FOREST STAND ANALYSIS TABLE

Applicant: MTA Project name: Red Line Submission No.: Segment 1

KEY	TYPE OF COMMUNITY	AREA*	SOIL INFORMATION			EXISTING VEGETATION (Dominant Species and Approx. %)	STAND CHARACTERISTICS		NOTES
			Soil Types	Typical Forest Cover	Habitat Value		Size (dbh) & Age	General Conditions	
FS3	White Oak					* White Oak	12-20"	Fair/poor Condition	Canopy closure 80 - 100%
	Black Oak					*Northern Red Oak			
	N. Red Oak					Black Oak			dead branches and trunk
	Association								damage common
						Understory			
						Flowering Cherry			Saplings in understory
						Beech			
						Hickory			Electric utility work along roadside
						Black Locust			
						Mulberry			Lots of woody debris on ground
						Green Ash			
						American Elm			Photo #s 1713-1715
						Japanese honeysuckle			
						Poison Ivy			Mid Successional
						Flowering dogwood			
						Blackhaw			Thick understory with
						Privet			high levels of invasives
	* Dominant species								

* Area measured to the nearest 1/10 acre.

FOREST STAND ANALYSIS TABLE

Applicant: MTA Project name: Red Line Submission No.: Segment 1

KEY	TYPE OF COMMUNITY	AREA*	SOIL INFORMATION			EXISTING VEGETATION (Dominant Species and Approx. %)	STAND CHARACTERISTICS		NOTES
			Soil Types	Typical Forest Cover	Habitat Value		Size (dbh) & Age	General Conditions	
FS4	White oak					*Northern Red Oak	12-20"	Fair Condition	Lots of dead branches
	Black oak					*White Oak			and standing snags
	N. Red oak					*Green Ash			
	Association					Black Oak			Canopy closure 70-90%
						Black Locust			
									Lots of wood debris on
						Understory			forest floor
						Bigtooth Aspen			
						Hickory			Photos 1716-1721
						Beech			
						Virginia Pine-inclusions along edges			Mid successional
						Flowering Cherry			
						Privet			Forested strip
						Poison Ivy			between SS Mall &
						Multi-flora Rose			I-695
						Russian Olive			
						Shrub honeysuckle			High levels of invasives
						Japanese honeysuckle			in understory
						Poison Ivy			
						Red Cedar			
	* Dominant species								

* Area measured to the nearest 1/10 acre.

FOREST STAND ANALYSIS TABLE

Applicant: MTA Project name: Red Line Submission No.: Segment 1

KEY	TYPE OF COMMUNITY	AREA*	SOIL INFORMATION			EXISTING VEGETATION (Dominant Species and Approx. %)	STAND CHARACTERISTICS		NOTES
			Soil Types	Typical Forest Cover	Habitat Value		Size (dbh) & Age	General Conditions	
FS5	Va Pine - Oak					*Bigtooth Aspen	6 - 18"	Good condition	Moderate woody debris
	Association					* Sweet Gum			on forest floor
						*White Pine			
	Forest along					Virginia Pine			All trees are volunteers
	embankment					Austrian Pine			dense shrubby understory
	above roadway					*Northern Red Oak			
						Red Maple			Some minor dead branches
						Tulip Poplar			
									Early successional
						Understory:			Canopy closure 80-100%
						Honeysuckle shrub			
						Black Haw			High invasive cover
						Japanese Honeysuckle			
						Sumac			Photos 1731-1734
						Beech			
						Red maple			
						Sweet Gum			
	* Dominant species								

* Area measured to the nearest 1/10 acre.

FOREST STAND ANALYSIS TABLE

Applicant: MTA Project name: Red Line Submission No.: Segment 1

KEY	TYPE OF COMMUNITY	AREA*	SOIL INFORMATION			EXISTING VEGETATION (Dominant Species and Approx. %)	STAND CHARACTERISTICS		NOTES
			Soil Types	Typical Forest Cover	Habitat Value		Size (dbh) & Age	General Conditions	
FS6	Virginia Pine/Oak					*Red Maple	8-14"	Good Condition	Photos 10, 11
	Association					Tulip Poplar			
						*Green Ash			DWD low
						Beech (Understory)			Invasives high along edge
						Virginia Pine - inclusions			
						Bradford Pear			Canopy closure 80-100%
						Eastern Red Cedar			
						Honeysuckle			Early successional
						*Northern Red Oak			
						Willow Oak			
						White Pine			
						Pin Oak			
						Japanese Honeysuckle along edge			
	* Dominant species								

* Area measured to the nearest 1/10 acre.

FOREST STAND ANALYSIS TABLE

Applicant: MTA Project name: Red Line Submission No.: Segment 1

KEY	TYPE OF COMMUNITY	AREA*	SOIL INFORMATION			EXISTING VEGETATION (Dominant Species and Approx. %)	STAND CHARACTERISTICS		NOTES
			Soil Types	Typical Forest Cover	Habitat Value		Size (dbh) & Age	General Conditions	
FS7	Sycamore					*Green Ash	12-18"	Good/Fair Condition	Located along edges of I-70
	Green ash					*White Oak		mid-successional	
	Box elder					* Red Maple			60-90% Canopy Closure
	Silver maple					Slippery Elm			
	Association					Bradford Pear (scattered)			Wetland delineated in
						*Northern Red Oak			bottom of grade
						Hickory			
						Black Haw			High levels of invasives
						Japanese Honeysuckle			in herbaceous layer
						Greenbrier			
									Minor DWD
									Photos 7, 8 & 9
	* Dominant species								

* Area measured to the nearest 1/10 acre.

FOREST STAND ANALYSIS TABLE

Applicant: MTA Project name: Red Line Submission No.: Segment 1

KEY	TYPE OF COMMUNITY	AREA*	SOIL INFORMATION			EXISTING VEGETATION (Dominant Species and Approx. %)	STAND CHARACTERISTICS		NOTES
			Soil Types	Typical Forest Cover	Habitat Value		Size (dbh) & Age	General Conditions	
FS8	Sycamore					*Box Elder	8 - 16"	Fair Condition	90% Canopy Closure
	Green Ash					*Red Maple			
	Box Elder								Large vines
	Silver Maple					Understory			
	Association					*Green Ash			Irregular growth
						*Silver Maple			
						Black Locust			dense invasive understory
						Sawtooth Oak			
						American Elm			Concrete lined channel with
						Pin Oak			flowing water
						Sycamore			
						Shrub honeysuckle			Early successional
						Multiflora Rose			
						English Ivy			DWD low to moderate
						Grape Vines			
						Lesser Celandine			Photos 1372-1373
						Poison Ivy			
						Garlic Mustard			
	* Dominant species								

* Area measured to the nearest 1/10 acre.

FOREST STAND ANALYSIS TABLE

Applicant: MTA Project name: Red Line Submission No.: Segment 1&2

KEY	TYPE OF COMMUNITY	AREA*	SOIL INFORMATION			EXISTING VEGETATION (Dominant Species and Approx. %)	STAND CHARACTERISTICS		NOTES
			Soil Types	Typical Forest Cover	Habitat Value		Size (dbh) & Age	General Conditions	
1-FS9	Red Maple					*Black Locust	6-11"	Fair Condition	60% canopy closure
2-FS1	Association					*Red Maple			(Hole in canopy, large downed tree)
						*Black Cherry			
						*Red Oak			Dense Japanese honeysuckle
						Box Elder			in understory
						Pin Oak			
						Willow Oak			High levels of
									invasives & woody
						Understory			vine interference
						Green Ash			
						Black Cherry			Early successional
						Multiflora Rose			
						Shrub Honeysuckle			DWD high
						Box Elder			
						Japanese Honeysuckle			Previously disturbed
						Garlic mustard			road edge
									Photos 1376-1377
	* Dominant species								

* Area measured to the nearest 1/10 acre.

FOREST STAND ANALYSIS TABLE

Applicant: MTA Project name: Red Line Submission No.: Segment 1

KEY	TYPE OF COMMUNITY	AREA*	SOIL INFORMATION			EXISTING VEGETATION (Dominant Species and Approx. %)	STAND CHARACTERISTICS		NOTES
			Soil Types	Typical Forest Cover	Habitat Value		Size (dbh) & Age	General Conditions	
FS10	Tulip Poplar					*Tulip Poplar	14-30"	Good Condition	Woody vines int. mod.-high
	Association					Northern Red Oak - Inclusions			DWD moderate
						in mid canopy			Good forest structure
									Canopy closure 80-100%
						Inclusions in overstory			
						mainly mid canopy			Lots of specimen trees
						Hickory			
						Blackgum			Invasives moderate to high
						Green Ash			in understory/herbaceous layer
						Black Cherry			
						Red Maple			Photos 1226-1227
						Sassafras			
						Black Walnut in eastern end			Mid to late successional
						Maple leaf viburnum		Multiflora Rose	Gas Line along Northern
						Beech included in understory		Green brier	boundary of stand near
						Mayapple		Flowering Dogwood	Parallel Drive
						Poison Ivy			
						Black haw			
						Japanese Honeysuckle			
						Spice bush			
						Burning Bush			
						Red bud			
	* Dominant species					Jack-in-a-pulpit			

* Area measured to the nearest 1/10 acre.

FOREST STAND ANALYSIS TABLE

Applicant: MTA Project name: Red Line Submission No.: Segment 1

KEY	TYPE OF COMMUNITY	AREA*	SOIL INFORMATION			EXISTING VEGETATION (Dominant Species and Approx. %)	STAND CHARACTERISTICS		NOTES
			Soil Types	Typical Forest Cover	Habitat Value		Size (dbh) & Age	General Conditions	
FS11	Tulip Poplar Assoc.					* Box Elder	8 - 14"	w/ scattered larger individuals	Extensive DWD
						* Black Locust		Poor Condition	
						* Green Ash			Thick understory of invasvies
						* Red Maple			
						*Tulip Poplar			High levels of woody vine
						*Black Walnut			interference
						Tree of Heaven along edges			
						Sumac			40-80% closure with
						* Black Cherry			lots of openings
						Mulberry			
						Sassafras			Previously disturbed area
						Wineberry			
						Chinese Wisteria			Photos 1223 - 1225
						Poison Ivy			
						Garlic Mustard			Early Successional
						Oriental Bittersweet			
						Russian-Olive			
						Crown Vetch			
						Grape Vine	Rubus		
						Multiflora Rose			
						Red Maple			
						Box Elder			
						Japanese Honeysuckle			
	* Dominant species					Shrub Honeysuckle			

* Area measured to the nearest 1/10 acre.

FOREST STAND ANALYSIS TABLE

Applicant: Mta Project name: Red line Submission No.: Segment 1

KEY	TYPE OF COMMUNITY	AREA*	SOIL INFORMATION			EXISTING VEGETATION (Dominant Species and Approx. %)	STAND CHARACTERISTICS		NOTES
			Soil Types	Typical Forest Cover	Habitat Value		Size (dbh) & Age	General Conditions	
Fs12	Sycamore					*Green ash	8-14"	Fair Condition	Heavy invasives
	Green Ash					*Red maple			
	Box Elder					*Elm			DWD low
	Silver Maple					*Box Elder			
	Association					Sumac			Along outfall
						Bradford pear			
						Mulberry			Canopy Closure 70-80%
						Multiflora rose			
						Japanese honeysuckle			Early Successional
						Poison Ivy			
	* Dominant species								

* Area measured to the nearest 1/10 acre.

FOREST STAND ANALYSIS TABLE

Applicant: MTA Project name: Red Line Submission No.: Segment 1

KEY	TYPE OF COMMUNITY	AREA*	SOIL INFORMATION			EXISTING VEGETATION (Dominant Species and Approx. %)	STAND CHARACTERISTICS		NOTES
			Soil Types	Typical Forest Cover	Habitat Value		Size (dbh) & Age	General Conditions	
Fs13	Tulip Poplar			Slippery elm und			12-20"	Good Condition	Generation of canopy
	Association			Holly		*Tulip poplar			species evident
				Grape		Slippery Elm - inclusions			
				Oriental bittersweet		White/Green Ash - inclusions			Moderate DWD
				Redbud on edge		Red Maple - inclusions			
									Invasive encroach along
						Understory			edge near road
						Black cherry			
						Sassafras			Good stratification
						Flowering dogwood			
						Black haw viburnum			80-100% canopy closure
						Arrowwood			
						Ironwood			Mid successional
						Red maple			
						Mayapple			Woody vine interference moderate
						Poison ivy			
						Virginia creeper			Scattered specimen
						Maple leaf viburnum			trees throughout
						Grape			
						Spice bush			Good forest structure
						Japanese honeysuckle			
						Redbud			Invasives high in
						Jack in the pulpit		Photos 5&6	herbaceous layer
	* Dominant species								

* Area measured to the nearest 1/10 acre.

FOREST STAND ANALYSIS TABLE

Applicant: MTA Project name: Red Line Submission No.: Segment 1

KEY	TYPE OF COMMUNITY	AREA*	SOIL INFORMATION			EXISTING VEGETATION (Dominant Species and Approx. %)	STAND CHARACTERISTICS		NOTES
			Soil Types	Typical Forest Cover	Habitat Value		Size (dbh) & Age	General Conditions	
Fs14	Tulip Poplar					*Tulip poplar	12-20"	Good/fair condition	Canopy closure 70-90%
	Association					Ash incl.			
									Downed woody debris moderate
						Understory			High-moderate invasive
						Flowering dogwood			species encroach in understory
						Redbud			
						Black cherry			Photos 7 & 8
						Black haw			
						Sassafras			Mid successional
						Japanese honeysuckle			
						Multiflora rose			
						Oriental bittersweet			
						May apple			
						White mulberry			
	* Dominant species								

* Area measured to the nearest 1/10 acre.

FOREST STAND ANALYSIS TABLE

Applicant: MTA Project name: Red Line Submission No.: Segment 1

KEY	TYPE OF COMMUNITY	AREA*	SOIL INFORMATION			EXISTING VEGETATION (Dominant Species and Approx. %)	STAND CHARACTERISTICS		NOTES
			Soil Types	Typical Forest Cover	Habitat Value		Size (dbh) & Age	General Conditions	
Fs15	Tulip Poplar						12-20"	Fair Condition	More understory coverage
	Association					*Tulip poplar			than FS14
						Ash incl			
						Red maple incl			Invasive spec level mod to
						Black walnut incl			high, esp on edges
						Understory			Woody vine interference high
						Black cherry			
						Red maple			Canopy closure 70-90%
						Black haw			
						Japanese honeysuckle			High level of invasives
						Bird cherry			in understory
						May apple			
						Multiflora rose			Thick shrub layer
						Garlic mustard			
						Oriental bittersweet			Edge of road distrubed
						White mulberry			
						English ivy			Photos 9&10
						Bush honeysuckle			
						Jack-in-the-pulpit			Mid successional
						Box elder			
						Elm - inclusion			
						Spice Bush			
	* Dominant species					Poison ivy			

* Area measured to the nearest 1/10 acre.

FOREST STAND ANALYSIS TABLE

Applicant: MTA Project name: Red Line Submission No.: Segment 1

KEY	TYPE OF COMMUNITY	AREA*	SOIL INFORMATION			EXISTING VEGETATION (Dominant Species and Approx. %)	STAND CHARACTERISTICS		NOTES
			Soil Types	Typical Forest Cover	Habitat Value		Size (dbh) & Age	General Conditions	
Fs16	Tulip Poplar					*Tulip poplar	12-18"	(6-10" along stand edge)	Extremely high level
						*Black walnut		Poor/fair	of invasives
						*Black cherry			
						*Ash			Climbing vines
						Understory			Smaller trees adj.
						White mulberry incl			to road
						Garlic mustard und			
						Grape			Clusters of large
						Bush honeysuckle			trees scattered
						Oriental bittersweet			
						Tree-of-heaven			Woody vine interference high
						Japanese honeysuckle			
						Sassafras			High DWD
						Multiflora rose			
						Bed straw			Canopy Closure 50-80%
						Ground ivy			
						Lesser celandine			Photos 11&12
						Wineberry			
									Early to mid successional
	* Dominant species								

* Area measured to the nearest 1/10 acre.

FOREST STAND ANALYSIS TABLE

Applicant: MTA Project name: Red Line Submission No.: Segment 1

KEY	TYPE OF COMMUNITY	AREA*	SOIL INFORMATION			EXISTING VEGETATION (Dominant Species and Approx. %)	STAND CHARACTERISTICS		NOTES
			Soil Types	Typical Forest Cover	Habitat Value		Size (dbh) & Age	General Conditions	
FS17	Tulip Poplar					*Tulip Poplar	12-18"	Poor Condition	Ivy dominates forest floor
						*Red maple			with japanese honeysuckle
						Understory			High level of invasvies
						Green Ash			
						Persimmon incl			Woody vine interference
						Box elder incl			
						Holly			Fairly open canopy with
						N red oak			lots of gaps
						Slippery elm			
						English ivy			Canopy closure 50-80%
						Poison ivy			
						Bush honeysuckle			Tulip poplar up on slope
						Japanese honeysuckle			
						Multiflora rose			DWD - moderate
						White mulberry			
						Black walnut			Small trees due to
									disturbance along road
									Photos 21&22
									Mid successional
	* Dominant species								

* Area measured to the nearest 1/10 acre.

FOREST STAND ANALYSIS TABLE

Applicant: MTA Project name: Red Line Submission No.: Segment 1

KEY	TYPE OF COMMUNITY	AREA*	SOIL INFORMATION			EXISTING VEGETATION (Dominant Species and Approx. %)	STAND CHARACTERISTICS		NOTES
			Soil Types	Typical Forest Cover	Habitat Value		Size (dbh) & Age	General Conditions	
FS18	White Oak					*Northern Red Oak	16-30" +	Good Condition	Less invasives than FS10,
	Black Oak					*White Oak		& Forest Structure	except along Parallel Dr. & I-70
	Northern Red Oak					* Black Oak			
	Association					Tulip Poplar - inclusions		Less tulip poplar than FS10	DWD low to moderate
						Pignut Hickory - inclusions			
									80-100% Canopy Closure
						Overstory species in Understory			
						Beech			Woody vine int. low
						Black Gum - Inclusions in overstory			
						Spice Bush			Lots of specimen trees
						Mayapple			
						Mapleleaf Viburnum			Good species diversity
						Arrowwood			& habitat
						Ironwood			
						Flowering Dogwood			Photos 1228-1230
						Sassafras			
									Late successional
	* Dominant species								

* Area measured to the nearest 1/10 acre.

FOREST STAND ANALYSIS TABLE

Applicant: MTA Project name: Red Line Submission No.: Segment 1

KEY	TYPE OF COMMUNITY	AREA*	SOIL INFORMATION			EXISTING VEGETATION (Dominant Species and Approx. %)	STAND CHARACTERISTICS		NOTES
			Soil Types	Typical Forest Cover	Habitat Value		Size (dbh) & Age	General Conditions	
FS19	White Oak					*Northern Red Oak	16-30" +	Dominant size class	Less invasives than FS13,
	Black Oak					*White Oak		Less tulip than FS13	except along Parallel Dr. & I-70
	Northern Red Oak					* Black Oak			
	Association					Black Cherry			DWD moderate to high
						Pignut Hickory - inclusions			
						Tulip Poplar - inclusions			80-100% Canopy Closure
						Black Gum - Inclusions in overstory			
						Overstory species in Understory			Woody vine int. low
						Beech			Lots of specimen trees
						Spicebush			
						Mapleleaf Viburnum			Good species diversity
						Arrowwood			& habitat
						Ironwood			
						Flowering Dogwood			Photos 1231-1232
						Sassafras			
						Mayapple			Late successional
	* Dominant species								

* Area measured to the nearest 1/10 acre.

FOREST STAND ANALYSIS TABLE

Applicant: MTA Project name: Red Line Submission No.: Segment 1

KEY	TYPE OF COMMUNITY	AREA*	SOIL INFORMATION			EXISTING VEGETATION (Dominant Species and Approx. %)	STAND CHARACTERISTICS		NOTES
			Soil Types	Typical Forest Cover	Habitat Value		Size (dbh) & Age	General Conditions	
FS20	Redcedar					Redcedar	6-11"	Fair Condition	All plants appear to
	Association					Honeysuckle Shrub		Roadside mound	be volunteers
						Japanese Honeysuckle			
						Russian Olive			Low DWD
						Bradford Pear (<3" DBH)			
						Green Ash			Photos 1724-1727
						American Elm			
						Sumac			Open Canopy
						White mulberry			20-30% closure
									Early/pioneer
									High invasives content
									Woody vine
									interference moderate

* Area measured to the nearest 1/10 acre.

FOREST STAND ANALYSIS TABLE

Applicant: MTA Project name: Red Line Submission No.: Segment 1

KEY	TYPE OF COMMUNITY	AREA*	SOIL INFORMATION			EXISTING VEGETATION (Dominant Species and Approx. %)	STAND CHARACTERISTICS		NOTES
			Soil Types	Typical Forest Cover	Habitat Value		Size (dbh) & Age	General Conditions	
FS21	Red Maple					*Bigtooth aspen	6-11"	Fair	Pioneer area lumped
	Association					* Northern red oak			together with forest
						* Red maple			to the west
						*Black cherry			
						Austrian Pine			Canopy closure 50-70%
						Red Cedar			
						Multiflora Rose			Trees approximately 20%
						Shrub Honeysuckle			of total cover
						Staghorn Sumac			
						Japanese Honeysuckle			High levels of invasives
						Poison ivy			& vine interference
						Privet			
									DWD low
									Early successional
									Photos 1728-1730
	* Dominant species								

* Area measured to the nearest 1/10 acre.

FOREST STAND ANALYSIS TABLE

Applicant: MTA Project name: Red Line Submission No.: Segment 1

KEY	TYPE OF COMMUNITY	AREA*	SOIL INFORMATION			EXISTING VEGETATION (Dominant Species and Approx. %)	STAND CHARACTERISTICS		NOTES
			Soil Types	Typical Forest Cover	Habitat Value		Size (dbh) & Age	General Conditions	
FS22	Tulip Poplar					*Box Elder	6-14"	Fair/Poor	Dead wood on floor
	Association					*Tulip Poplar			
						Virginia Pine			Woody vine
						Bradford Pear			interference high
						*Black Cherry			
						Red maple			Canopy closure 80-100%
						Sassafras			
						Japanese honeysuckle			Thick understory
						Multi-flora rose			with high levels of invasives
						Bush honeysuckle			
						Poison ivy			Embankment along
						Wild grape			woodlawn & Parallel Dr.
									Early successional
									Photo 1 - 2
	* Dominant species								

* Area measured to the nearest 1/10 acre.

FOREST STAND ANALYSIS TABLE

Applicant: MTA Project name: Red Line Submission No.: Segment 1

KEY	TYPE OF COMMUNITY	AREA*	SOIL INFORMATION			EXISTING VEGETATION (Dominant Species and Approx. %)	STAND CHARACTERISTICS		NOTES
			Soil Types	Typical Forest Cover	Habitat Value		Size (dbh) & Age	General Conditions	
FS23	Va Pine - Oak					Bradford Pear	8-14"	Fair	Thin strip of
	Association					*Virginia Pine			forest between
						Black Haw			Parallel Drive & I-70
						White Mulberry			
						Green Ash			
						Sawtooth Oak - planted			High levels of invasives
						*Black Locust			& woody vine interference
						*Pin Oak			
						Red Oak			Early successional
						Russian olive			
						Box elder			70-80% canopy closure
						Poison ivy			
						Oriental bittersweet			DWD moderate
						Bush honeysuckle			
						Japanese honeysuckle			Photos 3 & 4
	* Dominant species								

* Area measured to the nearest 1/10 acre.

FOREST STAND ANALYSIS TABLE

Applicant: MTA Project name: Red Line Submission No.: Segment 1

KEY	TYPE OF COMMUNITY	AREA*	SOIL INFORMATION			EXISTING VEGETATION (Dominant Species and Approx. %)	STAND CHARACTERISTICS		NOTES
			Soil Types	Typical Forest Cover	Habitat Value		Size (dbh) & Age	General Conditions	
FS24	Pioneer Hardwood					Green Ash	6-11"	Fair Condition	High levels of invasives
	Assoc.					*Willow oak			and woody vine interference
						*Black Walnut			
						Shrub Honeysuckle			Canopy closure 40-60%
						Japanese Honeysuckle			
						Black Haw			Early successional
						Grape			
						Sumac			Few scattered larger
						Black cherry			planted willow oaks
						Oriental bittersweet			
						Golden			DWD high
						White mulberry			
						Goldenrain tree			Photos 1772-1774
	*Dominant Species								

* Area measured to the nearest 1/10 acre.

FOREST STAND ANALYSIS TABLE

Applicant: MTA Project name: Red Line Submission No.: Segment 1

KEY	TYPE OF COMMUNITY	AREA*	SOIL INFORMATION			EXISTING VEGETATION (Dominant Species and Approx. %)	STAND CHARACTERISTICS		NOTES
			Soil Types	Typical Forest Cover	Habitat Value		Size (dbh) & Age	General Conditions	
FS25	Red maple					Red Cedar	6-11"	Good/Fair	40-60% canopy closure
	Association					Crab Apple			
						Bradford Pear			
						Poison Ivy			High invasives
						Staghorn Sumac			
						Sawtooth Oak			Hedgerow between 2
						Elm			ramps onto 695 north
						Box elder			
						Red maple			
									Early successional
									Area with adjacent forest
									Borderline forest area
									Photos 1739-1740

* Area measured to the nearest 1/10 acre.

FOREST STAND ANALYSIS TABLE

Applicant: MTA Project name: Red Line Submission No.: Segment 1

KEY	TYPE OF COMMUNITY	AREA*	SOIL INFORMATION			EXISTING VEGETATION (Dominant Species and Approx. %)	STAND CHARACTERISTICS		NOTES
			Soil Types	Typical Forest Cover	Habitat Value		Size (dbh) & Age	General Conditions	
FS26	Red Maple					Red Maple	6-14"	Fair, dead branches	Canopy closure 40-60%
	Association					Norway Maple			
						Black Locust			
						Green Ash			Dense carpet of
						Japanese honeysuckle			honeysuckle vine
						White oak			
									Light woody debris
									All plants appear to be
									volunteers
									Red Cedar saplings
									Photos 1748-1749
									Borderline forest area
									on roadside embankment
									near SSA and I-695/I-70
									interchange

* Area measured to the nearest 1/10 acre.

FOREST STAND ANALYSIS TABLE

Applicant: MTA Project name: Red Line Submission No.: Segment 1

KEY	TYPE OF COMMUNITY	AREA*	SOIL INFORMATION			EXISTING VEGETATION (Dominant Species and Approx. %)	STAND CHARACTERISTICS		NOTES
			Soil Types	Typical Forest Cover	Habitat Value		Size (dbh) & Age	General Conditions	
H1	Hedgerow					*Ash	8-14"	with scattered larger	High inv. in understory
						*White Oak		Fair condition	
						Red Maple - scattered			
						Black Cherry - scattered			Thin strip of trees
						Hickory			next to Apartments
						Mulberry			
									Photos 1884 - 1886
						Norway Maple			
						Japanese Honey suckle			
						Black Haw			
						Bush Honey Suckle			
	* Dominant species								

* Area measured to the nearest 1/10 acre.

FOREST STAND ANALYSIS TABLE

Applicant: MTA Project name: Red Line Submission No.: Segment 1

KEY	TYPE OF COMMUNITY	AREA*	SOIL INFORMATION			EXISTING VEGETATION (Dominant Species and Approx. %)	STAND CHARACTERISTICS		NOTES
			Soil Types	Typical Forest Cover	Habitat Value		Size (dbh) & Age	General Conditions	
H2	Native & Planted					White Oak	8 - 16"	Fair/Poor condition	Thin strip of trees
	Hedgerow					Northern Red Oak			between Security Blud &
						Green & White Ash			private property including
						Black Locust			planted yard trees
						Black Cherry + Red Maple			
						Silver Maple			Lots of trash and invasives
						Mulberry			in understory.
						Arborvitae + Red Cedar			
						Multiflora Rose			Photos 1887 - 1889
						Japanese Honey Suckle			
						Last 2 properties			
						1950 + 1952 Winder Rd			
						White and Northern Red Oaks	12-20"		
						1948 Winder Rd			
						Black Locust			
						dominated hedgerow			

* Area measured to the nearest 1/10 acre.

FOREST STAND ANALYSIS TABLE

Applicant: MTA Project name: Red Line Submission No.: Segment 1

KEY	TYPE OF COMMUNITY	AREA*	SOIL INFORMATION			EXISTING VEGETATION (Dominant Species and Approx. %)	STAND CHARACTERISTICS		NOTES
			Soil Types	Typical Forest Cover	Habitat Value		Size (dbh) & Age	General Conditions	
H3	Hedgerow					Black Oak	12-20" Oaks	Fair to good condition	Planted & Volunteer
						White Oak	Avg Size	Security Blvd Screening	Species
						Northern Red Oak	6 - 10"		Narrow strip that
						White Ash & Green Ash			includes yard trees
						Black Locust			
						Sawtooth Oak			Lots of smaller bushy
						Leyland Cypress			areas w/ 2-6" trees
						Black Cherry			
						Pin Oak			Photos 1384 & 1385
						Pear			
						Bush Honey Suckle Scattered			
						Planted Japanese Enonymous			
						along roadway			
						1st 3 properties on Derrickson Rd			
						near centers for Medicaid			
						have Northern Red Oak, Black Oak,	12 - 20"		
						White Oak + rows of			
						Leyland Cypress			

* Area measured to the nearest 1/10 acre.

FOREST STAND ANALYSIS TABLE

Applicant: MTA Project name: Red Line Submission No.: Segment 1

KEY	TYPE OF COMMUNITY	AREA*	SOIL INFORMATION			EXISTING VEGETATION (Dominant Species and Approx. %)	STAND CHARACTERISTICS		NOTES
			Soil Types	Typical Forest Cover	Habitat Value		Size (dbh) & Age	General Conditions	
H4	Hedgerow					* Red Cedars	4-6	Good	Volunteer vegetation on roadway
						Bradford Pear			embankment dominated by Red
						Honeysuckle Shrub			Cedar and shrub honeysuckle
						Mulberry			cedars generally small but
									in good condition
									Photos 1722-1723
	* Dominant species								

* Area measured to the nearest 1/10 acre.

FOREST STAND ANALYSIS TABLE

Applicant: MTA Project name: Red Line Submission No.: Segment 1

KEY	TYPE OF COMMUNITY	AREA*	SOIL INFORMATION			EXISTING VEGETATION (Dominant Species and Approx. %)	STAND CHARACTERISTICS		NOTES
			Soil Types	Typical Forest Cover	Habitat Value		Size (dbh) & Age	General Conditions	
H7	Hedgerow					Staghorn Sumac	< 3" DBH	Good	Tree species are
						Red Cedar			approximately 20%
						Honeysuckle Shrub			total cover
						Poison Ivy			
						Crab Apple			Photos 1737-1735
									Shrubby median embankment

* Area measured to the nearest 1/10 acre.

FOREST STAND ANALYSIS TABLE

Applicant: MTA Project name: Red Line Submission No.: Segment 1

KEY	TYPE OF COMMUNITY	AREA*	SOIL INFORMATION			EXISTING VEGETATION (Dominant Species and Approx. %)	STAND CHARACTERISTICS		NOTES
			Soil Types	Typical Forest Cover	Habitat Value		Size (dbh) & Age	General Conditions	
H10	Hedgerow					Sawtooth Oak	12"-18"	Fair Condition	
						Green Ash			Sawtooth
						Red Cedar			Oaks of generally
						Multiflora Rose			similar size and spacing
						Shrub Honeysuckle			= possibly planted on
						Japanese Honeysuckle			roadside embankment
						Pin Oak			also Pin and Red Oaks
						Northern Red Oak			
						Poison ivy			Hedgerow appears
									to be a number of Oaks
									planted on the
									embankment below the
									roadway with volunteer
									trees, vines and shrubs
									= 1 row thick of trees
									Shrubby trees along
									roadway embankment
									Photos 1751-1753

* Area measured to the nearest 1/10 acre.

FOREST STAND ANALYSIS TABLE

Applicant: MTA Project name: Red Line Submission No.: Segment 1

KEY	TYPE OF COMMUNITY	AREA*	SOIL INFORMATION			EXISTING VEGETATION (Dominant Species and Approx. %)	STAND CHARACTERISTICS		NOTES
			Soil Types	Typical Forest Cover	Habitat Value		Size (dbh) & Age	General Conditions	
H11	Hedgerow					Red Cedar	6"-10"	Good Condition	Canopy cover
						Bradford Pear			approximately 40%
						Multiflora Rose			
						Shrub honeysuckle			All plants appear to be
						Poison Ivy			volunteers
						Japanese Honeysuckle			
						Red Maple			Photos 1754-1757
						Staghorn Sumac			
						Crab apple			Redcedar thicket along
						Sawtooth Oak			roadway embankment
						Russian Olive			

* Area measured to the nearest 1/10 acre.

FOREST STAND ANALYSIS TABLE

Applicant: MTA Project name: Red Line Submission No.: Segment 1

KEY	TYPE OF COMMUNITY	AREA*	SOIL INFORMATION			EXISTING VEGETATION (Dominant Species and Approx. %)	STAND CHARACTERISTICS		NOTES
			Soil Types	Typical Forest Cover	Habitat Value		Size (dbh) & Age	General Conditions	
H12	Hedgerow					White Pine	14-16"	Good/Fair	Total canopy cover 30%
						Sawtooth Oak	6-8"		
						Flowering Cherry	6"		White Pines appear
						Shrub Honeysuckle			to be planted
						Austrian Pine			
						Crab Apple			
						Japanese Honeysuckle			
									Berm separating highway
									from SSA
									Photos 1757-1761

* Area measured to the nearest 1/10 acre.

FOREST STAND ANALYSIS TABLE

Applicant: MTA Project name: Red Line Submission No.: Segment 1

KEY	TYPE OF COMMUNITY	AREA*	SOIL INFORMATION			EXISTING VEGETATION (Dominant Species and Approx. %)	STAND CHARACTERISTICS		NOTES
			Soil Types	Typical Forest Cover	Habitat Value		Size (dbh) & Age	General Conditions	
H13	Hedgerow					Red Maple	6-15"	Fair	Canopy cover 40-60%
						Sawtooth Oak	for canopy		
						Black Locust	trees		Lots of deadwood/
						Elm			branches & vines
						Austrian Pine			
						Shrub Honeysuckle			
						Japanese Honeysuckle			Lots of wood
						Black Haw			debris on ground
						Multi-flora Rose			
						Russian Olive			Photos 1762-1764

* Area measured to the nearest 1/10 acre.

FOREST STAND ANALYSIS TABLE

Applicant: MTA Project name: Red Line Submission No.: Segment 1

KEY	TYPE OF COMMUNITY	AREA*	SOIL INFORMATION			EXISTING VEGETATION (Dominant Species and Approx. %)	STAND CHARACTERISTICS		NOTES
			Soil Types	Typical Forest Cover	Habitat Value		Size (dbh) & Age	General Conditions	
H14	Hedgerow					Bradford Pear	4-10"	Good Condition	Canopy cover 60%
						Red Maple	Avg. of		
						White Mulberry	volunteer		Veg description and
						Red Cedar	trees		size excludes large
						Virginia Pine			planted trees measured
						Black Hawthorn			separately
						Shrub Honeysuckle			
						Multflora Rose			
						Russian Olive			
						Japanese Honeysuckle			
									Photos 1765-1771

* Area measured to the nearest 1/10 acre.

FOREST STAND ANALYSIS TABLE

Applicant: MTA Project name: Red Line Submission No.: Segment 1

KEY	TYPE OF COMMUNITY	AREA*	SOIL INFORMATION			EXISTING VEGETATION (Dominant Species and Approx. %)	STAND CHARACTERISTICS		NOTES
			Soil Types	Typical Forest Cover	Habitat Value		Size (dbh) & Age	General Conditions	
H18	Hedgerow					Holly cultivar	6-18"		Located along Fenceline
						Laurel			of CMS property
						Arrowwood viburnum			
									Photo #1

* Area measured to the nearest 1/10 acre.

FOREST STAND ANALYSIS TABLE

Applicant: MTA Project name: Red line Submission No.: Segment 1

KEY	TYPE OF COMMUNITY	AREA*	SOIL INFORMATION			EXISTING VEGETATION (Dominant Species and Approx. %)	STAND CHARACTERISTICS		NOTES
			Soil Types	Typical Forest Cover	Habitat Value		Size (dbh) & Age	General Conditions	
H19	Hedgerow					Black locust	6-10"	Fair Condition	Heavy invasive cover
						Green ash			
						Bush honeysuckle			Photos 1&2
						Japanese honeysuckle			
						Multiflora rose			

* Area measured to the nearest 1/10 acre.

FOREST STAND ANALYSIS TABLE

Applicant: MTA Project name: Red Line Submission No.: Segment 1

KEY	TYPE OF COMMUNITY	AREA*	SOIL INFORMATION			EXISTING VEGETATION (Dominant Species and Approx. %)	STAND CHARACTERISTICS		NOTES
			Soil Types	Typical Forest Cover	Habitat Value		Size (dbh) & Age	General Conditions	
H20	Hedgerow					*Red maple	8-14"	Fair Condition	Downed woody debris low
						*Green ash			to moderate
						Black locust			
						slippery elm			Little to no canopy
						Black oak			regeneration
						Black cherry			
						Sassafras			Woody vine
									interference moderate
						Understory			
						Northern red oak			Thin strip of trees adjacent
						White oak			to SSA building on Parallel
						Flowering dogwood			Drive
						redbud - incl			
						Big tooth aspen			
						Hickory			
						Bush honeysuckle			
						Multifloral rose			
						Oriental bittersweet			
						Poison ivy			
						Japanese honeysuckle			
	* Dominant species								

* Area measured to the nearest 1/10 acre.

FOREST STAND ANALYSIS TABLE

Applicant: MTA Project name: Red Line Submission No.: Segment 1

KEY	TYPE OF COMMUNITY	AREA*	SOIL INFORMATION			EXISTING VEGETATION (Dominant Species and Approx. %)	STAND CHARACTERISTICS		NOTES
			Soil Types	Typical Forest Cover	Habitat Value		Size (dbh) & Age	General Conditions	
H21	Hedgerow					Northern red oak	8-14"	Poor Condition	Couple scattered large trees
						Black cherry			
						Black walnut			High level of invasives
						White mulberry			
						Green ash			Woody vine interference
						Box elder			
						Wild grape			DWD High
						Garlic mustard			
						Oriental bittersweet			
						Ground ivy			
						Multiflora rose			
						Wineberry			
						Bush honeysuckle			
						English ivy			
						Japanese honeysuckle			

* Area measured to the nearest 1/10 acre.

FOREST STAND ANALYSIS TABLE

Applicant: MTA Project name: Red Line Submission No.: Segment 1

KEY	TYPE OF COMMUNITY	AREA*	SOIL INFORMATION			EXISTING VEGETATION (Dominant Species and Approx. %)	STAND CHARACTERISTICS		NOTES
			Soil Types	Typical Forest Cover	Habitat Value		Size (dbh) & Age	General Conditions	
H22	Hedgerow					Red maple	6-11"	Poor condition	High levels of invasives
						Green ash			
						Sycamore			Photos 1382-1383
						Pin oak			
						Black locust			Thin strip of trees
						Box elder			@ Ingleside/I-70
									Interchange
						Poison ivy			
						Multi-flora rose			
						Oriental bittersweet			
						Bush honeysuckle			

* Area measured to the nearest 1/10 acre.

FOREST STAND ANALYSIS TABLE

Applicant: MTA Project name: Red Line Submission No.: Segment 1

KEY	TYPE OF COMMUNITY	AREA*	SOIL INFORMATION			EXISTING VEGETATION (Dominant Species and Approx. %)	STAND CHARACTERISTICS		NOTES
			Soil Types	Typical Forest Cover	Habitat Value		Size (dbh) & Age	General Conditions	
H23	Hedgerow					White pine	8-12"	7 trees	Planted hedgerow
						Red maple		7 trees	in front of apartments
						Green ash		3 trees	with mowed area
									underneath
									Photos 1380-1381

* Area measured to the nearest 1/10 acre.

FOREST STAND ANALYSIS TABLE

Applicant: MTA Project name: Red Line Submission No.: Segment 1

KEY	TYPE OF COMMUNITY	AREA*	SOIL INFORMATION			EXISTING VEGETATION (Dominant Species and Approx. %)	STAND CHARACTERISTICS		NOTES
			Soil Types	Typical Forest Cover	Habitat Value		Size (dbh) & Age	General Conditions	
H24	Hedgerow					Austrian pine	6-8"		Located on CMS property
						White spruce			
						Holly cultivar			
						Zelkova			Photo #2

* Area measured to the nearest 1/10 acre.

FOREST STAND ANALYSIS TABLE

Applicant: MTA Project name: Red Line Submission No.: Segment 1

KEY	TYPE OF COMMUNITY	AREA*	SOIL INFORMATION			EXISTING VEGETATION (Dominant Species and Approx. %)	STAND CHARACTERISTICS		NOTES
			Soil Types	Typical Forest Cover	Habitat Value		Size (dbh) & Age	General Conditions	
H25	Hedgerow					*Sawtooth oak	6-16"	Good	Open Canopy
						*Red cedar			
						Red maple			Canopy Cover 40%
						Honeysuckle shrub			
									Photos 1735-1736
									In triangular area between
									ramps to 695 east

* Area measured to the nearest 1/10 acre.

FOREST STAND ANALYSIS TABLE

Applicant: MTA Project name: Red Line Submission No.: Segment 2

KEY	TYPE OF COMMUNITY	AREA*	SOIL INFORMATION			EXISTING VEGETATION (Dominant Species and Approx. %)	STAND CHARACTERISTICS		NOTES
			Soil Types	Typical Forest Cover	Habitat Value		Size (dbh) & Age	General Conditions	
FS2	Tulip Poplar					*Black walnut	8-16"	Good/fair Condition	30' Gas pipeline
	Association					*Black locust			runs through forest
						*Tulip poplar			
						Pin oak			Few open areas
						Box elder			
						Northern red oak			80% canopy closure
						Black cherry			
									Moderate DWD
						Understory			
						Box elder			Photos 1925-1928
						Black cherry			
						*Bush honeysuckle			Early successional
						*Multiflora rose			
						Japanese honeysuckle			Woody vine interference
									and invasives are high
	* Dominant species								

* Area measured to the nearest 1/10 acre.

FOREST STAND ANALYSIS TABLE

Applicant: MTA Project name: Red Line Submission No.: Segment 2

KEY	TYPE OF COMMUNITY	AREA*	SOIL INFORMATION			EXISTING VEGETATION (Dominant Species and Approx. %)	STAND CHARACTERISTICS		NOTES
			Soil Types	Typical Forest Cover	Habitat Value		Size (dbh) & Age	General Conditions	
FS3	Black locust					*Black locust	10 - 18"	Fair/poor Condition	50% canopy closure
	association					*Northern red oak			
						*White pine			Open understory
						Sawtooth oak			
						Red maple			Low/moderate DWD
						Black cherry			
						Tree of heaven			Photos 1931-1936
						Virginia pine			
									High levels of invasives
						Understory			
						*Black locust			Early successional
						Black cherry			
						American holly			
						*Japanese honeysuckle			
						*Bush honeysuckle			
						Vitis sp.			
	* Dominant species								

* Area measured to the nearest 1/10 acre.

FOREST STAND ANALYSIS TABLE

Applicant: MTA Project name: Red Line Submission No.: Segment 2

KEY	TYPE OF COMMUNITY	AREA*	SOIL INFORMATION			EXISTING VEGETATION (Dominant Species and Approx. %)	STAND CHARACTERISTICS		NOTES
			Soil Types	Typical Forest Cover	Habitat Value		Size (dbh) & Age	General Conditions	
FS4	Tulip-poplar					*Black locust	6-12"	Fair/poor Condition	80% canopy cover
	Association					*Slippery elm			
						* Pin oak			Open patches w/
						Tulip poplar			several down trees
						Red maple			
						White pine			DWD high
						Willow oak			
						Box elder			Photos 1937-11
						Black cherry			
						Northern red oak			Early Successional
						Understory			HIgh levels of invasives
						*Black cherry			
						Black locust			
						American beech			
						*Bush honeysuckle			
						*Japanese honeysuckle			
						Poison Ivy			
						Multiflora rose			
	* Dominant species								

* Area measured to the nearest 1/10 acre.

FOREST STAND ANALYSIS TABLE

Applicant: MTA Project name: Red Line Submission No.: Segment 2

KEY	TYPE OF COMMUNITY	AREA*	SOIL INFORMATION			EXISTING VEGETATION (Dominant Species and Approx. %)	STAND CHARACTERISTICS		NOTES
			Soil Types	Typical Forest Cover	Habitat Value		Size (dbh) & Age	General Conditions	
FS5	Tulip poplar					*Tulip poplar	12-30"	Good interior	Invasives dominate
	association					*White oak		Edges disturbed	along edges
						Beech		w/ smaller diameter	
						Black locust		trees	Moderate DWD
						Green Ash			
						Black cherry			Mid to late successional
						Sycamore			
						Spicebush			Canopy closure 90-100%
						Multiflora rose			
						Japanese honeysuckle			
						Red maple			
						Oriental bittersweet			
									Photos 1846-1850
	* Dominant species								

* Area measured to the nearest 1/10 acre.

FOREST STAND ANALYSIS TABLE

Applicant: MTA Project name: Red Line Submission No.: Segment 2

KEY	TYPE OF COMMUNITY	AREA*	SOIL INFORMATION			EXISTING VEGETATION (Dominant Species and Approx. %)	STAND CHARACTERISTICS		NOTES
			Soil Types	Typical Forest Cover	Habitat Value		Size (dbh) & Age	General Conditions	
FS6	Sycamore					*White oak	12-24"	Fair/Good Condition	DWD moderate
	Green ash					*Northern red oak			
	Box elder					*Black Locust			Edges of forest dominated
	Silver maple					Beech			by black locust
	Association					Sycamore			
						Box Elder			Photos 1862-1864
						Slippery Elm			
									High levels of invasives &
									woody vine interference
						Understory			
						Box Elder			Canopy closure 80-100%
						Black Locust			
						Japanese Honeysuckle			Mid-successional
						Shrub Honeysuckle			
						Multiflora Rose			
						Poison ivy			
	* Dominant species								

* Area measured to the nearest 1/10 acre.

FOREST STAND ANALYSIS TABLE

Applicant: MTA Project name: Red Line Submission No.: Segment 2

KEY	TYPE OF COMMUNITY	AREA*	SOIL INFORMATION			EXISTING VEGETATION (Dominant Species and Approx. %)	STAND CHARACTERISTICS		NOTES
			Soil Types	Typical Forest Cover	Habitat Value		Size (dbh) & Age	General Conditions	
FS7	Sycamore					*Boxelder	6 -12"	Poor condition	Near stream outfall
	Green ash					*Black Locust			
	Box elder					*Slippery Elm			Lots of trash
	Silver maple					Leyland Cypress			
	Association					Tree of Heaven			DWD low
						*Honeysuckle Shrub			
						Japanese honeysuckle			Canopy closure 60%
						Red maple			
									Early successional
									High levels of invasives
									Photos 1869, 1870
	* Dominant species								

* Area measured to the nearest 1/10 acre.

FOREST STAND ANALYSIS TABLE

Applicant: MTA Project name: Red Line Submission No.: Segment 2

KEY	TYPE OF COMMUNITY	AREA*	SOIL INFORMATION			EXISTING VEGETATION (Dominant Species and Approx. %)	STAND CHARACTERISTICS		NOTES
			Soil Types	Typical Forest Cover	Habitat Value		Size (dbh) & Age	General Conditions	
FS8	Sycamore					American Elm	12-18"	Fair Condition	DWD moderate
	Green ash					*Slippery Elm			
	Box elder					*Box elder			Canopy Closure 90%
	Silver maple					Red Maple			
	Association					Sycamore			Wetland present
						*Green ash			
						Black walnut			Photos 1865, 1866,1871
						Black locust - along edges			
									Early to mid successional
						Understory			
						English Ivy			Invasives & woody vine
						Japanese honeysuckle			interference high
						Garlic mustard			
						Poison Ivy			
						Rubus			
						Virginia Creeper			
						Wild Grape			
						Privet shrub			
						Black Cherry			
	* Dominant species								

* Area measured to the nearest 1/10 acre.

FOREST STAND ANALYSIS TABLE

Applicant: MTA Project name: Red Line Submission No.: Segment 2

KEY	TYPE OF COMMUNITY	AREA*	SOIL INFORMATION			EXISTING VEGETATION (Dominant Species and Approx. %)	STAND CHARACTERISTICS		NOTES
			Soil Types	Typical Forest Cover	Habitat Value		Size (dbh) & Age	General Conditions	
FS9	Tulip Poplar					*Slippery Elm	8-16"	Fair condition	DWD low
	Association					*Tulip Poplar			
						*Box Elder			High level of invasives
						Black Cherry			
						Black Locust			70% Canopy Closure
						Northern Red Oak			
									Photos 1872, 1873
						Understory			
						English ivy			Early to mid successional
						Honeysuckle vine			
						Bush Honeysuckle			
						Multiflora rose			
						Poison Ivy			
	* Dominant species								

* Area measured to the nearest 1/10 acre.

FOREST STAND ANALYSIS TABLE

Applicant: MTA Project name: Red Line Submission No.: Segment 2

KEY	TYPE OF COMMUNITY	AREA*	SOIL INFORMATION			EXISTING VEGETATION (Dominant Species and Approx. %)	STAND CHARACTERISTICS		NOTES
			Soil Types	Typical Forest Cover	Habitat Value		Size (dbh) & Age	General Conditions	
FS10	Va Pine - Oak					*Pin Oak	6-12"	Fair Condition	Canopy Closure 30% -50%
	Association					*White Oak			
						*Black locust			DWD moderate
						Red Maple			
						Virginia pine			High level of invasives
						Black cherry			
									Early successional
						Understory			
						Honeysuckle vine			Security white oak located
						Poison Ivy			in stand - 49" DBH
						Honeysuckle Shrub			
									Photos1874-1876
	* Dominant species								

* Area measured to the nearest 1/10 acre.

FOREST STAND ANALYSIS TABLE

Applicant: MTA Project name: Red Line Submission No.: Segment 2

KEY	TYPE OF COMMUNITY	AREA*	SOIL INFORMATION			EXISTING VEGETATION (Dominant Species and Approx. %)	STAND CHARACTERISTICS		NOTES
			Soil Types	Typical Forest Cover	Habitat Value		Size (dbh) & Age	General Conditions	
FS11	Tulip Poplar					*Black Locust	12-18"	Fair Condition	DWD moderate
	Association					*Tulip Poplar			
						*Slippery Elm			high level of invasives
						*Northern Red Oak			
						Black Cherry			Some trash
						Silver Maple			
						*Green Ash			60 - 80% Canopy Closure
						Red Maple			
						White Pine			Photos 1378 - 1379
						Sawtooth Oak			& 1351-1352
						Black Walnut			
						Tree of Heaven			Mid Successional
						Box Elder			
									White pine and sawtooth
						Understory			oak planted along
						Multiflora Rose			building
						Honeysuckle shrub			
						Poison Ivy			
						Grapevine			
						Japanese honeysuckle			
	* Dominant species								

* Area measured to the nearest 1/10 acre.

FOREST STAND ANALYSIS TABLE

Applicant: MTA Project name: Red Line Submission No.: Segment 2

KEY	TYPE OF COMMUNITY	AREA*	SOIL INFORMATION			EXISTING VEGETATION (Dominant Species and Approx. %)	STAND CHARACTERISTICS		NOTES
			Soil Types	Typical Forest Cover	Habitat Value		Size (dbh) & Age	General Conditions	
FS12	Red Maple					*Black walnut	10-18"	Fair/poor Condition	70% canopy closure
	Association					*Boxelder			
						*Black locust			Open understory
						Pin oak			
						Red maple			DWD - Low/mod
						White pine			
						Sawtooth oak			Moderate to high invasives
						Northern red oak			
						Alianthus			Early successional
						Understory			
						Black walnut			
						Boxelder			
						Multiflora rose			
						Rubus sp.			Photos 1929-1930
						Vitis sp.			
						Bush honeysuckle			
	* Dominant species								

* Area measured to the nearest 1/10 acre.

FOREST STAND ANALYSIS TABLE

Applicant: MTA Project name: Red Line Submission No.: Segment 2

KEY	TYPE OF COMMUNITY	AREA*	SOIL INFORMATION			EXISTING VEGETATION (Dominant Species and Approx. %)	STAND CHARACTERISTICS		NOTES
			Soil Types	Typical Forest Cover	Habitat Value		Size (dbh) & Age	General Conditions	
FS13	Black locust					*Black locust	6 - 11"	Fair/Poor Condition	Heavy invasive cover
	Association					Green ash			& woody vine interference
						Austrian pine			
						Japanese honeysuckle			DWD High
						Multiflora rose			
						Black Cherry			Canopy Closure 60-80%
						Garlic Mustard			
						Poison Ivy			Early/Pioneer
									Successional
									Photo 1845
	* Dominant species								

* Area measured to the nearest 1/10 acre.

FOREST STAND ANALYSIS TABLE

Applicant: MTA Project name: Redline Submission No.: Segment 2

KEY	TYPE OF COMMUNITY	AREA*	SOIL INFORMATION			EXISTING VEGETATION (Dominant Species and Approx. %)	STAND CHARACTERISTICS		NOTES
			Soil Types	Typical Forest Cover	Habitat Value		Size (dbh) & Age	General Conditions	
H1	Hedgerow					*Bush honeysuckle	2 - 6"	Fair Condition	High invasive cover
						*Black locust			
						Japanese honeysuckle			Photo 1844
						Multiflora rose			
						White mulberry			
						Sumac			
	* Dominant species								

* Area measured to the nearest 1/10 acre.

FOREST STAND ANALYSIS TABLE

Applicant: MTA Project name: Red Line Submission No.: Segment 2

KEY	TYPE OF COMMUNITY	AREA*	SOIL INFORMATION			EXISTING VEGETATION (Dominant Species and Approx. %)	STAND CHARACTERISTICS		NOTES
			Soil Types	Typical Forest Cover	Habitat Value		Size (dbh) & Age	General Conditions	
H2	Hedgerow					Green Ash	4-10"		High levels of invasives
						Red Maple			
						Pin Oak			Roadside cluster of trees
						Bush honeysuckle			Photos 1374-1375
						Japanese honeysuckle			
						Oriental bittersweet			

* Area measured to the nearest 1/10 acre.

FOREST STAND ANALYSIS TABLE

Applicant: MTA Project name: Red Line Submission No.: Segment 3

KEY	TYPE OF COMMUNITY	AREA*	SOIL INFORMATION			EXISTING VEGETATION (Dominant Species and Approx. %)	STAND CHARACTERISTICS		NOTES
			Soil Types	Typical Forest Cover	Habitat Value		Size (dbh) & Age	General Conditions	
FS1	Sycamore					*Box elder	10-16"	Fair Condition	Lots of vines
	Green Ash					*Elm			
	Boxelder					Tree of heaven			80% canopy cover
	Silver maple					Black locust			
	Association					Sycamore			Lots of trash
						Understory			Photos 1159-1161
						Japanese honeysuckle			Photos 68-76
						Honeysuckle shrub			
						*English ivy			Early to mid
						Clematis			successional
									High levels of invasives
	* Dominant species								

* Area measured to the nearest 1/10 acre.

FOREST STAND ANALYSIS TABLE

Applicant: MTA Project name: Red Line Submission No.: Segment 3

KEY	TYPE OF COMMUNITY	AREA*	SOIL INFORMATION			EXISTING VEGETATION (Dominant Species and Approx. %)	STAND CHARACTERISTICS		NOTES
			Soil Types	Typical Forest Cover	Habitat Value		Size (dbh) & Age	General Conditions	
FS2	Sycamore					*Green/white ash	8-14"	Poor	High levels of invasives
	Green ash					*Black locust			and woody vine interference
	Boxelder					*Tree of heaven			
	Silver maple					American elm			Canopy closure 50-80%
	Association					White mulberry			with scattered openings
						Poison Ivy			Early successional
						Rubus			
						Multiflora rose			DWD moderate
						Ash			
						Mulberry			Photos 1386-1387
						English ivy			Photos 1156-1157
						Oriental bittersweet			
						Norway maple			
	* Dominant Species								

* Area measured to the nearest 1/10 acre.

FOREST STAND ANALYSIS TABLE

Applicant: MTA Project name: Red Line Submission No.: Segment 3

KEY	TYPE OF COMMUNITY	AREA*	SOIL INFORMATION			EXISTING VEGETATION (Dominant Species and Approx. %)	STAND CHARACTERISTICS		NOTES
			Soil Types	Typical Forest Cover	Habitat Value		Size (dbh) & Age	General Conditions	
FS3	Sycamore					*Tree of heaven	6-12"	Poor	Photos 1159-1161
	Green ash					*Black cherry			
	Boxelder					*Black locust			Heavy Japanese
	Silver maple					Green ash			and shrub honeysuckle
	Association					Black gum			
						Pin oak			High invasives &
									woody vine interference
						Rubus			
						Bush honeysuckle			Canopy closure 60-80%
						Oriental bittersweet			
						English ivy			Early successional
						Multiflora rose			
	* Dominant species								

* Area measured to the nearest 1/10 acre.

FOREST STAND ANALYSIS TABLE

Applicant: MTA Project name: Red Line Submission No.: Segment 3

KEY	TYPE OF COMMUNITY	AREA*	SOIL INFORMATION			EXISTING VEGETATION (Dominant Species and Approx. %)	STAND CHARACTERISTICS		NOTES
			Soil Types	Typical Forest Cover	Habitat Value		Size (dbh) & Age	General Conditions	
FS4	Sycamore					*Tree of heaven	6-12"	Poor	Photos 1162 -1163
	Green ash					*Green ash			
	Boxelder					*Box elder			Photos 1388 -1389
	Silver maple					Black cherry			
	Association					Mulberry			Canopy closure 60-80%
						Elm			
									Thick invasive understory
						Bush & Japanese honeysuckle			& woody vine interference
						Rubus			
						Grape vine			Early successional
						Oriental bittersweet			
						Porcelain berry			Heavy ivy
						Multiflora rose			
	* Dominant species								

* Area measured to the nearest 1/10 acre.

FOREST STAND ANALYSIS TABLE

Applicant: MTA Project name: Red Line Submission No.: Segment 3

KEY	TYPE OF COMMUNITY	AREA*	SOIL INFORMATION			EXISTING VEGETATION (Dominant Species and Approx. %)	STAND CHARACTERISTICS		NOTES
			Soil Types	Typical Forest Cover	Habitat Value		Size (dbh) & Age	General Conditions	
H2	Hedgerow					White mulberry	10-12"	Poor	Dead vines
						Red maple			
						English ivy			Volunteers along fenceline
						Japanese honeysuckle			
						Grape vine			Photos taken with Ipad

* Area measured to the nearest 1/10 acre.

FOREST STAND ANALYSIS TABLE

Applicant: MTA Project name: Red Line Submission No.: Segment 3

KEY	TYPE OF COMMUNITY	AREA*	SOIL INFORMATION			EXISTING VEGETATION (Dominant Species and Approx. %)	STAND CHARACTERISTICS		NOTES
			Soil Types	Typical Forest Cover	Habitat Value		Size (dbh) & Age	General Conditions	
H4	Hedgerow					*Mulberry	4 - 8"	Fair/Poor	Dense vines
						*Elm			
						Tree of heaven			Trees growing
						English Ivy			through fence

* Area measured to the nearest 1/10 acre.

FOREST STAND ANALYSIS TABLE

Applicant: MTA Project name: Red Line Submission No.: Segment 3

KEY	TYPE OF COMMUNITY	AREA*	SOIL INFORMATION			EXISTING VEGETATION (Dominant Species and Approx. %)	STAND CHARACTERISTICS		NOTES
			Soil Types	Typical Forest Cover	Habitat Value		Size (dbh) & Age	General Conditions	
H5	Hedgerow					Tree of heaven	2-6"	Poor	Photos 1165
						Box elder			

* Area measured to the nearest 1/10 acre.

FOREST STAND ANALYSIS TABLE

Applicant: MTA Project name: Red Line Submission No.: Segment 3

KEY	TYPE OF COMMUNITY	AREA*	SOIL INFORMATION			EXISTING VEGETATION (Dominant Species and Approx. %)	STAND CHARACTERISTICS		NOTES
			Soil Types	Typical Forest Cover	Habitat Value		Size (dbh) & Age	General Conditions	
H6	Hedgerow					Tree of heaven	2-6"	Poor condition	Photos 1166-1168
						Black locust			
						Box elder			

* Area measured to the nearest 1/10 acre.

FOREST STAND ANALYSIS TABLE

Applicant: MTA Project name: Red Line Submission No.: Segment 3

KEY	TYPE OF COMMUNITY	AREA*	SOIL INFORMATION			EXISTING VEGETATION (Dominant Species and Approx. %)	STAND CHARACTERISTICS		NOTES
			Soil Types	Typical Forest Cover	Habitat Value		Size (dbh) & Age	General Conditions	
H7	Hedgerow					Tree of heaven	6-12"	Poor Condition	Photos 1169-1170
						Japanese honey suckle			

* Area measured to the nearest 1/10 acre.

FOREST STAND ANALYSIS TABLE

Applicant: MTA Project name: Red Line Submission No.: Segment 3

KEY	TYPE OF COMMUNITY	AREA*	SOIL INFORMATION			EXISTING VEGETATION (Dominant Species and Approx. %)	STAND CHARACTERISTICS		NOTES
			Soil Types	Typical Forest Cover	Habitat Value		Size (dbh) & Age	General Conditions	
H8	Hedgerow					Tree of heaven	3-6"	Fair Condition	Japanese honeysuckle vine
									Photos 55, 56, 58

* Area measured to the nearest 1/10 acre.

FOREST STAND ANALYSIS TABLE

Applicant: MTA Project name: Red Line Submission No.: Segment 3

KEY	TYPE OF COMMUNITY	AREA*	SOIL INFORMATION			EXISTING VEGETATION (Dominant Species and Approx. %)	STAND CHARACTERISTICS		NOTES
			Soil Types	Typical Forest Cover	Habitat Value		Size (dbh) & Age	General Conditions	
H9	Hedgerow					Princess tree	6-12"	Poor condition	Growing through fence
						Chinese elm			
									Heavy vines
									Photos 52-53

* Area measured to the nearest 1/10 acre.

FOREST STAND ANALYSIS TABLE

Applicant: MTA Project name: Red Line Submission No.: Segment 3

KEY	TYPE OF COMMUNITY	AREA*	SOIL INFORMATION			EXISTING VEGETATION (Dominant Species and Approx. %)	STAND CHARACTERISTICS		NOTES
			Soil Types	Typical Forest Cover	Habitat Value		Size (dbh) & Age	General Conditions	
H10	Hedgerow					Princess tree	3-12"	Fair/poor condition	Growing through fence
						Siberian elm			
						Box elder			Heavy vines
									Photos 45-47

* Area measured to the nearest 1/10 acre.

FOREST STAND ANALYSIS TABLE

Applicant: MTA Project name: Red Line Submission No.: Segment 3

KEY	TYPE OF COMMUNITY	AREA*	SOIL INFORMATION			EXISTING VEGETATION (Dominant Species and Approx. %)	STAND CHARACTERISTICS		NOTES
			Soil Types	Typical Forest Cover	Habitat Value		Size (dbh) & Age	General Conditions	
H11	Hedgerow					Chinese elm	3-14"	Fair/poor condition	Extensive Japanese
						Box elder			honeysuckle
									Photo 49

* Area measured to the nearest 1/10 acre.

FOREST STAND ANALYSIS TABLE

Applicant: MTA Project name: Red Line Submission No.: Segment 3

KEY	TYPE OF COMMUNITY	AREA*	SOIL INFORMATION			EXISTING VEGETATION (Dominant Species and Approx. %)	STAND CHARACTERISTICS		NOTES
			Soil Types	Typical Forest Cover	Habitat Value		Size (dbh) & Age	General Conditions	
H12	Hedgerow					Mulberry	4-14"	Fair/poor condition	Heavy vines
						Chinese elm			
						Tree of heaven			Japanese honeysuckle
						Zelkova			
						Clematis			Photos 50-51

* Area measured to the nearest 1/10 acre.

FOREST STAND ANALYSIS TABLE

Applicant: MTA Project name: Red Line Submission No.: Segment 3

KEY	TYPE OF COMMUNITY	AREA*	SOIL INFORMATION			EXISTING VEGETATION (Dominant Species and Approx. %)	STAND CHARACTERISTICS		NOTES
			Soil Types	Typical Forest Cover	Habitat Value		Size (dbh) & Age	General Conditions	
H13	Hedgerow					Box elder	8-12"	Fair condition	Photos 79-80
						Elm			
						Multiflora rose			
						Japanese honeysuckle			
						English ivy			

* Area measured to the nearest 1/10 acre.

FOREST STAND ANALYSIS TABLE

Applicant: MTA Project name: Red Line Submission No.: Segment 3

KEY	TYPE OF COMMUNITY	AREA*	SOIL INFORMATION			EXISTING VEGETATION (Dominant Species and Approx. %)	STAND CHARACTERISTICS		NOTES
			Soil Types	Typical Forest Cover	Habitat Value		Size (dbh) & Age	General Conditions	
H14	Hedgerow					Tree of heaven	2-8"	Poor condition	Growing in elevated jersey wall of Rt. 40

* Area measured to the nearest 1/10 acre.

FOREST STAND ANALYSIS TABLE

Applicant: MTA Project name: Red Line Submission No.: Segment 4

KEY	TYPE OF COMMUNITY	AREA*	SOIL INFORMATION			EXISTING VEGETATION (Dominant Species and Approx. %)	STAND CHARACTERISTICS		NOTES
			Soil Types	Typical Forest Cover	Habitat Value		Size (dbh) & Age	General Conditions	
H1	Hedgerow					Tree of heaven	10-15"	Fair Condition	Lots of trash & debris
						American elm			
						Red maple			Lots of Ailanthus saplings
						Bradford pear			
									Heavy invasives

* Area measured to the nearest 1/10 acre.

FOREST STAND ANALYSIS TABLE

Applicant: MTA Project name: Red Line Submission No.: Segment 4

KEY	TYPE OF COMMUNITY	AREA*	SOIL INFORMATION			EXISTING VEGETATION (Dominant Species and Approx. %)	STAND CHARACTERISTICS		NOTES
			Soil Types	Typical Forest Cover	Habitat Value		Size (dbh) & Age	General Conditions	
H2	Hedgerow					*White mulberry	1-4"	Poor Condition	High invasive cover
						Tree of heaven			And vines
						Bradford pear			Volunteers along
						Siberian elm			Fenceline
						Princess tree			
						Oriental bittersweet			
						Fescue			
						Chicory			
	*Dominant species								

* Area measured to the nearest 1/10 acre.

FOREST STAND ANALYSIS TABLE

Applicant: MTA Project name: Red Line Submission No.: Segment 5

KEY	TYPE OF COMMUNITY	AREA*	SOIL INFORMATION			EXISTING VEGETATION (Dominant Species and Approx. %)	STAND CHARACTERISTICS		NOTES
			Soil Types	Typical Forest Cover	Habitat Value		Size (dbh) & Age	General Conditions	
FS1	Sweetgum					*Sweetgum	8-14"	Fair Condition	High levels of invasives
	Association					*Green ash			& woody vine interference
						*Black cherry			
						*black locust			early successional
						*Elm- American & slippery			
						*Pin oak			
						Red maple			Canopy closure 80-100%
						Catalpa			
						Big tooth aspen			DWD- low
						Cottonwood			
						Sycamore			
									Cottonwood & sycamore
									In floodplain near
						Red bud			Norfolk Southern
						Black hawthorn			
						Poison ivy			Black locust concentrated
						Multiflora rose			In disturbed edges
						Russian olive			
						Japanese honeysuckle			Mixed oak spp. in southern tip
									Photos 1495 - 1497
	* Dominant species								

* Area measured to the nearest 1/10 acre.

FOREST STAND ANALYSIS TABLE

Applicant: MTA Project name: Red Line Submission No.: Segment 5

KEY	TYPE OF COMMUNITY	AREA*	SOIL INFORMATION			EXISTING VEGETATION (Dominant Species and Approx. %)	STAND CHARACTERISTICS		NOTES
			Soil Types	Typical Forest Cover	Habitat Value		Size (dbh) & Age	General Conditions	
FS2	Pioneer					*Black cherry	8-12"	Poor Condition	High levels of invasives
	Association					*Princess tree			& woody vine interference
									Canopy closure 80%
									DWD- high
									Lots of trash & debris
						Elm			
						White mulberry			
						Tree of heaven			
						Bradford pear			
						Poison ivy			
						Virginia creeper			
						Rubus			
						Japanese honeysuckle			
						Black cherry			
						Bush honeysuckle			
						Pokeweed			
	* Dominant species								

* Area measured to the nearest 1/10 acre.

FOREST STAND ANALYSIS TABLE

Applicant: MTA Project name: Red Line Submission No.: Segment 5

KEY	TYPE OF COMMUNITY	AREA*	SOIL INFORMATION			EXISTING VEGETATION (Dominant Species and Approx. %)	STAND CHARACTERISTICS		NOTES
			Soil Types	Typical Forest Cover	Habitat Value		Size (dbh) & Age	General Conditions	
FS3	Pioneer					*Black cherry		Poor Condition	High levels of invasives
	Association					*Princess tree	6-12"		& woody vine interference
									Canopy closure 60-70%
									DWD- high
									Lots of trash & debris
						Elm			
						White mulberry			
						Tree of heaven			
						Mimosa			
						Poison ivy			
						Virginia creeper			
						Rubus			
						Japanese honeysuckle			
						Black cherry			
						Bush honeysuckle			
						Pokeweed			
	* Dominant species					Wisteria			

* Area measured to the nearest 1/10 acre.

FOREST STAND ANALYSIS TABLE

Applicant: MTA Project name: Red Line Submission No.: Segment 5

KEY	TYPE OF COMMUNITY	AREA*	SOIL INFORMATION			EXISTING VEGETATION (Dominant Species and Approx. %)	STAND CHARACTERISTICS		NOTES
			Soil Types	Typical Forest Cover	Habitat Value		Size (dbh) & Age	General Conditions	
FS9	Pioneer					*Black cherry	8-14"	Poor Condition	High levels of invasives
	Black cherry					*Cottonwood			& woody vine interference
	Association					*Mulberry			
						*Black locust			
						*Tree of heaven			
									Canopy closure 80-90%
						Phragmites			
						Mulberry			DWD- high
						Black cherry			Lots of trash & debris
						Sumac			
						Japanese honeysuckle			
						Grape vine			
						Virginia creeper			
						Poison ivy			
						Bush honeysuckle			
						Oriental bittersweet			
	* Dominant species								

* Area measured to the nearest 1/10 acre.

FOREST STAND ANALYSIS TABLE

Applicant: MTA Project name: Red line Submission No.: Segment 5

KEY	TYPE OF COMMUNITY	AREA*	SOIL INFORMATION			EXISTING VEGETATION (Dominant Species and Approx. %)	STAND CHARACTERISTICS		NOTES
			Soil Types	Typical Forest Cover	Habitat Value		Size (dbh) & Age	General Conditions	
H1	Hedgerow					*Ailanthus	2-6"	Poor Condition	Photo 2151
						*Bradford pear			
						Bush honeysuckle			
	* Dominant species								

* Area measured to the nearest 1/10 acre.

FOREST STAND ANALYSIS TABLE

Applicant: MTA Project name: Red line Submission No.: Segment 5

KEY	TYPE OF COMMUNITY	AREA*	SOIL INFORMATION			EXISTING VEGETATION (Dominant Species and Approx. %)	STAND CHARACTERISTICS		NOTES
			Soil Types	Typical Forest Cover	Habitat Value		Size (dbh) & Age	General Conditions	
H2	Hedgerow					*White Mulberry	12-20"	Fair/Poor	High invasive cover
						Tree of heaven			and vines
						*White Pine			
						Black Cherry			
						Northern Red Oak			Photos 2188-2189
						Poison Ivy			
						Virginia Creeper			
						Japanese Honeysuckle			
						Thistle			
	* Dominant species								

* Area measured to the nearest 1/10 acre.

FOREST STAND ANALYSIS TABLE

Applicant: MTA Project name: Red Line Submission No.: Segment 5

KEY	TYPE OF COMMUNITY	AREA*	SOIL INFORMATION			EXISTING VEGETATION (Dominant Species and Approx. %)	STAND CHARACTERISTICS		NOTES
			Soil Types	Typical Forest Cover	Habitat Value		Size (dbh) & Age	General Conditions	
H3	Hedgerow					*Ailanthus	2-6"	Poor Condition	Abandoned lot
						*Bradford pear			All invasive volunteers
						*Sumac			
						*White mulberry			
						Cottonwood			
						Multiflora rose			
						Oriental bittersweet			
						Poison ivy			
						Phragmites			
	* Dominant species								

* Area measured to the nearest 1/10 acre.

FOREST STAND ANALYSIS TABLE

Applicant: MTA Project name: Red Line Submission No.: Segment 5

KEY	TYPE OF COMMUNITY	AREA*	SOIL INFORMATION			EXISTING VEGETATION (Dominant Species and Approx. %)	STAND CHARACTERISTICS		NOTES
			Soil Types	Typical Forest Cover	Habitat Value		Size (dbh) & Age	General Conditions	
H4	Hedgerow					*Tree of Heaven	1-3"	Fair Condition	Brushy area
						*Bradford pear			All invasive volunteers
						*Russian olive			
						*White mulberry			
									895 ROW
									Photos 1 - 3
						Poison ivy			
						Phragmites			
						Black cherry seedlings			
						Groundsel tree			
						Thistle			
	* Dominant species								

* Area measured to the nearest 1/10 acre.

FOREST STAND ANALYSIS TABLE

Applicant: MTA Project name: Red Line Submission No.: Segment 5

KEY	TYPE OF COMMUNITY	AREA*	SOIL INFORMATION			EXISTING VEGETATION (Dominant Species and Approx. %)	STAND CHARACTERISTICS		NOTES
			Soil Types	Typical Forest Cover	Habitat Value		Size (dbh) & Age	General Conditions	
H5	Hedgerow					*Tree of Heaven	2-6"	Poor Condition	Brushy area
						*Bradford pear			All invasive volunteers
						*White mulberry			Thick herb layer
						Green ash			
									895 ROW
									Photo 4
						Poison ivy			
						Multiflora rose			
						Fescue			
						Wild garlic			
	* Dominant species								

* Area measured to the nearest 1/10 acre.

FOREST STAND ANALYSIS TABLE

Applicant: MTA Project name: Red Line Submission No.: Segment 5

KEY	TYPE OF COMMUNITY	AREA*	SOIL INFORMATION			EXISTING VEGETATION (Dominant Species and Approx. %)	STAND CHARACTERISTICS		NOTES
			Soil Types	Typical Forest Cover	Habitat Value		Size (dbh) & Age	General Conditions	
H6	Hedgerow					*Ailanthus	2-6"	Poor Condition	
						*Bradford pear			All invasive volunteers
						*White mulberry			
						Elm			Growing along fenceline
						Black cherry			
									Photos 1499-1500
						Poison ivy			
						Virginia creeper			
						Japanese honeysucle			
	* Dominant species								

* Area measured to the nearest 1/10 acre.

FOREST STAND ANALYSIS TABLE

Applicant: MTA Project name: Red Line Submission No.: Segment 5

KEY	TYPE OF COMMUNITY	AREA*	SOIL INFORMATION			EXISTING VEGETATION (Dominant Species and Approx. %)	STAND CHARACTERISTICS		NOTES
			Soil Types	Typical Forest Cover	Habitat Value		Size (dbh) & Age	General Conditions	
H7	Hedgerow					*Black locust	8-16"	Poor Condition	
						*Black cherry			High invasives and vines
						*White mulberry			
						Tree of heaven			Growing along CSX fence
						Box elder			
									Photos 1503 - 1504
						Japanese honeysuckle			
						Poison ivy			
						Virginia creeper			
						Grape vine			
						Japanese knotweed			
	* Dominant species								

* Area measured to the nearest 1/10 acre.

FOREST STAND ANALYSIS TABLE

Applicant: MTA Project name: Red Line Submission No.: Segment 5

KEY	TYPE OF COMMUNITY	AREA*	SOIL INFORMATION			EXISTING VEGETATION (Dominant Species and Approx. %)	STAND CHARACTERISTICS		NOTES
			Soil Types	Typical Forest Cover	Habitat Value		Size (dbh) & Age	General Conditions	
H8	Hedgerow					*Tree of heaven	8-16	Poor Condition	
						*Black cherry			High invasives and vines
						*White mulberry			
						*Cottonwood			Growing along CSX fence
									Photos 1505 - 1506
						Japanese honeysuckle			
						Poison ivy			
						Virginia creeper			
						Grape vine			
						Phragmites			
	* Dominant species								

* Area measured to the nearest 1/10 acre.

FOREST STAND ANALYSIS TABLE

Applicant: MTA Project name: Red Line Submission No.: Segment 5

KEY	TYPE OF COMMUNITY	AREA*	SOIL INFORMATION			EXISTING VEGETATION (Dominant Species and Approx. %)	STAND CHARACTERISTICS		NOTES
			Soil Types	Typical Forest Cover	Habitat Value		Size (dbh) & Age	General Conditions	
H9	Hedgerow					*Black locust	8-16"	Poor Condition	
						*Black cherry			High levels of invasives
						*White mulberry			and vines
						*Green Ash			
						Box elder			Photos 1501 - 1502
						Tree of heaven			
						Japanese honeysuckle			
						Poison ivy			
						Virginia creeper			
						Grape vine			
	* Dominant species								

* Area measured to the nearest 1/10 acre.

FOREST STAND ANALYSIS TABLE

Applicant: MTA Project name: Red Line Submission No.: Segment 5

KEY	TYPE OF COMMUNITY	AREA*	SOIL INFORMATION			EXISTING VEGETATION (Dominant Species and Approx. %)	STAND CHARACTERISTICS		NOTES
			Soil Types	Typical Forest Cover	Habitat Value		Size (dbh) & Age	General Conditions	
H11						*Black willow	6-10"	Poor	
						Tree of heaven			High invasives and vines
						*White mulberry			
						*Cottonwood			
						Japanese honeysuckle			
						Poison ivy			
						Vriginia creeper			
	* Dominant species								

* Area measured to the nearest 1/10 acre.

FOREST STAND ANALYSIS TABLE

Applicant: MTA Project name: Red line Submission No.: Segment 5

KEY	TYPE OF COMMUNITY	AREA*	SOIL INFORMATION			EXISTING VEGETATION (Dominant Species and Approx. %)	STAND CHARACTERISTICS		NOTES
			Soil Types	Typical Forest Cover	Habitat Value		Size (dbh) & Age	General Conditions	
						Mulberry		Poor Condition	High invasives and vines
H16						Tree of heaven	2-6"		
						Japanese honeysuckle			
	* Dominant species								

* Area measured to the nearest 1/10 acre.

FOREST STAND ANALYSIS TABLE

Applicant: MTA Project name: Red Line Submission No.: Segment 5

KEY	TYPE OF COMMUNITY	AREA*	SOIL INFORMATION			EXISTING VEGETATION (Dominant Species and Approx. %)	STAND CHARACTERISTICS		NOTES
			Soil Types	Typical Forest Cover	Habitat Value		Size (dbh) & Age	General Conditions	
H17						Princess tree	2-6"	Poor Condition	High invasives and vines
						Tree of heaven			
						Japanese honeysuckle			
						Poison ivy			
	* Dominant species								

* Area measured to the nearest 1/10 acre.

FOREST STAND ANALYSIS TABLE

Applicant: MTA Project name: Red line Submission No.: Segment 5

KEY	TYPE OF COMMUNITY	AREA*	SOIL INFORMATION			EXISTING VEGETATION (Dominant Species and Approx. %)	STAND CHARACTERISTICS		NOTES
			Soil Types	Typical Forest Cover	Habitat Value		Size (dbh) & Age	General Conditions	
H18						Mulberry	6-12"	Poor	High invasives and vines
						Tree of heaven			
						Cherry			
						Japanese honeysuckle			
						Poison ivy			
	* Dominant species								

* Area measured to the nearest 1/10 acre.

FOREST STAND ANALYSIS TABLE

Applicant: MTA Project name: Red line Submission No.: Segment 5

KEY	TYPE OF COMMUNITY	AREA*	SOIL INFORMATION			EXISTING VEGETATION (Dominant Species and Approx. %)	STAND CHARACTERISTICS		NOTES
			Soil Types	Typical Forest Cover	Habitat Value		Size (dbh) & Age	General Conditions	
H20						Tree of heaven	2-6"	Poor	High invasives and vines
						Black locust			
									Debris from railroad
						Bush honeysuckle			
						Japanese honeysuckle			Photos 2644-2645
						Poison ivy			
	* Dominant species								

* Area measured to the nearest 1/10 acre.

Appendix F
Tree Inventory List

Red Line Tree Inventory

Segment 1

Number	Common Name	Scientific Name	DBH	Condition	Comment	Impact	Location
T1	Red maple	*Acer rubrum*	17	Good			County
T2	Red maple	*Acer rubrum*	15	Good/Fair	Dead wood, street tree, girdling root		County
T3	Red maple	*Acer rubrum*	11	Good/Fair	Dead wood, inlcuded bark		County
T4	Black cherry	*Prunus serotina*	12	Fair	Dead wood, black knot, base decay		County
T5	Persimmon	*Diospyros virginiana*	10	Poor	Utility trim/trunk damage	Private	County
T6	Loblolly pine	*Pinus taeda*	14	Good	Bad pruning cuts		County
T7	Persimmon	*Diospyros virginiana*	9	Fair	Trunk damage	Private	County
T8	Pin oak	*Quercus palustris*	15	Poor	Utility prune, dead wood	Private	County
T9	Bradford pear	*Pyrus calleryana*	14	Good			County
T10	White ash	*Fraxinus americana*	14	Good	Roots & trunk mower damage	Private	County
T11	Black cherry	*Prunus serotina*	3	Poor	Vines in canopy	Private	County
T12	Green ash	*Fraxinus pennsylvanica*	4	Good	2x, included bark, vines	Private	County
T13	Green ash	*Fraxinus pennsylvanica*	11	Fair	Suspect base, suppressed		County
T14	Pin oak	*Quercus palustris*	11	Fair	2x, Included bark, dead wood, mower damage		County
T15	Black oak	*Quercus velutina*	19	Good	Minor dead wood	Private	County
T16	Virginia pine	*Pinus virginiana*	19	Good/Fair	Dead wood, mower damage, minor dead wood		County
T17	Pin oak	*Quercus palustris*	22	Good	Dead wood, root damage, mower damage		County
T18	Pin oak	*Quercus palustris*	20	Good	Dead wood, minor mower damage	Private	County
T19	Honey locust	*Gleditsia triacanthos*	24	Good	Included bark, minor dead wood		County
T20	Honey locust	*Gleditsia triacanthos*	16	Good	Included bark, dead wood		County
T21	Honey locust	*Gleditsia triacanthos*	16	Good	Improper pruning		County
T22	White ash	*Fraxinus americana*	19	Fair	Girdling roots, included bark, stem defect		County
T23	Siberian elm	*Ulmus pumila*	12	Good	6x, included bark		County
T24	American sycamore	*Platanus occidentalis*	8	Good	2x, included bark		County
T25	Bradford pear	*Pyrus calleryana*	20	Poor	Main stem decay		County
T26	Zelkova	*Zelkova serrata*	7	Fair	Included bark, root damage, girdling roots	ROW	County
T27	Zelkova	*Zelkova serrata*	8	Good	Included bark, girdling roots	ROW	County
T28	Zelkova	*Zelkova serrata*	9	Good	Included bark	ROW	County
T29	Zelkova	*Zelkova serrata*	9	Good	Included bark	ROW	County
T30	Zelkova	*Zelkova serrata*	11	Good	Included bark, minor dead wood	ROW	County
T31	Zelkova	*Zelkova serrata*	9	Good/Fair	Stem defect, included bark	ROW	County

Red Line Tree Inventory
Segment 1

Number	Common Name	Scientific Name	DBH	Condition	Comment	Impact	Location
T32	Zelkova	*Zelkova serrata*	10	Good/Fair	Stem damage	ROW	County
T33	Zelkova	*Zelkova serrata*	11	Good/Fair	Stem defect, included bark	ROW	County
T34	Zelkova	*Zelkova serrata*	11	Good/Fair	Stem defect, included bark	ROW	County
T35	Zelkova	*Zelkova serrata*	14	Good	Included bark	ROW	County
T36	Zelkova	*Zelkova serrata*	11	Good	Included bark	ROW	County
T37	Zelkova	*Zelkova serrata*	11	Good/Fair	Suppressed, dead wood, included bark	ROW	County
T38	Zelkova	*Zelkova serrata*	10	Good	Included bark	ROW	County
T39	Zelkova	*Zelkova serrata*	10	Good	Included bark, minor dead wood, mower damage	ROW	County
T40	Zelkova	*Zelkova serrata*	8	Good	Included bark, mower damage	ROW	County
T41	Zelkova	*Zelkova serrata*	7	Good/Fair	Included bark, suppressed, root girdling	ROW	County
T42	Zelkova	*Zelkova serrata*	10	Good	Included bark, girdling root	ROW	County
T43	White ash	*Fraxinus americana*	16	Good	Minor dead wood	ROW	County
T44	Norway spruce	*Picea abies*	16	Poor	Defoliating	ROW	County
T45	White ash	*Fraxinus americana*	11	Fair/Good	3x, included bark, poor stem attachment	Private	County
T46	Catalpa	*Catalpa speciosa*	31	Fair	Utility trimmed, stem defect	Private	County
T47	Zelkova	*Zelkova serrata*	5	Good	Included bark	ROW	County
T48	Zelkova	*Zelkova serrata*	4	Fair	Stem defect, thin crown	ROW	County
T49	Zelkova	*Zelkova serrata*	3	Fair	Dead wood, thin crown	ROW	County
T50	Zelkova	*Zelkova serrata*	3	Poor	Trunk damage dying	ROW	County
T51	Zelkova	*Zelkova serrata*	4	Poor	Trunk damage	ROW	County
T52	Zelkova	*Zelkova serrata*	3	Poor	Dying	ROW	County
T53	Zelkova	*Zelkova serrata*	4	Poor	Trunk damage, dying	ROW	County
T54	Zelkova	*Zelkova serrata*	2	Poor	Dying	ROW	County
T55	Zelkova	*Zelkova serrata*	4	Poor	Trunk damage, dying	ROW	County
T56	Zelkova	*Zelkova serrata*	3	Poor	Dying	ROW	County
T57	Zelkova	*Zelkova serrata*	13	Good	Included bark, minor dead wood	ROW	County
T58	Zelkova	*Zelkova serrata*	11	Good	Included bark, minor dead wood	ROW	County
T59	Zelkova	*Zelkova serrata*	7	Fair/Good	Included bark, suppressed	ROW	County
T60	Zelkova	*Zelkova serrata*	6	Fair	Included bark, dead wood, suppressed	ROW	County
T61	Zelkova	*Zelkova serrata*	9	Good	Included bark	ROW	County

Red Line Tree Inventory
Segment 1

Number	Common Name	Scientific Name	DBH	Condition	Comment	Impact	Location
T62	Zelkova	*Zelkova serrata*	5	Fair	Included bark, dead wood, thin crown	ROW	County
T63	Zelkova	*Zelkova serrata*	15	Good	Included bark, minor dead wood	ROW	County
T64	Zelkova	*Zelkova serrata*	8	Good	Included bark	ROW	County
T65	Zelkova	*Zelkova serrata*	11	Good	Included bark, minor dead wood	ROW	County
T66	Zelkova	*Zelkova serrata*	14	Good	Included bark, minor dead wood	ROW	County
T67	Zelkova	*Zelkova serrata*	12	Good	Included bark	ROW	County
T68	Zelkova	*Zelkova serrata*	8	Good	Included bark, minor dead wood	ROW	County
T69	Zelkova	*Zelkova serrata*	10	Good	Included bark	ROW	County
T70	Silver maple	*Acer saccharinum*	26	Good	Included bark, hose hanger embedded	ROW	County
T71	Siberian elm	*Ulmus pumila*	22	Good	Minor dead wood		County
T72	Tulip poplar	*Liriodendron tulipifera*	12	Poor	Dying	ROW	County
T73	Tulip poplar	*Liriodendron tulipifera*	13	Fair/Poor	Stunted canopy, dead wood	ROW	County
T74	Tulip poplar	*Liriodendron tulipifera*	16	Poor	Main stem decay		County
T75	White oak	*Quercus alba*	35	Good	Included bark, 3 leaders, minor dead wood		County
T76	Persimmon	*Diospyros virginiana*	2	Fair	Trunk damage	Private	County
T77	Eastern white pine	*Pinus strobus*	2	Poor	Trunk damage	Private	County
T78	Crabapple	*Malus sp.*	4	Fair	Dead wood, stem defects	Private	County
T79	Crabapple	*Malus sp.*	2	Poor	Dead lead	Private	County
T80	Green ash	*Fraxinus pennsylvanica*	2	Fair	Multi-stem, poor stem attachment	Private	County
T81	Crabapple	*Malus sp.*	3	Fair	Lean, stem defect	Private	County
T82	Black cherry	*Prunus serotina*	5	Fair/Poor	3x, black knot, dead wood, stem decay		County
T83	Eastern white pine	*Pinus strobus*	6	Fair	Chlorotic, thin canopy		County
T84	Red maple	*Acer rubrum*	27	Good/Fair	Dead wood, included bark, utility trimmed		County
T85	Silver maple	*Acer saccharinum*	18	Good	Utility trimmed		County
T86	Silver maple	*Acer saccharinum*	25	Good	Utility trimmed		County
T87	Black locust	*Robinia pseudoacacia*	11	Fair	Utility trimmed		County
T88	Black locust	*Robinia pseudoacacia*	16	Good/Fair	3x, utility trim, weak stem attachment		County
T89	White oak	*Quercus alba*	35	Good	Minor dead wood	Private	County
T90	White mulberry	*Morus alba*	12	Good	Minor dead wood, included bark		County
T91	White mulberry	*Morus alba*	8	Good	Minor dead wood, included bark	Private	County

Red Line Tree Inventory

Segment 1

Number	Common Name	Scientific Name	DBH	Condition	Comment	Impact	Location
T92	White mulberry	*Morus alba*	8	Good	Minor dead wood, included bark	Private	County
T93	White mulberry	*Morus alba*	12	Good	Minor dead wood, included bark	Private	County
T94	Black walnut	*Juglans nigra*	11	Good	Included bark	Private	County
T95	Red maple	*Acer rubrum*	10	Good	3x, included bark, minor dead wood	Private	County
T96	Flowering cherry	*Prunus sp.*	7	Fair	Included bark, stem defect		County
T97	Crabapple	*Malus sp.*	6	Poor	Improper pruning, suckers		County
T98	Crabapple	*Malus sp.*	4	Poor	Improper pruning		County
T99	Austrian pine	*Pinus nigra*	19	Good/Fair	Browning		County
T100	Austrian pine	*Pinus nigra*	13	Good/Fair	Browning, suppressed crown		County
T101	Austrian pine	*Pinus nigra*	17	Good			County
T102	Austrian pine	*Pinus nigra*	12	Good/Fair	Browning, suppressed crown		County
T103	Sugar maple	*Acer saccharum*	12	Fair	Dead wood, girdling root		County
T104	Siberian elm	*Ulmus pumila*	15	Good	Minor dead wood		County
T105	Sugar maple	*Acer saccharum*	12	Good/Fair	Girdling root		County
T106	Siberian elm	*Ulmus pumila*	20	Good	Minor dead wood, mower damage		County
T107	Sweetgum	*Liquidambar styraciflua*	12	Poor	3x, included bark, dead lead, root & stem damage	Private	County
T108	Red maple	*Acer rubrum*	16	Good/Fair	Minor dead wood, girdling root	ROW	County
T109	Sweetgum	*Liquidambar styraciflua*	15	Poor	Thin crown, stem defect	ROW	County
T110	Red maple	*Acer rubrum*	12	Poor	Broken top	ROW	County
T111	Red maple	*Acer rubrum*	17	Good	Vines	ROW	County
T112	Silver maple	*Acer saccharinum*	17	Good	Included bark, minor dead wood		County
T113	Norway spruce	*Picea abies*	11	Good			County
T114	Norway spruce	*Picea abies*	19	Good			County
T115	Green ash	*Fraxinus pennsylvanica*	3	Good		ROW	County
T116	Green ash	*Fraxinus pennsylvanica*	3	Good		ROW	County
T117	Green ash	*Fraxinus pennsylvanica*	3	Fair	Trunk defects	ROW	County
T118	Green ash	*Fraxinus pennsylvanica*	3	Poor	Main stem decay	ROW	County
T119	Green ash	*Fraxinus pennsylvanica*	3	Good		ROW	County
T120	Green ash	*Fraxinus pennsylvanica*	4	Good		ROW	County
T121	Green ash	*Fraxinus pennsylvanica*	4	Poor	Trunk damage	ROW	County

Red Line Tree Inventory

Segment 1

Number	Common Name	Scientific Name	DBH	Condition	Comment	Impact	Location
T122	Green ash	*Fraxinus pennsylvanica*	4	Good		ROW	County
T123	Green ash	*Fraxinus pennsylvanica*	3	Fair	Trunk damage	ROW	County
T124	Red maple	*Acer rubrum*	3	Poor	Main stem decay		County
T125	Red maple	*Acer rubrum*	3	Poor	Main stem decay		County
T126	Honey locust	*Gleditsia triacanthos*	3	Good			County
T127	Crabapple	*Malus sp.*	2	Poor	Base decay	Private	County
T128	Littleleaf linden	*Tilia cordata*	3	Good		Private	County
T129	Crabapple	*Malus sp.*	2	Poor	Base decay	Private	County
T130	Littleleaf linden	*Tilia cordata*	2	Fair	Trunk damage	Private	County
T131	Littleleaf linden	*Tilia cordata*	3	Good		Private	County
T132	Littleleaf linden	*Tilia cordata*	2	Fair	Trunk defects	Private	County
T133	Littleleaf linden	*Tilia cordata*	2	Good		Private	County
T134	Littleleaf linden	*Tilia cordata*	3	Good		Private	County
T135	Honey locust	*Gleditsia triacanthos*	3	Good		Private	County
T136	Honey locust	*Gleditsia triacanthos*	3	Fair	Trunk damage		County
T137	Honey locust	*Gleditsia triacanthos*	3	Fair	Trunk damage		County
T138	Honey locust	*Gleditsia triacanthos*	3	Good			County
T139	Honey locust	*Gleditsia triacanthos*	3	Good			County
T140	Honey locust	*Gleditsia triacanthos*	4	Good		Private	County
T141	Honey locust	*Gleditsia triacanthos*	4	Good			County
T142	Honey locust	*Gleditsia triacanthos*	2	Good		Private	County
T143	Honey locust	*Gleditsia triacanthos*	3	Good		Private	County
T144	Honey locust	*Gleditsia triacanthos*	3	Good		Private	County
T145	Honey locust	*Gleditsia triacanthos*	2	Good		Private	County
T146	Honey locust	*Gleditsia triacanthos*	2	Good		Private	County
T147	Honey locust	*Gleditsia triacanthos*	2	Good/Fair	Trunk damage	Private	County
T148	Honey locust	*Gleditsia triacanthos*	2	Good		Private	County
T149	Honey locust	*Gleditsia triacanthos*	2	Good		Private	County
T150	Honey locust	*Gleditsia triacanthos*	2	Good/Fair	Stem defect	Private	County
T151	Littleleaf linden	*Tilia cordata*	4	Good/Fair	Bark split, included bark	Private	County

Red Line Tree Inventory

Segment 1

Number	Common Name	Scientific Name	DBH	Condition	Comment	Impact	Location
T152	Littleleaf linden	*Tilia cordata*	2	Fair	Branch decay	Private	County
T153	Honey locust	*Gleditsia triacanthos*	2	Good		Private	County
T154	Honey locust	*Gleditsia triacanthos*	2	Good		Private	County
T155	Honey locust	*Gleditsia triacanthos*	3	Good		Private	County
T156	Honey locust	*Gleditsia triacanthos*	2	Good		Private	County
T157	Northern red oak	*Quercus rubra*	14	Fair	Broken lead, stem decay	Private	County
T158	Bradford pear	*Pyrus calleryana*	7	Good	Included bark		County
T159	Bradford pear	*Pyrus calleryana*	8	Good	Included bark	Private	County
T160	Redbud	*Cercis canadensis*	7	Good		Private	County
T161	Redbud	*Cercis canadensis*	8	Fair	Stem defect	Private	County
T162	Zelkova	*Zelkova serrata*	9	Good	Included bark		County
T163	Eastern white pine	*Pinus strobus*	5	Fair	Chlorotic, thin crown	Private	County
T164	Eastern white pine	*Pinus strobus*	5	Fair	Chlorotic, thin crown	Private	County
T165	Bradford pear	*Pyrus calleryana*	8	Good	Included bark	Private	County
T166	Zelkova	*Zelkova serrata*	8	Good	Included bark	Private	County
T167	Zelkova	*Zelkova serrata*	8	Good	Included bark	Private	County
T168	Zelkova	*Zelkova serrata*	9	Good	Included bark	Private	County
T169	Zelkova	*Zelkova serrata*	9	Good	Included bark, minor dead wood	Private	County
T170	Eastern white pine	*Pinus strobus*	6	Good/Fair	Chlorotic, thin crown	Private	County
T171	Eastern white pine	*Pinus strobus*	5	Fair	Chlorotic, thin crown	Private	County
T172	Eastern white pine	*Pinus strobus*	6	Fair	Chlorotic, thin crown	Private	County
T173	Eastern white pine	*Pinus strobus*	5	Fair	Chlorotic, thin crown	Private	County
T174	Eastern white pine	*Pinus strobus*	5	Fair	Chlorotic, thin crown	Private	County
T175	Eastern white pine	*Pinus strobus*	5	Fair	Chlorotic, thin crown	Private	County
T176	Eastern white pine	*Pinus strobus*	5	Fair	Chlorotic, thin crown	Private	County
T177	Eastern white pine	*Pinus strobus*	4	Fair	Chlorotic, thin crown	Private	County
T178	Eastern white pine	*Pinus strobus*	5	Fair	Chlorotic, thin crown	Private	County
T179	Eastern white pine	*Pinus strobus*	5	Fair	Chlorotic, thin crown	Private	County
T180	Eastern white pine	*Pinus strobus*	4	Fair	Chlorotic, thin crown	Private	County
T181	Eastern white pine	*Pinus strobus*	5	Fair	Chlorotic, thin crown	Private	County

Red Line Tree Inventory

Segment 1

Number	Common Name	Scientific Name	DBH	Condition	Comment	Impact	Location
T182	Eastern white pine	*Pinus strobus*	5	Fair	Chlorotic, thin crown	Private	County
T183	Eastern white pine	*Pinus strobus*	5	Fair	Chlorotic, thin crown	Private	County
T184	Eastern white pine	*Pinus strobus*	4	Fair	Chlorotic, thin crown	Private	County
T185	Eastern white pine	*Pinus strobus*	5	Fair	Chlorotic, thin crown	Private	County
T186	Zelkova	*Zelkova serrata*	3	Poor	Severely damaged	ROW	County
T187	Zelkova	*Zelkova serrata*	5	Poor	Base decay	ROW	County
T188	Zelkova	*Zelkova serrata*	6	Fair	Included bark, poor pruning	ROW	County
T189	Zelkova	*Zelkova serrata*	6	Good	Included bark	ROW	County
T190	Zelkova	*Zelkova serrata*	5	Fair	Thin crown, dead wood, included wood	ROW	County
T191	Zelkova	*Zelkova serrata*	7	Good	Minor dead wood, included bark	ROW	County
T192	Zelkova	*Zelkova serrata*	9	Good	Included bark	ROW	County
T193	Zelkova	*Zelkova serrata*	6	Good/Fair	Thin crown, included bark	ROW	County
T194	Zelkova	*Zelkova serrata*	8	Good	Included bark	ROW	County
T195	Flowering cherry	*Prunus sp.*	7	Good	Included bark	Private	County
T196	Flowering cherry	*Prunus sp.*	6	Good	Included bark	Private	County
T197	Redbud	*Cercis canadensis*	7	Poor	Stem defect, broken branches	Private	County
T198	Redbud	*Cercis canadensis*	7	Good/Fair	Included bark	Private	County
T199	Redbud	*Cercis canadensis*	6	Fair	Included bark, stem decay	Private	County
T200	Bradford pear	*Pyrus calleryana*	8	Good	Included bark	Private	County
T201	Flowering cherry	*Prunus sp.*	7	Good	Included bark	Private	County
T202	Flowering cherry	*Prunus sp.*	7	Good	Included bark	Private	County
T203	Bradford pear	*Pyrus calleryana*	7	Good	Included bark	Private	County
T204	Bradford pear	*Pyrus calleryana*	7	Good	Included bark	Private	County
T205	Zelkova	*Zelkova serrata*	7	Good	Included bark	Private	County
T206	Pin oak	*Quercus palustris*	14	Good	Minor dead wood		County
T207	Austrian pine	*Pinus nigra*	14	Good		ROW	County
T208	Post oak	*Quercus stellata*	24	Fair	Trunk damage, main stem decay	ROW	County
T209	Pin oak	*Quercus palustris*	19	Good			County
T210	Pin oak	*Quercus palustris*	22	Good			County
T211	White oak	*Quercus alba*	28	Fair/Poor	Dead wood, mainstem decay		County

Red Line Tree Inventory

Segment 1

Number	Common Name	Scientific Name	DBH	Condition	Comment	Impact	Location
T212	Post oak	*Quercus stellata*	31	Good			County
T213	Black oak	*Quercus velutina*	42	Good	Minor dead wood		County
T214	Silver maple	*Acer saccharinum*	18	Poor	Hollow base, dead wood		County
T215	Zelkova	*Zelkova serrata*	8	Good/Fair	Included bark	Private	County
T216	Bradford pear	*Pyrus calleryana*	8	Good	Included bark	Private	County
T217	Bradford pear	*Pyrus calleryana*	8	Good	Included bark	Private	County
T218	Bradford pear	*Pyrus calleryana*	8	Good	Included bark		County
T219	Bradford pear	*Pyrus calleryana*	7	Good	Included bark		County
T220	Bradford pear	*Pyrus calleryana*	8	Good	Included bark		County
T221	Eastern white pine	*Pinus strobus*	4	Poor	Chlorotic, thin crown		County
T222	Eastern white pine	*Pinus strobus*	6	Poor	Chlorotic, thin crown		County
T223	Pin oak	*Quercus palustris*	14	Good		Private	County
T224	Honey locust	*Gleditsia triacanthos*	14	Good		Private	County
T225	Honey locust	*Gleditsia triacanthos*	10	Good	Girdling root	Private	County
T226	Honey locust	*Gleditsia triacanthos*	11	Good	Minor girdling roots	Private	County
T227	Honey locust	*Gleditsia triacanthos*	14	Good		Private	County
T228	Honey locust	*Gleditsia triacanthos*	12	Good		Private	County
T229	Honey locust	*Gleditsia triacanthos*	14	Good	Minor girdling roots	Private	County
T230	Honey locust	*Gleditsia triacanthos*	5	Poor	Thin crown, broken top	Private	County
T231	Honey locust	*Gleditsia triacanthos*	8	Fair	Stem damage	Private	County
T232	Honey locust	*Gleditsia triacanthos*	11	Good		Private	County
T233	Honey locust	*Gleditsia triacanthos*	8	Good		Private	County
T234	Honey locust	*Gleditsia triacanthos*	6	Good		Private	County
T235	Honey locust	*Gleditsia triacanthos*	5	Fair	Thin crown	Private	County
T236	Honey locust	*Gleditsia triacanthos*	10	Good	Included bark	Private	County
T237	Honey locust	*Gleditsia triacanthos*	10	Good	Included bark	Private	County
T238	Honey locust	*Gleditsia triacanthos*	12	Fair/Good	Included bark, minor dead wood	Private	County
T239	Honey locust	*Gleditsia triacanthos*	8	Fair	Extensive soil compaction	Private	County
T240	Honey locust	*Gleditsia triacanthos*	7	Fair	Extensive soil compaction	Private	County
T241	Honey locust	*Gleditsia triacanthos*	18	Good	Included bark	Private	County

Red Line Tree Inventory

Segment 1

Number	Common Name	Scientific Name	DBH	Condition	Comment	Impact	Location
T242	Honey locust	*Gleditsia triacanthos*	16	Poor	Stem decay, girdling roots	Private	County
T243	Northern red oak	*Quercus rubra*	23	Good	Minor dead wood		County
T244	Eastern white pine	*Pinus strobus*	10	Good			County
T245	Eastern white pine	*Pinus strobus*	8	Good			County
T246	Eastern white pine	*Pinus strobus*	10	Good			County
T247	Pin oak	*Quercus palustris*	16	Good	Minor dead wood		County
T248	Pin oak	*Quercus palustris*	20	Good	Minor dead wood	Private	County
T249	Eastern white pine	*Pinus strobus*	10	Good			County
T250	Eastern white pine	*Pinus strobus*	10	Good			County
T251	Eastern white pine	*Pinus strobus*	11	Fair	Minor dead wood		County
T252	Green ash	*Fraxinus pennsylvanica*	10	Fair	3x, base decay		County
T253	Green ash	*Fraxinus pennsylvanica*	8	Fair	Dead wood		County
T254	Eastern white pine	*Pinus strobus*	13	Good			County
T255	Eastern white pine	*Pinus strobus*	10	Fair	Dead wood, thin crown		County
T256	White mulberry	*Morus alba*	12	Fair	Vines, dead wood		County
T257	Bradford pear	*Pyrus calleryana*	7	Good			County
T258	Bradford pear	*Pyrus calleryana*	7	Poor	Interfering branches, suspect base		County
T259	Eastern red cedar	*Juniperus virginiana*	6	Good			County
T260	Bradford pear	*Pyrus calleryana*	5	Fair	Base decay, included bark		County
T261	Bradford pear	*Pyrus calleryana*	8	Fair	2x, suspect base, included bark		County
T262	Bradford pear	*Pyrus calleryana*	6	Good			County
T263	Eastern white pine	*Pinus strobus*	14	Good		Private	County
T264	Eastern white pine	*Pinus strobus*	13	Good/Fair	Topped double lead	Private	County
T265	Eastern white pine	*Pinus strobus*	14	Fair	Dead wood	Private	County
T266	Eastern white pine	*Pinus strobus*	10	Fair	Thin crowned	Private	County
T267	Eastern white pine	*Pinus strobus*	12	Good	Minor dead wood	Private	County
T268	Eastern white pine	*Pinus strobus*	12	Good			County
T269	Pin oak	*Quercus palustris*	21	Good			County
T270	Pin oak	*Quercus palustris*	18	Good			County
T271	Eastern white pine	*Pinus strobus*	6	Good			County

Red Line Tree Inventory

Segment 1

Number	Common Name	Scientific Name	DBH	Condition	Comment	Impact	Location
T272	Eastern white pine	*Pinus strobus*	10	Good	Vines		County
T273	Eastern white pine	*Pinus strobus*	10	Fair	Thin crown		County
T274	Eastern white pine	*Pinus strobus*	10	Good			County
T275	Bradford pear	*Pyrus calleryana*	13	Good	Included bark	Private	County
T276	Bradford pear	*Pyrus calleryana*	10	Good	Included bark, minor dead wood	Private	County
T277	Honey locust	*Gleditsia triacanthos*	13	Fair/Poor	Trench damage, dead wood	Private	County
T278	Honey locust	*Gleditsia triacanthos*	15	Fair	Girdling root	Private	County
T279	Pin oak	*Quercus palustris*	4	Good		Private	County
T280	Pin oak	*Quercus palustris*	13	Fair	Stem defect, dead wood	Private	County
T281	Kousa dogwood	*Cornus kousa*	8	Good			County
T282	Eastern white pine	*Pinus strobus*	8	Good/Fair		Private	County
T283	Eastern white pine	*Pinus strobus*	5	Poor	Dead wood, thin crown	Private	County
T284	Eastern white pine	*Pinus strobus*	8	Good/Fair		Private	County
T285	Pin oak	*Quercus palustris*	14	Fair/Good	Dead wood, dying top	Private	County
T286	Bradford pear	*Pyrus calleryana*	9	Good	Included bark		County
T287	Zelkova	*Zelkova serrata*	5	Fair	Included bark		County
T288	Bradford pear	*Pyrus calleryana*	8	Good	Included bark		County
T289	Bradford pear	*Pyrus calleryana*	10	Good	Included bark		County
T290	Bradford pear	*Pyrus calleryana*	10	Poor	Poor stem attachment		County
T291	Zelkova	*Zelkova serrata*	9	Good	Included bark		County
T292	Zelkova	*Zelkova serrata*	7	Good	Included bark		County
T293	Zelkova	*Zelkova serrata*	10	Good	Included bark		County
T294	Zelkova	*Zelkova serrata*	8	Good	Included bark		County
T295	Zelkova	*Zelkova serrata*	10	Good	Included bark		County
T296	Red maple	*Acer rubrum*	6	Poor	Broken top, dying		County
T297	Japanese maple	*Acer palmatum*	10	Fair	Girdling root	Private	County
T298	Japanese maple	*Acer palmatum*	9	Poor	Stem decay, included bark	Private	County
T299	Crabapple	*Malus sp.*	11	Poor	Extensive dead wood		County
T300	Crabapple	*Malus sp.*	11	Poor	Dying, extensive dead wood, stem damage		County
T301	Eastern red cedar	*Juniperus virginiana*	6	Good			County

Red Line Tree Inventory

Segment 1

Number	Common Name	Scientific Name	DBH	Condition	Comment	Impact	Location
T302	Austrian pine	*Pinus nigra*	8	Poor	Existing dead wood, trunk defect		County
T303	Austrian pine	*Pinus nigra*	10	Good/Fair	Dead wood, trunk defect		County
T304	Eastern white pine	*Pinus strobus*	9	Good			County
T305	Eastern white pine	*Pinus strobus*	6	Good/Fair	Thin crown		County
T306	Eastern white pine	*Pinus strobus*	5	Fair	Chlorotic, thin crown		County
T307	Green ash	*Fraxinus pennsylvanica*	9	Fair	Dead wood, stem damage, included bark		County
T308	Eastern white pine	*Pinus strobus*	6	Fair	Chlorotic, thin crown		County
T309	Eastern white pine	*Pinus strobus*	5	Fair	Chlorotic, thin crown, trunk wounds		County
T310	Eastern white pine	*Pinus strobus*	4	Fair/Poor	Chlorotic, thin crown		County
T311	Flowering cherry	*Prunus sp.*	6	Good			County
T312	Willow oak	*Quercus phellos*	22	Good/Fair	Dead branches		County
T313	Eastern white pine	*Pinus strobus*	5	Fair	Chlorotic, thin crown		County
T314	Willow oak	*Quercus phellos*	25	Good/Fair	Dead branches		County
T315	Willow oak	*Quercus phellos*	22	Good/Fair		Private	County
T316	White oak	*Quercus alba*	25	Good		Private	County
T317	Willow oak	*Quercus phellos*	31	Fair	Dead branches, stem damage	ROW	County
T318	Willow oak	*Quercus phellos*	25	Good	Dead branches		County
T319	Sawtooth oak	*Quercus acutissima*	5	Good/Fair	Broken branches		County
T320	Sawtooth oak	*Quercus acutissima*	18	Fair	Extensive poison ivy vines		County
T321	Sawtooth oak	*Quercus acutissima*	16	Fair	Excessive pruning	ROW	County
T322	Eastern white pine	*Pinus strobus*	14	Fair	Thin crown	ROW	County
T323	Eastern white pine	*Pinus strobus*	13	Fair	Thin crown, excessive pruning	ROW	County
T324	Eastern white pine	*Pinus strobus*	14	Fair	Thin crown	ROW	County
T325	Eastern white pine	*Pinus strobus*	20	Good		ROW	County
T326	Austrian pine	*Pinus nigra*	8	Poor	Topped, excessive pruning	ROW	County
T327	Austrian pine	*Pinus nigra*	6	Poor	Topped, excessive pruning	ROW	County
T328	Austrian pine	*Pinus nigra*	6	Poor	Topped, excessive pruning	ROW	County
T329	Sawtooth oak	*Quercus acutissima*	8	Good	2x	ROW	County
T330	Eastern red cedar	*Juniperus virginiana*	6	Good		ROW	County
T331	Austrian pine	*Pinus nigra*	8	Poor	Excessive pruning	ROW	County

Red Line Tree Inventory

Segment 1

Number	Common Name	Scientific Name	DBH	Condition	Comment	Impact	Location
T332	Bradford pear	*Pyrus calleryana*	5	Good		ROW	County
T333	Bradford pear	*Pyrus calleryana*	5	Good		ROW	County
T334	Sawtooth oak	*Quercus acutissima*	8	Good		ROW	County
T335	Eastern red cedar	*Juniperus virginiana*	3	Good	3x	ROW	County
T336	Northern red oak	*Quercus rubra*	15	Good	Vine	ROW	County
T337	Eastern white pine	*Pinus strobus*	15	Good/Fair	Minor dead wood	ROW	County
T338	Eastern white pine	*Pinus strobus*	16	Good/Fair	Minor dead wood	ROW	County
T339	Eastern white pine	*Pinus strobus*	15	Poor	Vines, oozing sap, dead wood	ROW	County
T340	Eastern white pine	*Pinus strobus*	14	Good	Minor dead wood	ROW	County
T341	Eastern white pine	*Pinus strobus*	16	Fair	Thin crown	ROW	County
T342	Eastern white pine	*Pinus strobus*	15	Fair	Thin crown, dead wood	ROW	County
T343	Eastern white pine	*Pinus strobus*	16	Fair	Thin crown, dead wood	ROW	County
T344	Eastern white pine	*Pinus strobus*	14	Good/Fair	Thin crown	ROW	County
T345	Eastern white pine	*Pinus strobus*	14	Good/Fair	Thin crown	ROW	County
T346	Willow oak	*Quercus phellos*	31	Good/Fair	Stem damage	ROW	County
T347	Willow oak	*Quercus phellos*	31	Good		ROW	County
T348	Pin oak	*Quercus palustris*	20	Good/Fair	Large vines	ROW	County
T349	Willow oak	*Quercus phellos*	25	Good	Vines	ROW	County
T350	Willow oak	*Quercus phellos*	22	Fair/Good	Dead branches	ROW	County
T351	Sawtooth oak	*Quercus acutissima*	25	Good/Fair	Broken dead branches	ROW	County
T352	Sawtooth oak	*Quercus acutissima*	14	Fair	4x	ROW	County
T353	Northern red oak	*Quercus rubra*	19	Poor	Bad pruning, dead wood	ROW	County
T354	Pin oak	*Quercus palustris*	22	Fair	Thin crown	ROW	County
T355	Pin oak	*Quercus palustris*	16	Fair/Poor	Vines, split leader	ROW	County
T356	Pin oak	*Quercus palustris*	20	Good	Minor vines	ROW	County
T357	Sawtooth oak	*Quercus acutissima*	11	Fair/Poor	Dead wood, broken branches	ROW	County
T358	Sawtooth oak	*Quercus acutissima*	14	Poor	Sagging, broken branches, thin crown	ROW	County
T359	Eastern white pine	*Pinus strobus*	24	Poor	Bad pruning, vines	ROW	County
T360	Eastern white pine	*Pinus strobus*	20	Poor	2x, dead leader, dead wood	ROW	County
T361	Willow oak	*Quercus phellos*	30	Fair/Poor	Thin canopy, broken branches	ROW	County

Red Line Tree Inventory

Segment 1

Number	Common Name	Scientific Name	DBH	Condition	Comment	Impact	Location
T362	Willow oak	*Quercus phellos*	24	Fair/Poor	Dead wood, broken branches	ROW	County
T363	Northern red oak	*Quercus rubra*	12	Poor	4x, dead leaders, broken branches vines	ROW	County
T364	Eastern white pine	*Pinus strobus*	23	Fair/Poor	Heavy pruning, thin crown	ROW	County
T365	Eastern white pine	*Pinus strobus*	27	Good		ROW	County
T366	Northern red oak	*Quercus rubra*	24	Fair	Dead wood	ROW	County
T367	Northern red oak	*Quercus rubra*	16	Poor	Thin crown, broken branches	ROW	County
T368	Northern red oak	*Quercus rubra*	23	Poor	Dead wood	ROW	County
T369	Austrian pine	*Pinus nigra*	16	Poor	Abnormal trunk, dead wood	ROW	County
T370	Northern red oak	*Quercus rubra*	20	Fair	Vines	ROW	County
T371	Pin oak	*Quercus palustris*	14	Fair	Vines, dead branches	ROW	County
T372	Pin oak	*Quercus palustris*	20	Fair	Dead branches	ROW	County
T373	Bradford pear	*Pyrus calleryana*	15	Good	Included bark		County
T374	Bradford pear	*Pyrus calleryana*	15	Fair	Broken Lead, included bark		County
T375	Bradford pear	*Pyrus calleryana*	16	Good	Included bark		County
T376	Bradford pear	*Pyrus calleryana*	20	Fair	Included bark, interfering branches		County
T377	Bradford pear	*Pyrus calleryana*	15	Good	Included bark, bad pruning		County
T378	Honey locust	*Gleditsia triacanthos*	14	Good/Fair	Improper pruning, dead wood		County
T379	American beech	*Fagus grandifolia*	42	Good/Fair	Dead wood, broken limbs		County
T380	White oak	*Quercus alba*	34	Fair	Included bark, dead wood		County
T381	Northern red oak	*Quercus rubra*	13	Fair	3x, interfering lead, decay	Private	County
T382	Pin oak	*Quercus palustris*	16	Good	Vines, dead wood	ROW	County
T383	Silver maple	*Acer saccharinum*	42	Fair	Trunk splits into 3 stems at DBH	ROW	County
T384	Green ash	*Fraxinus pennsylvanica*	45	Good	English ivy along lower trunk	ROW	County
T385	Silver maple	*Acer saccharinum*	30	Good/Fair	2x, vines, included bark, dead wood	ROW	County
T386	American sycamore	*Platanus occidentalis*	36	Good		ROW	County
T387	Northern red oak	*Quercus rubra*	36	Good			County
T388	Black oak	*Quercus velutina*	36	Fair	Stem flaw, broken branch		County
T389	Black oak	*Quercus velutina*	45	Fair/Poor	Major stem damage		County
T390	Black oak	*Quercus velutina*	32	Good		Private	County
T391	Tulip poplar	*Liriodendron tulipifera*	32	Good		Private	County

Red Line Tree Inventory

Segment 1

Number	Common Name	Scientific Name	DBH	Condition	Comment	Impact	Location
T392	Tulip poplar	*Liriodendron tulipifera*	40	Fair/Good	Deformed stem growth	Private	County
T393	Tulip poplar	*Liriodendron tulipifera*	34	Good		Private	County
T394	Green ash	*Fraxinus pennsylvanica*	42	Fair	Vines, split leader, dead wood	ROW	County
T395	Box elder	*Acer negundo*	32	Fair/Poor	Dead wood	Private	County
T396	Zelkova	*Zelkova serrata*	11	Good		ROW	County
T397	Zelkova	*Zelkova serrata*	13	Good		Private	County
T398	Zelkova	*Zelkova serrata*	12	Good		Private	County
T399	Zelkova	*Zelkova serrata*	10	Fair/Good	Included bark	Private	County
T400	Zelkova	*Zelkova serrata*	13	Good		Private	County
T401	Zelkova	*Zelkova serrata*	13	Fair/Good	Trunk decay	Private	County
T402	Zelkova	*Zelkova serrata*	11	Good			County
T403	Flowering cherry	*Prunus sp.*	9	Good			County
T404	Ash	*Fraxinus sp.*	6	Fair	Crown die back		County
T405	Ash	*Fraxinus sp.*	6	Good			County
T406	White spruce	*Picea glauca*	5	Fair	Dead wood		County
T407	White spruce	*Picea glauca*	5	Good			County
T408	White spruce	*Picea glauca*	6	Good			County
T409	White spruce	*Picea glauca*	6	Good			County
T410	White spruce	*Picea glauca*	3	Fair	Dead wood		County
T411	White spruce	*Picea glauca*	4	Fair/Good	Dead wood		County
T412	White spruce	*Picea glauca*	4	Good			County
T413	White spruce	*Picea glauca*	4	Fair	Dead wood & chlorosis		County
T414	White spruce	*Picea glauca*	5	Good			County
T415	White spruce	*Picea glauca*	4	Fair/Good	Double leader		County
T416	Flowering cherry	*Prunus sp.*	6	Fair/Good	Stem decay		County
T417	Flowering cherry	*Prunus sp.*	6	Good			County
T418	Flowering cherry	*Prunus sp.*	6	Fair/Good	Dead wood & dual leader		County
T419	Zelkova	*Zelkova serrata*	10	Good			County
T420	Zelkova	*Zelkova serrata*	7	Fair	Trunk decay		County
T421	Zelkova	*Zelkova serrata*	7	Good			County

Red Line Tree Inventory

Segment 1

Number	Common Name	Scientific Name	DBH	Condition	Comment	Impact	Location
T422	Southern magnolia	*Magnolia grandiflora*	4	Good			County
T423	Southern magnolia	*Magnolia grandiflora*	7	Good	Multi-stem		County
T424	Southern magnolia	*Magnolia grandiflora*	8	Good	Multi-stem		County
T425	Southern magnolia	*Magnolia grandiflora*	7	Good			County
T426	Southern magnolia	*Magnolia grandiflora*	6	Fair	Multi-stem, dead wood		County
T427	Southern magnolia	*Magnolia grandiflora*	7	Good	Multi-stem		County
T428	Flowering cherry	*Prunus sp.*	7	Good			County
T429	Flowering cherry	*Prunus sp.*	8	Good			County
T430	Flowering cherry	*Prunus sp.*	8	Good			County
T431	Southern magnolia	*Magnolia grandiflora*	7	Good			County
T432	Southern magnolia	*Magnolia grandiflora*	7	Good			County
T433	Southern magnolia	*Magnolia grandiflora*	7	Good			County
T434	Northern red oak	*Quercus rubra*	13	Good			County
T435	Northern red oak	*Quercus rubra*	11	Good			County
T436	Red maple	*Acer rubrum*	9	Good			County
T437	Red maple	*Acer rubrum*	9	Good			County
T438	Cherry	*Prunus sp.*	7	Fair/Good	Dead wood		County
T439	Zelkova	*Zelkova serrata*	8	Fair/Good	Trunk decay		County
T440	Zelkova	*Zelkova serrata*	8	Good			County
T441	Zelkova	*Zelkova serrata*	8	Fair	Trunk decay, dead wood		County
T442	Zelkova	*Zelkova serrata*	7	Good			County
T443	Zelkova	*Zelkova serrata*	8	Fair/Good	Minor trunk decay		County
T444	Zelkova	*Zelkova serrata*	8	Good			County
T445	Crape myrtle	*Lagerstroemia indica*	2	Good	Multi-stem		County
T446	Crape myrtle	*Lagerstroemia indica*	2	Good	Multi-stem		County
T447	Crape myrtle	*Lagerstroemia indica*	3	Good	Multi-stem		County
T448	Crape myrtle	*Lagerstroemia indica*	5	Good	Multi-stem		County
T449	Redbud	*Cercis canadensis*	9	Good		ROW	County
T450	Crape myrtle	*Lagerstroemia indica*	3	Good	Multi-stem	ROW	County
T451	Sawtooth oak	*Quercus acutissima*	8	Good			County

Red Line Tree Inventory

Segment 1

Number	Common Name	Scientific Name	DBH	Condition	Comment	Impact	Location
T452	Eastern red cedar	*Juniperus virginiana*	12	Good		Private	County
T453	Virginia pine	*Pinus virginiana*	8	Good			County
T454	Virginia pine	*Pinus virginiana*	8	Good	2x		County
T455	Virginia pine	*Pinus virginiana*	9	Good	2x		County
T456	Virginia Pine	*Pinus virginiana*	6	Fair	Lean		County
T457	Cherry	*Prunus sp.*	5	Good/Fair	Lean		County
T458	Eastern red cedar	*Juniperus virginiana*	8	Fair	One-sided	Private	County
T459	White oak	*Quercus alba*	12	Fair/Poor	Improper pruning, sprouts		County
T460	Eastern red cedar	*Juniperus virginiana*	5	Good			County
T461	Bradford pear	*Pyrus calleryana*	8	Good	Included bark		County
T462	Eastern red cedar	*Juniperus virginiana*	6	Good			County
T463	White oak	*Quercus alba*	24	Poor	Dead wood, trunk decay, broken limbs		County
T473	Flowering cherry	*Prunus sp.*	5	Good/Fair	Lean		County
T464	Hickory	*Carya sp.*	5	Good/Fair	2x, dead wood		County
T465	Hickory	*Carya sp.*	5	Good		Private	County
T466	White oak	*Quercus alba*	11	Good/Fair	Interfering branches, improper pruning		County
T467	River birch	*Betula nigra*	4	Good		Private	County
T468	Eastern red cedar	*Juniperus virginiana*	8	Good			County
T469	Bradford pear	*Pyrus calleryana*	8	Good			County
T470	Bradford pear	*Pyrus calleryana*	6	Good/Fair	Mower damage at base		County
T471	Flowering cherry	*Prunus sp.*	9	Good/Fair	2x		County
T472	Flowering cherry	*Prunus sp.*	8	Good			County
T474	Flowering cherry	*Prunus sp.*	13	Good		Private	County
T475	Flowering cherry	*Prunus sp.*	4	Good		Private	County
T476	Flowering cherry	*Prunus sp.*	8	Fair	Lean, base damage	Private	County
T477	Flowering cherry	*Prunus sp.*	7	Fair	Lean	Private	County
T478	Flowering cherry	*Prunus sp.*	7	Good		Private	County
T479	Flowering cherry	*Prunus sp.*	5	Good	2x		County
T480	White oak	*Quercus alba*	15	Fair/Poor	Mainstem crack, dead wood		County
T481	Flowering cherry	*Prunus sp.*	5	Good		Private	County

Red Line Tree Inventory

Segment 1

Number	Common Name	Scientific Name	DBH	Condition	Comment	Impact	Location
T482	White oak	*Quercus alba*	24	Good/Fair	Dead wood		County
T483	Oak	*Quercus sp.*	6	Poor	Severe lean, dead wood		County
T484	Black cherry	*Prunus serotina*	11	Fair	Dead wood, broken limbs		County
T485	Persimmon	*Diospyros virginiana*	8	Poor	Base decay, lean		County
T486	Bradford pear	*Pyrus calleryana*	8	Good		Private	County
T487	Bradford pear	*Pyrus calleryana*	8	Good		Private	County
T488	Bradford pear	*Pyrus calleryana*	7	Good		Private	County
T489	Black cherry	*Prunus serotina*	7	Poor	Lean, cankers, decay	Private	County
T490	Green ash	*Fraxinus pennsylvanica*	5	Good		Private	County
T491	Eastern red cedar	*Juniperus virginiana*	10	Good		Private	County
T492	Eastern red cedar	*Juniperus virginiana*	13	Fair	Busted lead, one-sided	Private	County
T493	Cherry	*Prunus sp.*	9	Fair	Lean, cavity	ROW	County
T494	Red maple	*Acer rubrum*	2	Good		Private	County
T495	Red maple	*Acer rubrum*	2	Good		Private	County
T496	Red maple	*Acer rubrum*	2	Good		Private	County
T497	Red maple	*Acer rubrum*	2	Good		Private	County
T498	Red maple	*Acer rubrum*	2	Good		Private	County
T499	Bradford pear	*Pyrus calleryana*	10	Fair	Included bark, improper pruning	Private	County
T500	Bradford pear	*Pyrus calleryana*	10	Fair	Improper pruning, dead wood	Private	County
T501	Bradford pear	*Pyrus calleryana*	10	Good/Fair	Included bark	Private	County
T502	Bradford pear	*Pyrus calleryana*	8	Good		Private	County
T503	Redbud	*Cercis canadensis*	2	Good		Private	County
T504	Redbud	*Cercis canadensis*	1	Good	Multi-stem	Private	County
T505	Redbud	*Cercis canadensis*	1	Good	Multi-stem	Private	County
T506	Box elder	*Acer negundo*	14	Poor/dying	Mainstem decay, crown dieback	Private	County
T507	Austrian pine	*Pinus nigra*	8	Good			County
T508	Austrian pine	*Pinus nigra*	10	Good			County
T509	Austrian pine	*Pinus nigra*	11	Good			County
T510	Crape myrtle	*Lagerstroemia indica*	5	Good	Multi-stem	ROW	County
T511	Maple	*Acer sp.*	10	Good			County

Red Line Tree Inventory

Segment 1

Number	Common Name	Scientific Name	DBH	Condition	Comment	Impact	Location
T512	Austrian pine	*Pinus nigra*	13	Fair	One-sided		County
T513	Pin oak	*Quercus palustris*	20	Good			County
T514	Crabapple	*Malus sp.*	6	Poor	Crown dead, cavity at base		County
T515	Northern red oak	*Quercus rubra*	16	Good			County
T516	Northern red oak	*Quercus rubra*	13	Good			County
T517	Pin oak	*Quercus palustris*	19	Good			County
T518	Flowering cherry	*Prunus sp.*	5	Fair	Suspect base, cankers		County
T519	Flowering cherry	*Prunus sp.*	4	Fair	Broken limbs, canker		County
T520	Flowering cherry	*Prunus sp.*	3	Good			County
T521	Flowering cherry	*Prunus sp.*	9	Fair	Cankers, cavities, suspect base		County
T522	Flowering cherry	*Prunus sp.*	5	Fair/Poor	Suspect base, cavities, decay		County
T523	Flowering cherry	*Prunus sp.*	5	Poor	Suspect base, dead wood, cavities		County
T524	Eastern white pine	*Pinus strobus*	13	Fair	Lean, busted limbs		County
T525	Eastern white pine	*Pinus strobus*	14	Good			County
T526	Crabapple	*Malus sp.*	9	Fair/Poor	Multi-stem, dead wood, improper pruning, decay		County
T527	Eastern white pine	*Pinus strobus*	11	Fair	Dead wood		County
T528	Eastern white pine	*Pinus strobus*	14	Fair	Dead wood, broken limb		County
T529	Eastern white pine	*Pinus strobus*	16	Good			County
T530	Box elder	*Acer negundo*	9	Fair/Poor	Broken lead, cavities, dead wood		County
T531	Austrian pine	*Pinus nigra*	14	Good			County
T532	Eastern white pine	*Pinus strobus*	20	Fair	Girdling root, dead wood		County
T533	Flowering cherry	*Prunus sp.*	4	Poor	Base decay		County
T534	Flowering cherry	*Prunus sp.*	5	Poor	Mainstem decay		County
T535	American holly	*Ilex opaca*	10	Good	Multi-stem		County
T536	American holly	*Ilex opaca*	12	Fair/Poor	Multi-stem, decay, trunk damage		County
T537	American holly	*Ilex opaca*	9	Good	2x	Private	County
T538	Austrian pine	*Pinus nigra*	14	Fair	Dead wood	Private	County
T539	Bradford pear	*Pyrus calleryana*	14	Fair	Busted lead		County
T540	Bradford pear	*Pyrus calleryana*	15	Fair	Included bark, cavities		County
T541	Bradford pear	*Pyrus calleryana*	15	Fair	Included bark		County

Red Line Tree Inventory

Segment 1

Number	Common Name	Scientific Name	DBH	Condition	Comment	Impact	Location
T542	Bradford pear	*Pyrus calleryana*	14	Fair	Included bark, interfering branches		County
T543	Bradford pear	*Pyrus calleryana*	14	Good/Fair	Included bark		County
T544	Bradford pear	*Pyrus calleryana*	13	Fair	Included bark, interfering branches		County
T545	Bradford pear	*Pyrus calleryana*	12	Fair	Included bark, interfering branches		County
T546	Bradford pear	*Pyrus calleryana*	21	Fair/Poor	Interfering branches, busted lead, included bark		County
T547	Bradford pear	*Pyrus calleryana*	13	Good/Fair	Included bark		County
T548	Bradford pear	*Pyrus calleryana*	15	Poor	Busted lead		County
T549	Bradford pear	*Pyrus calleryana*	14	Fair	Interfering branches, included bark		County
T550	Bradford pear	*Pyrus calleryana*	13	Fair	Interfering branches		County
T551	Box elder	*Acer negundo*	15	Fair	Dead wood, suckers		County
T552	Austrian pine	*Pinus nigra*	17	Good		Private	County
T553	Honey locust	*Gleditsia triacanthos*	19	Good			County
T554	Honey locust	*Gleditsia triacanthos*	13	Fair	Topped		County
T555	Honey locust	*Gleditsia triacanthos*	10	Good			County
T556	Honey locust	*Gleditsia triacanthos*	10	Good			County
T557	Honey locust	*Gleditsia triacanthos*	11	Good			County
T558	Honey locust	*Gleditsia triacanthos*	12	Poor	Main stem decay		County
T559	Honey locust	*Gleditsia triacanthos*	12	Good			County
T560	Honey locust	*Gleditsia triacanthos*	6	Good			County
T561	Honey locust	*Gleditsia triacanthos*	9	Good			County
T562	Honey locust	*Gleditsia triacanthos*	8	Good			County
T563	Honey locust	*Gleditsia triacanthos*	9	Good			County
T564	Willow oak	*Quercus phellos*	20	Good			County
T565	Eastern white pine	*Pinus strobus*	11	Good			County
T566	Eastern white pine	*Pinus strobus*	7	Good			County
T567	Eastern white pine	*Pinus strobus*	7	Fair	Lean		County
T568	Bradford pear	*Pyrus calleryana*	16	Poor	Suspect base, one-sided	Private	County
T569	Northern red oak	*Quercus rubra*	12	Fair	Girdling roots		County
T570	Honey locust	*Gleditsia triacanthos*	17	Fair	Girdling roots	Private	County
T571	Hawthorn	*Crataegus sp.*	6	Poor	Diseased		County

Red Line Tree Inventory

Segment 1

Number	Common Name	Scientific Name	DBH	Condition	Comment	Impact	Location
T572	Willow oak	*Quercus phellos*	17	Fair	Suspect base, girdling roots		County
T573	Honey locust	*Gleditsia triacanthos*	11	Poor	Main stem crack, decay, dead wood		County
T574	Hawthorn	*Crataegus sp.*	6	Fair	Crack at base		County
T575	Hawthorn	*Crataegus sp.*	6	Fair	Dead wood		County
T576	Honey locust	*Gleditsia triacanthos*	13	Fair	Dead wood, girdling roots		County
T577	Bradford pear	*Pyrus calleryana*	4	Poor	Stressed	Private	County
T578	Eastern red cedar	*Juniperus virginiana*	12	Good			County
T579	Mulberry	*Morus sp.*	18	Fair	Cavity		County
T580	Honey locust	*Gleditsia triacanthos*	6	Good			County
T581	Austrian pine	*Pinus nigra*	5	Fair	Lean		County
T582	Austrian pine	*Pinus nigra*	8	Poor	Severe lean		County
T583	Austrian pine	*Pinus nigra*	8	Good			County
T584	Austrian pine	*Pinus nigra*	11	Poor	Main stem crack, decay		County
T585	Austrian pine	*Pinus nigra*	9	Poor	Root damage, busted lead		County
T586	White oak	*Quercus alba*	32	Good			County
T596	Tulip poplar	*Liriodendron tulipifera*	33	Good/Fair	Dead wood, vines		County
T587	White oak	*Quercus alba*	34	Good	Minor dead wood, minor tank defect		County
T588	White oak	*Quercus alba*	38	Good	Minor dead wood		County
T589	White oak	*Quercus alba*	37	Good/Fair	Dead wood		County
T590	White oak	*Quercus alba*	34	Good	Dead wood		County
T591	White oak	*Quercus alba*	43	Fair	Dead wood, busted lead		County
T592	Tulip poplar	*Liriodendron tulipifera*	35	Good/Fair	Multi-stem, included bark, dead wood		County
T593	Tulip poplar	*Liriodendron tulipifera*	30	Poor	Broken leads, uneven canopy		County
T594	Tulip poplar	*Liriodendron tulipifera*	32	Good	Minor dead wood		County
T595	Tulip poplar	*Liriodendron tulipifera*	30	Fair	Large cavity		County
T597	Tulip poplar	*Liriodendron tulipifera*	33	Good/Fair	Dead wood, vine		County
T598	Tulip poplar	*Liriodendron tulipifera*	31	Good	Minor dead wood		County
T599	Tulip poplar	*Liriodendron tulipifera*	31	Good/Fair	Dead wood, vine		County
T600	Tulip poplar	*Liriodendron tulipifera*	35	fair	Included bark, dead wood, vines, lean		County
T601	Tulip poplar	*Liriodendron tulipifera*	35	Fair	Vines, trunk defect		County

Red Line Tree Inventory

Segment 1

Number	Common Name	Scientific Name	DBH	Condition	Comment	Impact	Location
T602	Black walnut	*Juglans nigra*	42	Poor	Included bark, vines, dead wood		County
T603	Black walnut	*Juglans nigra*	35	Fair	Vines, dead wood		County
T604	Black cherry	*Prunus serotina*	3	Fair	Included bark, black knot		County
T605	Eastern red cedar	*Juniperus virginiana*	4	Good			County
T606	Green ash	*Fraxinus pennsylvanica*	6	Good/Fair	Included bark, improper pruning	Private	County
T607	Black walnut	*Juglans nigra*	6	Good	Vines		County
T608	Black cherry	*Prunus serotina*	8	Fair	Vines, dead wood		County
T609	Northern red oak	*Quercus rubra*	6	Good	Included bark		County
T610	Northern red oak	*Quercus rubra*	43	Good	Minor dead wood		County
T611	Red maple	*Acer rubrum*	37	Poor	Included bark, vines, main stem decay	Private	County
T612	Redbud	*Cercis canadensis*	13	Poor	Deformed stem, dead wood		County
T613	Mulberry	*Morus sp.*	15	Poor	Dead wood, included bark		County
T614	Eastern hemlock	*Tsuga canadensis*	6	Fair	Scale, adelgid		County
T615	Mulberry	*Morus sp.*	5	Fair	Included bark, improper pruning		County
T616	American elm	*Ulmus americana*	27	Good	Included bark, minor root mower damage		County
T617	Flowering dogwood	*Cornus florida*	5	Poor	Dead top		County
T618	White ash	*Fraxinus americana*	14	Good/Fair	Tree growing into guy wire	Private	County
T619	Eastern white pine	*Pinus strobus*	10	Good	Minor stem deformity		County
T620	Northern red oak	*Quercus rubra*	31	Good	Lean, minor dead wood		County
T621	Northern red oak	*Quercus rubra*	30	Good	Minor dead wood	Private	County
T622	Northern red oak	*Quercus rubra*	30	Good		Private	County
T623	Black oak	*Quercus velutina*	31	Fair	Lots of dead wood		County
T624	Northern red oak	*Quercus rubra*	31	Fair	Dead wood		County
T625	Black oak	*Quercus velutina*	31	Fair/Poor	Dead wood, cavity		County
T626	Tulip poplar	*Liriodendron tulipifera*	36	Good			County
T627	Tulip poplar	*Liriodendron tulipifera*	37	Poor	Major stem decay, cavity	Private	County
T628	Tulip poplar	*Liriodendron tulipifera*	30	Fair	Dead wood, stem deformity	Private	County
T629	Tulip poplar	*Liriodendron tulipifera*	35	Fair	Dead wood	Private	County
T630	Tulip poplar	*Liriodendron tulipifera*	35	Fair	Thin crown, dead wood		County
T631	Tulip poplar	*Liriodendron tulipifera*	45	Fair/Poor	Broken, and dead branches		County

Red Line Tree Inventory
Segment 1

Number	Common Name	Scientific Name	DBH	Condition	Comment	Impact	Location
T632	Tulip poplar	*Liriodendron tulipifera*	37	Good	Minor dead wood		County
T633	Tulip poplar	*Liriodendron tulipifera*	33	Good	Dead wood		County
T634	Tulip poplar	*Liriodendron tulipifera*	37	Good	Dead wood		County
T635	Tulip poplar	*Liriodendron tulipifera*	30	Good	Dead wood		County
T636	Tulip poplar	*Liriodendron tulipifera*	37	Fair	Dead wood	Private	County
T637	Tulip poplar	*Liriodendron tulipifera*	32	Good/Fair	Vines, dead wood		County
T638	Tulip poplar	*Liriodendron tulipifera*	31	Good	Vines		County
T639	Tulip poplar	*Liriodendron tulipifera*	39	Good/Fair	Vines, included bark, dead wood		County
T640	Tulip poplar	*Liriodendron tulipifera*	30	Fair	Included bark, weeping wound at base		County
T641	Tulip poplar	*Liriodendron tulipifera*	37	Fair	Dead wood	Private	County
T642	White ash	*Fraxinus americana*	31	Poor	Dead wood, poor form, included bark		County
T643	Tulip poplar	*Liriodendron tulipifera*	40	Fair	Dead wood		County
T644	Tulip poplar	*Liriodendron tulipifera*	36	Good	Dead wood		County
T645	Tulip poplar	*Liriodendron tulipifera*	33	Good	Deadwood		County
T646	Tulip poplar	*Liriodendron tulipifera*	36	Poor	Base decay, hollow, cavity		County
T647	Tulip poplar	*Liriodendron tulipifera*	33	Good/Fair	Included bark		County
T648	Tulip poplar	*Liriodendron tulipifera*	30	Fair	Vines	Private	County
T649	Tulip poplar	*Liriodendron tulipifera*	32	Good/Fair	Dead wood		County
T650	Box elder	*Acer negundo*	36	Poor	Base decay, vines, dead wood, lean	ROW	County
T651	Tulip poplar	*Liriodendron tulipifera*	32	Good		Private	County
T652	Tulip poplar	*Liriodendron tulipifera*	30	Good		Private	County
T653	Black gum	*Nyssa sylvatica*	34	Good		ROW	County
T654	Tulip poplar	*Liriodendron tulipifera*	23	Good			County
T655	Slippery elm	*Ulmus rubra*	23	Fair/Good	Vines in crown		County
T656	Scarlet oak	*Quercus coccinea*	22	Good			County
T657	Northern red oak	*Quercus rubra*	23	Good		ROW	County
T658	Pin oak	*Quercus palustris*	22	Fair	Vines in crown		County
T659	Slippery elm	*Ulmus rubra*	22	Fair/Good	Dead wood		County
T660	Scarlet oak	*Quercus coccinea*	30	Fair	5x, vines in crown		County
T661	Northern red oak	*Quercus rubra*	22	Good			County

Red Line Tree Inventory

Segment 1

Number	Common Name	Scientific Name	DBH	Condition	Comment	Impact	Location
T662	Northern red oak	*Quercus rubra*	20	Fair	Dead wood		County
T663	Red maple	*Acer rubrum*	16	Poor	Dead central leader		County
T664	Green ash	*Fraxinus pennsylvanica*	17	Good			County
T665	Green ash	*Fraxinus pennsylvanica*	17	Good			County
T666	Green ash	*Fraxinus pennsylvanica*	14	Good			County
T667	Green ash	*Fraxinus pennsylvanica*	13	Good			County
T668	Green ash	*Fraxinus pennsylvanica*	15	Good			County
T669	Silver maple	*Acer saccharinum*	16	Fair	Lean, suckering		County
T670	Silver maple	*Acer saccharinum*	19	Fair	Lean, dead wood		County
T671	Silver maple	*Acer saccharinum*	28	Good			County
T672	Red maple	*Acer rubrum*	12	Fair	Canker		County
T673	Red maple	*Acer rubrum*	12	Fair	Canker		County
T674	Red maple	*Acer rubrum*	18	Good/Fair	Included bark		County
T675	Red maple	*Acer rubrum*	14	Fair	Bark inclusion, imbalanced		County
T676	Red maple	*Acer rubrum*	11	Fair/Good	Included bark		County
T677	Red maple	*Acer rubrum*	13	Fair	Included bark, pruning		County
T678	Red maple	*Acer rubrum*	14	Good			County
T679	Red maple	*Acer rubrum*	14	Good			County
T680	Eastern white pine	*Pinus strobus*	7	Good			County
T681	Silver maple	*Acer saccharinum*	28	Good/Fair	Included bark		County
T682	Green ash	*Fraxinus pennsylvanica*	11	Good			County
T683	Green ash	*Fraxinus pennsylvanica*	11	Poor	Cavities, dead wood	Private	County
T684	Honey locust	*Gleditsia triacanthos*	3	Good			County
T685	Bradford pear	*Pyrus calleryana*	12	Fair	Included bark, improper pruning		County
T686	Northern red oak	*Quercus rubra*	14	Good	Minor dead wood		County
T687	River birch	*Betula nigra*	4	Poor	Crown decline		County
T688	Bradford Pear	*Pyrus calleryana*	7	Fair	Included bark, dead wood, minor fire blight		County
T689	Zelkova	*Zelkova serrata*	6	Fair	Minor dead wood		County
T690	Bradford pear	*Pyrus calleryana*	6	Poor	Mainstem decay, dead wood, fire blight		County
T691	Crabapple	*Malus sp.*	4	Good			County

Red Line Tree Inventory

Segment 1

Number	Common Name	Scientific Name	DBH	Condition	Comment	Impact	Location
T692	Crabapple	*Malus sp.*	5	Good	Minor stem defect		County
T693	Crabapple	*Malus sp.*	5	Good			County
T694	Crabapple	*Malus sp.*	12	Good/Fair	Dead wood, included bark		County
T695	Crabapple	*Malus sp.*	12	Fair	Thin crown, dead wood, included bark		County
T696	Red maple	*Acer rubrum*	7	Poor	Dead wood, stem defects		County
T697	Flowering cherry	*Prunus sp.*	5	Fair	Mulch volcano, dead wood		County
T698	Flowering cherry	*Prunus sp.*	4	Poor	Dying		County
T699	Zelkova	*Zelkova serrata*	9	Fair	Stressed		County
T700	Zelkova	*Zelkova serrata*	9	Fair	Dead wood, stressed		County
T701	Zelkova	*Zelkova serrata*	10	Good/Fair	Dead wood		County
T702	Zelkova	*Zelkova serrata*	13	Good/Fair	Dead wood		County
T703	Willow oak	*Quercus phellos*	21	Fair	Chlorosis		County
T704	Bradford pear	*Pyrus calleryana*	27	Fair	Dead wood, hollow trunk		County
T705	White ash	*Fraxinus americana*	17	Fair	Dead wood		County
T706	Crabapple	*Malus sp.*	8	Good/Fair	Included bark, improper pruning		County
T707	Hedge maple	*Acer campestre*	6	Good	Multi-stem	Private	County
T708	Hedge maple	*Acer campestre*	6	Good	Multi-stem		County
T709	Hedge maple	*Acer campestre*	6	Good	Multi-stem		County
T710	Hedge maple	*Acer campestre*	6	Good	Multi-stem	Private	County
T711	Hedge maple	*Acer campestre*	6	Good	Multi-stem		County
T712	Eastern white pine	*Pinus strobus*	16	Good			County
T713	Eastern white pine	*Pinus strobus*	16	Good			County
T714	Hedge maple	*Acer campestre*	6	Good	Multi-stem	Private	County
T715	Hedge maple	*Acer campestre*	6	Good	Multi-stem	Private	County
T716	Eastern white pine	*Pinus strobus*	12	Good		Private	County
T717	Eastern white pine	*Pinus strobus*	12	Good		Private	County
T718	Eastern white pine	*Pinus strobus*	10	Good		Private	County
T719	Hedge maple	*Acer campestre*	6	Good	Multi-stem	Private	County
T720	Crabapple	*Malus sp.*	6	Poor	Vines, dead wood		County
T721	Crabapple	*Malus sp.*	8	Poor	Dying		County

Red Line Tree Inventory

Segment 1

Number	Common Name	Scientific Name	DBH	Condition	Comment	Impact	Location
T722	Crabapple	*Malus sp.*	14	Poor	Dying		County
T723	Norway spruce	*Picea abies*	20	Good	Minor dead wood, sapsucker holes		County

Red Line Tree Inventory
Segment 2

Number	Common Name	Scientific Name	DBH	Condition	Comment	Impact	Location
T1	Northern red oak	*Quercus rubra*	18	Good	Dead wood	ROW	County
T2	Northern red oak	*Quercus rubra*	24	Good		ROW	County
T3	Northern red oak	*Quercus rubra*	32	Fair	Dead wood, poison ivy vines		City
T4	Tree of heaven	*Ailanthus altissima*	32	Fair	Dead wood, included bark, multi-stem, vines		City
T5	American elm	*Ulmus americana*	12	Fair	Vines		City
T6	Black locust	*Robinia pseudoacacia*	13	Fair	Vines		City
T7	Black walnut	*Juglans nigra*	6	Good			City
T8	Black cherry	*Prunus serotina*	12	Good	Vines		City
T9	Mulberry	*Morus sp.*	9	Fair	Vines, broken top		City
T10	Black walnut	*Juglans nigra*	12	Poor	Dying	ROW	City
T11	Black walnut	*Juglans nigra*	17	Poor	Dying	ROW	City
T12	Siberian elm	*Ulmus pumila*	8	Fair	Suspect base with decay	ROW	City
T13	Black oak	*Quercus velutina*	51	Good	Some dead wood		City
T14	Tulip poplar	*Liriodendron tulipifera*	24	Good			City
T15	American beech	*Fagus grandifolia*	23	Good			City
T16	Tulip poplar	*Liriodendron tulipifera*	30	Good			City
T17	Black gum	*Nyssa sylvatica*	24	Good/Fair	Dead wood, broken lead		City
T18	Tulip poplar	*Liriodendron tulipifera*	51	Good/Fair	Lead damage, dead wood		City
T19	White oak	*Quercus alba*	37	Good/Fair	Dead wood, minor decay		City
T20	White oak	*Quercus alba*	35	Good	Minor dead wood		City
T21	Chinese elm	*Ulmus parvifolia*	10	Good	Minor interior dead wood, improper pruning cuts	ROW	City
T22	Chinese elm	*Ulmus parvifolia*	9	Good	Minor interior dead wood		City
T23	Chinese elm	*Ulmus parvifolia*	10	Good	Minor interior dead wood		City
T24	Chinese elm	*Ulmus parvifolia*	9	Good	Minor interior dead wood		City
T25	Chinese elm	*Ulmus parvifolia*	11	Good	Minor dead wood, improper cuts	ROW	City
T26	Zelkova	*Zelkova serrata*	12	Good	Included bark, minor dead wood		City
T27	Tulip poplar	*Liriodendron tulipifera*	48	Good	Included bark, powerline pruning		City
T28	Littleleaf linden	*Tilia cordata*	3	Good		ROW	City
T29	Littleleaf linden	*Tilia cordata*	2	Good	Leaf cupping	ROW	City
T30	Flowering cherry	*Prunus sp.*	16	Good	Minor dead wood, girdling root development		City
T31	Littleleaf linden	*Tilia cordata*	3	Good	Leaf cupping	ROW	City

Red Line Tree Inventory
Segment 2

Number	Common Name	Scientific Name	DBH	Condition	Comment	Impact	Location
T32	Flowering cherry	*Prunus sp.*	15	Good			City
T33	Sugar maple	*Acer saccharum*	17	Poor	Crown decline, utility pruning	ROW	City
T34	Bradford pear	*Pyrus calleryana*	1	Good			City
T35	Sugar maple	*Acer saccharum*	18	Fair	Mainstem decay, utility pruning	ROW	City
T36	Bradford pear	*Pyrus calleryana*	1	Good			City
T37	Green ash	*Fraxinus pennsylvanica*	22	Good		ROW	City
T38	Arborvitae	*Thuja occidentalis*	10	Good	Improper cuts		City
T39	Arborvitae	*Thuja occidentalis*	4	Good			City
T40	Yellow wood	*Cladrastis kentukea*	3	Fair	Base decay	ROW	City
T41	Yellow wood	*Cladrastis kentukea*	4	Good		ROW	City
T42	Yellow wood	*Cladrastis kentukea*	3	Good		ROW	City
T43	Yellow wood	*Cladrastis kentukea*	1	Fair		ROW	City
T44	Bradford pear	*Pyrus calleryana*	13	Good	Included bark	ROW	City
T45	Bradford pear	*Pyrus calleryana*	14	Good	Included bark	ROW	City
T46	Black walnut	*Juglans nigra*	25	Fair	Utility pruned, root damage		City
T47	London plane	*Platanus x acerifolia*	30	Fair	Utility pruned, dead wood		City
T48	Chinese chestnut	*Castanea mollissima*	14	Fair	Utility pruned, dead wood, dead leads		City
T49	Black walnut	*Juglans nigra*	15	Fair/Poor	Crown pruned, poor form		City
T50	Black walnut	*Juglans nigra*	10	Fair	Utility pruned		City
T51	Northern red oak	*Quercus rubra*	30	Poor	Hazard tree, mainstem decay, root decay, dead wood		City
T52	London plane	*Platanus x acerifolia*	32	Fair	Utility trimmed, base swell		City
T53	London plane	*Platanus x acerifolia*	40	Good/Fair	Utility trimmed, base swell		City
T54	London plane	*Platanus x acerifolia*	45	Good/Fair	Suspect base, utility trimmed		City
T55	London plane	*Platanus x acerifolia*	30	Fair	Utility trimmed		City
T56	London plane	*Platanus x acerifolia*	30	Fair	Utility trimmed, broken lead		City
T57	London plane	*Platanus x acerifolia*	32	Fair	Utility trimmed		City
T58	Silver maple	*Acer saccharinum*	22	Good			City
T59	London plane	*Platanus x acerifolia*	67	Fair	Suspect base, hollow spots		City
T60	London plane	*Platanus x acerifolia*	51	Good	Stem swell		City
T61	London plane	*Platanus x acerifolia*	44	Fair	Stem swell		City

Red Line Tree Inventory
Segment 2

Number	Common Name	Scientific Name	DBH	Condition	Comment	Impact	Location
T62	London plane	*Platanus x acerifolia*	46	Poor	Dead wood, crown decline		City
T63	London plane	*Platanus x acerifolia*	50	Good/Fair			City
T64	London plane	*Platanus x acerifolia*	46	Good/Fair	Base swell, root collar on pavement		City
T65	Red maple	*Acer rubrum*	21	Good	Surface roots		City
T66	Red maple	*Acer rubrum*	23	Fair	Surface roots, main stem decay		City
T67	Flowering cherry	*Prunus sp.*	14	Fair	Dead wood, included bark	ROW	City
T68	White oak	*Quercus alba*	13	Good		ROW	City
T69	White ash	*Fraxinus americana*	27	Fair	Crown decline	ROW	City
T70	Red maple	*Acer rubrum*	16	Fair	Dead wood	Private	City
T70	Red maple	*Acer rubrum*	16	Fair	Dead wood, broken lead	ROW	City
T71	Red maple	*Acer rubrum*	20	Good/Fair	Recent sidewalk root damage	ROW	City
T72	American beech	*Fagus grandifolia*	41	Poor	Main stem decay, crown decline	ROW	City
T73	Sweetgum	*Liquidambar styraciflua*	28	Fair	Vines	Park	City
T74	Sweetgum	*Liquidambar styraciflua*	14	Poor	Trunk damage, crown decline	ROW	City
T75	Sweetgum	*Liquidambar styraciflua*	27	Good/Fair	water sprouts	ROW	City
T76	Pin oak	*Quercus palustris*	30	Good	Minor dead wood, included bark, trunk damage	ROW	City
T77	Littleleaf linden	*Tilia cordata*	32	Good			City
T78	White oak	*Quercus alba*	41	Good	Minor dead wood		City
T79	Northern red oak	*Quercus rubra*	22	Good			City
T80	Northern red oak	*Quercus rubra*	20	Good	Dead wood		City
T81	Eastern white pine	*Pinus strobus*	23	Fair	Broken top		City
T82	Pin oak	*Quercus palustris*	20	Fair	Bittersweet vines in canopy		City
T83	Pin oak	*Quercus palustris*	21	Good/Fair	Vines		City
T84	Pin oak	*Quercus palustris*	20	Fair	Vines		City
T85	Northern red oak	*Quercus rubra*	26	Fair	Dead wood, girdled roots, vines		City
T86	Willow oak	*Quercus phellos*	23	Fair	Lots of dead wood		City
T87	White oak	*Quercus alba*	43	Good	Dead wood		City
T88	White oak	*Quercus alba*	33	Fair	Lean, dead wood		City
T89	White oak	*Quercus alba*	26	Good/Fair	Lean, dead wood		City
T90	American beech	*Fagus grandifolia*	20	Good/Fair	Growing in fence		City

Red Line Tree Inventory
Segment 2

Number	Common Name	Scientific Name	DBH	Condition	Comment	Impact	Location
T91	Tulip poplar	*Liriodendron tulipifera*	25	Good			City
T92	American beech	*Fagus grandifolia*	40	Good/Fair	Cankers		City
T93	Tulip poplar	*Liriodendron tulipifera*	33	Poor	Major base decay, fungus		City
T94	Tulip poplar	*Liriodendron tulipifera*	24	Poor	Hollow base, fungus		City
T95	Tulip poplar	*Liriodendron tulipifera*	31	Fair	Vines, ash growing into side		City
T96	Green ash	*Fraxinus pennsylvanica*	27	Fair/Poor	Lean, vines, dead wood		City
T97	Slippery elm	*Ulmus rubra*	30	Fair	Busted lead, vines, dead wood		City
T98	American sycamore	*Platanus occidentalis*	33	Fair	Suspect base, vines		City
T99	Tulip poplar	*Liriodendron tulipifera*	51	Poor	Suspect base, weak union, decay		City
T100	Tulip poplar	*Liriodendron tulipifera*	25	Good			City
T101	Tulip poplar	*Liriodendron tulipifera*	28	Good/Fair	Suspect union at base, dead wood		City
T102	Tulip poplar	*Liriodendron tulipifera*	29	Good	Vines		City
T103	Black locust	*Robinia pseudoacacia*	22	Poor	Decay, mainstem crack, vines		City
T104	Black locust	*Robinia pseudoacacia*	23	Fair	Lean, dead wood		City
T105	Black locust	*Robinia pseudoacacia*	25	Poor	Fungus, decay, dead wood		City
T106	Redbud	*Cercis canadensis*	2	Good		ROW	City
T107	Red maple	*Acer rubrum*	4	Good		ROW	City
T108	Box elder	*Acer negundo*	12	Fair/Good	Lean, trunk decay	ROW	City
T109	Red maple	*Acer rubrum*	4	Good		ROW	City
T110	Red maple	*Acer rubrum*	3	Poor	Lean, crown mostly dead, bark decay		City
T111	Red maple	*Acer rubrum*	3	Fair/Good	Some bark decay		City
T112	Slippery elm	*Ulmus rubra*	7	Good/Fair	Tree canker		City
T113	Red maple	*Acer rubrum*	3	Good			City
T114	White oak	*Quercus alba*	27	Fair	Vines in crown		City
T115	White oak	*Quercus alba*	26	Fair	Lean, dead wood		City
T116	White oak	*Quercus alba*	25	Fair	Lean, dead wood		City
T117	White oak	*Quercus alba*	33	Good			City
T118	White oak	*Quercus alba*	25	Good	Vines		City
T119	White oak	*Quercus alba*	25	Good	Vines		City
T120	White oak	*Quercus alba*	24	Good			City

Red Line Tree Inventory
Segment 2

Number	Common Name	Scientific Name	DBH	Condition	Comment	Impact	Location
T121	American beech	*Fagus grandifolia*	26	Good	Small canker		City
T122	Northern red oak	*Quercus rubra*	21	Good			City
T123	White oak	*Quercus alba*	26	Good/Fair	Deadwood		City
T124	Pin oak	*Quercus palustris*	20	Fair	Vines, dead wood		City
T125	White oak	*Quercus alba*	21	Good/Fair	Dead wood		City
T126	White oak	*Quercus alba*	26	Fair/Good	Dead wood		City
T127	White oak	*Quercus alba*	27	Fair	Dead wood		City
T128	White oak	*Quercus alba*	24	Fair	Lean		City
T129	White oak	*Quercus alba*	28	Fair/Good			City
T130	White oak	*Quercus alba*	25	Good			City
T131	Northern red oak	*Quercus rubra*	29	Good			City
T132	White oak	*Quercus alba*	20	Good/Fair	Deadwood		City
T133	Northern red oak	*Quercus rubra*	20	Fair	Lean		City
T134	White oak	*Quercus alba*	25	Fair	Lean, dead wood		City
T135	Northern red oak	*Quercus rubra*	21	Fair	Lean		City
T136	American beech	*Fagus grandifolia*	21	Fair	Deadwood, split		City
T137	American sycamore	*Platanus occidentalis*	30	Fair	Heavy vines in crown	ROW	County
T138	Northern red oak	*Quercus rubra*	16	Fair	Dead wood	ROW	County
T139	Northern red oak	*Quercus rubra*	21	Fair	Dead wood	ROW	County
T140	American sycamore	*Platanus occidentalis*	35	Fair/Poor	Canker, heavy vines in crown		County
T141	White oak	*Quercus alba*	30	Fair	Vines, exposed roots		County
T142	Hawthorn	*Crataegus sp.*	5	Good			County
T143	Hawthorn	*Crataegus sp.*	4	Good		Private	County
T144	Redbud	*Cercis canadensis*	10	Fair/Good	Included bark		County
T145	Redbud	*Cercis canadensis*	8	Fair/Good	Trunk decay	Private	County
T146	Swamp white oak	*Quercus bicolor*	32	Fair	Vines in crown		County
T147	Swamp white oak	*Quercus bicolor*	31	Poor	broken main lead		County
T148	Pin oak	*Quercus palustris*	35	Fair/Good	Canker, unbalanced crown		County
T149	White oak	*Quercus alba*	49	Fair/Good	"**Security White Oak**", dead wood, thinning, vines, thin canopy		County

Red Line Tree Inventory
Segment 2

Number	Common Name	Scientific Name	DBH	Condition	Comment	Impact	Location
T150	American sycamore	*Platanus occidentalis*	35	Fair	Deadwood, vines		County
T151	Black locust	*Robinia pseudoacacia*	26	Fair	Dead wood		County
T152	Black locust	*Robinia pseudoacacia*	31	Fair/Poor	Dead leader, split	ROW	County
T153	Norway spruce	*Picea abies*	23	Good		ROW	County
T154	Northern red oak	*Quercus rubra*	31	Fair/Good	Dead wood, vines		County
T184	Mulberry	*Morus sp.*	8	Fair	Multi-stem	Private	City
T185	Mulberry	*Morus sp.*	7	Fair	Vines, dead wood		City
T186	Mulberry	*Morus sp.*	6	Fair	Lean		City
T187	Black cherry	*Prunus serotina*	20	Poor	Lean, dead wood		City
T188	Mulberry	*Morus sp.*	18	Poor	Multi-stem, dead wood		City
T189	Black cherry	*Prunus serotina*	20	Poor	Vines in crown, dead wood		City
T190	Black cherry	*Prunus serotina*	20	Poor	Multi-stem, dead crown	Private	City
T191	Red maple	*Acer rubrum*	37	Fair	Included bark		City
T192	Long leaf pine	*Pinus palustris*	28	Good			City
T193	Red maple	*Acer rubrum*	5	Good			City
T194	Flowering dogwood	*Cornus florida*	6	Fair/Good	Multi-stem, anthracnose		City
T195	Japanese maple	*Acer palmatum*	12	Good	Multi-stem		City
T196	Crabapple	*Malus sp.*	12	Fair	Multi-stem, suckering, dead wood		City
T197	Flowering cherry	*Prunus sp.*	18	Fair/Poor	Dead wood		City
T198	Red maple	*Acer rubrum*	34	Fair	Canker, dead wood		City
T199	Red maple	*Acer rubrum*	43	Good/Fair	Included bark		City
T200	Japanese maple	*Acer palmatum*	11	Good			City
T201	Silver maple	*Acer saccharinum*	22	Fair	Dead wood		City
T202	Silver maple	*Acer saccharinum*	24	Fair	Dead wood		City
T203	Silver maple	*Acer saccharinum*	21	Fair	3x, dead wood		City
T204	Norway spruce	*Picea abies*	24	Good			City
T205	Japanese maple	*Acer palmatum*	11	Good	Multi-stem		City
T206	Slippery elm	*Ulmus rubra*	14	Poor	Pruning		City
T207	Slippery elm	*Ulmus rubra*	18	Poor	Pruning		City
T208	Slippery elm	*Ulmus rubra*	18	Poor	Pruning, multi-stem		City

Red Line Tree Inventory
Segment 2

Number	Common Name	Scientific Name	DBH	Condition	Comment	Impact	Location
T209	Bradford pear	*Pyrus calleryana*	12	Good			City
T210	Eastern hemlock	*Tsuga canadensis*	14	Good			City
T211	Norway spruce	*Picea abies*	17	Good			City
T212	Eastern hemlock	*Tsuga canadensis*	11	Good	Vines		City
T213	Bradford pear	*Pyrus calleryana*	16	Fair/Good			City
T214	Bradford pear	*Pyrus calleryana*	16	Fair/Good			City
T215	Black cherry	*Prunus serotina*	15	Fair	Dead wood		City
T216	Black cherry	*Prunus serotina*	18	Fair	Vines		City
T217	Slippery elm	*Ulmus rubra*	28	Fair	Dead wood, trunk decay		City
T218	Eastern white pine	*Pinus strobus*	22	Good/Fair	Dead wood		City
T219	Black cherry	*Prunus serotina*	29	Fair	Dead wood		City
T220	Eastern white pine	*Pinus strobus*	17	Fair/Poor	Severe pruning	ROW	City
T221	Eastern white pine	*Pinus strobus*	18	Good	Vines	ROW	City
T222	Eastern white pine	*Pinus strobus*	20	Fair	Dead wood	ROW	City
T223	Norway spruce	*Picea abies*	10	Fair	Vines	ROW	City
T225	Black locust	*Robinia pseudoacacia*	41	Poor	Dead wood, trunk decay		City
T226	Black locust	*Robinia pseudoacacia*	17	Fair	Dead wood		City
T227	Black locust	*Robinia pseudoacacia*	35	Fair	Trunk decay		City
T228	Black cherry	*Prunus serotina*	17	Fair	Multi-stem, extreme lean		City
T229	Chestnut oak	*Quercus prinus*	19	Poor	Dead wood, lean, In grove of 8 trees		City
T230	White oak	*Quercus alba*	33	Good			City
T231	White oak	*Quercus alba*	26	Good			City
T232	White oak	*Quercus alba*	31	Good			City
T233	White oak	*Quercus alba*	30	Good/Fair	Dead wood		City
T234	Northern red oak	*Quercus rubra*	9	Good			City
T235	Green ash	*Fraxinus pennsylvanica*	15	Poor	Almost dead, severe trunk decay		City
T236	Green ash	*Fraxinus pennsylvanica*	11	Fair	Dead wood		City
T237	Northern red oak	*Quercus rubra*	40	Good			City
T238	Japanese maple	*Acer palmatum*	12	Good	3x		City
T239	Fraser fir	*Abies fraseri*	22	Good			City

Red Line Tree Inventory
Segment 2

Number	Common Name	Scientific Name	DBH	Condition	Comment	Impact	Location
T240	White oak	*Quercus alba*	7	Good			City
T241	Norway maple	*Acer platanoides*	21	Fair	Dead wood		City
T242	Eastern white pine	*Pinus strobus*	9	Fair	Lean, vines		City
T243	Norway spruce	*Picea abies*	13	Fair	Dead wood, crown damage		City
T244	Eastern white pine	*Pinus strobus*	6	Fair/Poor	Crown damage		City
T245	Red maple	*Acer rubrum*	16	Good			City
T246	Northern red oak	*Quercus rubra*	27	Good/Fair	Dead wood		City
T247	Fraser fir	*Abies fraseri*	29	Good			City
T248	Atlas cedar	*Cedrus atlantica*	12	Good			City
T249	Red maple	*Acer rubrum*	35	Fair	Trunk decay, dead wood		City
T250	Leyland cypress	*xCupressocyparis leylandii*	8	Good/Fair	Dead wood		City
T251	Northern red oak	*Quercus rubra*	7	Good			City
T252	Norway spruce	*Picea abies*	21	Good			City
T253	Eastern white pine	*Pinus strobus*	39	Good			City
T254	Northern red oak	*Quercus rubra*	8	Good			City
T255	Port orford cedar	*Chamaecyparis lawsoniana*	15	Fair	Dead wood		City
T256	Port orford cedar	*Chamaecyparis lawsoniana*	14	Fair			City
T257	Black cherry	*Prunus serotina*	22	Fair	Dead wood, lean,double leader		City
T258	Eastern hemlock	*Tsuga canadensis*	13	Fair	Dead wood		City
T259	Norway spruce	*Picea abies*	13	Fair/Poor	Dead wood		City
T260	Eastern white pine	*Pinus strobus*	17	Good/Fair	Lean	Private	City
T261	Black locust	*Robinia pseudoacacia*	33	Fair	Dead wood	Private	City
T263	White ash	*Fraxinus americana*	37	Fair	Lean, trunk decay	Park	City
T264	Flowering cherry	*Prunus sp.*	26	Poor	Severe trunk decay, dead crown	Park	City
T265	White oak	*Quercus alba*	34	Fair	Dead wood		City
T266	White ash	*Fraxinus americana*	34	Fair	Dead wood	Park	City
T267	White oak	*Quercus alba*	38	Fair/Poor	Dead central leader, vines		City
T268	White oak	*Quercus alba*	25	Fair/Poor	Severe lean		City
T269	White ash	*Fraxinus americana*	22	Fair/Good	Dead wood		City
T270	Tulip poplar	*Liriodendron tulipifera*	24	Good	Dead wood		City

Red Line Tree Inventory
Segment 2

Number	Common Name	Scientific Name	DBH	Condition	Comment	Impact	Location
T271	Tulip poplar	*Liriodendron tulipifera*	30	Good			City
T272	Tulip poplar	*Liriodendron tulipifera*	38	Good/Fair	Dead wood		City
T273	Red maple	*Acer rubrum*	25	Poor	Leader dying		City
T274	White ash	*Fraxinus americana*	22	Fair	Lean		City
T275	Flowering cherry	*Prunus sp.*	7	Good			City
T276	White ash	*Fraxinus americana*	20	Fair	Dead wood		City
T277	White ash	*Fraxinus americana*	40	Good/Fair	Dead wood, vines, stem defect		City
T278	White ash	*Fraxinus americana*	15	Fair	Vines		City
T279	White ash	*Fraxinus americana*	34	Fair	Vines		City
T280	White ash	*Fraxinus americana*	34	Fair	Dead wood		City
T281	Red maple	*Acer rubrum*	19	Poor	Dead leader		City
T282	Red maple	*Acer rubrum*	20	Fair	Lean, broken limb		City
T283	White ash	*Fraxinus americana*	19	Fair	Dead wood		City
T284	Slippery elm	*Ulmus rubra*	19	Poor	Dead wood		City
T285	Flowering cherry	*Prunus sp.*	24	Good			City
T286	Saucer magnolia	*Magnolia soulangeana*	13	Fair	Multi-stem, overlapping branches		City
T287	Flowering cherry	*Prunus sp.*	18	Fair	Overlapping branches		City
T288	Crape myrtle	*Lagerstroemia indica*	1	Good	Multi-stem		City
T289	American beech	*Fagus grandifolia*	20	Good	Root zone impacted by construction		City
T290	Zelkova	*Zelkova serrata*	4	Good		ROW	City
T291	Zelkova	*Zelkova serrata*	4	Fair	Dead branches	ROW	City
T292	Chinese elm	*Ulmus parvifolia*	10	Good		ROW	City
T293	Hawthorn	*Crataegus sp.*	6	Good		Private	City
T294	Hawthorn	*Crataegus sp.*	6	Good		Private	City
T295	Hawthorn	*Crataegus sp.*	6	Good		Private	City
T296	Red maple	*Acer rubrum*	8	Good		Private	City
T297	Red maple	*Acer rubrum*	6	Good		Private	City
T298	Red maple	*Acer rubrum*	5	Good			City
T299	Hawthorn	*Crataegus sp.*	4	Good			City
T300	Hawthorn	*Crataegus sp.*	5	Good			City

Red Line Tree Inventory
Segment 2

Number	Common Name	Scientific Name	DBH	Condition	Comment	Impact	Location
T301	Hawthorn	*Crataegus sp.*	4	Good			City
T302	Red maple	*Acer rubrum*	6	Fair	Trunk damage, dead wood		City
T303	Red maple	*Acer rubrum*	6	Fair	Trunk damage		City
T304	Red maple	*Acer rubrum*	5	Fair	Trunk wound		City
T305	White oak	*Quercus alba*	31	Fair	Dead wood, cankers		City
T306	Chinese elm	*Ulmus parvifolia*	10	Good	Minor dead wood, mulch volcano		City
T307	Eastern white pine	*Pinus strobus*	8	Good			City
T308	Hawthorn	*Crataegus sp.*	4	Fair	Leaf scorch		City
T309	Hawthorn	*Crataegus sp.*	4	Fair	Leaf scorch		City
T310	Eastern white pine	*Pinus strobus*	4	Fair	Thin crown		City
T311	Eastern white pine	*Pinus strobus*	6	Fair	Thin crown		City
T312	Red maple	*Acer rubrum*	5	Good		Private	City
T313	Eastern white pine	*Pinus strobus*	5	Fair	Thin crown		City
T314	Eastern white pine	*Pinus strobus*	6	Good		Private	City
T315	Eastern white pine	*Pinus strobus*	5	Good/Fair	Pitch tubes	Private	City
T316	Red maple	*Acer rubrum*	5	Good	Minor Dead wood	Private	City
T317	Eastern white pine	*Pinus strobus*	8	Good		Private	City
T318	Eastern white pine	*Pinus strobus*	8	Good	Included bark	Private	City
T319	Eastern white pine	*Pinus strobus*	8	Good		Private	City
T320	Eastern white pine	*Pinus strobus*	8	Good		Private	City
T320	Eastern white pine	*Pinus strobus*	10	Good		Private	City
T321	Eastern white pine	*Pinus strobus*	8	Good		Private	City
T322	Eastern white pine	*Pinus strobus*	10	Good		Private	City
T323	Arborvitae	*Thuja occidentalis*	12	Good			City
T324	Swamp white oak	*Quercus bicolor*	6	Good			City
T325	Green ash	*Fraxinus pennsylvanica*	5	Good	Included bark		City
T326	Blue spruce	*Picea pungens*	12	Good			City
T327	Japanese maple	*Acer palmatum*	6	Fair	2x, included bark, stem defect, improper pruning		City
T328	Flowering cherry	*Prunus sp.*	9	Fair	Improper pruning, included bark		City
T329	American hornbeam	*Carpinus caroliniana*	1	Good	Included bark		City

Red Line Tree Inventory
Segment 2

Number	Common Name	Scientific Name	DBH	Condition	Comment	Impact	Location
T330	Arborvitae	*Thuja occidentalis*	4	Good			City
T331	Black cherry	*Prunus serotina*	35	Poor	Vines, dying		City
T332	Eastern red cedar	*Juniperus virginiana*	16	Fair	Dead wood, browning leaves, vines		City
T333	Eastern red cedar	*Juniperus virginiana*	19	Fair	Vines, dead wood, browning		City
T334	Sugar maple	*Acer saccharum*	18	Fair/poor	Dead wood, stem decay		City
T335	Bradford pear	*Pyrus calleryana*	22	Good	Included bark		City
T336	Black walnut	*Juglans nigra*	9	Fair	Overtopped		City
T337	Black walnut	*Juglans nigra*	13	Fair/poor	Stem crack, uneven crown, overtopped		City
T338	Black walnut	*Juglans nigra*	15	Fair	Uneven crown		City
T339	Shagbark hickory	*Carya ovata*	10	Good	Overtopped		City
T340	Spruce	*Picea sp.*	33	Poor	Dead wood, vines, overall decline		City
T341	White ash	*Fraxinus americana*	29	Fair	Thin crown, dead wood		City
T342	White mulberry	*Morus alba*	7	Good	2x, included bark, vines		City
T343	White mulberry	*Morus alba*	6	Good	3x		City
T344	Pin oak	*Quercus palustris*	37	Good	minor dead wood		City
T345	Eastern hemlock	*Tsuga canadensis*	13	Good/Fair	HWA & scale		City
T346	Eastern hemlock	*Tsuga canadensis*	15	Good/Fair	HWA & scale		City
T347	Eastern hemlock	*Tsuga canadensis*	9	Good/Fair	HWA & scale		City
T348	Eastern hemlock	*Tsuga canadensis*	13	Good/Fair	HWA & scale		City
T349	Eastern red cedar	*Juniperus virginiana*	15	Good	3x, dead wood, overtopped		City
T350	Blue spruce	*Picea pungens*	9	Fair	Overtopped		City
T351	Blue spruce	*Picea pungens*	7	Fair/Poor	Topped, pruned		City
T352	Blue spruce	*Picea pungens*	6	Good			City
T353	Eastern hemlock	*Tsuga canadensis*	11	Good/Fair	HWA & scale		City
T354	Japanese maple	*Acer palmatum*	8	Good/Fair	3x, dead wood, included bark, minor stem decay		City
T355	American holly	*Ilex opaca*	8	Good	2x		City
T356	Eastern red cedar	*Juniperus virginiana*	5	Fair	Multi-stem, overtopped, improper pruning		City
T357	Eastern red cedar	*Juniperus virginiana*	9	Good/Fair	Multi-stem, improper cuts, dead wood		City
T358	Eastern red cedar	*Juniperus virginiana*	15	Good/Fair	Multi-stem, improper cuts, dead wood		City
T359	Eastern red cedar	*Juniperus virginiana*	10	Fair	2x, dead wood, improper cuts		City

Red Line Tree Inventory
Segment 2

Number	Common Name	Scientific Name	DBH	Condition	Comment	Impact	Location
T360	Upright yew	*Taxus sp.*	13	Fair	Improper cuts, chlorosis		City
T361	White mulberry	*Morus alba*	7	Fair	6x, dead wood, included bark, cracked branches		City
T362	Black cherry	*Prunus serotina*	13	Good	2x, dead wood, included bark		City
T363	Eastern red cedar	*Juniperus virginiana*	7	Fair	Overtopped, dead wood, included bark		City
T364	Eastern red cedar	*Juniperus virginiana*	9	Poor	Stem defect, overtopped		City
T365	Eastern red cedar	*Juniperus virginiana*	10	Fair	2x, included bark, minor dead wood		City
T366	Zelkova	*Zelkova serrata*	11	Good/Fair	Minor dead wood, included bark		City
T367	Eastern red cedar	*Juniperus virginiana*	19	Fair	Dead wood, included bark		City
T368	Eastern red cedar	*Juniperus virginiana*	18	Fair	Dead wood, included bark		City
T369	Eastern red cedar	*Juniperus virginiana*	17	Fair	Dead wood, included bark		City
T370	Eastern red cedar	*Juniperus virginiana*	17	Fair	Dead wood, included bark		City
T371	Eastern red cedar	*Juniperus virginiana*	13	Fair	3x, included bark, dead wood		City

Red Line Tree Inventory
Segment 3

Number	Common Name	Scientific Name	DBH	Condition	Comment	Impact	Location
T1	London plane	*Platanus x acerifolia*	27	Good	Minor dead wood		City
T2	London plane	*Platanus x acerifolia*	23	Good	Minor root collar decay		City
T3	London plane	*Platanus x acerifolia*	27	Good	Minor trunk decay, minor dead wood		City
T4	London plane	*Platanus x acerifolia*	27	Poor	Strangled by English ivy	ROW	City
T5	London plane	*Platanus x acerifolia*	33	Good/Fair	English ivy vines, minor dead wood		City
T6	London plane	*Platanus x acerifolia*	23	Good	Minor dead wood, English ivy vines		City
T7	London plane	*Platanus x acerifolia*	20	Good/Fair	Thin crown, English ivy vines		City
T8	London plane	*Platanus x acerifolia*	23	Good/Fair	Minor dead wood, minor stem defect		City
T9	London plane	*Platanus x acerifolia*	17	Fair	Thin canopy, dead wood		City
T10	London plane	*Platanus x acerifolia*	28	Poor	Vines, crown decline	ROW	City
T11	London plane	*Platanus x acerifolia*	24	Poor	Crown dieback, dead wood, old ivy	ROW	City
T12	London plane	*Platanus x acerifolia*	24	Fair/Poor	Dead wood, crown decline, mainstem decay		City
T13	London plane	*Platanus x acerifolia*	26	Good/Fair	Ivy, soil compaction, dead wood, root flare damage		City
T14	Chinese elm	*Ulmus parvifolia*	10	Good	Minor interior dead wood	ROW	City
T15	Chinese elm	*Ulmus parvifolia*	8	Good	Minor interior dead wood	ROW	City
T16	Chinese elm	*Ulmus parvifolia*	9	Good	Minor interior dead wood, girdling roots forming	ROW	City
T17	Chinese elm	*Ulmus parvifolia*	11	Good	Minor interior, dead wood, girdling roots forming	ROW	City
T18	Chinese elm	*Ulmus parvifolia*	11	Good	Minor interior dead wood	ROW	City
T19	Chinese elm	*Ulmus parvifolia*	11	Good	Minor interior dead wood	ROW	City
T20	Chinese elm	*Ulmus parvifolia*	10	Good	Minor interior dead wood	ROW	City
T23	American holly	*Ilex opaca*	6	Good	Multi-stem		City
T24	American holly	*Ilex opaca*	6	Good	Multi-stem		City
T25	American holly	*Ilex opaca*	6	Good	Multi-stem		City
T26	Leyland cypress	*xCupressocyparis leylandii*	3	Good			City
T27	Chinese elm	*Ulmus parvifolia*	6	Good			City
T28	Chinese elm	*Ulmus parvifolia*	10	Good			City
T29	Chinese elm	*Ulmus parvifolia*	10	Good			City
T30	Zelkova	*Zelkova serrata*	4	Good		ROW	City
T31	Zelkova	*Zelkova serrata*	4	Good		ROW	City
T32	Zelkova	*Zelkova serrata*	4	Good		ROW	City
T33	Zelkova	*Zelkova serrata*	4	Good		ROW	City

Red Line Tree Inventory
Segment 3

Number	Common Name	Scientific Name	DBH	Condition	Comment	Impact	Location
T34	Chinese elm	*Ulmus parvifolia*	8	Good			City
T35	Chinese elm	*Ulmus parvifolia*	8	Fair	Dead branches		City
T36	Chinese elm	*Ulmus parvifolia*	10	Fair	Trunk wound		City
T37	Chinese elm	*Ulmus parvifolia*	10	Good			City
T38	Chinese elm	*Ulmus parvifolia*	8	Good			City
T39	Juniper	*Juniperus sp.*	3	Good		Private	City
T40	Hawthorn	*Crataegus sp.*	8	Poor	Multi-stem, trunk wound		City
T41	Juniper	*Juniperus sp.*	3	Good			City
T42	Juniper	*Juniperus sp.*	3	Good		Private	City
T43	Juniper	*Juniperus sp.*	4	Good		Private	City
T44	Juniper	*Juniperus sp.*	4	Good		Private	City
T45	Crabapple	*Malus sp.*	10	Fair	Vines	Private	City
T46	Northern red oak	*Quercus rubra*	50	Good	Dead branches		City
T47	Redbud	*Cercis canadensis*	18	Poor	Multi-stem, trunk damage		City
T48	Eastern hemlock	*Tsuga canadensis*	16	Fair	One-sided due to crowding		City
T49	Red maple	*Acer rubrum*	22	Good			City
T50	Kousa dogwood	*Cornus kousa*	5	Good			City
T51	Kousa dogwood	*Cornus kousa*	7	Good			City
T52	Eastern hemlock	*Tsuga canadensis*	15	Good			City
T53	Crabapple	*Malus sp.*	4	Good	Dead branches	Private	City
T54	Arborvitae	*Thuja occidentalis*	14	Fair	Twin, dead branches		City
T55	Flowering cherry	*Prunus sp.*	20	Good	Dead branches		City
T56	Yew	*Taxus sp.*	12	Good	Excessive pruning		City
T57	Blue spruce	*Picea pungens*	16	Fair/Poor	Dead branches, pruned		City
T58	Flowering dogwood	*Cornus florida*	8	Poor	Half dead, multiple trunks	ROW	City
T59	Flowering dogwood	*Cornus florida*	10	Good		ROW	City
T60	Flowering dogwood	*Cornus florida*	7	Good	Multi-stem	ROW	City
T61	Flowering dogwood	*Cornus florida*	10	Good		ROW	City
T62	Japanese maple	*Acer palmatum*	14	Good	Twin trunks	Private	City
T63	Flowering cherry	*Prunus sp.*	11	Good		Private	City

Red Line Tree Inventory
Segment 3

Number	Common Name	Scientific Name	DBH	Condition	Comment	Impact	Location
T64	Flowering cherry	*Prunus sp.*	16	Fair	Included bark, trunk wound	Private	City
T65	Tree of heaven	*Ailanthus altissima*	4	Poor	Growing through fence	Private	City
T66	Blue spruce	*Picea pungens*	12	Good		Private	City
T67	Catalpa	*Catalpa speciosa*	24	Fair	Twin trunk, broken leader	Private	City
T68	Japanese maple	*Acer palmatum*	18	Fair	Twin trunk, dead branches	Private	City
T69	Flowering cherry	*Prunus sp.*	12	Good		Private	City
T70	American holly	*Ilex opaca*	13	Good	Multi-stem	Private	City
T71	Loblolly pine	*Pinus taeda*	18	Fair	Thin canopy	Private	City
T72	Crabapple	*Malus sp.*	12	Poor	Trunk damage	Private	City
T73	Saucer magnolia	*Magnolia soulangeana*	10	Good	Multi-stem	Private	City
T74	Japanese maple	*Acer palmatum*	14	Fair	Multi-stem, dead branches	Private	City
T75	Japanese maple	*Acer palmatum*	10	Fair/Poor	Multi-stem, dead branches, lots of vines	Private	City
T76	Red maple	*Acer rubrum*	27	Good	Lean	ROW	City
T77	London plane	*Platanus x acerifolia*	26	Good	Some dead branches	ROW	City
T78	Ginkgo	*Ginkgo biloba*	15	Good	Minor dead wood	Private	City
T79	Ginkgo	*Ginkgo biloba*	21	Good	Minor dead wood, included bark	Private	City
T80	Honey locust	*Gleditsia triacanthos*	24	Good	Minor dead wood	Private	City
T81	Ginkgo	*Ginkgo biloba*	21	Fair	Stem decay	Private	City
T82	Ginkgo	*Ginkgo biloba*	28	Good/Fair	Included bark, stem decay	Private	City
T83	Honey locust	*Gleditsia triacanthos*	26	Poor	Stem decay, dead wood, crown decline	Private	City
T84	Ginkgo	*Ginkgo biloba*	21	Good		Private	City
T85	Ginkgo	*Ginkgo biloba*	14	Good	Female wtih fruit	Private	City
T86	Ginkgo	*Ginkgo biloba*	14	Poor	mainstem decay	Private	City
T87	Crabapple	*Malus sp.*	8	Good	Included bark	Private	City
T88	Green ash	*Fraxinus pennsylvanica*	24	Poor	major stem damage	Private	City
T89	Black locust	*Robinia pseudoacacia*	16	Fair	Vines, dead wood		City
T90	Black locust	*Robinia pseudoacacia*	12	Fair	Stem defect, dead wood		City
T91	Black locust	*Robinia pseudoacacia*	33	Good	Vines, minor dead wood		City
T92	Zelkova	*Zelkova serrata*	20	Fair	Vines, dead wood		City
T93	Zelkova	*Zelkova serrata*	14	Poor	Broken canopy & top	Private	City

Red Line Tree Inventory
Segment 3

Number	Common Name	Scientific Name	DBH	Condition	Comment	Impact	Location
T94	Zelkova	*Zelkova serrata*	12	Fair	Dead wood	Private	City
T95	Black locust	*Robinia pseudoacacia*	21	Poor	Uneven crown, broken lead, vines	Private	City
T96	Black locust	*Robinia pseudoacacia*	28	Fair	Vines, uneven crown	Private	City
T97	Black locust	*Robinia pseudoacacia*	14	Poor	Vines, broken top	Private	City
T98	Silver maple	*Acer saccharinum*	16	Poor	Utility trimmed		City
T99	Tree of heaven	*Ailanthus altissima*	20	Poor	Utility trimmed	Private	City
T100	Black locust	*Robinia pseudoacacia*	24	Fair	Utility trimmed, dead wood		City
T101	White ash	*Fraxinus americana*	16	Poor	Utility trimmed		City
T102	Tree of heaven	*Ailanthus altissima*	10	Poor	Utility trimmed		City
T103	White ash	*Fraxinus americana*	28	Poor	Utility trimmed, minor stem decay		City
T104	Norway spruce	*Picea abies*	6	Fair	Over topped		City
T105	White ash	*Fraxinus americana*	8	Good/Fair	Dead wood, uneven crown, minor stem decay		City
T106	Willow oak	*Quercus phellos*	15	Good			City
T107	Flowering cherry	*Prunus sp.*	17	Poor	Minor stem decay, decline		City
T108	Tree of heaven	*Ailanthus altissima*	18	Fair	2x, dead wood, suspect base		City
T109	Green ash	*Fraxinus pennsylvanica*	14	Poor	2x, multi-stem, utility pruned, decay		City
T110	American sycamore	*Platanus occidentalis*	12	Good/Fair	Uneven crown, minor dead wood		City
T111	White mulberry	*Morus alba*	9	Poor	3x, stem decay, weak stem attachment		City
T112	American sycamore	*Platanus occidentalis*	28	Fair	2x, growing out of pavement, lean		City
T113	Norway maple	*Acer platanoides*	5	Poor	Vines		City
T114	White mulberry	*Morus alba*	6	Poor	Vines, dead wood		City
T115	Black cherry	*Prunus serotina*	9	Fair/Poor	Vines		City
T116	Black cherry	*Prunus serotina*	7	Poor	Stem decay, lean		City
T117	Black cherry	*Prunus serotina*	8	Poor	2x, dead wood, crown decline		City
T118	White ash	*Fraxinus americana*	8	Poor	Lean, stem decay, resprout		City
T119	American elm	*Ulmus americana*	10	Fair	Multi-stem, embedded crown, weak stem attachment		City
T120	White mulberry	*Morus alba*	10	Fair	3x, dead wood, weak stem attachment		City
T121	Black cherry	*Prunus serotina*	12	Fair	Vines, minor dead wood, minor stem defect		City
T122	Tree of heaven	*Ailanthus altissima*	18	Fair	Dead wood		City
T123	Tree of heaven	*Ailanthus altissima*	9	Fair	Vines		City

Red Line Tree Inventory
Segment 3

Number	Common Name	Scientific Name	DBH	Condition	Comment	Impact	Location
T124	Tree of heaven	*Ailanthus altissima*	12	Fair	Vines		City
T125	Tree of heaven	*Ailanthus altissima*	12	Poor	Vines, lean		City
T126	White mulberry	*Morus alba*	14	Poor	Dead wood, vines		City
T127	Tree of heaven	*Ailanthus altissima*	9	Poor	Vines, growing through fence		City
T128	White mulberry	*Morus alba*	18	Fair/Poor	Utility trimmed		City
T129	White mulberry	*Morus alba*	18	Poor	Dead wood, utility trimmed, stem defect		City
T130	Black walnut	*Juglans nigra*	8	Fair	Weak stem attachment		City
T131	Tree of heaven	*Ailanthus altissima*	10	Poor	Utility trimmed		City
T132	Royal paulownia	*Paulownia tomentosa*	6	Poor	Suspect base (concrete)		City
T133	White mulberry	*Morus alba*	8	Poor	Vines utility trimmed		City
T134	Black cherry	*Prunus serotina*	16	Poor	Vines, utility trimmed, dead wood		City
T135	Royal paulownia	*Paulownia tomentosa*	28	Poor	Vines, dying		City
T136	Tree of heaven	*Ailanthus altissima*	14	Fair/Poor	Stem defect		City
T137	Scotch pine	*Pinus sylvestris*	8	Poor	Deformed crown		City
T138	Mimosa	*Albizia julibrissin*	8	Fair	Vines		City
T139	White mulberry	*Morus alba*	16	Fair	Vines, dead wood		City
T140	Arborvitae	*Thuja occidentalis*	6	Good			City
T141	Silver maple	*Acer saccharinum*	14	Poor	Utility trimmed, dead wood, stem decay		City
T142	Black cherry	*Prunus serotina*	20	Fair	Dead wood, vines		City
T143	Silver maple	*Acer saccharinum*	24	Fair	Lean, dead wood		City
T144	Silver maple	*Acer saccharinum*	24	Fair	Lean, uneven crown		City
T145	London plane	*Platanus x acerifolia*	30	Good		ROW	City
T146	London plane	*Platanus x acerifolia*	28	Good		ROW	City
T147	American linden	*Tilia americana*	36	Fair/Good			City
T148	American linden	*Tilia americana*	36	Fair/Good	Vines		City
T149	White oak	*Quercus alba*	4	Good		ROW	City
T150	White oak	*Quercus alba*	4	Good		ROW	City
T151	White ash	*Fraxinus americana*	16	Poor	Top leader broken		City
T152	Japanese maple	*Acer palmatum*	12	Good	Twin trunks		City
T153	White ash	*Fraxinus americana*	18	Fair	Dead branches	ROW	City

Red Line Tree Inventory
Segment 3

Number	Common Name	Scientific Name	DBH	Condition	Comment	Impact	Location
T154	Kousa dogwood	*Cornus kousa*	4	Fair	Multi-stem, trunk damage		City
T155	Yew	*Taxus sp.*	10	Fair	Pruned		City
T156	Japanese maple	*Acer palmatum*	14	Fair	Twin trunk, trunk damage	ROW	City
T157	Japanese maple	*Acer palmatum*	14	Fair	Trunk damage, dead branches		City
T158	Flowering cherry	*Prunus sp.*	12	Fair	Pruned	ROW	City
T159	Japanese maple	*Acer palmatum*	10	Fair	Trunk damage, dead wood		City
T160	Bradford pear	*Pyrus calleryana*	6	Good		Private	City
T161	Tree of heaven	*Ailanthus altissima*	24	Fair	Multi-stem, dead branches	Private	City
T162	Tree of heaven	*Ailanthus altissima*	30	Fair/Poor	Dead branches, extensive vines	Private	City
T163	Mulberry	*Morus sp.*	8	Good		Private	City
T164	Tree of heaven	*Ailanthus altissima*	20	Good	Dead branches	Private	City
T165	Tree of heaven	*Ailanthus altissima*	30	Good		Private	City
T166	Chinese elm	*Ulmus parvifolia*	4	Good		ROW	City
T167	Red maple	*Acer rubrum*	14	Good			City
T168	Lombardi poplar	*Populus nigra*	4	Good		ROW	City
T169	Lombardi poplar	*Populus nigra*	4	Good		ROW	City
T170	Lombardi poplar	*Populus nigra*	4	Good		ROW	City
T171	London plane	*Platanus x acerifolia*	4	Good		ROW	City
T172	Japanese maple	*Acer palmatum*	3	Good			City
T173	Red maple	*Acer rubrum*	2	Good		ROW	City
T174	Flowering cherry	*Prunus sp.*	18	Fair/Good	Severe pruning	Private	City
T175	Yew	*Taxus sp.*	8	Good		Private	City
T176	Mulberry	*Morus sp.*	9	Fair	Vines, trunk decay	ROW	City
T177	Norway maple	*Acer platanoides*	9	Fair	Multiple trunks, runing, chopped leader	Private	City
T178	Eastern red cedar	*Juniperus virginiana*	24	Fair	lean, vines, dead wood		City
T179	Mulberry	*Morus sp.*	20	Fair	vines, sever lean, dead wood		City
T180	Norway maple	*Acer platanoides*	12	Fair	Dead wood	Private	City
T181	Arborvitae	*Thuja occidentalis*	7	Good	Pruned	Private	City
T182	Flowering cherry	*Prunus sp.*	6	Good			City
T183	Flowering cherry	*Prunus sp.*	6	Good			City

Red Line Tree Inventory
Segment 3

Number	Common Name	Scientific Name	DBH	Condition	Comment	Impact	Location
T184	Flowering cherry	*Prunus sp.*	7	Good			City
T185	Flowering cherry	*Prunus sp.*	7	Good			City
T186	Flowering cherry	*Prunus sp.*	4	Good/Fair	Suckering branches	ROW	City
T187	Eastern red cedar	*Juniperus virginiana*	12	Fair/Poor	Vines, dead wood	Private	City
T188	Mulberry	*Morus sp.*	20	Fair/Poor	Dead wood, heavy vines	Private	City
T189	Eastern red cedar	*Juniperus virginiana*	7	Poor	Severe lean, crown damage	Private	City
T190	Arborvitae	*Thuja occidentalis*	6	Good		Private	City
T191	Red maple	*Acer rubrum*	5	Fair		ROW	City
T192	Black locust	*Robinia pseudoacacia*	24	Fair	Dead wood, vines		City
T193	Mulberry	*Morus sp.*	16	Poor	Multiple trunks, sever lean, dead wood		City
T194	Mulberry	*Morus sp.*	7	Fair	Suckering		City
T195	Norway maple	*Acer platanoides*	9	Poor	Trunk damage		City
T196	London plane	*Platanus x acerifolia*	11	Good	Lean		City
T197	Red maple	*Acer rubrum*	12	Good			City
T198	Zelkova	*Zelkova serrata*	3	Good		ROW	City
T199	Zelkova	*Zelkova serrata*	3	Good		ROW	City
T200	Chinese elm	*Ulmus parvifolia*	23	Fair	Trunk damage, root restrictions	ROW	City
T201	Zelkova	*Zelkova serrata*	2	Fair/Poor	Dead branches	ROW	City
T202	Zelkova	*Zelkova serrata*	4	Good		ROW	City
T203	Crabapple	*Malus sp.*	8	Fair	Dead wood, suckers	Private	City
T204	Bradford pear	*Pyrus calleryana*	8	Good		ROW	City
T205	Chinese sumac	*Rhus chinensis*	3	Good		ROW	City
T206	Chinese sumac	*Rhus chinensis*	5	Good		ROW	City
T207	Chinese sumac	*Rhus chinensis*	4	Fair	Lean	ROW	City
T208	Chinese sumac	*Rhus chinensis*	6	Good		ROW	City
T209	Bradford pear	*Pyrus calleryana*	6	Fair		ROW	City
T210	Tree of heaven	*Ailanthus altissima*	22	Good/Fair	3x, vines, constricted roots	Private	City
T211	Silver maple	*Acer saccharinum*	20	Fair	Lean, dead wood		City
T212	Silver maple	*Acer saccharinum*	38	Good/Fair	Multiple leaders		City
T213	Sugar maple	*Acer saccharum*	3	Good		ROW	City

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Number	Common Name	Scientific Name	DBH	Condition	Comment	Impact	Location
T214	Bradford pear	*Pyrus calleryana*	9	Good		ROW	City
T215	Eastern red cedar	*Juniperus virginiana*	16	Fair	Dead branches		City
T216	American holly	*Ilex opaca*	10	Fair	Constricted growing space		City
T217	Silver maple	*Acer saccharinum*	25	Fair/Poor	Missing leader, trunk decay	ROW	City
T218	Mulberry	*Morus sp.*	14	Poor	Multiple trunks, growing through fence, dead wood	ROW	City
T219	Red maple	*Acer rubrum*	28	Fair	dead wood, trunk decay	Private	City
T220	Red maple	*Acer rubrum*	28	Good		Private	City
T221	Red maple	*Acer rubrum*	24	Good		Private	City
T222	Norway maple	*Acer platanoides*	18	Poor	Trunk damage		City
T223	Red maple	*Acer rubrum*	26	Fair	Dead wood	Private	City
T224	Red maple	*Acer rubrum*	20	Fair	Dead wood	Private	City
T225	Black cherry	*Prunus serotina*	16	Fair	Dead wood, roots in pavement, double leader	ROW	City
T226	tree of heaven	*Ailanthus altissima*	28	Fair/Poor	Dead wood, curb roots	ROW	City
T227	Tree of heaven	*Ailanthus altissima*	22	Fair	Trunk damage		City
T228	Mulberry	*Morus sp.*	27	Fair	Poor crown		City
T229	Elm	*Ulmus sp.*	9	Poor	Roots in concrete, roots in fence		City
T230	Tree of heaven	*Ailanthus altissima*	10	Poor	Vines, pruning		City
T231	Green ash	*Fraxinus pennsylvanica*	26	Fair/Poor	Deadwood, roots confined		City
T232	Tree of heaven	*Ailanthus altissima*	24	Fair/Poor	Heavy vines, dread wood		City
T233	Tree of heaven	*Ailanthus altissima*	18	Fair/Poor	2x, vines, dead branches, growing through fence		City
T234	Tree of heaven	*Ailanthus altissima*	10	Fair	Growing out of concrete		City
T235	Tree of heaven	*Ailanthus altissima*	16	Poor	Dead branches, lean, trunk decay		City
T236	Black locust	*Robinia pseudoacacia*	10	Fair	Multi-stem, growing in concrete		City
T237	Sawtooth oak	*Quercus acutissima*	12	Fair	Deadwood, confined planter	ROW	City
T238	Sawtooth oak	*Quercus acutissima*	10	Fair	Deadwood, confined planter box	ROW	City
T239	Tree of heaven	*Ailanthus altissima*	14	Good		ROW	City
T240	Elm	*Ulmus sp.*	6	Good	Multi-stem	ROW	City
T241	American elm	*Ulmus americana*	28	Good		ROW	City
T242	American elm	*Ulmus americana*	25	Good		ROW	City
T243	Silver maple	*Acer saccharinum*	30	Fair	Twin leader, dead wood		City

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Number	Common Name	Scientific Name	DBH	Condition	Comment	Impact	Location
T244	Sweetgum	*Liquidambar styraciflua*	14	Fair	Dead wood	ROW	City
T245	Red maple	*Acer rubrum*	10	Poor	Dead branches	ROW	City
T246	London plane	*Platanus x acerifolia*	12	Good/Fair	Lean, branch damage	ROW	City
T247	American linden	*Tilia americana*	8	Good			City
T248	American linden	*Tilia americana*	6	Good		Private	City
T249	American linden	*Tilia americana*	6	Good		Private	City
T250	Bradford pear	*Pyrus calleryana*	6	Fair	Branch damage, planted in gravel		City
T251	Bradford pear	*Pyrus calleryana*	6	Fair	Planted in gravel, compacted roots		City
T252	American hornbeam	*Carpinus caroliniana*	3	Good		ROW	City
T253	American hornbeam	*Carpinus caroliniana*	8	Fair	Multi-stem, dead wood	ROW	City
T254	Eastern red cedar	*Juniperus virginiana*	10	Good		Private	City
T255	Tree of heaven	*Ailanthus altissima*	20	Fair	Trunk wound	ROW	City
T256	Silver maple	*Acer saccharinum*	20	Fair	Dead branches		City
T257	Tree of heaven	*Ailanthus altissima*	12	Fair	Trunk wound	ROW	City
T258	Black cherry	*Prunus serotina*	10	Good			City
T259	Eastern red cedar	*Juniperus virginiana*	8	Fair	Over pruned	Private	City
T260	Tree of heaven	*Ailanthus altissima*	14	Good		Private	City
T261	Juniper	*Juniperus sp.*	10	Good		Private	City
T262	Juniper	*Juniperus sp.*	10	Good		Private	City
T263	Juniper	*Juniperus sp.*	10	Good		Private	City
T264	Juniper	*Juniperus sp.*	10	Good		Private	City
T265	Crabapple	*Malus sp.*	9	Poor	Mostly dead branches	Private	City
T266	Crabapple	*Malus sp.*	7	Poor	Trunk wound, mostly dead branches	Private	City
T267	Crabapple	*Malus sp.*	6	Poor	Trunk wound, dead branches	Private	City
T268	Crabapple	*Malus sp.*	7	Poor	Mostly dead	Private	City
T269	Sugar maple	*Acer saccharum*	8	Good		Private	City
T270	Austrian pine	*Pinus nigra*	12	Good		Private	City
T271	Tree of heaven	*Ailanthus altissima*	10	Fair	Double leader, severely pruned, root restriction	Private	City
T272	Elm	*Ulmus sp.*	16	Poor	Pruned, split by fence	Private	City
T273	Sugar maple	*Acer saccharum*	11	Good		Private	City

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Number	Common Name	Scientific Name	DBH	Condition	Comment	Impact	Location
T274	Sugar maple	*Acer saccharum*	11	Good		Private	City
T275	Mulberry	*Morus sp.*	17	Poor	3x, severe pruning, dead branches	Private	City
T276	Sugar maple	*Acer saccharum*	12	Good		Private	City
T277	Elm	*Ulmus sp.*	6	Poor	Multiple leader, growing into fence, dead branches	Private	City
T278	Higan cherry	*Prunus subhirtella*	3	Fair	Multi-stem, dead branches	Private	City
T279	Higan cherry	*Prunus subhirtella*	5	Fair	Twisted trunk	Private	City
T280	Saucer magnolia	*Magnolia soulangeana*	3	Good	Double leader	Private	City
T281	Box elder	*Acer negundo*	4	Fair	Suckering	Private	City
T282	Green ash	*Fraxinus pennsylvanica*	11	Good		Private	City
T283	Norway maple	*Acer platanoides*	8	Poor	Central leader dead	Private	City
T284	Norway maple	*Acer platanoides*	10	Good		Private	City
T285	Norway maple	*Acer platanoides*	8	Good		Private	City
T286	Bradford pear	*Pyrus calleryana*	8	Good		Private	City
T287	Red maple	*Acer rubrum*	14	Fair/Good	Deadwood, root restriction	ROW	City
T288	Red maple	*Acer rubrum*	11	Fair/Good	Restricted roots	ROW	City
T289	Red maple	*Acer rubrum*	11	Fair	Trunk damage, restricted roots	ROW	City
T290	Red maple	*Acer rubrum*	12	Fair/Good	Restricted roots	ROW	City
T291	Red maple	*Acer rubrum*	14	Fair/Good	Deadwood, rest roots	ROW	City
T292	Flowering cherry	*Prunus sp.*	9	Fair/Good	Severe pruning	Private	City
T293	Red maple	*Acer rubrum*	9	Fair	Damaged branches, restricted roots	ROW	City
T294	Norway maple	*Acer platanoides*	8	Good		Private	City
T295	Norway maple	*Acer platanoides*	8	Good		Private	City
T296	Norway maple	*Acer platanoides*	8	Good		Private	City
T297	Norway maple	*Acer platanoides*	8	Good		Private	City
T298	Norway maple	*Acer platanoides*	8	Good		Private	City
T299	Norway maple	*Acer platanoides*	8	Good		Private	City
T300	Green ash	*Fraxinus pennsylvanica*	12	Good		Private	City
T301	Green ash	*Fraxinus pennsylvanica*	14	Good		Private	City
T302	Tree of heaven	*Ailanthus altissima*	6	Fair	Multi-stem, growing through fence	Private	City
T303	Austrian pine	*Pinus nigra*	12	Fair	Vines, dead branches	Private	City

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Number	Common Name	Scientific Name	DBH	Condition	Comment	Impact	Location
T304	Austrian pine	*Pinus nigra*	12	Poor	Heavy vines	Private	City
T305	Honey locust	*Gleditsia triacanthos*	10	Poor	Heavy vines	Private	City
T306	Honey locust	*Gleditsia triacanthos*	10	Poor	Vines	Private	City
T307	Honey locust	*Gleditsia triacanthos*	10	Poor	Vines	Private	City
T308	Honey locust	*Gleditsia triacanthos*	10	Poor	Vines	Private	City
T309	Flowering cherry	*Prunus sp.*	8	Fair	Heavy vines	Private	City
T310	Flowering cherry	*Prunus sp.*	8	Fair	Heavy vines	Private	City
T311	Flowering cherry	*Prunus sp.*	8	Fair	Heavy vines	Private	City
T312	Flowering cherry	*Prunus sp.*	8	Fair	Heavy vines	Private	City
T313	Royal paulownia	*Paulownia tomentosa*	36	Fair	Dead wood, heavy vines		City
T314	Hawthorn	*Crataegus sp.*	5	Good		ROW	City
T315	Flowering cherry	*Prunus sp.*	5	Poor	Trunk damage		City
T316	Flowering cherry	*Prunus sp.*	6	Good			City
T317	Willow oak	*Quercus phellos*	6	Good			City
T318	Willow oak	*Quercus phellos*	4	Good			City
T319	Willow oak	*Quercus phellos*	6	Good			City
T320	Willow oak	*Quercus phellos*	6	Good			City
T321	Willow oak	*Quercus phellos*	10	Good			City
T322	Flowering cherry	*Prunus sp.*	8	Good			City
T323	Willow oak	*Quercus phellos*	12	Good			City
T324	Willow oak	*Quercus phellos*	13	Good			City
T325	Willow oak	*Quercus phellos*	6	Good		ROW	City
T326	Willow oak	*Quercus phellos*	6	Fair	Trunk wound, dead branches	ROW	City
T327	Box elder	*Acer negundo*	14	Good	Multi-stem		City
T328	Box elder	*Acer negundo*	16	Poor	Multi-stem, dead branches		City
T329	Tree of heaven	*Ailanthus altissima*	36	Poor	Hollow trunk		City
T330	Norway maple	*Acer platanoides*	34	Fair	Heavily pruned		City
T331	Honey locust	*Gleditsia triacanthos*	7	Good		Private	City
T332	Honey locust	*Gleditsia triacanthos*	7	Fair	Trunk damage	Private	City
T333	Red maple	*Acer rubrum*	6	Good		Private	City

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Number	Common Name	Scientific Name	DBH	Condition	Comment	Impact	Location
T334	Flowering cherry	*Prunus sp.*	5	Good			City
T335	Flowering cherry	*Prunus sp.*	7	Good			City
T336	Flowering cherry	*Prunus sp.*	7	Fair	Lean		City
T337	Red maple	*Acer rubrum*	6	Fair	Large trunk wound	Private	City
T338	Red maple	*Acer rubrum*	7	Good		Private	City
T339	Red maple	*Acer rubrum*	6	Good		Private	City
T340	Willow oak	*Quercus phellos*	11	Good		Private	City
T341	Willow oak	*Quercus phellos*	8	Good		Private	City
T342	Red maple	*Acer rubrum*	6	Good		Private	City
T343	Red maple	*Acer rubrum*	6	Good		Private	City
T344	Red maple	*Acer rubrum*	6	Good		Private	City
T345	Honey locust	*Gleditsia triacanthos*	7	Fair	Trunk wound		City
T346	Flowering cherry	*Prunus sp.*	9	Good		Private	City
T347	Flowering cherry	*Prunus sp.*	8	Good		Private	City
T348	Willow oak	*Quercus phellos*	9	Good		Private	City
T349	American elm	*Ulmus americana*	22	Fair	Pruning, confined roots	ROW	City
T350	American elm	*Ulmus americana*	16	Fair	Pruned branches		City
T351	Tree of heaven	*Ailanthus altissima*	22	Good			City
T352	Tree of heaven	*Ailanthus altissima*	22	Good			City
T353	Green ash	*Fraxinus pennsylvanica*	4	Good			City
T354	Green ash	*Fraxinus pennsylvanica*	4	Good			City
T355	Green ash	*Fraxinus pennsylvanica*	4	Poor	Dead branches, constriction of trunk by supports		City
T356	Green ash	*Fraxinus pennsylvanica*	4	Poor	Dead branches, constriction of trunk by supports		City
T357	Green ash	*Fraxinus pennsylvanica*	3	Good			City
T358	Green ash	*Fraxinus pennsylvanica*	3	Good			City
T359	Honey locust	*Gleditsia triacanthos*	9	Good			City
T360	Honey locust	*Gleditsia triacanthos*	6	Good			City
T361	Red maple	*Acer rubrum*	3	Good			City
T362	Zelkova	*Zelkova serrata*	6	Poor	Dead branches	ROW	City
T363	Red maple	*Acer rubrum*	6	Good			City

Red Line Tree Inventory
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Number	Common Name	Scientific Name	DBH	Condition	Comment	Impact	Location
T364	Red maple	*Acer rubrum*	2	Good		ROW	City
T365	Red maple	*Acer rubrum*	6	Good			City
T366	Zelkova	*Zelkova serrata*	4	Poor	Dead branches	ROW	City
T367	Red maple	*Acer rubrum*	5	Good			City
T368	Zelkova	*Zelkova serrata*	4	Fair	Dead branches	ROW	City
T369	Red maple	*Acer rubrum*	5	Good			City
T370	Red maple	*Acer rubrum*	5	Good			City
T371	Red maple	*Acer rubrum*	7	Fair	Dead branches		City
T372	Box elder	*Acer negundo*	16	Fair	Lean		City
T373	Red maple	*Acer rubrum*	11	Fair	Trunk damage		City
T374	Red maple	*Acer rubrum*	6	Poor	Trunk wound, leaning		City
T375	Red maple	*Acer rubrum*	6	Fair	Trunk wound		City
T376	Red maple	*Acer rubrum*	5	Poor	Girdling, trunk wound		City
T377	Red maple	*Acer rubrum*	14	Good			City
T378	Red maple	*Acer rubrum*	11	Good			City
T379	Red maple	*Acer rubrum*	12	Good			City
T380	Red maple	*Acer rubrum*	11	Good			City
T381	Red maple	*Acer rubrum*	6	Good			City
T382	Willow oak	*Quercus phellos*	11	Good			City
T383	Green ash	*Fraxinus pennsylvanica*	5	Good			City
T384	Green ash	*Fraxinus pennsylvanica*	6	Good	Broken branch		City
T385	Green ash	*Fraxinus pennsylvanica*	5	Good			City
T386	Green ash	*Fraxinus pennsylvanica*	5	Good			City
T387	Green ash	*Fraxinus pennsylvanica*	5	Fair	Dead branches		City
T388	Green ash	*Fraxinus pennsylvanica*	5	Good			City
T389	Willow oak	*Quercus phellos*	10	Good			City
T390	Willow oak	*Quercus phellos*	10	Good			City
T391	Red maple	*Acer rubrum*	3	Fair	Trunk wounds, dead branches		City
T392	Red maple	*Acer rubrum*	3	Poor	Termites, trunk wound		City
T393	Willow oak	*Quercus phellos*	8	Good		Private	City

Red Line Tree Inventory
Segment 3

Number	Common Name	Scientific Name	DBH	Condition	Comment	Impact	Location
T394	Red maple	*Acer rubrum*	2	Fair	Trunk wounds		City
T395	Red maple	*Acer rubrum*	10	Fair	Trunk wounds		City
T396	Red maple	*Acer rubrum*	2	Poor	Trunk wound, severe lean		City
T397	Flowering cherry	*Prunus sp.*	11	Good	Trunk wound	Private	City
T398	Honey locust	*Gleditsia triacanthos*	7	Good			City
T399	Flowering cherry	*Prunus sp.*	7	Good	Dead branches		City
T400	Honey locust	*Gleditsia triacanthos*	6	Good			City
T401	Honey locust	*Gleditsia triacanthos*	10	Good			City
T402	Honey locust	*Gleditsia triacanthos*	11	Poor	Trunk wound	ROW	City
T403	Honey locust	*Gleditsia triacanthos*	9	Fair		ROW	City
T404	Honey locust	*Gleditsia triacanthos*	9	Fair	Dead branches		City
T405	Honey locust	*Gleditsia triacanthos*	9	Fair	Dead branches		City
T406	American linden	*Tilia americana*	4	Good/Fair	Slight lean, trunk decay		City
T408	American linden	*Tilia americana*	5	Fair/Poor	Lean, trunk decay, root damage		City
T409	Honey locust	*Gleditsia triacanthos*	14	Fair/Poor	Large cavity, root damage		City
T410	Flowering cherry	*Prunus sp.*	4	Fair/Poor	Lean, suckering, trunk decay		City
T411	Flowering cherry	*Prunus sp.*	7	Good			City
T412	Ash	*Fraxinus sp.*	6	Good		ROW	City
T413	Flowering cherry	*Prunus sp.*	8	Fair	Lean, suckering		City
T415	Red maple	*Acer rubrum*	5	Poor	Dead wood, dead leader		City
T416	American linden	*Tilia americana*	5	Good			City
T417	American linden	*Tilia americana*	4	Fair	Trunk damage, decay		City
T418	Ash	*Fraxinus sp.*	13	Fair/Poor	Deep canker, broken leader, severe pruning	ROW	City
T419	Flowering cherry	*Prunus sp.*	14	Fair	Cankers, root disturbance, suckering & dead wood		City
T420	Honey locust	*Gleditsia triacanthos*	13	Fair	Dead wood, root constriction		City
T421	Honey locust	*Gleditsia triacanthos*	11	Poor	Trunk decay, canker, root constriction		City
T422	Horse chestnut	*Aesculus hippocastanum*	4	Fair	Dead wood		City
T423	Tree of heaven	*Ailanthus altissima*	1	Poor	Multi-stem, growing out of wall		City
T424	Horse chestnut	*Aesculus hippocastanum*	5	Good			City
T425	Horse chestnut	*Aesculus hippocastanum*	4	Fair	Broken branch, dead wood		City

Red Line Tree Inventory
Segment 3

Number	Common Name	Scientific Name	DBH	Condition	Comment	Impact	Location
T426	Horse chestnut	*Aesculus hippocastanum*	4	Fair/Poor	Trunk damage, decay, dead wood		City
T427	Horse chestnut	*Aesculus hippocastanum*	5	Fair	Canker, trunk decay		City
T428	Horse chestnut	*Aesculus hippocastanum*	4	Fair	Canker, dead wood		City
T429	Horse chestnut	*Aesculus hippocastanum*	5	Fair/Good	Dead wood		City
T430	Horse chestnut	*Aesculus hippocastanum*	4	Fair	Trunk decay, dead wood		City
T431	Horse chestnut	*Aesculus hippocastanum*	1	Fair	Suckers growing from broken stump		City
T432	Sweetgum	*Liquidambar styraciflua*	6	Good			City
T433	Sweetgum	*Liquidambar styraciflua*	8	Good			City
T433	Sweetgum	*Liquidambar styraciflua*	8	Good		ROW	City
T434	Zelkova	*Zelkova serrata*	9	Good		ROW	City
T435	Cherry	*Prunus sp.*	5	Good	Multi-stem	ROW	City
T436	Cherry	*Prunus sp.*	3	Poor	Multi-stem, trunk decay, dead wood, dead leader	ROW	City
T437	Horse chestnut	*Aesculus hippocastanum*	3	Poor	Severe trunk decay		City
T438	Horse chestnut	*Aesculus hippocastanum*	4	Fair	Canker, suckering	ROW	City
T439	Horse chestnut	*Aesculus hippocastanum*	5	Fair	Trunk damage, suckering	ROW	City
T440	Horse chestnut	*Aesculus hippocastanum*	4	Fair	Trunk damage, suckering	ROW	City
T441	Horse chestnut	*Aesculus hippocastanum*	3	Fair	Trunk damage	ROW	City
T442	Horse chestnut	*Aesculus hippocastanum*	3	Fair	Trunk decay	ROW	City
T444	Catalpa	*Catalpa speciosa*	6	Fair	Growing out of wall	ROW	City
T445	Chinese elm	*Ulmus parvifolia*	5	Fair/Good	Suckering	ROW	City
T446	Chinese elm	*Ulmus parvifolia*	5	Fair	Growing out of wall, dead wood	ROW	City
T447	Tree of heaven	*Ailanthus altissima*	2	Fair	Growing out of wall, dead wood		City
T448	Horse chestnut	*Aesculus hippocastanum*	3	Fair/Poor	Trunk decay		City
T449	Tree of heaven	*Ailanthus altissima*	1	Fair	Growing out of wall		City
T450	White mulberry	*Morus alba*	2	Fair	Growing out of wall		City
T451	Tree of heaven	*Ailanthus altissima*	2	Fair	Growing out of wall		City
T452	Tree of heaven	*Ailanthus altissima*	2	Fair	Growing out of wall		City
T453	Horse chestnut	*Aesculus hippocastanum*	3	Fair	Trunk decay & damage, broken branches		City
T454	Horse chestnut	*Aesculus hippocastanum*	3	Fair	Trunk decay		City
T455	Tree of heaven	*Ailanthus altissima*	4	Fair	Growing out of wall		City

Red Line Tree Inventory
Segment 3

Number	Common Name	Scientific Name	DBH	Condition	Comment	Impact	Location
T456	Tree of heaven	*Ailanthus altissima*	3	Fair	Growing out of wall		City
T457	Horse chestnut	*Aesculus hippocastanum*	4	Fair	Trunk decay		City
T458	Horse chestnut	*Aesculus hippocastanum*	3	Fair	Broken branches, trunk decay		City
T459	Horse chestnut	*Aesculus hippocastanum*	5	Fair	Broken branches, trunk decay		City
T460	Chinese elm	*Ulmus parvifolia*	5	Fair	Multi-stem, growing out of wall		City
T461	White mulberry	*Morus alba*	2	Fair	Multi-stem, growing out of wall		City
T462	White mulberry	*Morus alba*	4	Fair	Multi-stem, growing out of wall & fence		City
T463	Chinese elm	*Ulmus parvifolia*	3	Fair	Multi-stem, growing out of wall		City
T464	Norway maple	*Acer platanoides*	12	Poor	Trunk decay, dead crown		City
T465	Littleleaf linden	*Tilia cordata*	5	Good			City
T466	Horse chestnut	*Aesculus hippocastanum*	7	Fair/Good	Trunk irregularity	ROW	City
T467	Redbud	*Cercis canadensis*	5	Fair/Good	Trunk damage		City
T468	Mulberry	*Morus sp.*	2	Poor	Growing out of wall & fence		City
T469	Eastern white pine	*Pinus strobus*	16	Good/Fair	Dead branches		City
T470	Crabapple	*Malus sp.*	5	Good		Private	City
T471	Crabapple	*Malus sp.*	6	Fair	Included bark, severe lean, pruning stubs	Private	City
T472	Crabapple	*Malus sp.*	5	Good		Private	City
T473	Crabapple	*Malus sp.*	5	Good		Private	City
T474	Crabapple	*Malus sp.*	5	Good		Private	City
T475	Green ash	*Fraxinus pennsylvanica*	8	Fair	4x, heavy vines, dead wood		City
T476	Tree of heaven	*Ailanthus altissima*	10	Fair	3x, heavy vines, dead wood		City
T477	Hawthorn	*Crataegus sp.*	5	Good		Private	City
T478	Hawthorn	*Crataegus sp.*	5	Good		Private	City
T479	Hawthorn	*Crataegus sp.*	5	Good		Private	City
T480	Hawthorn	*Crataegus sp.*	5	Good		Private	City
T481	Hawthorn	*Crataegus sp.*	5	Good		Private	City
T482	Hawthorn	*Crataegus sp.*	5	Good		Private	City
T483	Hawthorn	*Crataegus sp.*	5	Good		Private	City
T484	Hawthorn	*Crataegus sp.*	5	Good		Private	City
T485	Hawthorn	*Crataegus sp.*	5	Good		Private	City

Red Line Tree Inventory
Segment 3

Number	Common Name	Scientific Name	DBH	Condition	Comment	Impact	Location
T486	Hawthorn	*Crataegus sp.*	5	Good		Private	City
T487	Hawthorn	*Crataegus sp.*	5	Good		Private	City
T488	Hawthorn	*Crataegus sp.*	5	Good		Private	City
T489	Hawthorn	*Crataegus sp.*	5	Good		Private	City
T490	Hawthorn	*Crataegus sp.*	5	Good		Private	City
T491	Hawthorn	*Crataegus sp.*	5	Good		Private	City
T492	Hawthorn	*Crataegus sp.*	5	Good		Private	City
T493	Hawthorn	*Crataegus sp.*	5	Good		Private	City
T494	Hawthorn	*Crataegus sp.*	5	Good		Private	City
T495	Hawthorn	*Crataegus sp.*	5	Good		Private	City
T496	Hawthorn	*Crataegus sp.*	5	Good		Private	City
T497	Hawthorn	*Crataegus sp.*	5	Good		Private	City
T498	Hawthorn	*Crataegus sp.*	5	Good		Private	City
T499	Hawthorn	*Crataegus sp.*	5	Good		Private	City
T500	Hawthorn	*Crataegus sp.*	5	Good		Private	City
T501	Hawthorn	*Crataegus sp.*	5	Good		Private	City
T502	Hawthorn	*Crataegus sp.*	5	Good		Private	City
T503	Hawthorn	*Crataegus sp.*	5	Good		Private	City
T504	Hawthorn	*Crataegus sp.*	5	Good		Private	City
T505	Hawthorn	*Crataegus sp.*	5	Good		Private	City
T506	Hawthorn	*Crataegus sp.*	5	Good		Private	City
T507	Hawthorn	*Crataegus sp.*	5	Good		Private	City
T508	Hawthorn	*Crataegus sp.*	5	Good		Private	City
T509	Hawthorn	*Crataegus sp.*	5	Good		Private	City
T510	Hawthorn	*Crataegus sp.*	5	Fair	Dead wood, included bark	Private	City
T511	Flowering cherry	*Prunus sp.*	14	Fair	Girdling root, suckers		City
T512	Flowering cherry	*Prunus sp.*	14	Poor	Mainstem decay, girdling root		City
T513	Silver maple	*Acer saccharinum*	16	Poor	Stem defects, included bark	ROW	City
T514	Tree of heaven	*Ailanthus altissima*	12	Poor	Vines, utility trimmed		City
T515	Zelkova	*Zelkova serrata*	10	Good			City

Red Line Tree Inventory
Segment 3

Number	Common Name	Scientific Name	DBH	Condition	Comment	Impact	Location
T516	American sycamore	*Platanus occidentalis*	6	Good			City
T517	Zelkova	*Zelkova serrata*	6	Good			City
T518	American sycamore	*Platanus occidentalis*	5	Good			City
T519	Zelkova	*Zelkova serrata*	8	Good			City
T520	Honey locust	*Gleditsia triacanthos*	9	Fair	Confined root area	ROW	City
T521	Honey locust	*Gleditsia triacanthos*	8	Good		ROW	City
T522	Zelkova	*Zelkova serrata*	3	Fair	Stem defect		City
T523	Flowering cherry	*Prunus sp.*	2	Poor	Crown dieback, included bark	ROW	City
T524	Flowering cherry	*Prunus sp.*	3	Poor	Mainstem decay, crown dieback	ROW	City
T525	Flowering cherry	*Prunus sp.*	4	Fair	2x, included bark, dead wood	ROW	City
T526	Flowering cherry	*Prunus sp.*	3	Fair	Crown dieback	ROW	City
T527	Flowering cherry	*Prunus sp.*	4	Good	Included bark, multi-stem	ROW	City
T528	Flowering cherry	*Prunus sp.*	4	Good/Fair	Included bark, multi-stem	ROW	City
T529	Flowering cherry	*Prunus sp.*	4	Fair	Included bark, multi-stem	ROW	City
T530	Flowering cherry	*Prunus sp.*	4	Good/Fair	Included bark, multi-stem	ROW	City
T531	Honey locust	*Gleditsia triacanthos*	8	Good		ROW	City
T532	Honey locust	*Gleditsia triacanthos*	8	Good		ROW	City
T533	Honey locust	*Gleditsia triacanthos*	8	Good		ROW	City
T534	Honey locust	*Gleditsia triacanthos*	8	Good		ROW	City
T535	Honey locust	*Gleditsia triacanthos*	8	Good		ROW	City
T536	Honey locust	*Gleditsia triacanthos*	8	Good		ROW	City
T537	Honey locust	*Gleditsia triacanthos*	8	Good		ROW	City

Red Line Tree Inventory
Segment 4

Number	Common Name	Scientific Name	DBH	Condition	Comment	Impact	Location
T1	Zelkova	*Zelkova serrata*	6	Good			City
T2	Honey locust	*Gleditsia triacanthos*	8	Fair	Topped, lean, cankers	ROW	City
T3	Honey locust	*Gleditsia triacanthos*	9	Fair		ROW	City
T4	Honey locust	*Gleditsia triacanthos*	8	Good		ROW	City
T5	Honey locust	*Gleditsia triacanthos*	11	Fair	Damage on trunk, included bark	ROW	City
T6	Honey locust	*Gleditsia triacanthos*	9	Good		ROW	City
T7	American linden	*Tilia americana*	10	Good			City
T8	American linden	*Tilia americana*	9	Fair	Improper pruning, interfering branches, decay		City
T9	Cherry	*Prunus sp.*	4	Fair	Sprout at base		City
T10	Chinese elm	*Ulmus parvifolia*	8	Good			City
T11	Chinese elm	*Ulmus parvifolia*	9	Good			City
T12	Redbud	*Cercis canadensis*	10	Fair	Broken limbs, suspect base		City
T13	Mulberry	*Morus sp.*	6	Good	Multi-stem		City
T14	Redbud	*Cercis canadensis*	6	Fair	Broken limbs, suspect base		City
T15	Mulberry	*Morus sp.*	7	Poor	Interfering branches, lean, suspect base		City
T16	Mulberry	*Morus sp.*	13	Fair			City
T17	Mulberry	*Morus sp.*	8	Fair	Root compaction at wall		City
T18	Austrian pine	*Pinus nigra*	7	Poor	Severe lean		City
T19	Austrian pine	*Pinus nigra*	10	Fair	Lean, broken limbs		City
T20	American elm	*Ulmus americana*	14	Fair	Lean, dead wood		City
T21	American elm	*Ulmus americana*	19	Fair/Poor	Decay, dead wood		City
T22	Austrian Pine	*Pinus nigra*	10	Fair	Broken limbs, suspect union		City
T23	Austrian Pine	*Pinus nigra*	12	Good			City
T24	Austrian Pine	*Pinus nigra*	11	Good			City
T25	Honey locust	*Gleditsia triacanthos*	9	Good			City
T26	Honey locust	*Gleditsia triacanthos*	8	Good			City
T27	Honey locust	*Gleditsia triacanthos*	8	Good			City
T28	Honey locust	*Gleditsia triacanthos*	8	Good	Some broken limbs		City
T29	Honey locust	*Gleditsia triacanthos*	8	Good			City
T30	Honey locust	*Gleditsia triacanthos*	6	Fair	Base damage, trunk damage		City
T31	Honey locust	*Gleditsia triacanthos*	9	Fair	Included bark		City

Red Line Tree Inventory
Segment 4

Number	Common Name	Scientific Name	DBH	Condition	Comment	Impact	Location
T32	Siberian elm	*Ulmus pumila*	19	Poor	Dead wood, impacts to root zone	ROW	City
T33	Sawtooth oak	*Quercus acutissima*	5	Good		ROW	City
T34	Sawtooth oak	*Quercus acutissima*	6	Good		ROW	City
T35	Sawtooth oak	*Quercus acutissima*	5	Good		ROW	City
T36	Sawtooth oak	*Quercus acutissima*	5	Good		ROW	City
T37	Sawtooth oak	*Quercus acutissima*	5	Good		ROW	City
T38	Tree of heaven	*Ailanthus altissima*	15	Poor	Vines, roots growing under building		City
T39	Tree of heaven	*Ailanthus altissima*	16	Poor	Vines, roots growing under building		City
T40	Tree of heaven	*Ailanthus altissima*	16	Poor	Vines, roots growing under building		City
T41	Tree of heaven	*Ailanthus altissima*	16	Poor	Vines, roots growing under building		City
T42	Mulberry	*Morus sp.*	11	Poor	Trunk damage, lean, utility pruning		City
T43	Crape myrtle	*Lagerstroemia indica*	4	Good	Multi-stem		City
T44	Zelkova	*Zelkova serrata*	5	Good			City
T45	Zelkova	*Zelkova serrata*	3	Fair	Broken limb		City
T46	Japanese sophora	*Sophora japonica*	12	Good			City
T47	Japanese sophora	*Sophora japonica*	7	Fair	Included bark, dead wood		City
T48	Japanese sophora	*Sophora japonica*	9	Poor	Split trunk base, main lead broken		City
T49	American linden	*Tilia americana*	8	Fair	Included bark, broken limbs		City
T50	American linden	*Tilia americana*	7	Good			City
T51	American linden	*Tilia americana*	7	Fair	Broken limbs		City
T52	American linden	*Tilia americana*	7	Fair/Poor	Trunk base damage, broken limb, dead wood		City
T53	American linden	*Tilia americana*	7	Fair/Poor	Cankers, broken lead, dead wood		City
T54	American linden	*Tilia americana*	6	Fair	Cankers, dead wood		City
T55	American linden	*Tilia americana*	7	Fair	Cankers, dead wood		City
T56	American linden	*Tilia americana*	6	Fair	Cankers		City
T57	American linden	*Tilia americana*	7	Fair	Cankers, dead wood		City
T58	American linden	*Tilia americana*	6	Fair	Broken lead, cankers		City
T59	American linden	*Tilia americana*	6	Poor	Cankers along trunk, fungus		City
T60	American linden	*Tilia americana*	6	Poor	Decay, cracks along trunk	ROW	City
T61	American linden	*Tilia americana*	6	Poor	Swollen base, cracks along trunk, broken lead		City

Red Line Tree Inventory
Segment 4

Number	Common Name	Scientific Name	DBH	Condition	Comment	Impact	Location
T62	American linden	*Tilia americana*	4	Good			City
T63	American linden	*Tilia americana*	4	Good	Broken limb		City
T64	American linden	*Tilia americana*	4	Good	Some broken limbs		City
T65	American linden	*Tilia americana*	6	Poor	Swollen base, cracks along trunk, broken limbs		City
T66	American linden	*Tilia americana*	5	Poor	Swollen base, cracks along trunk, broken limbs		City
T67	Japanese maple	*Acer palmatum*	6	Good		ROW	City
T68	Red maple	*Acer rubrum*	4	Good		ROW	City
T69	Red maple	*Acer rubrum*	4	Good		ROW	City
T70	Japanese maple	*Acer palmatum*	5	Good		ROW	City
T71	Bradford pear	*Pyrus calleryana*	5	Good	Included bark		City
T72	Bradford pear	*Pyrus calleryana*	4	Fair/Poor	Girdling roots, suckering at base		City
T73	Bradford pear	*Pyrus calleryana*	4	Good			City
T74	Bradford pear	*Pyrus calleryana*	3	Fair	Suckers at base		City
T75	Bradford pear	*Pyrus calleryana*	4	Good			City
T76	Bradford pear	*Pyrus calleryana*	2	Poor	Main lead decay, suckers		City
T77	Bradford pear	*Pyrus calleryana*	4	Good			City
T78	Red maple	*Acer rubrum*	3	Good			City
T79	Red maple	*Acer rubrum*	5	Good			City
T80	Red maple	*Acer rubrum*	3	Poor	Base decay		City
T81	Zelkova	*Zelkova serrata*	6	Fair/Poor	Busted lead, dead wood, cankers		City
T82	American linden	*Tilia americana*	12	Fair	Dead wood, vines		City
T83	Tree of heaven	*Ailanthus altissima*	10	Fair/Poor	Compromised root zone		City
T84	Tree of heaven	*Ailanthus altissima*	6	Fair/Poor	Compromised base		City
T85	Honey locust	*Gleditsia triacanthos*	8	Poor	Major trunk damage, decay		City
T86	Honey locust	*Gleditsia triacanthos*	6	Good/Fair	Broken limbs		City
T87	Honey locust	*Gleditsia triacanthos*	6	Good			City
T88	Honey locust	*Gleditsia triacanthos*	9	Fair/Poor	Trunk decay, broken branches		City
T89	Honey locust	*Gleditsia triacanthos*	7	Fair	Broken limbs		City
T90	Honey locust	*Gleditsia triacanthos*	7	Good	Broken branches		City
T91	Honey locust	*Gleditsia triacanthos*	6	Fair	Suckering		City

Red Line Tree Inventory
Segment 4

Number	Common Name	Scientific Name	DBH	Condition	Comment	Impact	Location
T92	Honey locust	*Gleditsia triacanthos*	7	Fair/Poor	Decay, broken limb		City
T93	Honey locust	*Gleditsia triacanthos*	8	Poor	Major lead decay, cankers		City
T94	Honey locust	*Gleditsia triacanthos*	6	Poor	Major trunk decay, limb decay		City
T95	Bradford pear	*Pyrus calleryana*	12	Fair/Poor	Girdling roots, improper pruning, included bark	Private	City
T96	Honey locust	*Gleditsia triacanthos*	9	Fair	Compromised root zone	Private	City
T97	Honey locust	*Gleditsia triacanthos*	6	Fair	Compromised root zone		City
T98	Willow oak	*Quercus phellos*	3	Poor	Cankers, base decay	ROW	City
T99	Willow oak	*Quercus phellos*	6	Poor/dying	Mainstem decay	ROW	City
T100	Willow oak	*Quercus phellos*	11	Fair/Poor	Mainstem decay	ROW	City
T101	Willow oak	*Quercus phellos*	3	Good		ROW	City
T102	Chinese elm	*Ulmus parvifolia*	11	Fair	Girdling roots, improper pruning		City
T103	Chinese elm	*Ulmus parvifolia*	6	Fair	Dead wood, busted limb		City
T104	Chinese elm	*Ulmus parvifolia*	6	Good/Fair	Dead wood		City
T105	Chinese elm	*Ulmus parvifolia*	7	Fair	Improper pruning, dead wood		City
T106	Chinese elm	*Ulmus parvifolia*	6	Good			City
T108	American linden	*Tilia americana*	6	Poor/dying	Mainstem decay	ROW	City
T109	American linden	*Tilia americana*	5	Poor	Sprouting, Mainstem decay		City
T110	American linden	*Tilia americana*	9	Fair/Poor	Damage at base, improper pruning	ROW	City
T111	American linden	*Tilia americana*	10	Poor	Mainstem decay, girdling roots, improper pruning	ROW	City
T112	American linden	*Tilia americana*	9	Fair	Trunk damage		City
T113	American linden	*Tilia americana*	14	Fair	Decay, dead wood		City
T114	American linden	*Tilia americana*	5	Fair/Poor	Trunk damage, decay		City
T115	American linden	*Tilia americana*	4	Poor	Suspect base, mainstem decay		City
T116	American linden	*Tilia americana*	5	Fair	Improper pruning, broken limbs		City
T118	Chinese elm	*Ulmus parvifolia*	4	Fair/Poor	Improper pruning, interfering branches		City
T119	Chinese elm	*Ulmus parvifolia*	7	Good			City
T120	Chinese elm	*Ulmus parvifolia*	6	Good			City
T121	Chinese elm	*Ulmus parvifolia*	7	Good/Fair	Dead wood		City
T122	Chinese elm	*Ulmus parvifolia*	6	Good			City
T123	London plane	*Platanus x acerifolia*	3	Good		ROW	City

Red Line Tree Inventory
Segment 4

Number	Common Name	Scientific Name	DBH	Condition	Comment	Impact	Location
T124	London plane	*Platanus x acerifolia*	3	Good/Fair	Trunk damage	ROW	City
T125	London plane	*Platanus x acerifolia*	3	Fair	Trunk damage	ROW	City
T126	London plane	*Platanus x acerifolia*	3	Fair	Suckering	ROW	City
T127	Crape myrtle	*Lagerstroemia indica*	3	Good	Multi-stem	ROW	City
T128	Crape myrtle	*Lagerstroemia indica*	2	Good	Multi-stem	ROW	City
T130	Crape myrtle	*Lagerstroemia indica*	2	Good/Fair	Dead wood	ROW	City
T131	London plane	*Platanus x acerifolia*	3	Good		ROW	City
T132	Sawtooth oak	*Quercus acutissima*	10	Good	Dead wood	ROW	City
T133	Sawtooth oak	*Quercus acutissima*	9	Good/Fair	Broken top, busted limbs	ROW	City
T134	Sawtooth oak	*Quercus acutissima*	10	Good	Dead wood	ROW	City
T135	Sawtooth oak	*Quercus acutissima*	10	Good	Dead wood	ROW	City
T136	American linden	*Tilia americana*	15	Good/Fair	Included bark, improper pruning	Private	City
T137	American linden	*Tilia americana*	14	Fair/Poor	Trunk decay, improper pruning	Private	City
T138	American linden	*Tilia americana*	15	Fair/Poor	Mainstem decay, cavities	Private	City
T139	American linden	*Tilia americana*	15	Fair	Cavities	Private	City
T140	American linden	*Tilia americana*	15	Fair/Poor	Cavities, decay	Private	City
T141	American linden	*Tilia americana*	15	Fair/Poor	Cavities, dead wood, decay	Private	City
T142	American linden	*Tilia americana*	15	Fair	Cavity	Private	City
T143	American linden	*Tilia americana*	15	Fair/Poor	Cavities, dead wood	Private	City
T144	American linden	*Tilia americana*	14	Fair/Poor	Cavities, included bark	Private	City
T145	Bradford pear	*Pyrus calleryana*	11	Fair	Cavity, included bark	Private	City
T146	American linden	*Tilia americana*	15	Fair/Poor	Cavities, improper pruning, included bark	Private	City
T147	American linden	*Tilia americana*	17	Fair/Poor	Cavities, improper pruning, included bark	Private	City
T148	American linden	*Tilia americana*	16	Fair/Poor	Cavities, included bark	Private	City
T149	American linden	*Tilia americana*	15	Fair	Cavities	Private	City
T150	American linden	*Tilia americana*	15	Fair/Poor	Cavities, included bark	Private	City
T151	American linden	*Tilia americana*	12	Good	Small cavity	Private	City
T152	American linden	*Tilia americana*	15	Fair/Poor	Cavities, girdling	Private	City
T153	American linden	*Tilia americana*	11	Fair	Cavities	Private	City
T154	American linden	*Tilia americana*	11	Fair	Included bark	Private	City

Red Line Tree Inventory
Segment 4

Number	Common Name	Scientific Name	DBH	Condition	Comment	Impact	Location
T155	American linden	*Tilia americana*	12	Fair	Cavities	Private	City
T156	American linden	*Tilia americana*	14	Fair	Included bark	Private	City
T157	American linden	*Tilia americana*	11	Fair	Included bark	Private	City
T158	American linden	*Tilia americana*	16	Fair/Poor	Cavities, Included bark, dead wood	Private	City
T159	American linden	*Tilia americana*	15	Fair/Poor	Cavities, Included bark, decay	Private	City
T160	Sawtooth oak	*Quercus acutissima*	10	Good		ROW	City
T161	Sawtooth oak	*Quercus acutissima*	10	Good		ROW	City
T162	Sawtooth oak	*Quercus acutissima*	7	Good	Dead wood	ROW	City
T163	Sawtooth oak	*Quercus acutissima*	13	Good	Dead wood	ROW	City
T164	Sawtooth oak	*Quercus acutissima*	12	Good/Fair		ROW	City
T165	Sawtooth oak	*Quercus acutissima*	10	Good	Dead wood	ROW	City
T166	Sawtooth oak	*Quercus acutissima*	9	Good	Dead wood	ROW	City
T167	Red maple	*Acer rubrum*	3	Good			City
T168	Sugar maple	*Acer saccharum*	3	Good			City
T169	Norway maple	*Acer platanoides*	13	Good/Fair	Dead wood		City
T170	Sawtooth oak	*Quercus acutissima*	8	Fair	Dead wood, mold	ROW	City
T171	Sawtooth oak	*Quercus acutissima*	13	Good			City
T172	Kwanzan cherry	*Prunus serrulata*	5	Good		ROW	City
T173	Sawtooth oak	*Quercus acutissima*	8	Good		ROW	City
T174	Sawtooth oak	*Quercus acutissima*	7	Good	Dead wood	ROW	City
T175	Sawtooth oak	*Quercus acutissima*	6	Fair/Poor	Dead wood, decay, suckering	ROW	City
T176	Sawtooth oak	*Quercus acutissima*	6	Poor	Base & mainstem decay	ROW	City
T177	Sawtooth oak	*Quercus acutissima*	7	Fair/Poor	Base decay	ROW	City
T178	Sawtooth oak	*Quercus acutissima*	8	Fair	Dead wood	ROW	City
T179	Sawtooth oak	*Quercus acutissima*	10	Good		ROW	City
T180	Sawtooth oak	*Quercus acutissima*	9	Good/Fair	Improper pruning	ROW	City
T181	Sawtooth oak	*Quercus acutissima*	9	Good		ROW	City
T182	Crape myrtle	*Lagerstroemia indica*	2	Good	Multi-stem	Private	City
T183	Crape myrtle	*Lagerstroemia indica*	2	Good	Multi-stem		City
T184	Green ash	*Fraxinus pennsylvanica*	7	Fair	Suspect base, dead wood		City

Red Line Tree Inventory
Segment 4

Number	Common Name	Scientific Name	DBH	Condition	Comment	Impact	Location
T185	Green ash	*Fraxinus pennsylvanica*	6	Fair	Suspect base		City
T186	Crape myrtle	*Lagerstroemia indica*	3	Good	Multi-stem		City
T187	Sawtooth oak	*Quercus acutissima*	12	Good		ROW	City
T188	Sawtooth oak	*Quercus acutissima*	11	Good		ROW	City
T189	Sawtooth oak	*Quercus acutissima*	10	Good		ROW	City
T190	Sawtooth oak	*Quercus acutissima*	10	Good/Fair	Branch decay	ROW	City
T191	Crape myrtle	*Lagerstroemia indica*	3	Good	Multi-stem	Private	City
T192	Sawtooth oak	*Quercus acutissima*	8	Good			City
T193	Green ash	*Fraxinus pennsylvanica*	5	Fair/Poor	Suspect base, dead wood		City
T194	Green ash	*Fraxinus pennsylvanica*	6	Fair/Poor	Dead wood, suspect base, included bark		City
T195	Green ash	*Fraxinus pennsylvanica*	7	Fair/Poor	Suspect base, included bark		City
T196	Crape myrtle	*Lagerstroemia indica*	3	Good	Multi-stem	Private	City
T197	Sawtooth oak	*Quercus acutissima*	10	Good			City
T198	Flowering dogwood	*Cornus florida*	3	Good		Private	City
T199	Crape myrtle	*Lagerstroemia indica*	3	Good	Multi-stem	Private	City
T200	Bradford pear	*Pyrus calleryana*	9	Good			City
T201	Bradford pear	*Pyrus calleryana*	8	Fair	Dead wood, included bark		City
T202	Leyland cypress	*xCupressocyparis leylandii*	12	Fair	Dead wood, growing through wire	Private	City
T203	Sawtooth oak	*Quercus acutissima*	9	Good	Dead wood	ROW	City
T204	Leyland cypress	*xCupressocyparis leylandii*	10	Good		Private	City
T205	Leyland cypress	*xCupressocyparis leylandii*	13	Good/Fair	Included bark, dead wood	Private	City
T206	Leyland cypress	*xCupressocyparis leylandii*	5	Good		Private	City
T207	Leyland cypress	*xCupressocyparis leylandii*	5	Good		Private	City
T208	Leyland cypress	*xCupressocyparis leylandii*	5	Good		Private	City
T209	Eastern white pine	*Pinus strobus*	5	Good		Private	City
T210	Eastern white pine	*Pinus strobus*	5	Good		Private	City
T211	Eastern white pine	*Pinus strobus*	5	Good		Private	City
T212	Eastern white pine	*Pinus strobus*	5	Good		Private	City
T213	Eastern white pine	*Pinus strobus*	5	Good		Private	City
T214	Eastern white pine	*Pinus strobus*	5	Good		Private	City

Red Line Tree Inventory
Segment 4

Number	Common Name	Scientific Name	DBH	Condition	Comment	Impact	Location
T215	Eastern white pine	*Pinus strobus*	5	Good		Private	City
T216	Eastern white pine	*Pinus strobus*	5	Good		Private	City
T217	Eastern white pine	*Pinus strobus*	5	Good		Private	City
T218	Eastern white pine	*Pinus strobus*	5	Good		Private	City
T219	Eastern white pine	*Pinus strobus*	5	Good		Private	City
T220	Eastern white pine	*Pinus strobus*	5	Good		Private	City
T221	Eastern white pine	*Pinus strobus*	5	Good		Private	City
T222	Eastern white pine	*Pinus strobus*	5	Good		Private	City
T223	Eastern white pine	*Pinus strobus*	5	Good		Private	City
T224	Eastern white pine	*Pinus strobus*	5	Good		Private	City
T225	Eastern white pine	*Pinus strobus*	5	Good		Private	City
T226	Eastern white pine	*Pinus strobus*	5	Good		Private	City
T227	Eastern white pine	*Pinus strobus*	5	Good		Private	City
T228	Eastern white pine	*Pinus strobus*	5	Good		Private	City
T229	Eastern white pine	*Pinus strobus*	5	Good		Private	City
T230	Eastern white pine	*Pinus strobus*	5	Good		Private	City
T231	Eastern white pine	*Pinus strobus*	5	Good		Private	City
T232	Eastern white pine	*Pinus strobus*	5	Good		Private	City
T233	Leyland cypress	*xCupressocyparis leylandii*	4	Good		Private	City
T234	Leyland cypress	*xCupressocyparis leylandii*	4	Good		Private	City
T235	Eastern white pine	*Pinus strobus*	6	Good		Private	City
T236	Eastern white pine	*Pinus strobus*	6	Good		Private	City
T237	Eastern white pine	*Pinus strobus*	6	Good		Private	City
T238	Eastern white pine	*Pinus strobus*	6	Good		Private	City
T239	Eastern white pine	*Pinus strobus*	6	Good		Private	City
T240	Eastern white pine	*Pinus strobus*	6	Good		Private	City
T241	Eastern white pine	*Pinus strobus*	6	Good		Private	City
T242	Eastern white pine	*Pinus strobus*	6	Good		Private	City
T243	Eastern white pine	*Pinus strobus*	6	Good		Private	City
T244	Eastern white pine	*Pinus strobus*	6	Good		Private	City

Red Line Tree Inventory
Segment 4

Number	Common Name	Scientific Name	DBH	Condition	Comment	Impact	Location
T245	Eastern white pine	*Pinus strobus*	6	Good		Private	City
T246	Eastern white pine	*Pinus strobus*	6	Good		Private	City
T247	Eastern white pine	*Pinus strobus*	6	Good		Private	City
T248	Eastern white pine	*Pinus strobus*	6	Good		Private	City
T249	Eastern white pine	*Pinus strobus*	6	Good		Private	City
T250	Eastern white pine	*Pinus strobus*	6	Good		Private	City
T251	Eastern white pine	*Pinus strobus*	6	Good		Private	City
T252	Eastern white pine	*Pinus strobus*	6	Good		Private	City
T253	Eastern white pine	*Pinus strobus*	6	Good		Private	City
T254	Eastern white pine	*Pinus strobus*	6	Good		Private	City
T255	Leyland cypress	*xCupressocyparis leylandii*	4	Good		Private	City
T256	Eastern white pine	*Pinus strobus*	6	Good		Private	City
T257	Eastern white pine	*Pinus strobus*	5	Good		Private	City
T258	Eastern white pine	*Pinus strobus*	5	Good		Private	City
T259	Eastern white pine	*Pinus strobus*	5	Good		Private	City
T260	Eastern white pine	*Pinus strobus*	5	Good		Private	City
T261	Eastern white pine	*Pinus strobus*	5	Good		Private	City
T262	Eastern white pine	*Pinus strobus*	5	Good		Private	City
T263	Eastern white pine	*Pinus strobus*	5	Good		Private	City
T264	Eastern white pine	*Pinus strobus*	5	Good		Private	City
T265	Eastern white pine	*Pinus strobus*	5	Good		Private	City
T266	Eastern white pine	*Pinus strobus*	5	Good		Private	City
T267	Eastern white pine	*Pinus strobus*	5	Good		Private	City
T268	Eastern white pine	*Pinus strobus*	5	Good		Private	City
T269	Eastern white pine	*Pinus strobus*	5	Good		Private	City
T270	Eastern white pine	*Pinus strobus*	5	Good		Private	City
T271	Eastern white pine	*Pinus strobus*	5	Good		Private	City
T272	Eastern white pine	*Pinus strobus*	5	Good		Private	City
T273	Eastern white pine	*Pinus strobus*	5	Good		Private	City
T274	Eastern white pine	*Pinus strobus*	5	Good		Private	City

Red Line Tree Inventory
Segment 4

Number	Common Name	Scientific Name	DBH	Condition	Comment	Impact	Location
T275	Leyland cypress	*xCupressocyparis leylandii*	2	Good		Private	City
T276	Leyland cypress	*xCupressocyparis leylandii*	2	Good		Private	City
T277	Leyland cypress	*xCupressocyparis leylandii*	2	Good		Private	City
T278	Leyland cypress	*xCupressocyparis leylandii*	2	Good		Private	City
T279	Leyland cypress	*xCupressocyparis leylandii*	2	Good		Private	City
T280	Leyland cypress	*xCupressocyparis leylandii*	2	Good		Private	City
T281	Leyland cypress	*xCupressocyparis leylandii*	2	Good		Private	City
T282	Leyland cypress	*xCupressocyparis leylandii*	2	Good		Private	City
T283	Leyland cypress	*xCupressocyparis leylandii*	2	Good		Private	City
T284	Leyland cypress	*xCupressocyparis leylandii*	2	Good		Private	City
T285	Leyland cypress	*xCupressocyparis leylandii*	5	Good		Private	City
T286	Leyland cypress	*xCupressocyparis leylandii*	5	Good		Private	City
T287	Leyland cypress	*xCupressocyparis leylandii*	5	Good		Private	City
T288	Eastern white pine	*Pinus strobus*	5	Good		Private	City
T289	Eastern white pine	*Pinus strobus*	5	Good		Private	City
T290	Eastern white pine	*Pinus strobus*	5	Good		Private	City
T291	Eastern white pine	*Pinus strobus*	5	Good			City
T292	Eastern white pine	*Pinus strobus*	5	Good			City
T293	Eastern white pine	*Pinus strobus*	5	Good			City
T294	Eastern white pine	*Pinus strobus*	5	Good			City
T295	Leyland cypress	*xCupressocyparis leylandii*	4	Good			City
T296	Eastern white pine	*Pinus strobus*	4	Good			City
T297	Eastern white pine	*Pinus strobus*	4	Good			City
T298	Zelkova	*Zelkova serrata*	3	Fair	Suckers, thinning crown		City
T299	Zelkova	*Zelkova serrata*	4	Fair	Stem defect, dead wood		City
T300	Zelkova	*Zelkova serrata*	3	Fair	Tip dieback		City
T301	Zelkova	*Zelkova serrata*	3	Fair	Stem defect, tip dieback		City
T302	Zelkova	*Zelkova serrata*	4	Fair	Included bark, dead wood, thin crown		City
T303	Zelkova	*Zelkova serrata*	6	Good/Fair	Suckers		City
T304	Zelkova	*Zelkova serrata*	7	Fair	Dead wood, thin crown		City

Red Line Tree Inventory
Segment 4

Number	Common Name	Scientific Name	DBH	Condition	Comment	Impact	Location
T305	Zelkova	*Zelkova serrata*	7	Good/Fair	Dead wood		City
T306	Bradford pear	*Pyrus calleryana*	18	Fair	Included bark, improper pruning	ROW	City
T307	Bradford pear	*Pyrus calleryana*	11	Fair/Poor	Improper pruning, thin crown, included bark	ROW	City
T308	Bradford pear	*Pyrus calleryana*	13	Fair/Poor	Included bark, thin crown, dead wood	ROW	City
T309	Bradford pear	*Pyrus calleryana*	13	Fair/Poor	Base damage and decay, dead wood, included bark	ROW	City
T310	Siberian elm	*Ulmus pumila*	5	Poor	Dying	ROW	City
T311	Siberian elm	*Ulmus pumila*	10	Poor	3x, crown decline, dead wood	ROW	City
T312	Austrian pine	*Pinus nigra*	6	Fair	2x, overtopped	ROW	City
T313	Siberian elm	*Ulmus pumila*	8	Poor	2x, dead wood	ROW	City
T314	American Linden	*Tilia americana*	12	Good	Included bark		City
T315	Chinese elm	*Ulmus parvifolia*	5	Good			City
T316	Crape myrtle	*Lagerstroemia indica*	2	Good	Multi-stem	ROW	City
T317	Crape myrtle	*Lagerstroemia indica*	2	Good	Multi-stem	ROW	City
T318	Crape myrtle	*Lagerstroemia indica*	2	Good	Multi-stem	ROW	City
T319	Crape myrtle	*Lagerstroemia indica*	2	Good	Multi-stem	ROW	City
T320	London plane	*Platanus x acerifolia*	3	Good		ROW	City
T321	London plane	*Platanus x acerifolia*	3	Good		ROW	City
T322	Chinese elm	*Ulmus parvifolia*	8	Good			City
T323	Chinese elm	*Ulmus parvifolia*	5	Good			City
T324	London plane	*Platanus x acerifolia*	2	Poor	Crown dieback	ROW	City
T325	Sawtooth Oak	*Quercus acutissima*	7	Good		ROW	City
T326	Sawtooth Oak	*Quercus acutissima*	5	Good			City
T327	Sawtooth Oak	*Quercus acutissima*	6	Good		ROW	City
T328	Sawtooth Oak	*Quercus acutissima*	6	Good			City

Red Line Tree Inventory
Segment 5

Number	Common Name	Scientific Name	DBH	Condition	Comment	Impact	Location
T2	Sawtooth oak	*Quercus acutissima*	13	Good		ROW	City
T3	Kwanzan cherry	*Prunus serrulata*	8	Fair	Girdling roots		City
T4	Kwanzan cherry	*Prunus serrulata*	7	Fair	Girdling		City
T5	Kwanzan cherry	*Prunus serrulata*	7	Fair	Girdling		City
T6	Kwanzan cherry	*Prunus serrulata*	7	Fair	Girdling		City
T7	Sawtooth oak	*Quercus acutissima*	8	Good		ROW	City
T8	Sawtooth oak	*Quercus acutissima*	9	Good/Fair	dead wood, poor pruning	ROW	City
T9	Crape myrtle	*Lagerstroemia indica*	2	Good	Multi-stem	Private	City
T10	Crape myrtle	*Lagerstroemia indica*	2	Good	Multi-stem	Private	City
T11	Crape myrtle	*Lagerstroemia indica*	2	Good	Multi-stem	Private	City
T12	Crape myrtle	*Lagerstroemia indica*	2	Good	Multi-stem	Private	City
T13	Crape myrtle	*Lagerstroemia indica*	2	Good	Multi-stem	Private	City
T14	Kwanzan cherry	*Prunus serrulata*	5	Good		ROW	City
T15	Buckeye	*Aesculus sp.*	3	Fair	Suspect base	ROW	City
T16	Kwanzan cherry	*Prunus serrulata*	7	Fair	Cavity at base	ROW	City
T17	Kwanzan cherry	*Prunus serrulata*	8	Good		Private	City
T18	Tree of heaven	*Ailanthus altissima*	3	Good		ROW	City
T19	Sawtooth oak	*Quercus acutissima*	10	Good			City
T20	Sawtooth oak	*Quercus acutissima*	9	Good/Fair	Improper pruning, dead wood		City
T21	Bradford pear	*Pyrus calleryana*	4	Fair	Multi-stem, interfering branches, included bark		City
T22	Crape myrtle	*Lagerstroemia indica*	4	Good	Multi-stem		City
T23	American elm	*Ulmus americana*	2	Fair/Poor	Mainstem dieback	Park	City
T24	American elm	*Ulmus americana*	2	Fair	Some dieback	Park	City
T25	American elm	*Ulmus americana*	2	Fair/Poor	Mainstem dieback	Park	City
T26	American elm	*Ulmus americana*	2	Fair	Some dieback	Park	City
T27	American elm	*Ulmus americana*	2	Fair/Poor	Mainstem dieback, lean	Park	City
T28	Red maple	*Acer rubrum*	8	Good			City
T29	Bradford pear	*Pyrus calleryana*	5	Good			City
T30	Elm	*Ulmus sp.*	2	Fair	Multi-stem, suspect base, canker		City
T31	Black cherry	*Prunus serotina*	26	Poor	Base decay & cavity, dead wood		City
T32	American elm	*Ulmus americana*	2	Good		Park	City

Red Line Tree Inventory
Segment 5

Number	Common Name	Scientific Name	DBH	Condition	Comment	Impact	Location
T33	Red maple	*Acer rubrum*	10	Good/Fair	Improper pruning, dead wood		City
T34	Crabapple	*Malus sp.*	5	Fair/Poor	Decay, dead wood		City
T35	Bradford pear	*Pyrus calleryana*	5	Poor	Multi-stem, fungus, decay		City
T36	Crabapple	*Malus sp.*	5	Fair	Suckering		City
T37	Red maple	*Acer rubrum*	10	Good			City
T38	Black locust	*Robinia pseudoacacia*	13	Good/Fair	Roots exposed	Park	City
T39	Crabapple	*Malus sp.*	4	Fair/Poor	Multi-stem, suspect base	Park	City
T40	Crabapple	*Malus sp.*	7	Good/Fair	Improper pruning	Park	City
T41	Black locust	*Robinia pseudoacacia*	2	Fair	Multi-stem, growing next to building	Park	City
T42	Eastern white pine	*Pinus strobus*	9	Good			City
T44	American linden	*Tilia americana*	2	Fair	Suspect base		City
T45	Crabapple	*Malus sp.*	8	Fair	Branch cankers		City
T46	American linden	*Tilia americana*	2	Fair	Suspect base		City
T47	Crabapple	*Malus sp.*	7	Fair	Improper pruning, suspect base	Park	City
T48	Crabapple	*Malus sp.*	7	Fair	Improper pruning, suspect base	Park	City
T49	Crabapple	*Malus sp.*	9	Fair	Suspect base	Park	City
T50	Crabapple	*Malus sp.*	5	Fair/Poor	Suckering, suspect base, dead wood	Park	City
T51	Crabapple	*Malus sp.*	5	Fair/Poor	Suckering, dead wood, suspect base	Park	City
T52	Shingle oak	*Quercus imbricaria*	11	Good		Park	City
T53	Sweetgum	*Liquidambar styraciflua*	5	Fair	Base damage, suckering	Park	City
T54	Flowering cherry	*Prunus sp.*	10	Fair/Poor	Dead wood, trunk & branch decay		City
T55	Flowering cherry	*Prunus sp.*	10	Good/Fair	Dead wood		City
T56	Sweetgum	*Liquidambar styraciflua*	6	Good		Park	City
T57	Crabapple	*Malus sp.*	5	Good/Fair	Suspect base	Park	City
T58	Crabapple	*Malus sp.*	5	Good/Fair	Dead wood, base damage	Park	City
T59	Crabapple	*Malus sp.*	10	Good/Fair	Base damage	Park	City
T60	Crabapple	*Malus sp.*	7	Poor	Multi-stem, decay		City
T61	Crabapple	*Malus sp.*	7	Poor	Cavity, hollow, base decay		City
T62	Crabapple	*Malus sp.*	10	Good		Park	City
T63	American linden	*Tilia americana*	5	Fair	Base damage	Park	City

Red Line Tree Inventory
Segment 5

Number	Common Name	Scientific Name	DBH	Condition	Comment	Impact	Location
T64	Red maple	*Acer rubrum*	6	Fair	Base damage	Park	City
T65	Red maple	*Acer rubrum*	9	Good			City
T66	Sawtooth oak	*Quercus acutissima*	8	Good		ROW	City
T67	Sawtooth oak	*Quercus acutissima*	7	Poor	Decay, dead wood	ROW	City
T68	Sawtooth oak	*Quercus acutissima*	7	Good		ROW	City
T69	Atlas cedar	*Cedrus atlantica*	6	Poor	Multi-stem, fungus, decay		City
T70	Arborvitae	*Thuja occidentalis*	6	Good/Fair	Topped, lean		City
T71	Arborvitae	*Thuja occidentalis*	6	Good/Fair	Topped		City
T72	Sugar maple	*Acer saccharum*	8	Good			City
T73	Norway maple	*Acer platanoides*	10	Good		Private	City
T74	Norway maple	*Acer platanoides*	7	Good		Private	City
T75	Sawtooth oak	*Quercus acutissima*	7	Good		ROW	City
T76	Sawtooth oak	*Quercus acutissima*	7	Good		ROW	City
T77	Green ash	*Fraxinus pennsylvanica*	7	Fair	Topped, interfering branches	Private	City
T78	Flowering cherry	*Prunus sp.*	4	Fair/Poor	Suckering, stressed	ROW	City
T79	Shingle oak	*Quercus imbricaria*	2	Fair/Poor	Multi-stem, stressed	ROW	City
T80	Sawtooth oak	*Quercus acutissima*	9	Good		ROW	City
T81	Sawtooth oak	*Quercus acutissima*	11	Good		ROW	City
T82	Sawtooth oak	*Quercus acutissima*	10	Good/Fair	Branch decay	ROW	City
T83	Bradford pear	*Pyrus calleryana*	4	Fair	Suspect union	Private	City
T84	Flowering cherry	*Prunus sp.*	8	Good		Private	City
T85	Flowering cherry	*Prunus sp.*	8	Good		Private	City
T86	Flowering cherry	*Prunus sp.*	8	Good		Private	City
T87	Willow oak	*Quercus phellos*	15	Good		Private	City
T88	Flowering cherry	*Prunus sp.*	7	Good		Private	City
T89	Flowering cherry	*Prunus sp.*	6	Good		Private	City
T90	Flowering cherry	*Prunus sp.*	8	Good		Private	City
T91	Willow oak	*Quercus phellos*	7	Good			City
T92	Willow oak	*Quercus phellos*	9	Good			City
T93	Willow oak	*Quercus phellos*	14	Good			City

Red Line Tree Inventory
Segment 5

Number	Common Name	Scientific Name	DBH	Condition	Comment	Impact	Location
T94	Sawtooth oak	*Quercus acutissima*	11	Good/Fair	Branch decay	ROW	City
T95	Sawtooth oak	*Quercus acutissima*	9	Good		ROW	City
T96	Sawtooth oak	*Quercus acutissima*	9	Good		ROW	City
T97	Sawtooth oak	*Quercus acutissima*	9	Good		ROW	City
T98	Green ash	*Fraxinus pennsylvanica*	6	Fair/Poor	Topped, lean, suspect base	ROW	City
T99	Green ash	*Fraxinus pennsylvanica*	8	Fair	Topped		City
T100	Norway spruce	*Picea abies*	8	Good			City
T101	Red maple	*Acer rubrum*	4	Fair/Poor	Topped, decay		City
T102	Green ash	*Fraxinus pennsylvanica*	5	Fair/Poor	Topped, dead wood		City
T103	Zelkova	*Zelkova serrata*	13	Fair/Poor	Sapsucker holes, stressed		City
T104	Zelkova	*Zelkova serrata*	11	Fair	Interfering branches		City
T105	Zelkova	*Zelkova serrata*	15	Fair	Interfering branches	ROW	City
T106	Zelkova	*Zelkova serrata*	11	Fair	Dead wood, dieback	ROW	City
T107	Zelkova	*Zelkova serrata*	11	Fair/Poor	Dieback, stressed	ROW	City
T108	Kwanzan cherry	*Prunus serrulata*	4	Good		ROW	City
T109	Sawtooth oak	*Quercus acutissima*	8	Good		ROW	City
T110	Sawtooth oak	*Quercus acutissima*	6	Fair	Broken branches	ROW	City
T111	Sawtooth oak	*Quercus acutissima*	7	Fair	Main stem, dieback, dead wood	ROW	City
T112	Kwanzan cherry	*Prunus serrulata*	9	Good		ROW	City
T113	Sugar maple	*Acer saccharum*	6	Good		ROW	City
T114	Sawtooth oak	*Quercus acutissima*	7	Fair	Root impacts, suspect base	ROW	City
T115	Sawtooth oak	*Quercus acutissima*	9	Good/Fair	Dead wood	ROW	City
T116	Sawtooth oak	*Quercus acutissima*	12	Good		ROW	City
T117	Paperbark maple	*Acer griseum*	3	Good		ROW	City
T118	American linden	*Tilia americana*	12	Fair	Girdling roots, lean		City
T119	American linden	*Tilia americana*	10	Fair/Poor	Broken limbs, decay		City
T120	Willow oak	*Quercus phellos*	11	Good			City
T121	Flowering cherry	*Prunus sp.*	6	Good			City
T122	Flowering cherry	*Prunus sp.*	7	Good			City
T123	Norway maple	*Acer platanoides*	4	Good			City

Red Line Tree Inventory
Segment 5

Number	Common Name	Scientific Name	DBH	Condition	Comment	Impact	Location
T124	Norway maple	*Acer platanoides*	5	Good			City
T125	Willow oak	*Quercus phellos*	9	Good			City
T126	Flowering cherry	*Prunus sp.*	8	Good		Private	City
T127	Flowering cherry	*Prunus sp.*	10	Good		Private	City
T128	Norway maple	*Acer platanoides*	7	Good			City
T129	Sawtooth oak	*Quercus acutissima*	9	Good/Fair	Busted limb	ROW	City
T130	Crape myrtle	*Lagerstroemia indica*	2	Good	Multi-stem	Private	City
T131	Flowering cherry	*Prunus sp.*	7	Good/Fair	Improper pruning	ROW	City
T132	Flowering cherry	*Prunus sp.*	11	Good/Fair	Improper pruning	ROW	City
T133	American linden	*Tilia americana*	7	Fair	Dead wood, broken limbs	ROW	City
T134	American linden	*Tilia americana*	3	Poor	Base decay	ROW	City
T135	American linden	*Tilia americana*	9	Fair	Included bark	ROW	City
T136	American linden	*Tilia americana*	8	Good			City
T137	Laurel	*Laurus sp.*	3	Good			City
T138	American linden	*Tilia americana*	4	Fair	Included bark		City
T139	American linden	*Tilia americana*	9	Good/Fair	Dead wood		City
T140	American linden	*Tilia americana*	6	Fair/Poor	Cavities, cracked base		City
T141	Sawtooth oak	*Quercus acutissima*	12	Good	Busted limb	ROW	City
T142	Sawtooth oak	*Quercus acutissima*	11	Good		ROW	City
T143	Sawtooth oak	*Quercus acutissima*	9	Good		ROW	City
T144	Sawtooth oak	*Quercus acutissima*	10	Good		ROW	City
T145	Sawtooth oak	*Quercus acutissima*	9	Good		ROW	City
T146	Flowering cherry	*Prunus sp.*	7	Fair	Improper pruning	Private	City
T147	American linden	*Tilia americana*	8	Fair	Included bark, improper pruning		City
T148	American linden	*Tilia americana*	10	Fair	Cavities		City
T149	American linden	*Tilia americana*	9	Poor	Trunk decay		City
T150	American linden	*Tilia americana*	2	Good			City
T151	American linden	*Tilia americana*	12	Good/Fair	Topped		City
T152	Bradford pear	*Pyrus calleryana*	18	Fair/Poor	Included bark, improper pruning		City
T153	Northern red oak	*Quercus rubra*	19	Good			City

Red Line Tree Inventory
Segment 5

Number	Common Name	Scientific Name	DBH	Condition	Comment	Impact	Location
T154	Red maple	*Acer rubrum*	8	Good/Fair	Improper pruning		City
T155	Red maple	*Acer rubrum*	7	Good/Fair	Girdling roots		City
T156	Flowering cherry	*Prunus sp.*	11	Fair	Decay		City
T157	Willow oak	*Quercus phellos*	17	Good			City
T158	Mulberry	*Morus sp.*	7	Fair/Poor	Included bark, decay		City
T159	Flowering cherry	*Prunus sp.*	12	Fair	Girdling roots		City
T160	Crape myrtle	*Lagerstroemia indica*	3	Good			City
T161	Flowering cherry	*Prunus sp.*	13	Good			City
T162	Flowering cherry	*Prunus sp.*	7	Fair	Improper pruning		City
T163	American linden	*Tilia americana*	10	Good/Fair	Included bark		City
T164	Flowering cherry	*Prunus sp.*	8	Fair	Improper pruning		City
T165	Flowering cherry	*Prunus sp.*	10	Good/Fair	Pruning cuts		City
T166	Bradford pear	*Pyrus calleryana*	7	Good/Fair	Busted limbs		City
T167	Bradford pear	*Pyrus calleryana*	8	Good/Fair	Busted limbs	ROW	City
T168	Sawtooth oak	*Quercus acutissima*	10	Good/Fair	Included bark	ROW	City
T169	Sawtooth oak	*Quercus acutissima*	8	Good		ROW	City
T170	Sawtooth oak	*Quercus acutissima*	8	Good		ROW	City
T171	Sawtooth oak	*Quercus acutissima*	8	Good		ROW	City
T172	Sawtooth oak	*Quercus acutissima*	7	Poor	Decay, topped	ROW	City
T173	Sawtooth oak	*Quercus acutissima*	7	Good		ROW	City
T174	Sawtooth oak	*Quercus acutissima*	6	Good		ROW	City
T175	Sawtooth oak	*Quercus acutissima*	6	Fair	Dead wood	ROW	City
T176	Sawtooth oak	*Quercus acutissima*	6	Fair	Dead wood	ROW	City
T177	Sawtooth oak	*Quercus acutissima*	7	Good		ROW	City
T178	American linden	*Tilia americana*	2	Good			City
T179	Red maple	*Acer rubrum*	6	Fair	Busted limbs		City
T180	River birch	*Betula nigra*	4	Good	Multi-stem	ROW	City
T181	River birch	*Betula nigra*	4	Good	Multi-stem	ROW	City
T182	River birch	*Betula nigra*	4	Good	Multi-stem	ROW	City
T183	River birch	*Betula nigra*	4	Good	Multi-stem	ROW	City

Red Line Tree Inventory
Segment 5

Number	Common Name	Scientific Name	DBH	Condition	Comment	Impact	Location
T184	River birch	*Betula nigra*	4	Good	Multi-stem	ROW	City
T185	River birch	*Betula nigra*	4	Good	Multi-stem	ROW	City
T186	River birch	*Betula nigra*	4	Good	Multi-stem	ROW	City
T187	River birch	*Betula nigra*	4	Good	Multi-stem	ROW	City
T188	River birch	*Betula nigra*	4	Good	Multi-stem	ROW	City
T189	Kwanzan cherry	*Prunus serrulata*	13	Fair	Cavities	ROW	City
T190	Kwanzan cherry	*Prunus serrulata*	13	Good		ROW	City
T191	Wax myrtle	*Morella cerifera*	6	Fair	Multi-stem, busted lead	ROW	City
T192	Tree of heaven	*Ailanthus altissima*	17	Fair	Multi-stem, girdling roots	Private	City
T193	Shingle oak	*Quercus imbricaria*	9	Good		ROW	City
T194	Shingle oak	*Quercus imbricaria*	8	Good		ROW	City
T195	Shingle oak	*Quercus imbricaria*	8	Good/Fair	Improper pruning	ROW	City
T196	Shingle oak	*Quercus imbricaria*	8	Good		ROW	City
T197	Shingle oak	*Quercus imbricaria*	8	Good		ROW	City
T198	Shingle oak	*Quercus imbricaria*	8	Good		ROW	City
T199	Shingle oak	*Quercus imbricaria*	8	Good		ROW	City
T200	Shingle oak	*Quercus imbricaria*	7	Good/Fair	Improper pruning	ROW	City
T201	Shingle oak	*Quercus imbricaria*	8	Good		ROW	City
T202	Shingle oak	*Quercus imbricaria*	9	Good/Fair	Dead wood	ROW	City
T203	Flowering cherry	*Prunus sp.*	4	Fair/Poor	Main stem dieback	ROW	City
T204	Crabapple	*Malus sp.*	15	Good/Fair	Improper pruning	Private	City
T205	Crabapple	*Malus sp.*	15	Good			City
T206	Crabapple	*Malus sp.*	16	Good/Fair	Included bark, improper pruning		City
T207	Crabapple	*Malus sp.*	14	Fair/Poor	Sapsuckers, dead wood, improper pruning		City
T208	Shingle oak	*Quercus imbricaria*	11	Good		ROW	City
T209	Shingle oak	*Quercus imbricaria*	10	Good	**Mary's Tree**	ROW	City
T210	Shingle oak	*Quercus imbricaria*	9	Good		ROW	City
T211	Shingle oak	*Quercus imbricaria*	8	Good/Fair	Interfering branches	ROW	City
T212	Crabapple	*Malus sp.*	11	Fair	Sapsucker damage	Private	City
T213	Shingle oak	*Quercus imbricaria*	7	Good/Fair	Dead wood	ROW	City

Red Line Tree Inventory
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Number	Common Name	Scientific Name	DBH	Condition	Comment	Impact	Location
T214	Crabapple	*Malus sp.*	7	Good			City
T215	Crabapple	*Malus sp.*	10	Good/Fair	Improper pruning		City
T216	Crabapple	*Malus sp.*	9	Fair	Decay		City
T217	Leyland cypress	*xCupressocyparis leylandii*	9	Fair	Multi-stem, dead wood		City
T218	Leyland cypress	*xCupressocyparis leylandii*	7	Fair	Multi-stem, lean		City
T219	Leyland cypress	*xCupressocyparis leylandii*	11	Good/Fair	Lean		City
T220	Leyland cypress	*xCupressocyparis leylandii*	10	Fair	Multi-stem, dead wood		City
T221	Cherry	*Prunus sp.*	10	Poor	Included bark, dead wood		City
T222	Cherry	*Prunus sp.*	4	Poor	Trunk damage		City
T223	Fig Tree	*Ficus carica*	2	Good/Fair	Trunk twisted		City
T224	Shingle oak	*Quercus imbricaria*	7	Good		ROW	City
T225	London plane	*Platanus x acerifolia*	7	Good			City
T226	London plane	*Platanus x acerifolia*	8	Good			City
T227	London plane	*Platanus x acerifolia*	11	Good			City
T228	London plane	*Platanus x acerifolia*	10	Good			City
T229	American linden	*Tilia americana*	10	Fair	Cankers, included bark		City
T230	American linden	*Tilia americana*	9	Fair	Cankers		City
T231	American linden	*Tilia americana*	8	Fair	Cankers		City
T232	American linden	*Tilia americana*	10	Fair	Cankers		City
T233	American linden	*Tilia americana*	11	Fair	Cankers, included bark		City
T234	American linden	*Tilia americana*	10	Fair	Cankers		City
T235	American linden	*Tilia americana*	7	Fair	Cankers		City
T236	American linden	*Tilia americana*	7	Fair	Cankers		City
T237	American linden	*Tilia americana*	10	Fair	Cankers, included bark		City
T238	American linden	*Tilia americana*	8	Fair	Cankers, included bark		City
T239	American linden	*Tilia americana*	8	Fair	Cankers		City
T240	American linden	*Tilia americana*	9	Fair	Cankers, improper pruning		City
T241	American linden	*Tilia americana*	9	Fair	Cankers, one sided	Park	City
T242	American linden	*Tilia americana*	10	Fair	Included bark, cankers	Park	City
T243	American linden	*Tilia americana*	10	Fair	Cankers		City

Red Line Tree Inventory
Segment 5

Number	Common Name	Scientific Name	DBH	Condition	Comment	Impact	Location
T244	American linden	*Tilia americana*	7	Fair	Cankers, included bark	Park	City
T245	American linden	*Tilia americana*	9	Good			City
T246	American linden	*Tilia americana*	8	Fair	Cankers, included bark	Park	City
T247	American linden	*Tilia americana*	10	Fair	Interfering branches, cankers		City
T248	American linden	*Tilia americana*	7	Fair	Lean, cankers		City
T249	American linden	*Tilia americana*	9	Fair	Cankers, included bark	Park	City
T250	American linden	*Tilia americana*	8	Fair	Cankers, included bark		City
T251	American linden	*Tilia americana*	7	Fair	Included bark, cankers		City
T252	American linden	*Tilia americana*	8	Fair	Cankers, included bark	Park	City
T253	American linden	*Tilia americana*	9	Fair	Cankers		City
T254	American linden	*Tilia americana*	8	Fair/Poor	Cankers, dead wood		City
T255	American linden	*Tilia americana*	9	Fair	Improper pruning, cankers		City
T256	American linden	*Tilia americana*	11	Fair	Included bark, cankers		City
T257	London plane	*Platanus x acerifolia*	11	Good			City
T258	London plane	*Platanus x acerifolia*	15	Good			City
T259	London plane	*Platanus x acerifolia*	5	Good			City
T260	London plane	*Platanus x acerifolia*	9	Good	Minor dead wood		City
T261	London plane	*Platanus x acerifolia*	9	Good		Park	City
T262	London plane	*Platanus x acerifolia*	9	Good			City
T263	London plane	*Platanus x acerifolia*	7	Good			City
T264	London plane	*Platanus x acerifolia*	11	Good		Private	City
T265	London plane	*Platanus x acerifolia*	13	Good		Private	City
T266	Sawtooth oak	*Quercus acutissima*	11	Good		ROW	City
T267	Sawtooth oak	*Quercus acutissima*	10	Good	Some dead wood	ROW	City
T268	Sawtooth oak	*Quercus acutissima*	11	Fair	Cankers, improper pruning	ROW	City
T269	Sawtooth oak	*Quercus acutissima*	11	Good		ROW	City
T270	Red maple	*Acer rubrum*	9	Good/Fair	Exposed & girdling roots		City
T271	Red maple	*Acer rubrum*	10	Fair/Poor	Busted lead, exposed, girdling roots		City
T272	Eastern white pine	*Pinus strobus*	9	Good			City
T273	Red maple	*Acer rubrum*	7	Fair/Poor	Base damage, decay		City

Red Line Tree Inventory
Segment 5

Number	Common Name	Scientific Name	DBH	Condition	Comment	Impact	Location
T274	Zelkova	*Zelkova serrata*	6	Fair	Base damage		City
T275	Mulberry	*Morus sp.*	7	Fair	Included bark, suspect base, pine growing in roots		City
T276	Austrian pine	*Pinus nigra*	7	Fair	Lean, growing out of mulberry roots		City
T277	Austrian pine	*Pinus nigra*	12	Fair	Lean, cankers	Private	City
T278	Zelkova	*Zelkova serrata*	9	Fair	Dead wood, crown dieback		City
T279	Zelkova	*Zelkova serrata*	20	Good/Fair	Included bark	ROW	City
T280	Sawtooth oak	*Quercus acutissima*	9	Good		ROW	City
T281	Austrian pines	*Pinus nigra*	12	Good/Fair	Girdling roots	ROW	City
T282	Austrian pine	*Pinus nigra*	13	Fair	Crooked lead	Private	City
T283	Austrian pine	*Pinus nigra*	12	Fair	Lean, crooked lead	Private	City
T284	Sawtooth oak	*Quercus acutissima*	9	Good/Fair	Interfering branches	ROW	City
T285	Sawtooth oak	*Quercus acutissima*	8	Good		ROW	City
T286	Zelkova	*Zelkova serrata*	13	Fair/Poor	Included bark, dead lead	ROW	City
T287	Zelkova	*Zelkova serrata*	12	Fair	Dead wood	ROW	City
T288	Austrian pine	*Pinus nigra*	8	Fair	Lean, interfering branching	ROW	City
T289	Austrian pine	*Pinus nigra*	9	Fair	Lean	ROW	City
T290	Austrian pine	*Pinus nigra*	9	Good/Fair	Lean	ROW	City
T291	Sawtooth oak	*Quercus acutissima*	8	Good		ROW	City
T292	Zelkova	*Zelkova serrata*	14	Fair	Crown dieback		City
T293	Zelkova	*Zelkova serrata*	10	Good/Fair	Dead wood		City
T294	Zelkova	*Zelkova serrata*	10	Good/Fair	Stem dieback		City
T295	Red maple	*Acer rubrum*	12	Fair	Girdling roots, base damage		City
T296	Red maple	*Acer rubrum*	13	Fair	Exposed & girdling roots		City
T297	Red maple	*Acer rubrum*	14	Fair	Exposed & girdling roots		City
T298	Sawtooth oak	*Quercus acutissima*	9	Good		ROW	City
T299	Shingle oak	*Quercus imbricaria*	8	Good		ROW	City
T300	Shingle oak	*Quercus imbricaria*	8	Good		ROW	City
T301	Shingle oak	*Quercus imbricaria*	10	Good		ROW	City
T302	Red maple	*Acer rubrum*	7	Fair/Poor	One-sided, dead wood	ROW	City
T303	Red maple	*Acer rubrum*	10	Fair	Cavity	ROW	City

Red Line Tree Inventory
Segment 5

Number	Common Name	Scientific Name	DBH	Condition	Comment	Impact	Location
T304	Flowering cherry	*Prunus sp.*	15	Fair/Poor	Broken limbs, vines, dead wood		City
T305	Flowering cherry	*Prunus sp.*	14	Fair/Poor	Ivy, broken limbs, dead wood		City
T306	Red maple	*Acer rubrum*	9	Fair/Poor	Decay, cavities, girdling roots		City
T307	Red maple	*Acer rubrum*	7	Good			City
T308	Flowering cherry	*Prunus sp.*	6	Good		ROW	City
T309	Shingle oak	*Quercus imbricaria*	7	Good/Fair	Topped	ROW	City
T310	Shingle oak	*Quercus imbricaria*	10	Good		ROW	City
T311	Shingle oak	*Quercus imbricaria*	10	Good		ROW	City
T312	Shingle oak	*Quercus imbricaria*	9	Good/Fair	Exposed roots	ROW	City
T313	Shingle oak	*Quercus imbricaria*	9	Good		ROW	City
T314	Shingle oak	*Quercus imbricaria*	8	Good		ROW	City
T315	Shingle oak	*Quercus imbricaria*	7	Good		ROW	City
T316	Shingle oak	*Quercus imbricaria*	8	Good		ROW	City
T317	Flowering cherry	*Prunus sp.*	4	Fair/Poor	Crown dieback, base decay	ROW	City
T318	American linden	*Tilia americana*	10	Good/Fair	Included bark, broken limbs		City
T319	American linden	*Tilia americana*	10	Good/Fair	Included bark, busted limb		City
T320	American linden	*Tilia americana*	9	Good/Fair	Included bark, improper pruning	ROW	City
T321	American linden	*Tilia americana*	11	Good	Included bark	ROW	City
T322	American linden	*Tilia americana*	10	Good/Fair	Included bark	ROW	City
T323	American linden	*Tilia americana*	11	Good/Fair	Improper pruning, Included bark	ROW	City
T324	Red maple	*Acer rubrum*	8	Good		Park	City
T325	Red maple	*Acer rubrum*	7	Good/Fair	Improper pruning	Park	City
T326	Red maple	*Acer rubrum*	7	Good/Fair	Suckers	ROW	City
T327	Bradford pear	*Pyrus calleryana*	4	Fair	Mower damage		City
T328	Flowering cherry	*Prunus sp.*	3	Fair/Poor	Base decay		City
T329	Red maple	*Acer rubrum*	6	Fair	Dead wood		City
T330	Black locust	*Robinia pseudoacacia*	9	Fair	Exposed roots		City
T331	Purple leaf plum	*Prunus cerasifera*	1	Good	Multi-stem	Park	City
T332	Purple leaf plum	*Prunus cerasifera*	1	Fair/Poor	Multi-stem, base decay, fungus		City
T333	Chinese elm	*Ulmus parvifolia*	10	Good		Park	City

Red Line Tree Inventory
Segment 5

Number	Common Name	Scientific Name	DBH	Condition	Comment	Impact	Location
T334	Bradford pear	*Pyrus calleryana*	3	Good			City
T335	Winged elm	*Ulmus alata*	5	Fair	Mainstem crack		City
T336	American linden	*Tilia americana*	10	Good/Fair	Included bark	ROW	City
T337	American linden	*Tilia americana*	11	Fair	Improper pruning, Included bark		City
T338	American linden	*Tilia americana*	11	Fair/Poor	Included bark, decay		City
T339	Flowering cherry	*Prunus sp.*	10	Good/Fair	Improper pruning		City
T340	Flowering cherry	*Prunus sp.*	10	Good/Fair	Improper pruning		City
T341	Flowering cherry	*Prunus sp.*	10	Good/Fair	Improper pruning		City
T342	Eastern white pine	*Pinus strobus*	7	Good		ROW	City
T343	Bradford pear	*Pyrus calleryana*	15	Good/Fair	Included bark	ROW	City
T344	Sawtooth oak	*Quercus acutissima*	8	Good/Fair	Broken limbs	ROW	City
T345	Austrian pine	*Pinus nigra*	8	Good		ROW	City
T346	Crabapple	*Malus sp.*	8	Fair	Interfering branches, exposed roots	ROW	City
T347	Bradford pear	*Pyrus calleryana*	12	Fair/Poor	Cavity, decay	ROW	City
T348	Eastern white pine	*Pinus strobus*	5	Good		ROW	City
T349	Bradford pear	*Pyrus calleryana*	13	Good		ROW	City
T350	Red maple	*Acer rubrum*	6	Fair/Poor	Mainstem decay, suckers		City
T351	Sawtooth oak	*Quercus acutissima*	11	Fair	Deadwood in crown	ROW	City
T352	Eastern white pine	*Pinus strobus*	6	Good			City
T353	Bradford pear	*Pyrus calleryana*	15	Fair	Lean, cavities	Private	City
T354	Crabapple	*Malus sp.*	10	Good/Fair	Girdling roots	Private	City
T355	Sawtooth oak	*Quercus acutissima*	9	Good	Dead wood	ROW	City
T356	Sawtooth oak	*Quercus acutissima*	8	Good/Fair	Dead wood	ROW	City
T357	Bradford pear	*Pyrus calleryana*	14	Fair	Girdling roots, included bark	Private	City
T358	Red maple	*Acer rubrum*	6	Poor	Mainstem decay		City
T359	Eastern white pine	*Pinus strobus*	6	Good			City
T360	Austrian pine	*Pinus nigra*	6	Fair	Twin, lean		City
T361	Bradford pear	*Pyrus calleryana*	13	Fair	Included bark, girdling roots		City
T362	Sawtooth oak	*Quercus acutissima*	9	Good/Fair	Dead wood	ROW	City
T363	Sawtooth oak	*Quercus acutissima*	8	Good		ROW	City

Red Line Tree Inventory
Segment 5

Number	Common Name	Scientific Name	DBH	Condition	Comment	Impact	Location
T364	Sawtooth oak	*Quercus acutissima*	9	Good/Fair	Deadwood	ROW	City
T365	Purple leaf plum	*Prunus cerasifera*	4	Good		ROW	City
T366	Purple leaf plum	*Prunus cerasifera*	4	Good		ROW	City
T367	London plane	*Platanus x acerifolia*	7	Good		ROW	City
T368	London plane	*Platanus x acerifolia*	6	Good		ROW	City
T369	Purple leaf plum	*Prunus cerasifera*	4	Good		ROW	City
T370	London plane	*Platanus x acerifolia*	11	Good		ROW	City
T371	Red maple	*Acer rubrum*	6	Good/Fair	Girdling root		City
T372	London plane	*Platanus x acerifolia*	9	Good		ROW	City
T373	Serviceberry	*Amelanchier sp.*	3	Good		ROW	City
T374	Serviceberry	*Amelanchier sp.*	3	Good		ROW	City
T375	Serviceberry	*Amelanchier sp.*	3	Good		ROW	City
T376	Ginkgo	*Ginkgo biloba*	3	Good			City
T377	Sawtooth oak	*Quercus acutissima*	6	Fair/Poor	Mainstem decay, topped	ROW	City
T378	London plane	*Platanus x acerifolia*	9	Fair	Broken limb, dead wood, lean		City
T379	Sawtooth oak	*Quercus acutissima*	4	Good		Private	City
T380	Honey locust	*Gleditsia triacanthos*	4	Good		ROW	City
T381	Shingle oak	*Quercus imbricaria*	7	Fair	Crown dieback	ROW	City
T382	Sawtooth oak	*Quercus acutissima*	6	Good		ROW	City
T383	Sawtooth oak	*Quercus acutissima*	6	Good		ROW	City
T384	Willow oak	*Quercus phellos*	4	Good		ROW	City
T385	Sawtooth oak	*Quercus acutissima*	6	Good/Fair	Dead wood	ROW	City
T386	Sawtooth oak	*Quercus acutissima*	5	Good/Fair	Deadwood	ROW	City
T387	Sawtooth oak	*Quercus acutissima*	3	Fair/Poor	Suspect base, lean	ROW	City
T388	Shingle oak	*Quercus imbricaria*	4	Poor	Suckers, deadwood, cankers	ROW	City
T389	Willow oak	*Quercus phellos*	3	Poor	Crown dieback	ROW	City
T390	Shingle oak	*Quercus imbricaria*	5	Poor	Crown dieback, decay	ROW	City
T391	Shingle oak	*Quercus imbricaria*	6	Fair/Poor	Diseased	ROW	City
T392	Shingle oak	*Quercus imbricaria*	6	Fair/Poor	Dead wood, diseased	ROW	City
T393	Shingle oak	*Quercus imbricaria*	6	Good/Fair	Dead wood	ROW	City

Red Line Tree Inventory
Segment 5

Number	Common Name	Scientific Name	DBH	Condition	Comment	Impact	Location
T394	Shingle oak	*Quercus imbricaria*	6	Fair/Poor	Topped, dead wood	ROW	City
T395	Shingle oak	*Quercus imbricaria*	7	Fair	Trunk damage, dead wood	ROW	City
T396	Shingle oak	*Quercus imbricaria*	7	Poor	Mainstem decay, dead wood	ROW	City
T397	Bradford pear	*Pyrus calleryana*	10	Fair	Dead wood	Private	City
T398	Bradford pear	*Pyrus calleryana*	9	Good		Private	City
T399	Bradford pear	*Pyrus calleryana*	9	Good		Private	City
T400	Bradford pear	*Pyrus calleryana*	9	Good			City
T401	Bradford pear	*Pyrus calleryana*	9	Good			City
T402	Bradford pear	*Pyrus calleryana*	9	Good			City
T403	Bradford pear	*Pyrus calleryana*	9	Good			City
T404	Shingle oak	*Quercus imbricaria*	7	Good/Fair	Dead wood	ROW	City
T405	Shingle oak	*Quercus imbricaria*	6	Fair/Poor	Crown dieback, dead wood	ROW	City
T406	Shingle oak	*Quercus imbricaria*	6	Poor	Crown dieback, dead wood	ROW	City
T407	Shingle oak	*Quercus imbricaria*	6	Poor	Dieing	ROW	City
T408	Sawtooth oak	*Quercus acutissima*	3	Good		ROW	City
T409	Shingle oak	*Quercus imbricaria*	7	Poor	Suckers, dead wood	ROW	City
T410	Eastern white pine	*Pinus strobus*	7	Good			City
T411	Eastern white pine	*Pinus strobus*	7	Good			City
T412	Eastern white pine	*Pinus strobus*	7	Good			City
T413	Eastern white pine	*Pinus strobus*	7	Good			City
T414	Eastern white pine	*Pinus strobus*	10	Good			City
T415	Sawtooth oak	*Quercus acutissima*	5	Good			City
T416	Sawtooth oak	*Quercus acutissima*	5	Good			City
T417	Sawtooth oak	*Quercus acutissima*	6	Good		ROW	City
T418	Chinese elm	*Ulmus parvifolia*	6	Good/Fair	Canker	ROW	City
T419	Chinese elm	*Ulmus parvifolia*	8	Good		ROW	City
T420	Chinese elm	*Ulmus parvifolia*	9	Good		ROW	City
T421	Chinese elm	*Ulmus parvifolia*	9	Good/Fair	Crown dieback	ROW	City
T422	Chinese elm	*Ulmus parvifolia*	8	Good			City
T423	Honey locust	*Gleditsia triacanthos*	4	Good			City

Red Line Tree Inventory
Segment 5

Number	Common Name	Scientific Name	DBH	Condition	Comment	Impact	Location
T424	Honey locust	*Gleditsia triacanthos*	5	Good			City
T425	Red maple	*Acer rubrum*	7	Good		ROW	City
T426	Willow oak	*Quercus phellos*	4	Good		ROW	City
T427	Honey locust	*Gleditsia triacanthos*	7	Good		ROW	City
T427	Zelkova	*Zelkova serrata*	7	Good		ROW	City
T428	Sawtooth oak	*Quercus acutissima*	6	Fair	Busted limbs	ROW	City
T429	Zelkova	*Zelkova serrata*	10	Good		Private	City
T430	Zelkova	*Zelkova serrata*	6	Fair	Thin crown	Private	City
T431	Zelkova	*Zelkova serrata*	6	Fair/Poor	Trunk damage, crown dieback	Private	City
T432	Zelkova	*Zelkova serrata*	7	Fair/Poor	Trunk damage, crown dieback	Private	City
T433	Honey locust	*Gleditsia triacanthos*	24	Good	Some dead wood	Private	City
T434	Austrian pine	*Pinus nigra*	7	Good		Private	City
T435	Flowering cherry	*Prunus sp.*	7	Fair	Trunk damage	Private	City
T436	Zelkova	*Zelkova serrata*	5	Fair	Dead wood, base damage	Private	City
T437	Zelkova	*Zelkova serrata*	4	Fair/Poor	Thin crown, trunk and base damage	Private	City
T438	Zelkova	*Zelkova serrata*	3	Poor	Decay, insect damage		City
T439	Zelkova	*Zelkova serrata*	5	Fair	Thin crown, included bark		City
T440	Flowering dogwood	*Cornus florida*	6	Good			City
T441	Red maple	*Acer rubrum*	6	Good			City
T442	Sweetgum	*Liquidambar styraciflua*	6	Good			City
T443	Austrian pine	*Pinus nigra*	7	Good			City
T444	Red maple	*Acer rubrum*	6	Good			City
T445	Austrian pine	*Pinus nigra*	6	Fair	Uprooting		City
T446	Austrian pine	*Pinus nigra*	7	Good			City
T447	Austrian pine	*Pinus nigra*	7	Fair	Lean		City
T448	Austrian pine	*Pinus nigra*	7	Fair	Lean		City
T449	Austrian pine	*Pinus nigra*	8	Good			City
T450	Honey locust	*Gleditsia triacanthos*	6	Good			City
T451	Honey locust	*Gleditsia triacanthos*	6	Good		ROW	City
T452	Honey locust	*Gleditsia triacanthos*	6	Good	Improper pruning		City

Red Line Tree Inventory
Segment 5

Number	Common Name	Scientific Name	DBH	Condition	Comment	Impact	Location
T453	Honey locust	*Gleditsia triacanthos*	6	Good	Some dead wood		City
T454	Leyland cypress	*xCupressocyparis leylandii*	5	Good			City
T455	Leyland cypress	*xCupressocyparis leylandii*	5	Good			City
T456	Leyland cypress	*xCupressocyparis leylandii*	5	Good			City
T457	Honey locust	*Gleditsia triacanthos*	7	Good			City
T458	Honey locust	*Gleditsia triacanthos*	4	Good			City
T459	Willow oak	*Quercus phellos*	28	Fair/Poor	Dead wood, crown dieback		City
T460	Northern red oak	*Quercus rubra*	6	Poor	Mainstem decay		City
T461	Crabapple	*Malus sp.*	4	Fair/Poor	Trunk decay		City
T462	Crabapple	*Malus sp.*	4	Poor	Mainstem decay		City
T463	Crabapple	*Malus sp.*	5	Poor	One-sided, main stem decay		City
T464	Honey locust	*Gleditsia triacanthos*	3	Fair/Poor	Mainstem dieback	ROW	City
T465	Honey locust	*Gleditsia triacanthos*	3	Fair	Tip dieback	ROW	City
T466	Honey locust	*Gleditsia triacanthos*	3	Fair	Base decay, dieback	ROW	City
T467	Honey locust	*Gleditsia triacanthos*	3	Fair	Tip dieback	ROW	City
T468	Honey locust	*Gleditsia triacanthos*	3	Fair	Dieback	ROW	City
T469	Honey locust	*Gleditsia triacanthos*	3	Fair	Tip dieback	ROW	City
T470	Honey locust	*Gleditsia triacanthos*	3	Fair	Tip dieback	ROW	City
T471	Honey locust	*Gleditsia triacanthos*	6	Good			City
T472	Honey locust	*Gleditsia triacanthos*	5	Good			City
T473	Honey locust	*Gleditsia triacanthos*	6	Good			City
T474	Honey locust	*Gleditsia triacanthos*	6	Good			City
T475	Honey locust	*Gleditsia triacanthos*	6	Fair/Poor	Mainstem decay		City
T476	Honey locust	*Gleditsia triacanthos*	6	Good			City
T477	Honey locust	*Gleditsia triacanthos*	6	Good			City
T478	American holly	*Ilex opaca*	6	Good			City
T479	American holly	*Ilex opaca*	6	Good			City
T480	American holly	*Ilex opaca*	5	Good			City
T481	Crabapple	*Malus sp.*	6	Good			City
T482	Crabapple	*Malus sp.*	4	Good/Fair	Broken limbs		City

Red Line Tree Inventory
Segment 5

Number	Common Name	Scientific Name	DBH	Condition	Comment	Impact	Location
T483	Crabapple	*Malus sp.*	6	Good			City
T484	Kwanzan cherry	*Prunus serrulata*	9	Good			City
T485	Leyland cypress	*xCupressocyparis leylandii*	6	Good			City
T486	Leyland cypress	*xCupressocyparis leylandii*	6	Fair	Multi-stem, central lead busted		City
T487	Leyland cypress	*xCupressocyparis leylandii*	6	Good			City
T488	Leyland cypress	*xCupressocyparis leylandii*	6	Good	Multi-stem		City
T489	Leyland cypress	*xCupressocyparis leylandii*	5	Good	Multi-stem		City
T490	Leyland cypress	*xCupressocyparis leylandii*	7	Good	2x		City
T491	Leyland cypress	*xCupressocyparis leylandii*	5	Good	Multi-stem		City
T492	Leyland cypress	*xCupressocyparis leylandii*	6	Good	Multi-stem		City
T493	Leyland cypress	*xCupressocyparis leylandii*	6	Good	Multi-stem		City
T494	Leyland cypress	*xCupressocyparis leylandii*	5	Good	Multi-stem		City
T495	Leyland cypress	*xCupressocyparis leylandii*	5	Good	Multi-stem		City
T496	Leyland cypress	*xCupressocyparis leylandii*	7	Good			City
T497	Leyland cypress	*xCupressocyparis leylandii*	5	Good	Twin		City
T498	Leyland cypress	*xCupressocyparis leylandii*	7	Good	Twin		City
T499	Leyland cypress	*xCupressocyparis leylandii*	5	Good	Multi-stem		City
T500	Leyland cypress	*xCupressocyparis leylandii*	7	Good	Twin		City
T501	Leyland cypress	*xCupressocyparis leylandii*	5	Good	Multi-stem		City
T502	Zelkova	*Zelkova serrata*	8	Good			City
T503	Zelkova	*Zelkova serrata*	7	Good			City
T504	Zelkova	*Zelkova serrata*	9	Good			City
T505	Zelkova	*Zelkova serrata*	7	Good	Some interfering branches	Private	City
T506	Japanese Sophora	*Sophora japonica*	3	Poor	Thin crown, dead wood	Private	City
T507	Zelkova	*Zelkova serrata*	4	Poor	Dying	ROW	City
T508	Zelkova	*Zelkova serrata*	6	Poor	Mainstem decay, dead wood		City
T509	Zelkova	*Zelkova serrata*	6	Fair	One-sided, dead wood		City
T510	Cherry	*Prunus sp.*	5	Good/Fair	Improper pruning		City
T511	Cherry	*Prunus sp.*	5	Good/Fair	Thin crown		City
T512	Cherry	*Prunus sp.*	5	Good/Fair	Dead wood		City

Red Line Tree Inventory
Segment 5

Number	Common Name	Scientific Name	DBH	Condition	Comment	Impact	Location
T513	Cherry	*Prunus sp.*	6	Good/Fair	Thin crown		City
T514	Honey locust	*Gleditsia triacanthos*	12	Good			City
T515	Honey locust	*Gleditsia triacanthos*	12	Good			City
T516	Cherry	*Prunus sp.*	6	Good/Fair	Thin crown		City
T517	Cherry	*Prunus sp.*	6	Good			City
T518	Cherry	*Prunus sp.*	6	Good			City
T519	Cherry	*Prunus sp.*	6	Good			City
T520	Cherry	*Prunus sp.*	5	Good			City
T521	Zelkova	*Zelkova serrata*	4	Fair	Mainstem dieback	ROW	City
T522	Zelkova	*Zelkova serrata*	5	Fair	Cankers	ROW	City
T523	Zelkova	*Zelkova serrata*	6	Fair	Cavity, thin crown	ROW	City
T524	Zelkova	*Zelkova serrata*	7	Fair	Thin crown	ROW	City
T525	Zelkova	*Zelkova serrata*	7	Fair	Mainstem dieback	ROW	City
T526	Zelkova	*Zelkova serrata*	5	Good		ROW	City
T528	Zelkova	*Zelkova serrata*	4	Good	Minor dead wood	ROW	City
T529	Zelkova	*Zelkova serrata*	6	Fair/Poor	Mainstem decay, crown dieback	ROW	City
T530	Zelkova	*Zelkova serrata*	4	Good/Fair	Crown dieback	ROW	City
T531	Zelkova	*Zelkova serrata*	6	Good/Fair	Crown dieback	ROW	City
T532	Zelkova	*Zelkova serrata*	4	Fair	Tip dieback, dead wood	ROW	City
T533	Honey locust	*Gleditsia triacanthos*	3	Good		ROW	City
T534	Honey locust	*Gleditsia triacanthos*	3	Good		ROW	City
T535	Austrian pine	*Pinus nigra*	7	Fair	Twin, lean	ROW	City
T536	Austrian pine	*Pinus nigra*	7	Fair	Lean	Private	City
T537	Honey locust	*Gleditsia triacanthos*	3	Good		ROW	City
T538	Zelkova	*Zelkova serrata*	6	Fair	Thin crown	ROW	City
T539	Zelkova	*Zelkova serrata*	7	Fair	Thin crown	Private	City
T540	Zelkova	*Zelkova serrata*	4	Good		Private	City
T541	Zelkova	*Zelkova serrata*	7	Fair/Poor	Trunk decay, crown dieback	ROW	City
T542	Zelkova	*Zelkova serrata*	6	Good		ROW	City
T543	Zelkova	*Zelkova serrata*	6	Good/Fair	Canker		City

Red Line Tree Inventory
Segment 5

Number	Common Name	Scientific Name	DBH	Condition	Comment	Impact	Location
T544	Zelkova	*Zelkova serrata*	6	Good/Fair	Tip dieback	ROW	City
T545	Zelkova	*Zelkova serrata*	6	Fair	Mainstem decay, crown dieback		City
T546	Zelkova	*Zelkova serrata*	6	Good/Fair	Crown dieback	ROW	City
T547	Zelkova	*Zelkova serrata*	7	Fair	Tip dieback, thin crown		City
T548	Zelkova	*Zelkova serrata*	6	Fair	Dead wood, thin crown	ROW	City
T549	Zelkova	*Zelkova serrata*	7	Fair	Dead wood, thin crown		City
T550	Zelkova	*Zelkova serrata*	7	Fair	Dead wood, tip dieback		City
T551	Zelkova	*Zelkova serrata*	6	Fair	Thining crown		City
T552	Cherry	*Prunus sp.*	3	Good		ROW	City
T553	Cherry	*Prunus sp.*	6	Good		ROW	City
T554	Japanese Sophora	*Sophora japonica*	3	Poor	Thin crown, dead wood		City
T555	Cherry	*Prunus sp.*	3	Fair	Thin crown	ROW	City
T556	Cherry	*Prunus sp.*	3	Good		ROW	City
T557	Zelkova	*Zelkova serrata*	6	Fair	Base decay, crown dieback	ROW	City
T558	Zelkova	*Zelkova serrata*	4	Good		ROW	City
T559	Cherry	*Prunus sp.*	5	Good		ROW	City
T560	Cherry	*Prunus sp.*	4	Good		ROW	City
T561	Cherry	*Prunus sp.*	3	Good/Fair	Tip dieback	ROW	City
T562	Cherry	*Prunus sp.*	3	Good		ROW	City
T563	Cherry	*Prunus sp.*	3	Good		ROW	City
T564	Cherry	*Prunus sp.*	4	Good		ROW	City
T565	Cherry	*Prunus sp.*	4	Good		ROW	City
T566	Cherry	*Prunus sp.*	4	Good	Deadwood	ROW	City
T567	Zelkova	*Zelkova serrata*	6	Fair	Tip dieback, base decay	ROW	City
T568	Zelkova	*Zelkova serrata*	3	Good		ROW	City
T569	Zelkova	*Zelkova serrata*	3	Good		ROW	City
T570	Zelkova	*Zelkova serrata*	4	Good		ROW	City
T571	Zelkova	*Zelkova serrata*	7	Fair/Poor	Crown dieback, decay	ROW	City
T572	Zelkova	*Zelkova serrata*	7	Good/Fair	Trunk damage		City
T573	Zelkova	*Zelkova serrata*	7	Good/Fair	Dead wood in crown		City

Red Line Tree Inventory
Segment 5

Number	Common Name	Scientific Name	DBH	Condition	Comment	Impact	Location
T574	Zelkova	*Zelkova serrata*	7	Fair	Crown dieback, mainstem decay		City
T575	Zelkova	*Zelkova serrata*	6	Good			City
T576	Zelkova	*Zelkova serrata*	6	Fair	Interfering branches, crown dieback		City
T577	Zelkova	*Zelkova serrata*	6	Fair	Tip dieback, thin crown		City
T578	Zelkova	*Zelkova serrata*	6	Good/Fair	Trunk damage		City
T579	Zelkova	*Zelkova serrata*	7	Fair	Crown dieback, interfering branches		City
T580	Zelkova	*Zelkova serrata*	6	Good/Fair	Crown dieback		City
T581	Zelkova	*Zelkova serrata*	6	Good	Some dead wood		City
T582	Zelkova	*Zelkova serrata*	6	Fair	Tip dieback		City
T583	Zelkova	*Zelkova serrata*	7	Good/Fair	Trunk damage	ROW	City
T584	Zelkova	*Zelkova serrata*	6	Fair	Trunk damage, crown dieback		City
T585	Zelkova	*Zelkova serrata*	7	Good			City
T586	Cherry	*Prunus sp.*	9	Good/Fair	Some dead wood	Private	City
T587	Red maple	*Acer rubrum*	3	Good/Fair	Tip dieback	Private	City
T588	Cherry	*Prunus sp.*	10	Good		Private	City
T589	Red maple	*Acer rubrum*	4	Fair	Trunk damage, tip dieback	Private	City
T590	Sweetgum	*Liquidambar styraciflua*	4	Good/Fair	Tip dieback	Private	City
T591	Sweetgum	*Liquidambar styraciflua*	4	Good		Private	City
T592	Weeping willow	*Salix babylonica*	5	Fair	Crown dieback	Private	City
T593	Sweetgum	*Liquidambar styraciflua*	3	Good		Private	City
T594	Weeping willow	*Salix babylonica*	4	Good		Private	City
T595	Sweetgum	*Liquidambar styraciflua*	4	Good/Fair	Tip dieback	Private	City
T596	Weeping willow	*Salix babylonica*	4	Fair	Crown dieback		City
T597	Sweetgum	*Liquidambar styraciflua*	4	Fair	Tip dieback, dead wood		City
T598	Sweetgum	*Liquidambar styraciflua*	4	Fair	Dead wood, tip dieback		City
T599	Weeping willow	*Salix babylonica*	3	Fair	Crown dieback		City
T600	Sweetgum	*Liquidambar styraciflua*	5	Fair	Tip dieback		City
T601	Weeping willow	*Salix babylonica*	4	Fair	Crown dieback		City
T602	Pear	*Pyrus sp.*	3	Good			City
T603	Sweet bay	*Laurus nobilis*	2	Good	Multi-stem		City

Red Line Tree Inventory
Segment 5

Number	Common Name	Scientific Name	DBH	Condition	Comment	Impact	Location
T604	Willow oak	*Quercus phellos*	6	Good		Private	City
T605	Willow oak	*Quercus phellos*	5	Good		Private	City
T606	Japanese Sophora	*Sophora japonica*	3	Poor	Thin crown, main stem dieback	Private	City
T607	Pear	*Pyrus sp.*	3	Good		Private	City
T608	Pear	*Pyrus sp.*	4	Good			City
T609	Sweet bay	*Laurus nobilis*	2	Good			City
T610	Sweet bay	*Laurus nobilis*	2	Good	Multi-stem		City
T611	Sweet bay	*Laurus nobilis*	2	Good	Multi-stem		City
T611	Sweetgum	*Liquidambar styraciflua*	3	Good		Private	City
T612	Japanese Sophora	*Sophora japonica*	3	Poor	Thin crown, dead wood	Private	City
T613	Sweetgum	*Liquidambar styraciflua*	4	Poor	Trunk decay, crown dieback		City
T614	Japanese Sophora	*Sophora japonica*	3	Poor	Thin crown, dead wood		City
T615	Japanese Sophora	*Sophora japonica*	3	Poor	Thin crown, dead wood		City
T616	Japanese Sophora	*Sophora japonica*	3	Fair/Poor	Dead wood		City
T617	Japanese Sophora	*Sophora japonica*	3	Poor	Dead wood, thin crown		City
T618	Sweetgum	*Liquidambar styraciflua*	3	Poor	Mainstem decay, trunk damage	Private	City
T619	Sweetgum	*Liquidambar styraciflua*	3	Fair	One-sided	Private	City
T620	Sweetgum	*Liquidambar styraciflua*	4	Fair	Tip dieback	Private	City
T621	Sweetgum	*Liquidambar styraciflua*	4	Good		Private	City
T622	Japanese Sophora	*Sophora japonica*	3	Poor	Dead wood, thin crown	Private	City
T623	Sweetgum	*Liquidambar styraciflua*	4	Good		Private	City
T624	Sweetgum	*Liquidambar styraciflua*	4	Good/Fair	Tip dieback	Private	City
T625	Red maple	*Acer rubrum*	3	Fair/Poor	Mainstem dieback	Private	City
T626	Red maple	*Acer rubrum*	3	Fair	Tip dieback	ROW	City
T627	Red maple	*Acer rubrum*	3	Poor	Trunk decay, crown dieback	Private	City
T627	Red maple	*Acer rubrum*	3	Poor	Trunk decay, crown dieback	ROW	City
T628	Red maple	*Acer rubrum*	3	Poor	Trunk decay, dead crown	Private	City
T629	Red maple	*Acer rubrum*	3	Fair/Poor	Trunk damage, tip dieback	ROW	City
T630	Red maple	*Acer rubrum*	3	Poor	Trunk decay, dieback	Private	City
T631	Red maple	*Acer rubrum*	3	Poor	Crown dieback, trunk damage	ROW	City

Red Line Tree Inventory
Segment 5

Number	Common Name	Scientific Name	DBH	Condition	Comment	Impact	Location
T632	Red maple	*Acer rubrum*	3	Fair	Tip dieback	Private	City
T633	Red maple	*Acer rubrum*	3	Fair/Poor	Trunk damage, tip dieback	ROW	City
T634	Red maple	*Acer rubrum*	4	Fair	Tip dieback	Private	City
T635	Red maple	*Acer rubrum*	4	Poor	Trunk damage, tip dieback	ROW	City
T636	Red maple	*Acer rubrum*	3	Fair	Tip dieback	Private	City
T637	Red maple	*Acer rubrum*	4	Fair/Poor	Trunk damage, tip dieback	ROW	City
T638	Cherry	*Prunus sp.*	2	Good			City
T639	Cherry	*Prunus sp.*	4	Fair/Poor	Trunk decay, mainstem dieback		City
T640	Cherry	*Prunus sp.*	3	Good			City
T641	Cherry	*Prunus sp.*	4	Good			City
T643	Cherry	*Prunus sp.*	4	Good			City
T644	Cherry	*Prunus sp.*	2	Good			City
T645	Cherry	*Prunus sp.*	4	Good			City
T646	Cherry	*Prunus sp.*	4	Good			City
T647	Cherry	*Prunus sp.*	3	Good/Fair	Topped		City
T648	Cherry	*Prunus sp.*	3	Fair/Poor	Lean, fungus		City
T649	Cherry	*Prunus sp.*	3	Fair	Topped		City
T650	Cherry	*Prunus sp.*	3	Fair	Trunk decay		City
T651	Cherry	*Prunus sp.*	2	Good			City
T652	Spruce	*Picea sp.*	3	Good			City
T653	Red maple	*Acer rubrum*	4	Fair	Trunk damage		City
T654	Cherry	*Prunus sp.*	2	Fair	Tip dieback, trunk decay	Private	City
T655	Austrian pine	*Pinus nigra*	4	Fair	Lean		City
T656	Eastern white pine	*Pinus strobus*	3	Good			City
T657	Eastern white pine	*Pinus strobus*	3	Good			City
T658	Eastern white pine	*Pinus strobus*	3	Good			City
T659	Black locust	*Robinia pseudoacacia*	6	Good			City
T660	Black locust	*Robinia pseudoacacia*	6	Good	Twin	ROW	City
T661	Black locust	*Robinia pseudoacacia*	6	Fair	Lean		City
T662	Black locust	*Robinia pseudoacacia*	8	Fair	Lean	ROW	City

Red Line Tree Inventory
Segment 5

Number	Common Name	Scientific Name	DBH	Condition	Comment	Impact	Location
T662	Black locust	*Robinia pseudoacacia*	6	Fair	Lean	ROW	City
T663	Serviceberry	*Amelanchier sp.*	3	Good	Multi-stem		City
T664	Serviceberry	*Amelanchier sp.*	3	Fair	Multi-stem, base damage	ROW	City
T665	Black willow	*Salix nigra*	5	Good		ROW	City
T666	Cherry	*Prunus sp.*	4	Good/Fair	Trunk damage	ROW	City
T667	Red maple	*Acer rubrum*	6	Poor	Mainstem decay, trunk decay		City
T668	Leyland cypress	*xCupressocyparis leylandii*	3	Good		Private	City
T669	Leyland cypress	*xCupressocyparis leylandii*	3	Good		Private	City
T670	Leyland cypress	*xCupressocyparis leylandii*	5	Good		Private	City
T671	Leyland cypress	*xCupressocyparis leylandii*	10	Good		Private	City
T672	Leyland cypress	*xCupressocyparis leylandii*	10	Good		Private	City
T673	Leyland cypress	*xCupressocyparis leylandii*	2	Good		Private	City
T674	Leyland cypress	*xCupressocyparis leylandii*	2	Good		Private	City
T675	Leyland cypress	*xCupressocyparis leylandii*	10	Good		Private	City
T676	Leyland cypress	*xCupressocyparis leylandii*	10	Good		Private	City
T677	Leyland cypress	*xCupressocyparis leylandii*	10	Good		Private	City
T678	Leyland cypress	*xCupressocyparis leylandii*	3	Good		Private	City
T679	Sawtooth oak	*Quercus acutissima*	6	Poor	Mainstem defect	ROW	City
T680	Sawtooth oak	*Quercus acutissima*	4	Fair	Dead wood, crown decline	ROW	City
T681	Sawtooth oak	*Quercus acutissima*	5	Fair	Dead wood	ROW	City
T682	Sawtooth oak	*Quercus acutissima*	4	Fair	Tip dieback	ROW	City
T683	Sawtooth oak	*Quercus acutissima*	6	Fair	Crown decline	ROW	City
T684	Eastern cottonwood	*Populus deltoides*	7	Fair	Growing out of asphalt	ROW	City
T685	Eastern cottonwood	*Populus deltoides*	6	Good/Fair		ROW	City
T686	Eastern cottonwood	*Populus deltoides*	9	Good/Fair	Improper pruning	ROW	City
T687	Eastern cottonwood	*Populus deltoides*	6	Fair	Included bark, suspect base, multi-stem	ROW	City
T688	Green ash	*Fraxinus pennsylvanica*	12	Fair	Included bark, epicormic branches	ROW	City
T689	Green ash	*Fraxinus pennsylvanica*	9	Fair	Epicormic branches, dead wood	ROW	City
T690	Green ash	*Fraxinus pennsylvanica*	9	Fair	Included bark, epicormic branches	ROW	City
T691	Green ash	*Fraxinus pennsylvanica*	9	Fair/poor	Included bark, crown decline	ROW	City

Red Line Tree Inventory
Segment 5

Number	Common Name	Scientific Name	DBH	Condition	Comment	Impact	Location
T692	Green ash	*Fraxinus pennsylvanica*	8	Poor	Lean, stem decay, included bark, dead wood	ROW	City
T693	Green ash	*Fraxinus pennsylvanica*	10	Poor	Included bark, dead wood, epicormic branches	ROW	City
T694	Green ash	*Fraxinus pennsylvanica*	8	Poor	Dead wood, included bark, suckers	ROW	City
T695	Green ash	*Fraxinus pennsylvanica*	4	Poor	Dying	ROW	City
T696	Green ash	*Fraxinus pennsylvanica*	8	Poor	Included bark, suckers	ROW	City
T697	Green ash	*Fraxinus pennsylvanica*	7	Poor	Dead wood, included bark, epicormic branching	ROW	City
T698	Green ash	*Fraxinus pennsylvanica*	4	Poor	Mainstem decay, dead top		City
T699	Green ash	*Fraxinus pennsylvanica*	4	Poor	Mainstem decay, base decay		City
T700	White mulberry	*Morus alba*	4	Good/fair	Growing through fence		City
T701	Pin oak	*Quercus palustris*	9	Good	2x, Included bark	ROW	City
T702	Eastern red cedar	*Juniperus virginiana*	3	Good/fair	One-sided, overtopped	ROW	City
T703	Sweet gum	*Liquidambar styraciflua*	2	Good		ROW	City
T704	Pin oak	*Quercus palustris*	12	Good	Minor dead wood	ROW	City
T705	Pin oak	*Quercus palustris*	10	Good/fair	Included bark, minor dead wood	ROW	City
T706	White mulberry	*Morus alba*	6	Fair	Dead wood, vines	Private	City
T707	White mulberry	*Morus alba*	8	Fair	Included bark, dead wood, vines	Private	City
T708	Red maple	*Acer rubrum*	8	Fair	Stem decay, recent sidewalk construction		City
T709	Red maple	*Acer rubrum*	12	Good	Thin crown		City
T710	Trident maple	*Acer buergerianum*	2	Fair	Mainstem dieback		City
T711	Red maple	*Acer rubrum*	9	Poor	Mainstem decay, crown decline		City
T712	White oak	*Quercus alba*	3	Fair	Mainstem dieback		City
T713	Hedge maple	*Acer campestre*	9	Good	Included bark, minor dead wood		City
T714	Hedge maple	*Acer campestre*	8	Good	Included bark, minor dead wood	ROW	City
T715	Slippery elm	*Ulmus rubra*	15	Fair	2x, growing out of asphalt and guardrail		City
T716	Tree of heaven	*Ailanthus altissima*	6	Fair	5x, growing through fence, vines		City
T717	Tree of heaven	*Ailanthus altissima*	4	Fair	Utility trimmed, growing through fence, vines		City
T718	Honey locust	*Gleditsia triacanthos*	15	Good		ROW	City
T719	Magnolia	*Magnolia sp.*	4	Good	Included bark		City
T720	Red maple	*Acer rubrum*	9	Good/fair	Thin crown, one-sided		City
T721	Red maple	*Acer rubrum*	6	Good/fair	Thin crown		City

Red Line Tree Inventory
Segment 5

Number	Common Name	Scientific Name	DBH	Condition	Comment	Impact	Location
T722	Red maple	*Acer rubrum*	6	Good/fair	Thin crown		City
T723	Flowering cherry	*Prunus sp.*	5	Good/fair	Included bark		City
T724	Flowering cherry	*Prunus sp.*	9	Good/fair	Base wound		City
T725	Flowering cherry	*Prunus sp.*	9	Good/fair	Included bark		City
T726	Flowering cherry	*Prunus sp.*	10	Fair	Included bark		City
T727	Flowering cherry	*Prunus sp.*	10	Poor	Included bark, base decay, crown decline	Private	City
T728	Green ash	*Fraxinus pennsylvanica*	26	Fair	Improper pruning, uneven crown, vines	Private	City
T729	White mulberry	*Morus alba*	23	Poor	Improper pruning, base decay, lean	Private	City
T730	Royal paulownia	*Paulownia tomentosa*	21	Fair	Vines, dead wood	Private	City
T731	Royal paulownia	*Paulownia tomentosa*	24	Fair	Dead wood, vines, included bark	Private	City
T732	Royal paulownia	*Paulownia tomentosa*	22	Fair	Dead wood, vines	Private	City
T733	Royal paulownia	*Paulownia tomentosa*	24	Fair	Vines, dead wood	Private	City
T734	Eastern cottonwood	*Populus deltoides*	28	Fair	Vines	Private	City
T735	Mimosa	*Albizia julibrissin*	4	Good		Private	City
T736	Bradford pear	*Pyrus calleryana*	6	Good		ROW	City
T737	American elm	*Ulmus americana*	36	Good/fair	Many fused stems, included bark		City
T738	Willow	*Salix sp.*	24	Fair	Vines, dead wood		City
T739	Eastern cottonwood	*Populus deltoides*	24	Fair	Thin crown, vines	Private	City
T740	Eastern cottonwood	*Populus deltoides*	24	Good/Fair	Side trimmed, vines	Private	City
T741	Chestnut oak	*Quercus prinus*	22	Good	2x, included bark, vines	Private	City
T775	Black locust	*Robinia pseudoacacia*	28	Fair	Broken top, vines		City
T776	Northern red oak	*Quercus rubra*	7	Poor	Trunk damage		City
T777	Northern red oak	*Quercus rubra*	8	Poor	Trunk damage, crown dieback		City
T778	Japanese sophora	*Sophora japonica*	8	Poor	Trunk damage		City
T779	Red maple	*Acer rubrum*	10	Poor	Trunk damage		City
T780	Red maple	*Acer rubrum*	8	Fair	Thin crown		City
T781	Red maple	*Acer rubrum*	9	Good			City

Appendix G
Agency Meeting Minutes

General Engineering Consultant Team
100 South Charles Street, Tower 1, 10th Floor
Baltimore, MD 21201

GEC Red Line Team
Meeting Minutes

TO: Participants

FROM: Sarah Williamson, Red Line GEC (CRI)

SUBJECT: Baltimore Redline, May 9th, 2012 Wetland Field Review

DATE: July 9th, 2012

CC: Richard Fischer – GEC Project Manager

CIN:

An agency field review was conducted on May 9th, 2012 to verify the limits of flagged wetlands and other Waters of the U.S. in the vicinity of the western segment of the Red Line project area. In attendance were the following:

Participants:

Jon Romeo – *U.S. Army Corps of Engineers*
Bill Seiger – *Maryland Department of Environment (MDE) Nontidal, Waters*
Phatta Thapa – *MDE Nontidal, Waters*
Cheryl Kerr –MD*E Nontidal, Wetlands*
Rick Maddox – *Red Line General Engineering Contractors (GEC)*
Earl Leach – *Red Line GEC*
Ray Moravec – *Red Line Project Management Consultants (PMC)*
Sarah Williamson – *Red Line GEC -Coastal Resources, Inc. (CRI)*
Steve Morseberger – *Red Line GEC - CRI*
Derek Rodgers – *Red Line GEC - CRI*

The team met at Security Square shopping mall near Lord Baltimore Drive at 9:30 a.m. Sarah Williamson summarized the plans for the day and Ray Moravec introduced the project to agency representatives.

The first system visited was **Wetland RL-3**, which is located adjacent to the parking area (See JD Map, Sheet 2 of 9). This wetland is a stormwater management basin that was constructed to intercept runoff from surrounding impervious surfaces. Cheryl Kerr, speaking on behalf of MDE, said the agency would likely not take jurisdiction over this wetland if the basin was functioning as intended and associated structures were in good condition. Jon Romeo, representing USACE, asked if the basin may have been built in an area historically occupied by wetlands, and indicated USACE may take jurisdiction if such was the case. However, Earl Leach indicated the project is not slated to impact this wetland; he indicated changes to the LOD could be made to exclude this system. CRI noted that SWM ponds created in uplands are not typically jurisdictional and would

not be flagged, but that this one was flagged because it was located in what appeared to be a historical drainage. Ms. Williamson stated that she would gather historical data on soils and drainage patterns for the area and provide that to the USACE and MDE to assist in their determination of jurisdiction.

This information was provided to the USACE and MDE in a Memorandum dated June 11, 2012. Based on the historical data, the USACE stated by email on June 22nd that it would take jurisdiction over Wetland RL-3 as flagged due to its location in a historical drainage with hydric soils. On June 25th, 2012, also by email, MDE stated it would not take jurisdiction over this area.

Wetlands RL-1 and **Wetland RL-2** were visited next (See JD Mapping, Sheet 1 of 9). Ray Moravec indicated impacts may occur to Wetland RL-1 as a result of construction of tail tracks, which may extend into the forested area adjoining the western terminus of Security Boulevard. The agencies concurred with the wetlands as flagged.

Wetlands and waters located on Social Security Administration (SSA) property were then visited by the project team, along Parallel Drive. The group was not able to access wetlands within the SSA complex at the third party-owned parking lot where the Red Line Corridor touches down after crossing I-695. Resources not reviewed by USACE and MDE in this area included **Wetland RL-10, Wetland RL-31**, **Waters RL-9,** and **Waters RL-32** (See JD Map, Sheet 2 of 9). Regarding the resources near Parallel Drive, the project team visited **Waters RL-11, Waters RL-12**, and **Wetland RL-13**, and concurred with the flagging of these resources (See JD Map, Sheet 6 of 9). Cheryl Kerr noticed the perennial portion of Waters RL-11 was omitted in the Wetland Summary Table; the summary table has since been updated (See Attachment B). MDE also asked if the limits-of-disturbance (LOD) could be pulled back to the west side of Waters 12 to minimize the impact to this perennial waterway. Earl Leach said he believed this was possible and agreed to make this change. He also agreed to investigate other changes to the LOD that might further minimize the small impacts currently shown to Wetland RL-13.

The field review team then accessed **Waters RL-22** from Calvert Road off of Parallel Drive (See JD Map, Sheet 7 of 9). Earl Leach informed the project team that this stream is slated to be placed in a culvert under the current design plan, in order to accommodate a large parking lot servicing the Parallel Drive Station. Bill Seiger, representing MDE, inquired whether there was any way this 230 foot segment of the stream could be daylighted, since MDE prefers this option to a culvert. Earl Leach did not think this would be possible due to the amount of parking needed for the station and the steepness of the adjacent slope. The agencies accepted the flagging of this system as shown.

Waters RL-14 was accessed next by parking on the shoulder of the entrance ramp to I-70 West from Ingleside Avenue (See JD Map, Sheet 7 of 9). This stream was accepted as flagged as an ephemeral channel, but Bill Seiger indicated that the storm drain receiving flow from an unknown source should be considered intermittent or perennial

due to significant audible flow entering the pipe crossing under I-70. CRI has designated the resource a perennial stream due to the observation of similar flow conditions during previous field work. The fact that near-drought conditions have been currently reported for Baltimore County further supports this designation. The mapping has been revised to show the storm drain associated with Waters RL-14 as part of **Waters RL-20**, which is the perennial stream that receives the storm drain flows on the far side of I-70.

The project team then drove to the apartment complex parking lot off of Franklin Avenue south of I-70 in order to access **Waters RL-20** and **Wetland RL-21** (See JD Map, Sheet 7 of 9). Earl Leach notified the team that neither of these systems would be affected as LOD revisions will be undertaken in order to avoid impacts. Nonetheless, the agencies concurred with the flagging of these systems.

Finally, the project team accessed wetlands and waters along the north side of the entrance ramp to the I-70 Park and Ride from Security Boulevard. These included **Wetland RL-28** and **Waters RL-29** (See JD Map, Sheet 9 of 9). At the time of the wetland/waters delineation conducted by CRI (March 1st, 2012), Waters RL-29 had recently been excavated to facilitate drainage of surface runoff and groundwater seepage associated with Wetland RL-28, and as such was designated an intermittent stream. However seeing this system in May of 2012, the agencies decided that sediment deposition and subsequent colonization of the channel by vegetation were sufficient to justify a designation of emergent wetland. Therefore, Wetland RL-28 was extended on the mapping to occupy the channel originally designated as the intermittent portion of Waters RL-29. Furthermore, the agencies felt that the concrete, trapezoidal channel portion of Waters RL-29 which was originally characterized as ephemeral should be labeled intermittent, since it serves as a connection between Wetland RL-28 and a storm drain. This change has also been implemented in the updated mapping. Otherwise, the agencies concurred with the flagging of these systems.

Several other wetlands and waters delineated by CRI were not visited during the May 9th field review due to a combination of factors, including: 1) avoidance/minimization measures taken by the GEC have effectively excluded resources from anticipated impacts, 2) resources are outside the current project LOD, or 3) resources are located in areas unsafe for a large group to access due to heavy traffic. In the case of the latter, wetlands were accepted as flagged based on the agencies' assessment of the mapping provided during the field review. Waters and wetlands not visited during the field review for any of the above reasons included: **Waters RL-4, Wetland RL-5, Wetland RL-6, Waters RL-7, Waters RL-8, portions of Waters RL-11 south of I-70, Wetland RL-15, Waters RL-16, Waters RL-17, Wetland RL-18, Wetland RL-19, Wetland RL-23, Waters RL-24, Waters RL-25, Waters RL-26, Waters RL-27,** and **Waters RL-30.**

The agencies present had no further comments or concerns at the end of the field review. The project team ended the meeting at around 1:00 p.m. with the understanding that a follow-up field review would be scheduled for the eastern section

of the project when property access issues were resolved and delineations could be completed.

General Engineering Consultant Team
100 South Charles Street, Tower 1, 10th Floor
Baltimore, MD 21201

Red Line GEC Team

Meeting Minutes

SUBJECT: Baltimore Redline, Mitigation Approach Meeting

DATE: June 8, 2012

TIME: 10:00 AM

LOCATION: Maryland Department of the Environment (MDE)
1800 Washington Blvd., Baltimore MD 21230

CIN:

Attendees	Organization	Phone	Email
Alaina DeGeorgio	US EPA	215-814-2741	degeorgio.alaina@epa.gov
Karen Jennings	Redline GEC – CRI	410-956-9000	karenj@coastal-resources.net
Cheryl Kerr	MDE	410-537-3911	ckerr@msn.com
Steve Morsberger	Redline GEC – CRI	410-956-9000	stevem@coastal-resources.net
Greg O'Hare	Redline GEC – RKK	410-462-9165	gohare@rkk.com
Jon Romeo	US ACE	410-962-6079	Jon.romeo@usace.army.mil
Phatta Thapa	MDE		pthapa@mde.state.md.us
Josh Tiralla	MDE	410-537-3558	jtiralla@mde.state.md.us
Sarah Williamson	Redline GEC – CRI	410-956-9000	sarahw@coastal-resources.net

A meeting was held on June 8, 2012 between the Red Line GEC team members developing the Red Line Conceptual Mitigation Package and the regulatory agencies responsible for reviewing the package for adequacy and eventual approval. The purpose of the meeting was to present mitigation site search work completed to date and solicit agency recommendations and feedback on the proposed mitigation approach for the Red Line Project.

Packets were distributed to the meeting attendees with a summary of the Redline mitigation site search process and results to date. A preliminary calculation of the project impacts indicates that under current design, stream impacts are below the 2000 LF threshold for an MDSPGP-4; however the wetland impacts are slightly above the 0.5 acre threshold for obtaining a general permit, indicating that the Red Line project may need to pursue an individual permit for impacts to wetlands and waterways. It is possible that future changes to the LOD could reduce wetland impacts below the threshold. MDE recommended that the Red Line team take a conservative approach and assume that an individual permit would be required for the project for both mitigation planning and the FEIS. A conservative approach will allow for greater flexibility during

later phases of the project, as it would be relatively easy to move from an individual permit to a general permit if impacts could be further minimized, but potentially complicated to make a change in the opposite direction. The group agreed that it would be more prudent to proceed based on the higher impact numbers than to rely on impact reductions down the line.

Steve Morsberger, of Coastal Resources, Inc. (CRI), then gave a summary of the mitigation site search process to date. The mitigation site search is being performed according to the federal mitigation rules. Mitigation bank credits are not available within the impacted watersheds, so banking is not an option for the Red Line project at this time. CRI is wrapping up Phase I of the mitigation site search, which is a desktop analysis. They have used the EPA Watershed Resources Registry (WRR) and Published Watershed Studies to find previously-identified sites, and have performed a GIS-based search for additional wetland sites. It was noted that the WRR only lists riparian buffer enhancement areas in the affected watersheds, rather than traditional stream restoration opportunities. Mr. Romeo noted that the USACE sometimes considers riparian plantings to be acceptable mitigation for stream impacts, and that the stream mitigation doesn't always have to be an in-stream restoration project.

Watershed studies that were consulted for the stream mitigation site search focused on the Gwynns Falls watershed. CRI is still looking for wetland opportunities in the Back River watershed. Most of the project impacts are located in the Gwynns Falls watershed, particularly in the Dead Run tributary. Impacts in the Back River and Direct Baltimore Harbor Drainage watersheds are very small and consist of wetlands inadvertently created by un-maintained drainage in developed areas. One of the wetlands has developed in an upland flat area where water ponds due to stockpiling, is dominated by *Phragmities*, and did not exist during previous surveys in 2006. Ms. Kerr mentioned that she suspected that MDE would not regulate a wetland with these characteristics. Since the wetland is located in the Picorp site, and access is highly controlled, it has been very difficult to get access to the site to examine the wetland, which was delineated by the City's consultants, more closely. The Redline GEC hopes to get access at the time of the Jurisdictional Determination, so that MDE and USACE can determine if it would be regulated. Mr. Romeo mentioned that the Jones Falls, which drains to the Harbor, is regulated by the USACE since the stream is considered navigable; however, no mitigation would be required as there are no anticipated impacts to Jones Falls due to the use of a deep tunnel at the Jones Falls crossing.

Mr. Morsberger explained that many of the riparian enhancement sites pulled from the WRR were eliminated from the list because they were showed as being located on roads or buildings, or because the stream corridor was less than 50 feet wide. The list of potential mitigation sites currently includes 34 wetland sites and 19 stream sites. Some of these sites may be eliminated through further screening.

The 8-digit HUC code for the Red Line impacts includes the entire Gunpowder-Patapsco watershed, which CRI hoped could potentially open the possibility for an available mitigation bank in the larger Gunpowder-Patapsco HUC. Mr. Tiralla informed the group that unfortunately all of the mitigation bank credits for the Patapsco watershed have been claimed already.

The Redline GEC asked whether a fee-in-lieu might be an option for this project, as it is a preference in the federal guidelines. Mr. Tiralla said that that MDE still considers fee-in-lieu to be the third option for mitigation. Mr. Romeo stated that the USACE would also prefer a watershed approach for this project.

The Redline GEC asked whether the agencies would prefer to see smaller mitigation sites located within the same subwatersheds as the impacts, or if they would be willing to consider mitigating all of the impacts collectively at one or two larger sites that could potentially provide a greater overall benefit to the Gunpowder-Patapsco HUC than replacing the very small wetland impacts likely to occur in the Back River and Direct Harbor subwatersheds. Depending on the public comments they receive, MDE prefers the consolidated approach since it would have a larger impact on the environment. An effort should be made to locate potential sites in all impacted watersheds, but the greatest effort should be put into finding the best sites in the Gwynns Falls/Dead Run subwatersheds where the majority of the impacts occur. Ms. DeGeorgio said that the EPA is also OK with consolidating mitigation to one or two sites, as long as the mitigation is still done within the same HUC code watershed.

Mr. Tiralla pointed out that the one potential mitigation site identified to date for the Back River watershed may be an existing SHA mitigation site. Mr. Morsberger replied that the site came from the WRR, and thought that it was adjacent to the SHA site. Mr. O'Hare said that he thought that SHA may be planting that entire area. The Redline GEC agreed to get in touch with Bill Buettner at SHA to determine the status of that site.

Mr. Morsberger said that the GEC intends to continue searching for wetland mitigation opportunities in the Back River watershed for Phase I, but may end up consolidating those impacts into a mitigation site in the Gwynns Falls watershed if nothing suitable can be found in the Back River watershed. The GEC will also coordinate with the City of Baltimore on opportunities they have identified within the Direct Harbor Drainage. Mr. Romeo suggested looking for opportunities to install trash interceptors. Although it would be out-of-kind mitigation, the USACE may deem it acceptable for harbor impacts. Ms. Williamson noted that the wetland impacts in the Direct Harbor Drainage are likely to be very small – less than 0.01 Acre. Mr. Tiralla and Ms. Kerr said that MDE prefers to see the mitigation in the Dead Run watershed over the Back River watershed, since that's where the majority of the project impacts are located.

Mr. Morsberger explained that Phase II will be an on-site evaluation of the potential mitigation sites, and a project suitability ranking. He explained how the on-site evaluation works, and the criteria used in the field forms, which are based on what was used for the ICC mitigation process. Mr. Morsberger agreed to email the on-site evaluation forms to Mr. Tiralla and Mr. Romeo for their review. The Red Line GEC will set up an agency review of the top ranked sites when Phase II is completed.

Ms. Williamson explained that the Redline GEC has started the process of acquiring permissions to access the potential mitigation site properties. Phase II can begin once we have permission via phone contact to visit a particular property, or 30 days after the permission letter has been sent. Since the letters will not be sent for a week or two at the earliest, we will probably not have access to all sites until July. That would likely put the agency field review

meeting in late July or August. Concurrence on the conceptual mitigation package is required by November 1st. The mitigation package will include the preferred site(s) as well as some "back-up" sites in case a preferred site falls through for any reason. The ROD is anticipated in February, and the final design will be completed after that. It is not certain when the permit application will be submitted, but it will be sometime after February. Mr. O'Hare and Ms. Williamson explained that the GEC staff have been trained for work along the rail corridors, but do not have permission to work in those areas to complete the wetland delineation in those areas yet. The GEC is relying on the DEIS boundaries and descriptions of the wetlands in the meantime.

Mr. O'Hare pointed out that many of the Baltimore watershed associations have been actively working to plant and expand riparian corridors, which somewhat limits mitigation opportunities for reforestation. Mr. Romeo suggested looking for sites within the City parks, such as Leakin Park and Gwynns Falls Park. Although the parks are largely forested, there may be some reforestation and/or wetland opportunities in meadow areas along the trails. Mr. Tiralla suggested that the GEC contact Ecotone Inc. about any potential sites that they may be aware of in the Patapsco watershed.

Ms. Kerr suggested that the GEC look for opportunities in the Red Run sub-watershed. She said that an old quarry pond is slated to become a subdivision near potential mitigation site 768805 on the mitigation map. Just downstream of the quarry pond may be a good area for stream mitigation. There are known populations of trout that live in that stream and the development will include reclamation of a stream segment that was severely impacted by the quarry activities. Also, farmland drains into the quarry pond near site RL-GF-089 on the map. A stream restoration project either up or downstream of the planned development could add to and enhance the reclamation project currently proposed for that area.

The meeting adjourned at 11:15 a.m.

General Engineering Consultant Team
100 South Charles Street, Tower 1, 10th Floor
Baltimore, MD 21201

Meeting Minutes

SUBJECT: Baltimore Red Line, Field Review of Potential Mitigation Sites

DATE: September 12, 2012

TIME: 9:00 AM

LOCATION: Multiple sites in Baltimore County and City

Attendees	Organization	Phone	Email
Alaina DeGeorgio	US EPA	215-814-2741	degeorgio.alaina@epa.gov
Matt Hubbard	Red Line GEC – CRI	410-956-9000	matth@coastal-resources.net
Karen Jennings	Red Line GEC – CRI	410-956-9000	karenj@coastal-resources.net
Cheryl Kerr	MDE	410-537-3911	ckerr@msn.com
Ray Moravec	MTA/Red Line PMC	443-451-3729	rmoravec@baltimoreredline.com
Steve Morsberger	Red Line GEC – CRI	410-956-9000	stevem@coastal-resources.net
Greg O'Hare	Red Line GEC – RKK	410-462-9165	gohare@rkk.com
Jon Romeo	US ACE	410-962-6079	Jon.romeo@usace.army.mil
Bill Seiger	MDE		wseiger@mde.state.md.us
Phatta Thapa	MDE		pthapa@mde.state.md.us
Josh Tiralla	MDE	410-537-3558	jtiralla@mde.state.md.us
Sarah Williamson	Red Line GEC – CRI	410-956-9000	sarahw@coastal-resources.net

A field meeting was held on September 12, 2012 between the Red Line GEC team members developing the Conceptual Mitigation Package and the regulatory agencies responsible for reviewing the package. The purpose of the meeting was to visit the highest ranked sites identified during the mitigation site search and solicit agency feedback on the suitability of the sites for use in the compensatory mitigation package for the Red Line Project. Packets were distributed to the meeting attendees with a meeting agenda, overview of the proposed mitigation sites, and detailed information and mapping for each site.

Ray Moravec began the meeting with an overview of the project status and milestone dates. The Red Line is a 14 mile transit project, with 2 tunnel segments. Construction is anticipated to begin in 2015. The Red Line Project is on an expedited review schedule as identified by the White House, and the draft FEIS is currently being compiled. The federal expedited review schedule has set a date for federal agency concurrence on the Conceptual Mitigation Package of November 1, 2012, making mitigation planning a critical path item for the overall project schedule. In response to Cheryl Kerr's question regarding the permit submittal schedule, Mr.

Moravec estimated that the Joint Permit Application (JPA) would be submitted after the NEPA record of decision is made and the final design phase begins, probably in June 2013.

Sarah Williamson pointed out that the project team has only just received access to areas along the Northern Suffolk rail lines very recently for wetland delineation, and so a Jurisdictional Determination (JD) will need to be done for that area if the agencies wish to see the wetland first hand. Ms. Williamson will present the findings of the wetland delineation at the interagency meeting, at which time the group can decide if a field review is necessary for the JD. Mr. Moravec mentioned that the project was likely to be permitted and constructed in phases with permit refinements and that even the downtown tunnel segment will need permits because they will be tunneling beneath navigable waterways. Mr. Moravec further explained that MTA's charge is to do as much benefit as possible even though the project has minimal impacts to natural resources. The Red Line team's perspective is that they don't want to only meet the minimum mitigation requirements, but rather they want to have complete mitigation projects with a real ecological benefits, even if that means overcompensating for the Red Line project impacts and applying excess mitigation towards future MTA projects.

Steve Morsberger gave an overview of the mitigation sites to be visited during the meeting. He explained that the mitigation site search followed a watershed approach, and that the field meeting would focus on the two sites where all of the mitigation needs can be resolved at one site. This approach results in a larger ecological benefit for the cost. Mr. Morsberger pointed out that two sites (the Golupski and Jones Falls sites) are shown on the list of sites, but are considered back up sites to demonstrate that potential mitigation sites were identified in each of the impacted watersheds. The Golupski site in particular was recommended to the Red Line Project by SHA, and is a great site, but the project impacts in the Back River watershed are very low (approximately 0.12 acre). Mr. Morsberger also explained that Area 3, shown on the mapping for the DNR Soldier's Delight site, is now excluded because of the presence of RTE plant and insect species in that area. Cheryl Kerr recommended that the Red Line team coordinate with Pam Bush at DNR regarding the Soldier's Delight site, and said that she would forward contact info.

Ms. Kerr also explained that the Columbia gas line is scheduled to be built between Owings Mills and Rutledge, and expressed concern that the gas line might run through some of the proposed mitigation sites. Matt Hubbard replied that he hadn't seen any survey flagging at the proposed mitigation sites, suggesting that they are not located in the gas line right-of-way. Mr. Moravec suggested that a separate meeting be scheduled as soon as possible to coordinate around the gas line location.

McDonogh School Site:

The group drove from the initial meeting location to the McDonogh School to walk the proposed mitigation site. Matt Hubbard gave an overview of the site, which includes opportunities for wetland creation, stream restoration, and riparian buffer creation. Mr. Hubbard explained that the existing narrow and sparse riparian buffer allows space to grade the floodplain for wetland creation. The wetland would provide water quality treatment by detaining nutrients and sediment from adjacent agricultural areas. A small tributary between agricultural fields could be

used for riparian plantings and also diverted to provide hydrology to created wetlands. Any work done on the site would have to consider existing sewer infrastructure and work around existing trees.

The agency representatives expressed concern about removing trees to create floodplain wetlands. Mr. Hubbard and Ms. Williamson explained that the design could work around trees in the floodplain and incorporate as habitat features. The design could also minimize tree impacts along the streambanks by leaving a levee between the stream and the wetlands, similar to what is often naturally created by sediment deposition in active floodplains, that could be breeched at small locations to avoid tree impacts, and increase flood frequency by raising the streambed instead of lowering the floodplain, or by adding roughness to the stream channel with large wood structures.

A straight tributary, located adjacent to Area 3 on the site map, has an abandoned building located on it. The tributary flows under the building and Mr. Hubbard explained that the building is believed to be an old Mill. Karen Jennings suggested that based on the way the flow is diverted through the base of the building, that it could have been an old ice house where the stream was used to keep the building cool. Cheryl Kerr said that MHT would need to be consulted before any work is performed in the area around the abandoned building. The tributary connects to other streams on both the upstream and downstream ends. An exposed manhole exists at the upstream end of the tributary. Proposed mitigation on the tributary could also include removal of an existing berm located on the west side of the channel at the upstream end of the tributary.

Mr. Hubbard showed the group an area of the floodplain that was 1 or 2 feet lower than other parts of the floodplain, and full of rack line debris around the tree trunks. He explained that this area suggests that if the floodplain could be lowered by just a foot, it would flood much more frequently. There are also less non-native invasive plant species in the more frequently flooded area.

Bill Seiger explained that the agencies are moving towards a function-based assessment for both impacts and mitigation to determine credit ratios. The agencies expressed that they would not want a large-scale stream realignment through this site, but that spot fixes may be enough to meet the stream mitigation requirements. A concern was raised that the stream didn't look too bad, and might be fixing itself. Ms. Williamson replied that the stream bank condition can be hard to see at this time of year because of the invasive grasses on the stream banks, and most of the erosion likely happens from high flows and freeze-thaw cycles in the winter months. Mr. Hubbard pointed out that the existing trees are not regenerating because of the dense NNI grasses on the floodplain, and the prevalence of black walnut.

Josh Tiralla expressed concern about the prevalence of NNI grasses on site, and that they may be difficult to control. He explained that the mitigation bank requirements have a 5% NNI maximum allowed, and that it might be difficult to keep the NNIs that low in perpetuity at this site. If the site goes over the mitigation amounts needed for the Red Line Project and MTA wanted to use the excess as a credit, then the site will have to meet the requirements for mitigation banks. Mr. Seiger mentioned that the MDE would not allow the tributary between the

agricultural fields to be diverted if it meant losing base flow. Others pointed out that the school may be using water from that tributary to water the fields. The agencies would want to see a detailed wetland delineation at this site to ensure that the area is not already a wetland.

DNR Soldier's Delight Site:

The group travelled to Soldier's Delight, where they met with Wayne Tyndell from DNR, to walk the proposed mitigation site. Matt Hubbard gave an overview of the site, which includes opportunities for wetland creation, stream restoration, and riparian buffer creation. Wetland creation areas would receive water from the seasonal groundwater table and runoff from upslope areas. Stream banks could be graded to increase flood frequency and provide supplemental hydrology to the wetlands. The stream is eroding into the valley wall in some locations, and could be realigned back to the valley center. Some wetland plants, such as umbrella sedge, are already popping up in the fields marked as Areas 1 and 2 on the mapping.

Cheryl Kerr expressed concern that the project could expose serpentine bedrock which would change the ecosystem pH. Mr. Tyndell explained that DNR is not sure where or how deep the serpentine bedrock might be on this side of the stream. The USDA is in the process of updating the soil maps for this area, and so they will have that information eventually, but the maps won't be done until next year. Mr. Tyndell said that the USDA indicated that areas where Mountain Laurel is growing, or areas where there is mica in the soil, indicates the bedrock is schist and not serpentine. There is a lot of Mountain Laurel growing along the stream channel.

Bill Seiger suggested that DNR stream staff may not approve realigning the stream channel away from the valley wall if there is impacts to existing trees. Ms. Kerr said that the valley wall appears to be eroded mostly from runoff down the steep slopes rather than from stream bank erosion. Mr. Morsberger pointed out an existing overflow channel on the north floodplain that could be utilized for channel relocation with minimal impacts to existing trees.

The agencies agreed that this site seemed more straightforward for wetland creation than the McDonogh site, although it might be short on stream mitigation credit. Mr. Morsberger suggested that more buffer plantings could be added to the site, for example, along drainage swales. Mr. Seiger pointed out that since a swale is not a WUS, planting trees along it wouldn't count towards stream mitigation. The MDE representatives indicate that they prefer to see stormwater management used in conjunction with stream restoration. MDE has, at times, allowed stormwater retrofits in lieu of stream restoration as mitigation. However, Jon Romeo wasn't sure if the USACE would accept that.

One of the stream areas identified for restoration at Soldier's Delight is at a power line crossing. Mr. Tyndell indicated that DNR has had a lot of success with creating warm season grass meadows in the power line right of ways, and that they have a good working relationship with BGE. Hence, a stream restoration project with meadow creation in the power line right-of-way is another possibility at this site.

Leakin Park Site:

The group travelled to Leakin Park to view two proposed mitigation sites. Steve Morsberger gave an overview of the site, which includes opportunities for wetland creation and stream restoration. Mr. Morsberger explained that the site has gas and sewer line constraints, but it is the closest site to the project impacts. The first site viewed, Area 121, is adjacent to an existing wetland, and likely just needs to be graded and planted. The second site, Area 120, doesn't need as much grading, but would require significant NNI control, as porcelain berry and wineberry dominate the vegetation at the site. Area 120 could also be linked to a stream restoration project to promote floodplain access.

Cheryl Kerr pointed out a stone wall near the potential wetland creation site are Area 121, which might indicate that MHT would need to review the area. She also mentioned that a permit was recently issued to KCI for a ~1600 LF stream restoration project downstream of this location.

Ms. Kerr and Josh Tiralla indicated that this was their preferred wetland mitigation site of the three areas we visited. Mr. Seiger doubted that Area 120 could count for both stream and wetland credits. Ms. Kerr suggested that the mitigation package could include the Leakin Park sites, and some stormwater management projects to substitute for the stream mitigation. Mr. Morsberger said that his staff would look through the Gwynns Falls Watershed Management report and pull out any recommended stormwater management projects. The agencies indicated that their first choice for stream restoration of the three sites visited would be the McDonogh site, followed by the Soldier's Delight site. Mr. Tiralla indicated that if the Leakin Park sites would not provide enough wetland credit, he would like to visit the Golupski site to see if that could be added.

Ms. Williamson asked the agencies if the sites presented are adequate to get concurrence that there is enough mitigation opportunities available that the project can move forward. In general, the agencies indicated that all of the sites appeared viable based on the preliminary information provided, though each had its strengths and weaknesses as a stream or wetland site, as discussed during the on-site review. Mr. Tiralla indicated that MDE cannot give official agency concurrence until they have been through a public comment period.

The meeting adjourned at 4pm.

General Engineering Consultant Team
100 South Charles Street, Tower 1, 10th Floor
Baltimore, MD 21201

Meeting Minutes

SUBJECT: Baltimore Red Line, Field Review of Potential Mitigation Sites

DATE: September 27th and 28th, 2012

TIME: 9:00 AM

LOCATION: Multiple sites in Baltimore City and Baltimore County

Attendees	Date in Attendance	Organization	Phone	Email
Karen Jennings	28th	RL GEC – CRI	410-956-9000	karenj@coastal-resources.net
Steve Morsberger	27th & 28th	RL GEC – CRI	410-956-9000	stevem@coastal-resources.net
Jon Romeo	27th & 28th	USACE	410-962-6079	Jon.romeo@usace.army.mil
Cheryl Kerr	27th	MDE		ckerr@mde.state.md.us
Bill Seiger	28th	MDE		wseiger@mde.state.md.us
Phatta Thapa	28th	MDE		pthapa@mde.state.md.us
Sarah Williamson	27th & 28th	RL GEC – CRI	410-956-9000	sarahw@coastal-resources.net

A field meeting was held on September 27th and 28, 2012 between the Red Line GEC wetland and waterways team and the regulatory agencies. The purpose of the meeting was to review the East Segment wetlands delineation and visit the additional wetland and stream sites identified during the mitigation site search. Agency feedback was solicited on the delineation as well as the suitability of the potential mitigation sites for use in the compensatory mitigation package for the Red Line Project.

Thursday September 27th

The group met at the Park and Ride Lot on Boston Street, where maps of the wetlands delineated for the East Segment wetlands were handed out. Thursday's agenda was to complete the agency review of the East Segment wetlands and visit the mitigation site identified within the Back River watershed.

After a little bit of time spent figuring out the best access points, the group visited Wetland RL-34 and Wetland RL-33. Ms. Williamson explained that both wetlands seem to be dependent on surface hydrology which drains from adjacent sites and ponds in the depressional areas of the inactive rail right-of-way. The areas seem to be isolated from other waters. The agencies concurred with these wetlands as shown as well as the assessment of their being of relatively poor quality.

The group then traveled to the eastern terminus of the Red Line project to view Wetland RL-36 and Waterway RL-41 that are located on Norfolk Southern property. These wetlands were viewed from the edge of the wooded areas. The agencies concurred with the overall wetland mapping in this area. However, access could not be obtained on the PiCorp site, so Wetland RL 40 was not reviewed in the field. Ms. Kerr noted that she believed that the PiCorp site may be under an enforcement action at MDE for unauthorized fill to the wetlands and stream at the back of the site. This site visit concluded the agency field review of the wetlands on the Red Line project.

Following the wetlands review, the group traveled to the east side of the Back River Watershed to review the potential mitigation site known as the Golupski site. This site is located in an agricultural area and is currently being managed by the landowner for wildlife forage to increase hunting opportunities. The portion of the site proposed for wetland creation is adjacent to existing forested and emergent wetlands and appears to need relatively low levels of excavation to reach suitable groundwater hydrology as evidenced by the elevations in the existing wetlands. Both MDE and the USACE stated that the site looked like a very good opportunity for creating mitigation wetlands. Ms. Kerr said that Josh Tiralla would have the last word for MDE on the suitability of the site, but that he was planning on visiting the site on another day as he was not able to attend the review meeting. She thought it was likely he would think the site was viable. The group also agreed that wetland mitigation appeared viable on the south side of Golupski Road in the open fields directly across from the current wetland mitigation area. This area is associated with hydric soils (Othello silt loam, 0-2 % slopes) and a small waterway draining to the east. Grading to create wetlands could be performed on the north and south side of the small waterway to intercept seasonal groundwater and capture additional surface water runoff or sheet flow draining to these areas.

Ms. Kerr encouraged the team to conduct an MHT screening on the site, as she was aware of cultural issues that had come up on other projects on an adjacent peninsula in the Back River watershed. The Red Line team noted that an initial cultural screening was underway as requested by MHT for all the potential sites. The meeting adjourned for the day at 1:00 pm.

Friday September 28th

On Friday, the group met at the Milford Mill Metro Station at 9 a.m. Packets were distributed to the meeting attendees with an agenda for the day, an overview of the proposed mitigation sites, and detailed information and mapping for each site.

Jon Romeo pointed out that the site at Powder Mill Park has already been permitted through Baltimore City for stream restoration. However, he wasn't sure if they have funding in place to do the work. Phatta Thapa explained that the site at McDonough Road and Meadow Heights Road has also been permitted as a wetland mitigation project for Baltimore County for one of its road projects. The Red Line team noted that this was two out of the three sites the group planned to visit that day, but that there were other potential sites identified in the Gwynns Falls Watershed Management Plan (2004) that could be added to the list for the day.

Scotts Level Branch Site:

The group drove from the initial meeting location to Tiverton Road to walk the proposed mitigation site. Karen Jennings gave an overview of opportunities at the site, which include stream restoration, riparian buffer enhancement and creation, and stormwater management through BMP installation at currently untreated outfalls. Site constraints include a power line crossing and some sewer infrastructure. There are at least 10 stormwater outfalls that empty into gullies on the floodplain that could be treated with BMPs. Upstream of Tiverton Road, stream restoration to stabilize the channel is particularly needed at the power line crossing and just downstream of the crossing. Downstream of Tiverton Road, the stream channel runs through open areas of an apartment complex where the lawn is mowed to the edge of channel. The lack of riparian vegetation in this reach has led to significant bank slumping. The overall length of the stream segment at this site is 2,600 linear feet, with about 1,500 linear feet upstream of Tiverton Road and 1,100 linear feet downstream of Tiverton Road. Although MDE noted that many of the banks did not appear to be wholly unstable, Mr. Morsberger noted that the drainage area was relatively small and that the stream appeared to be substantially over-widened relative to its drainage area. Ms. Williamson noted that flashy flows from the outfalls within the reach, as well as upstream sources, may be preventing the stream from healing and developing a new floodplain within the over-widened channel.

Bill Seiger said that he liked the idea of combining stream work with stormwater treatment using BMPs. However, he was unsure how mitigation credits would be assigned in that type of situation and would have to talk to Josh Tiralla at MDE about the credit allocation. Jon Romeo thought that it would be acceptable to the USACE to combine BMP and stream work for stream mitigation credits. Bill suggested that a regenerative stormwater conveyance system might work at some of the outfalls at this site, depending on the amount of flow that comes out of the outfalls. Bill suggested that small wetlands could be created in open areas of the floodplain upstream of Tiverton Road.

Since the stream segment downstream of Tiverton Road is located within an apartment complex, Sarah Williamson suggested that a stream project that included riparian plantings might have to be sold to the property owner as “native landscaping.” Jon expressed concern about keeping a mitigation site there protected and maintained in-perpetuity. Sarah suggested that the County might take on the long-term maintenance of any BMPs, since the upstream segment is also County property. She explained that for the SHA ICC project, Montgomery County assumed maintenance responsibilities for the BMPs installed.

Bill said that although there are somewhat limited opportunities for stream work at the Scotts Level Branch Site, he thinks it is a better site than the stream opportunities viewed during the 9/12 meeting. He reiterated that he liked how this site can incorporate stormwater treatment. Jon agreed that this site seems to have more potential than the ones viewed on 9/12. Sarah explained that the types of opportunities here are similar to the nature of the project’s stream impacts. She also pointed out that there are small fish in the channel here, and so in-channel habitat improvements that address the over-widening that currently limits habitat could be made to go hand-in-hand with water quality improvements at the stormwater outfalls. Bill said that it

may be tricky to get a mitigation project approved that includes a combination of in-kind and out-of-kind methods. The project would need to withstand the scrutiny of the public notice and hearing since it is not a traditional stream restoration project. However, if the nature of the impacts were explained well, then the public may be open to the out-of-kind mitigation aspects of a project at this site.

Brenbrook Drive Site:

The group travelled to Brenbrook Drive to walk the proposed mitigation site. Steve Morsberger explained that the site consists of potentially 3100 linear feet of stream restoration and stormwater outfall stabilization. The site is located within a forested corridor, about two miles upstream of the confluence with Gwynns Falls. Near the Brenbrook Road crossing, the stream channel is wide with steep, eroding stream banks that have exposed a manhole along the right bank. The overbank area seems to be forested wetlands. About 500 feet downstream of Brenbrook Road, the stream becomes a concrete-lined channel which is in poor condition. The concrete is cracked and buckled, and the stream is cutting around the concrete and causing erosion on both sides of the channel. Bill Seiger thought that removing the failing concrete would be a good idea, and that a mitigation project here could restore in-stream habitat and reconnect the channel to the floodplain. The USACE agreed with MDE's statements on the viability of the site.

Woodlawn Memorial Park Site:

The group travelled to Woodlawn Memorial Park to view the next proposed stream mitigation site. Steve Morsberger explained that this site was identified as a potential riparian buffer enhancement and stream stabilization project in the Gwynns Falls Watershed Quality Management Plan (2004). The stream channel is very incised with eroding banks. However, there is not much space on either side of the channel to do bank grading. Upstream of the ball fields, the channel is more stable. On site, it seemed that the ball fields would have to be impacted in order to do any stream work. Bill noted that the site seemed limited to a BMP at the parking lot and some riparian plantings. The group agreed that it was not worth moving this site forward in the mitigation process.

N. Rolling Road Site:

The group travelled to N. Rolling Road to view a proposed stream and wetland mitigation site. Steve explained that this site has some constraints due to sewer infrastructure on the floodplain immediately adjacent to the stream channel, but that it might still have some potential for stream and wetland mitigation. The site is a large open area that now contains some shrubs and scattered small trees. An unnamed tributary to Dead Run flows across the northern portion of the parcel, and is concrete-lined for about 300 feet downstream of N. Rolling Road. An adjacent homeowner has been mowing the floodplain. The group observed a consistent rack line of debris that indicated recent flow on the floodplain about 1 foot above the top of bank.

Bill noted that removing the concrete channel and adding a riparian buffer is a benefit to the stream, but the sewer line will be a challenge. The utility company might not want the concrete

channel removed. The stream channel is not in bad shape, so Bill thought it could just be planted and BMPs added at the outfalls to slow down stormwater flow.

Sarah pointed out that if there is sufficient groundwater hydrology and/or drainage area for surface runoff, there is enough space to create wetlands further away from the channel so it would not disturb the sewer line. Then riparian plantings could be placed along the stream channel for the stream mitigation. Bill agreed that it is worth keeping this site in mind for stream buffer plantings, and that Josh Tiralla should perhaps look at the site from the wetland perspective. Bill asked the Red Line Team to look into whether the site is mapped as FEMA floodplain, and also to send the location to Josh Tiralla so that he could visit the site independently.

The group returned to the Milford Mill lot and discussed the overall findings from the various field visits. Bill stated that he does not have any concerns that the Red Line impacts cannot be mitigated. Rather, it is a question of whether the mitigation can be completely addressed at one site, or if it will require multiple smaller mitigation sites. The USACE also noted that there appears to be enough sites presented to meet the mitigation requirements, at least at this conceptual stage.

The meeting adjourned at 3pm.

Appendix H
Wetlands and Waters Photo Documentation

RLWL1 - PEM1C

RLWL2- PFO1C

RLWL3 – PEM2C

RLWL5 – PEM2A

RLWL6-PFO1A

RLWUS7 – Ephemeral Channel

RLWUS4 – R3RB2 –Concrete –No Picture Taken

RLWUS8 – R4UB1

RLWUS11 – R3UB1

RLWUS9 –R3UB1

RLWUS12 – R4UB1

RLWL10 – PEM1/2A

RLWL13 – PFO1A/C

RLWUS14 – Ephemeral Channel

RLWUS16 – R3UB1/3

RLWL15 – PEM1A

RLWUS17 – R4SB5

RLWUS16 – R4RBconcrete

RLWL18 – PFO1A/B

RLWL19 – PEM1B

RLWUS22 – R3UB1

RLWUS20 – R3RBconcrete

RLWL23 – PFO1B

RLWL21 – PFO1B

RLWUS24 – R3UB1 – Dead Run

RLWUS25 – Ephemeral Channel

RLWL28 – PEM1E

RLWUS26 – R3SBConcrete

RLWUS29 – R4SB5

RLWUS27 – R4RBconcrete

RLWL31 – PEM1B (Mowed)

RLWUS32 – R4RB2

RLWL34– PFO1B

RLWL33 – PFO1B

RLWUS35 – E1OW

RLWL34 – PEM1C

RLWL36 – PEM1A

Appendix I Conceptual Mitigation Package – Site Summaries and Maps

Baltimore Red Line Project
Potential Stream Mitigation Site on Scotts Level Branch

Existing Conditions Summary

Location Information

County: Baltimore
Watershed: Gwynns Falls
Coordinates: 39°23'01.52"N / 76°48'59.97"W **USGS Quad:** Reisterstown
Location: Upstream and downstream of Tiverton Road, Randallstown, MD
Property Ownership: Baltimore County and Private Owner (Woodridge Realty LLC)
Constraints: Power Line Crossing; Community Recreational Use

Site Conditions

Parcel Area: 6.7 Ac and 11.5 Ac **Existing Land Use:** Open Space
Landscape Position: Stream Valley **Adjacent Land Use:** Residential
Drainage Area: 320 Ac
Habitat Location: Contiguous to wetland/upland forest, 25 - 100 Acres
Mapped Soils: Baile Silt Loam; Baile-Urban Land Complex; Glenelg-Urban Land Complex; Glenville-Urban Land Complex; Hatboro Silt Loam, Urban Land
Mapped Wetlands: No NWI or DNR wetlands mapped on site
Green Infrastructure: Located adjacent to Green Infrastructure Corridor at downstream end

This site is located between Southall Road and Branchleigh Road, and can be accessed from Tiverton Road. This stream reach is associated with Scotts Level Branch, a tributary of Gwynns Falls (Use III). The land use within the stream corridor is semi-forested open space, with adjacent residential development on either side. Additionally, there is an overhead power line crossing at the middle portion of the County parcel. The stream channel exhibits vertical, eroded banks, and is particularly unstable at the unvegetated power line crossing. Several stormwater outfalls empty into this reach of Scotts Level Branch through incised gullies on the floodplain. The County-owned parcel has a very narrow riparian buffer along most of the channel length. The private parcel has a wider riparian buffer of trees, but with a mowed understory. Mitigation opportunities for the Redline project include stream restoration, riparian buffer improvements, and stormwater management.

Summary of Opportunities

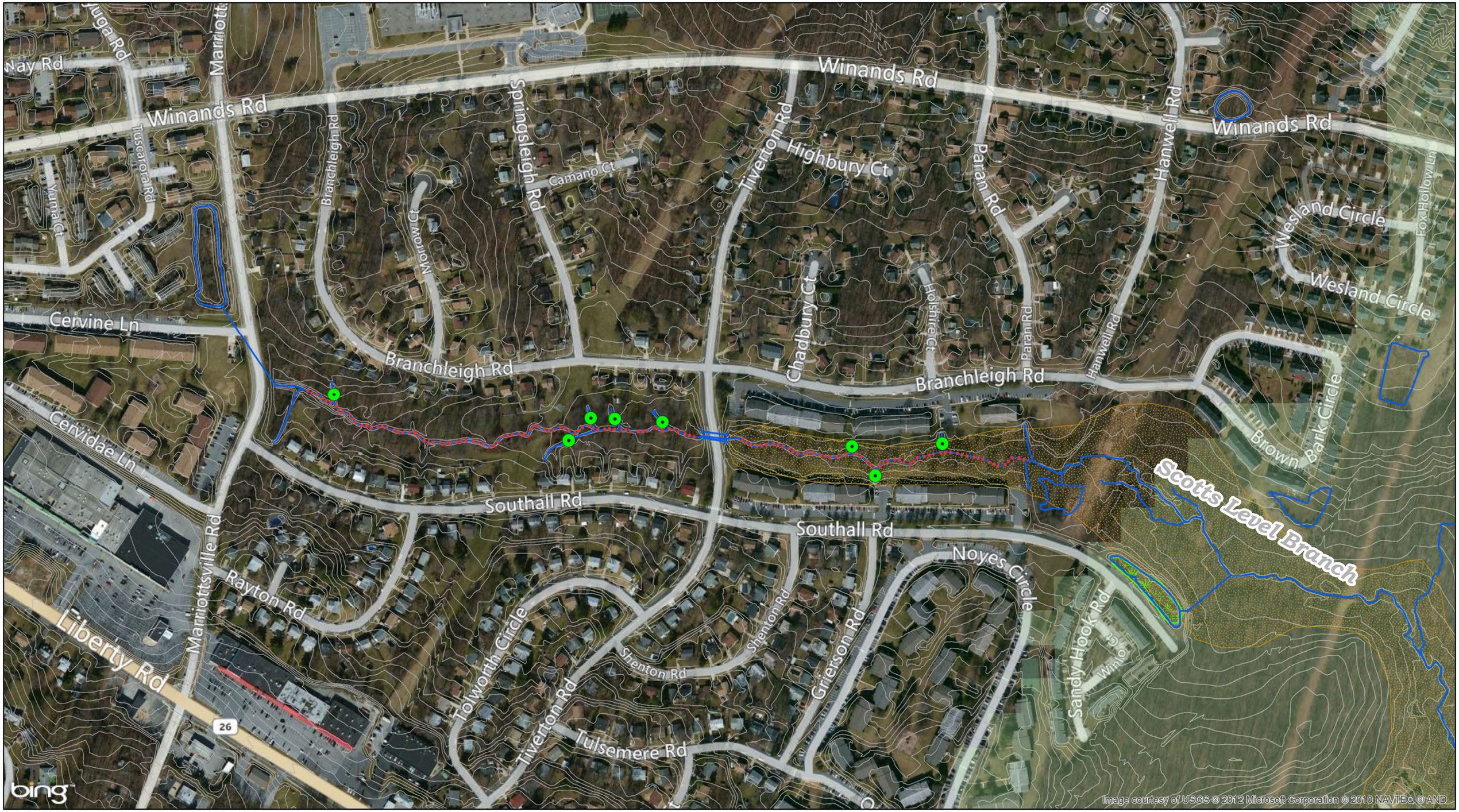
- Stream Restoration – Approximately 2,600 Linear Feet
- SWM BMP Installation

Restoration Objectives

- Stormwater Management
- Riparian Buffer Enhancement
- Stream Stabilization

Restoration Concept

- Installation of BMPs at stormwater outfalls to provide water quality and quantity improvements
- Bank stabilization and grade control to improve floodplain connection and in-stream habitat
- Riparian plantings to enhance the stream corridor



BALTIMORE RED LINE

- Potential BMP Opportunities
- Potential Stream Sites
- Streams
- 2' Contours
- Potential Wetland Sites
- Potential Buffer Sites
- DNR/NWI Wetlands
- Hydric Soils
- Green Hub
- Green Corridor

N

1 in = 300 feet

0 150 300 600 Feet

ASSOCIATED SITE ID:

SL-02

Red Line Potential Mitigation Sites

Scotts Level Br. Stream Site

October 2012

Baltimore Red Line Project
Potential Stream Mitigation Site
Brenbrook Drive

Existing Conditions Summary

Location Information

County: Baltimore County
Watershed: Gwynns Falls
Coordinates: 39°22'20.21"N / 76°47'13.70"W **USGS Quad:** Ellicott City
Location: South of Winterbrook Rd and Brenbrook Dr, Randallstown, MD
Property Ownership: Public drainageway and Private Property
Constraints: Utilities

Site Conditions

Parcel Area: 22.21 Ac **Existing Land Use:** Forest
Landscape Position: Stream Valley **Adjacent Land Use:** Residential, Recreational
Drainage Area: 1,600 Ac
Habitat Location: Contiguous to wetland/upland forest, 25 - 100 Acres
Mapped Soils: Hatboro silt loams
Mapped Wetlands: No NWI or DNR wetlands mapped on site
Green Infrastructure: Not located adjacent to Green Infrastructure

This stream site is located south of the intersection of Winterbrook Road and Brenbrook Drive. This stream reach is associated with Scotts Level Branch, a tributary of Gwynns Falls (Use III). The land use within the stream corridor is forested, with adjacent residential development, and a recreational field at the downstream end, along the right side of the stream. This site includes approximately 3,100 linear feet of potential stream restoration and stabilization, including the removal of a failing concrete channel. This site also includes the potential for the creation of floodplain wetlands for five small (<36”) and one large (42”) stormdrain outfalls.

Summary of Opportunities

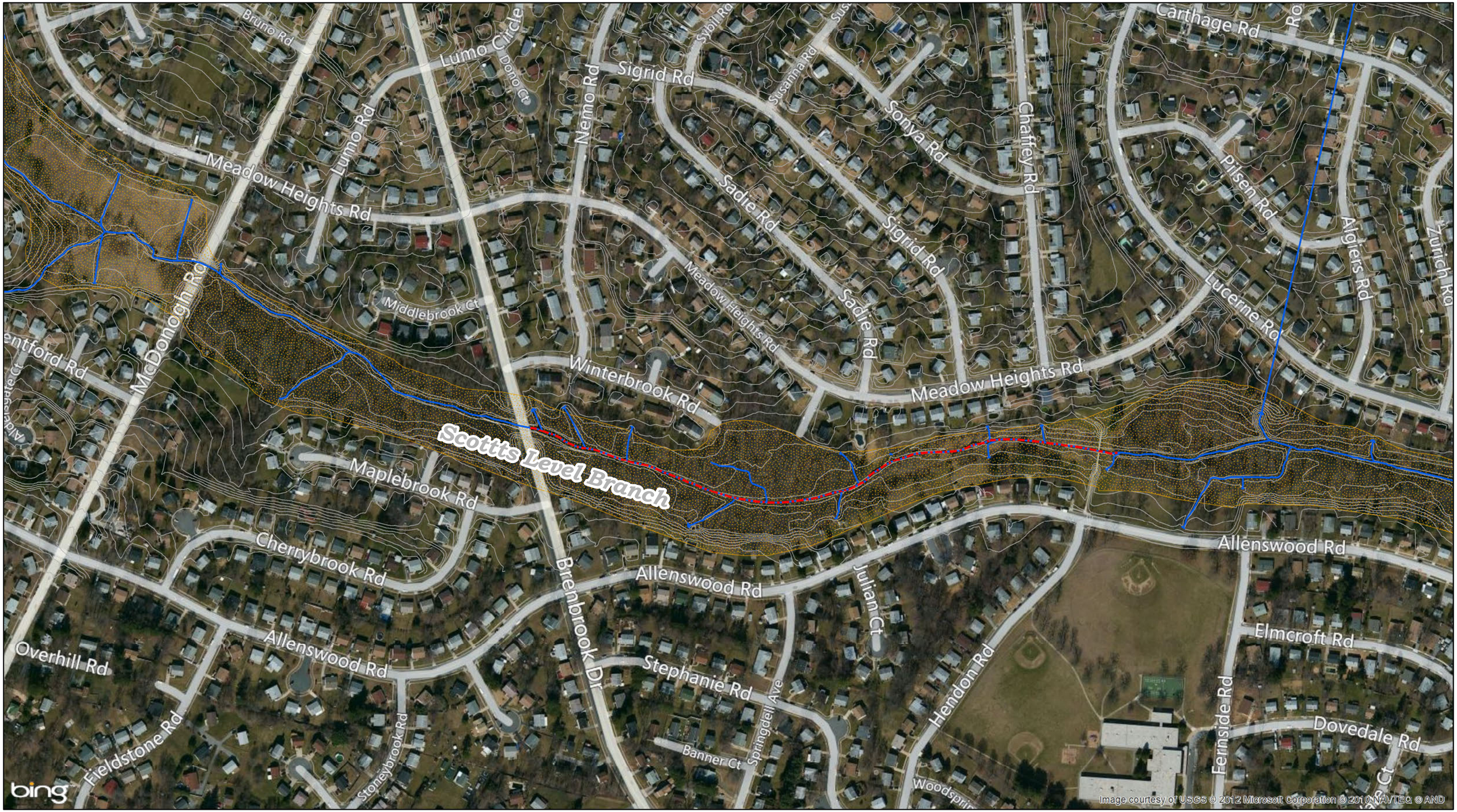
- Stream Restoration – Approximately 3,100 Linear Feet
- SWM BMP Installation

Restoration Objectives

- Stream Stabilization
- Stormwater Management
- Riparian Habitat Improvement

Restoration Concept

- Removal of concrete channel and re-construction of a natural channel form
- Installation of in-stream structures and bank grading to improve channel stability, reduce sediment loading, protect existing utilities, and improve in-stream habitat
- Installation of BMPs at stormwater outfalls to provide water quality and quantity improvements



BALTIMORE RED LINE

- Potential Stream Sites
- Streams
- 2' Contours
- Potential Wetland Sites
- Potential Buffer Sites
- DNR/NWI Wetlands
- Hydric Soils
- Green Hub
- Green Corridor

N

1 in = 300 feet

0 150 300 600 Feet

ASSOCIATED SITE ID:

SL-01

Red Line
Potential Mitigation Sites

Brenbrook Drive

October 2012

Baltimore Red Line Project
Potential Stream Mitigation Site on Powder Mill Run

Existing Conditions Summary

Location Information

County: Baltimore City
Watershed: Gwynns Falls
Coordinates: 39°20'11.71"N / 76°42'32.76"W **USGS Quad:** Baltimore West
Location: Northeast of Northern Parkway and Liberty Heights Ave., Baltimore, MD
Property Ownership: Public (Baltimore City)
Constraints: Utilities

Site Conditions

Parcel Area: 45.64 Ac **Existing Land Use:** Forest
Landscape Position: Stream Valley **Adjacent Land Use:** Residential, Industrial
Drainage Area: 2,368 Ac
Habitat Location: Contiguous to wetland/upland forest > 100 Acres
Mapped Soils: Fluvents; Jackland Silt Loam; Legore loam; Legore-Urban Land Complex; Montalto Silt Loam; Montalto-Urban Land Complex; Udorthents
Mapped Wetlands: No NWI or DNR wetlands mapped on site
Green Infrastructure: Not located adjacent to Green Infrastructure

This stream site is located within Powder Mill Park, northeast of the Northern Parkway and Liberty Heights Ave. intersection. This stream reach is associated with an unnamed tributary of Powder Mill Run, a tributary of Gwynns Falls (Use III). The land use within the stream corridor is forested, with an adjacent residential development to the east and a business park to the west. The stream corridor is densely forested and appears to access the floodplain regularly. However, the stream banks exhibit severe erosion and is moving a large amount of sediment. Sewer line infrastructure on the floodplain adjacent to the channel is also threatened by bank erosion and channel migration in some areas. Mitigation opportunities for the Redline project include stream restoration/stabilization. Based on coordination with USACE, MDE and Baltimore City DPW, this site has already moved forward in the design process and has obtained all necessary permits. However, the project is currently not funded for construction and may provide the opportunity to partner with Baltimore City for Red Line stream mitigation needs.

Summary of Opportunities

- Stream Restoration – Approximately 3,700 Linear Feet

Restoration Objectives

- Stream Stabilization
- Utility Protection

Restoration Concept

- Installation of in-stream structures and bank grading to improve channel stability, reduce sediment loading, protect existing utilities, and improve in-stream habitat

BALTIMORE RED LINE

Potential Stream Sites
Streams
2' Contours
Potential Wetland Sites
Potential Buffer Sites
DNR/NWI Wetlands
Hydric Soils
Green Hub
Green Corridor

N

1 in = 400 feet

0 200 400 800 Feet

ASSOCIATED SITE ID:

PM-04

Red Line
Potential Mitigation Sites

Power Mill Run Stream Site

October 2012

Baltimore Red Line Project
Potential Wetland and Stream Mitigation Site
Rolling Road

Existing Conditions Summary

Location Information

County: Baltimore
Watershed: Gwynns Falls
Coordinates: 39°18'59.66"N / 76°45'21.99"W **USGS Quad:** Ellicott City
Location: Southeast of N. Rolling Rd. and Glen Spring Rd., Woodlawn, MD
Property Ownership: Private
Constraints: Utilities

Site Conditions

Parcel Area: 24.09 Ac **Existing Land Use:** Open Space and Forest
Landscape Position: Topographic Low **Adjacent Land Use:** Residential
Drainage Area: Greater than 15:1
Habitat Location: Contiguous to wetland/upland forest < 25 Acres
Mapped Soils: Hatboro silt loams; Watching-Urban land complex
Mapped Wetlands: No NWI or DNR wetlands mapped on site
Green Infrastructure: No green infrastructure associated with this site

The site is located southeast of the intersection of N. Rolling Road and Glen Spring Road. The site is in the Gwynns Falls (Use III) watershed and associated with an unnamed tributary to Dead Run. Existing landuse consists of open field and meadow with sparse woody vegetation. Adjacent landuse consists of residential, commercial and industrial development. Mitigation opportunities for the Redline project include wetland creation along toe of slope and stream restoration. Stream restoration could include removal of concrete channel near Rolling Road and improving floodplain connection along upstream portions of the stream.

Summary of Opportunities

- Wetland Creation, 1.32 Acres
- Stream Restoration, 330 Linear Feet

Restoration Objectives

- Groundwater Recharge - increased retention time will allow for surface water infiltration
- Sediment/Toxicant Retention - sediment storage with connected floodplain and wetlands
- Nutrient Removal/Retention/Transformation - nutrient uptake/assimilation in floodplain and wetlands
- Flood Flow Alteration - enhancing floodplain connection and storage of flood waters; wetland could receive and retain overland or sheet flow runoff from surrounding uplands
- Wildlife Habitat – opportunity to enhance habitat for local wildlife
- Visual Quality/Aesthetics – opportunity to enhance visual landscape for neighboring residents and office space

Restoration Concept

- Grading to create wetland depressions along several areas within the riparian corridor
- Removal of concrete channel and replacement with natural stream channel
- May be possible to provide greater floodplain connection along upstream portions of channel

BALTIMORE RED LINE

Potential Stream Sites
Streams
2' Contours
Potential Wetland Sites
Potential Buffer Sites
DNR/NWI Wetlands
Hydric Soils
Green Hub
Green Corridor

N

1 in = 200 feet

0 100 200 400 Feet

ASSOCIATED SITE ID:

RL_GF_011

Red Line Potential Mitigation Sites

Rolling Road

October 2012

Baltimore Red Line Project
Potential Wetland and Stream Mitigation Site
McDonogh Riparian Buffer Site

Existing Conditions Summary

Location Information

County:	Baltimore		
Watershed:	Gwynns Falls (Horsehead subwatershed)		
Coordinates:	39°23'20.93"N / 76°46'52.07"W	**USGS Quad:**	Reisterstown
Location:	South side of McDonogh Road, Owings Mills, MD		
Property Ownership:	Private Property and Baltimore County ROW		
Constraints:	Utilities		

Site Conditions

Parcel Area:	11.10 Ac	**Existing Land Use:**	Open Floodplain
Landscape Position:	Topographic Low	**Adjacent Land Use:**	Forest and Residential
Drainage Area:	Greater than 15:1		
Habitat Location:	Contiguous to wetland/upland forest > 100 Acres		
Mapped Soils:	Codorus Silt Loam		
Mapped Wetlands:	No NWI or DNR wetlands mapped on site		
Green Infrastructure:	Located within GI Corridor and associated with GI Gaps		

The site is located on the south side of McDonogh Road just east of Painters Mill Road. The site is associated with the mainstem of Horsehead Branch (Use III) in the Gwynns Falls watershed. A majority of the proposed buffer is located on property owned by the McDonogh School. A small portion of the site is located on Baltimore County right-of-way. Buffer plantings may be limited in some areas of the site due to existing utilities (sanitary sewer).

Summary of Opportunities

- Riparian Buffer Enhancement, Approximately 1,300 Linear Feet

Restoration Concept

- Riparian plantings to enhance forested stream corridor

BALTIMORE RED LINE

Potential Stream Sites
Streams
2' Contours
Potential Wetland Sites
Potential Buffer Sites

DNR/NWI Wetlands
Hydric Soils
Green Hub
Green Corridor

N

1 in = 200 feet

0 100 200 400 Feet

ASSOCIATED SITE ID:

RL-GF-007B

Red Line Potential Mitigation Sites

McDonogh Buffer Site

October 2012

Baltimore Red Line Project
Potential Wetland and Stream Mitigation Site
Jones Falls Riparian Buffer Site

Existing Conditions Summary

Location Information

County: Baltimore
Watershed: Jones Falls
Coordinates: 39°24'29.62"N / 76°43'24.72"W **USGS Quad:** Cockeysville
Location: Southeast of Greenspring Valley Rd and Park Heights Ave, Stevenson, MD
Property Ownership: Private Owner
Constraints: Unknown

Site Conditions

Parcel Area: 91.50 Ac **Existing Land Use:** Agriculture
Landscape Position: Topographic Low **Adjacent Land Use:** Agriculture
Drainage Area: Greater than 15:1
Habitat Location: Contiguous to wetland/upland forest, 25 - 100 Acres
Mapped Soils: Lindside Silt Loam; Melvin Silt Loam
Mapped Wetlands: No NWI or DNR wetlands mapped on site
Green Infrastructure: Located within GI Corridor and associated with GI Gaps

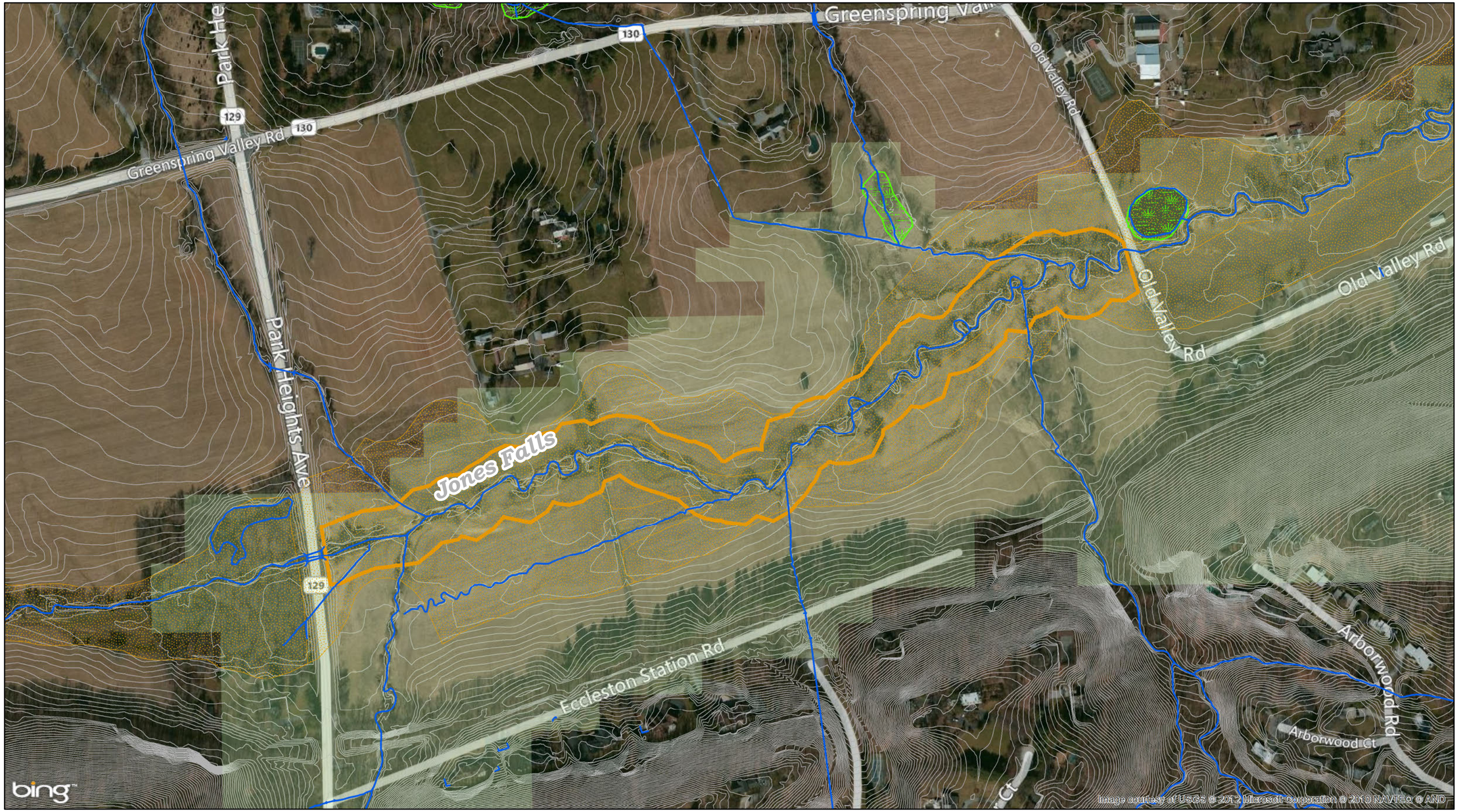
The site is located on the south side of Greenspring Valley Road just east of Park Heights Avenue. The site is associated with the mainstem of the Jones Falls (Use III) on a single farm property.

Summary of Opportunities

- Riparian Buffer Enhancement, Approximately 3,100 Linear Feet

Restoration Concept

- Riparian plantings to enhance forested stream corridor



BALTIMORE RED LINE

- Potential Stream Sites
- Streams
- 2' Contours
- Potential Wetland Sites
- Potential Buffer Sites
- DNR/NWI Wetlands
- Hydric Soils
- Green Hub
- Green Corridor

N

1 in = 300 feet

0 150 300 600 Feet

ASSOCIATED SITE ID:

RL-JF-001B

Red Line
Potential Mitigation Sites

Jones Falls Buffer Site

October 2012

Baltimore Red Line Project
Potential Wetland and Stream Mitigation Site
DNR Soldier's Delight Site

Existing Conditions Summary

Location Information

County: Baltimore
Watershed: Gwynns Falls (Red Run subwatershed)
Coordinates: 39°24'57.52"N / 76°49'18.18"W **USGS Quad:** Reisterstown
Location: Deer Park Road and Sunnyking Road, Owings Mills, MD
Property Ownership: Public Land (DNR Natural Environment Area)
Constraints: None

Site Conditions

Parcel Area: 191.91 Ac **Existing Land Use:** Agriculture - Hay
Landscape Position: Topographic Low **Adjacent Land Use:** Forest and meadow
Drainage Area: Greater than 15:1
Mapped Soils: Hatboro Silt Loam; Baile Silt Loam (3-8 percent slopes)
Habitat Location: Contiguous to wetland/upland forest > 100 Acres
Mapped Wetlands: NWI mapped wetlands exist on site along a tributary upstream of the proposed wetland mitigation areas. No DNR mapped wetlands exist on site.
Green Infrastructure: Located within GI Hub and associated with GI Gaps.

This site is located on the northeastern portion of the 1900 ac. Soldier's Delight State Park, south-southeast of Sunnyking Drive. Upland areas adjacent to the site include agricultural and State Park land uses. The site presents multiple mitigation opportunities for the Redline project. Opportunities include wetland creation, stream restoration/stabilization and riparian buffer enhancement. The site is associated with an unnamed tributary to Red Run (Use III).

Summary of Opportunities

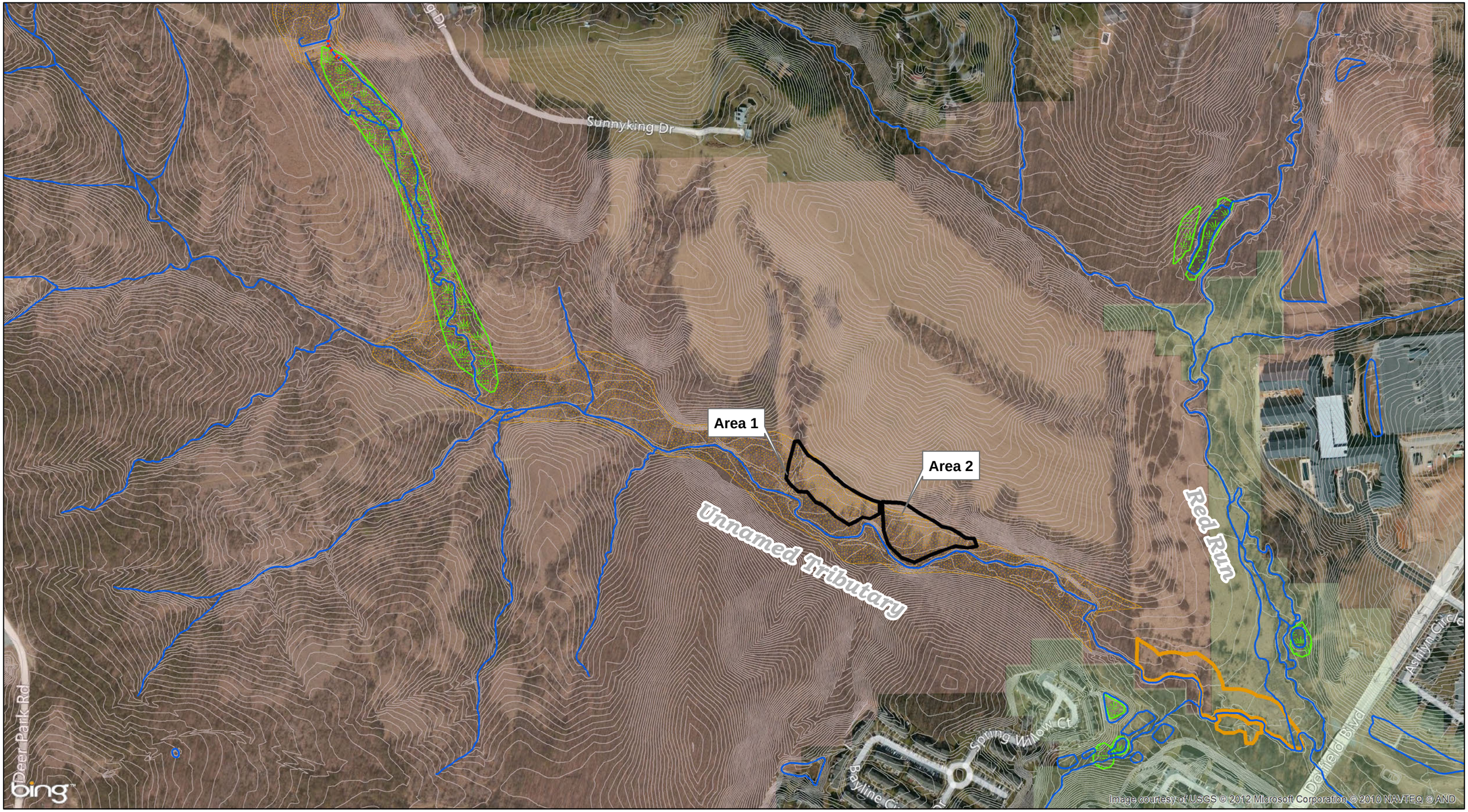
- Wetland Creation, 2.96 Acres
- Stream Restoration, 130 Linear Feet at utility crossing
- Riparian Buffer Planting, 1,000 Linear Feet

Restoration Objectives

- Groundwater Recharge - increased retention time will allow for surface water infiltration
- Nutrient Removal - nutrient uptake/assimilation in wetlands
- Wildlife Habitat - enhancement of riparian and wetland resources for resident and migrating wildlife
- Recreation - wetland will provide wildlife viewing opportunities
- Educational - the nature preserve with existing trails could include informational displays
- Visual Quality/Aesthetics - wetland and stream opportunities will enhance park viewscape

Restoration Concept

- Area 1 and 2 - Grading to create wetland areas
- Stream restoration could include restoration/stabilization at utility crossing
- Riparian buffer plantings to enhance forested stream corridors along downstream area on Baltimore County property



BALTIMORE RED LINE

Potential Stream Sites
Streams
2' Contours
Potential Wetland Sites
Potential Buffer Sites
DNR/NWI Wetlands
Hydric Soils
Green Hub
Green Corridor

N

1 in = 400 feet

0 200 400 800 Feet

ASSOCIATED SITE ID:

RL-GF-008S
RL-GF-008W
RL-GF-008B

Red Line
Potential Mitigation Sites

DNR Solider's Delight Site

October 2012

Baltimore Red Line Project
Potential Wetland and Stream Mitigation Site
McDonogh School Property

Existing Conditions Summary

Location Information

County: Baltimore
Watershed: Gwynns Falls
Coordinates: 39°23'58.16"N / 76°45'55.80"W **USGS Quad:** Reisterstown
Location: Riding Hall Road and Farm Road, Owings Mills, MD
Property Ownership: Sole Private Owner (McDonogh School)
Constraints: Utilities

Site Conditions

Parcel Area: 201.09 Ac **Existing Land Use:** Agriculture - Hay
Landscape Position: Topographic Low **Adjacent Land Use:** Forest and Institutional
Drainage Area: Greater than 15:1
Habitat Location: Contiguous to wetland/upland forest > 100 Acres
Mapped Soils: Codorus Silt Loam; Hatboro Silt Loam
Mapped Wetlands: NWI wetlands mapped along portions of site
Green Infrastructure: Located within GI Corridor and associated with GI Gaps

The site is located north of McDonogh Road and west of MD 795 on a portion of the approximately 800 acres that comprise the McDonogh School, established in 1873. The site is specifically associated with Gwynns Falls (Use III), forested floodplains, and adjacent farm fields of the McDonogh School. The site presents multiple mitigation opportunities for the Redline project. Opportunities include wetland creation, stream restoration/stabilization, floodplain connection, and potential riparian buffer enhancement. Limitations associated with existing utilities (sanitary sewer) may limit wetland creation opportunities on portions of the site (western floodplain).

Summary of Opportunities

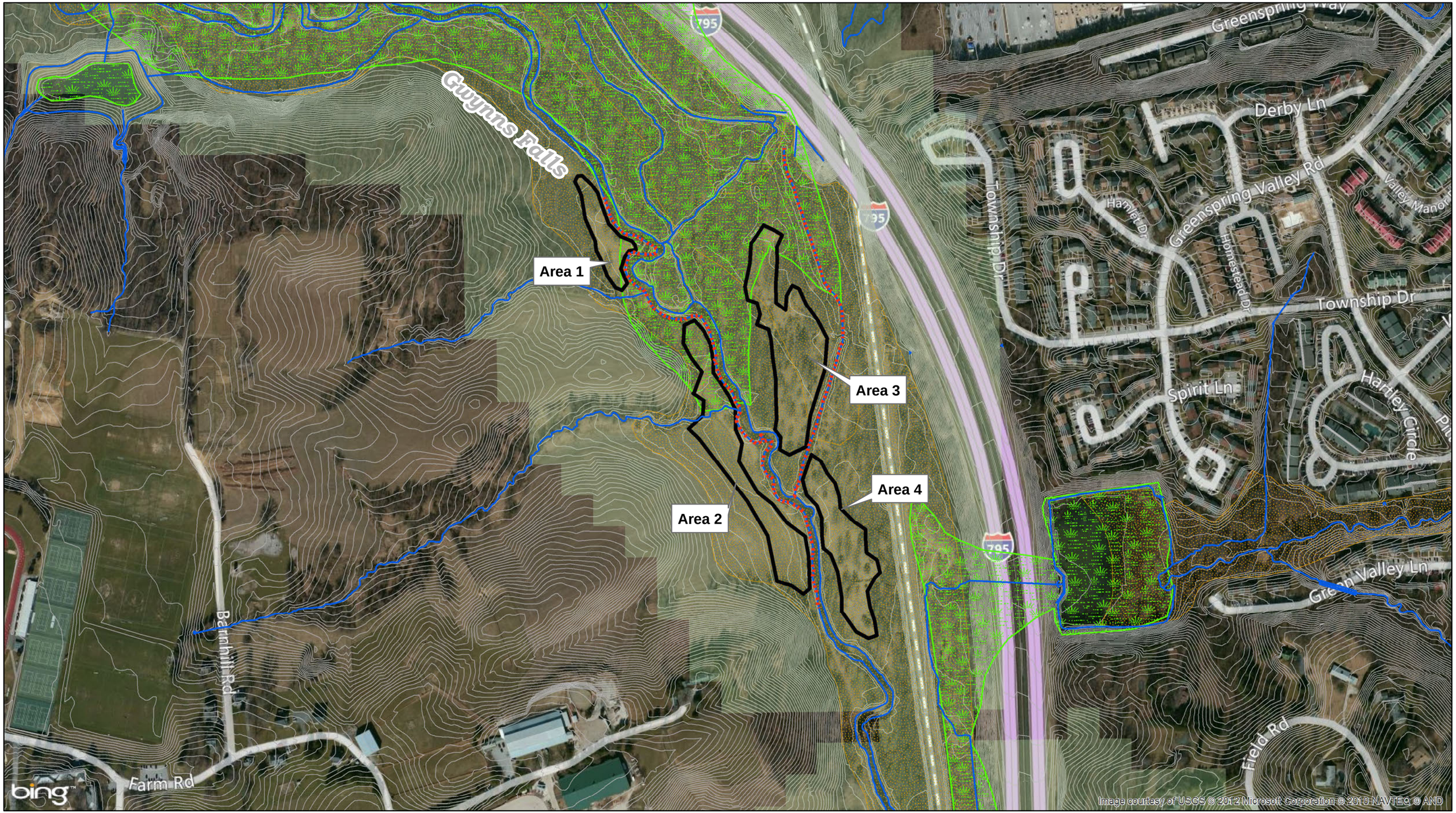
- Wetland Creation, 7.70 Acres
- Stream Restoration, 3,600 Linear Feet

Restoration Objectives

- Flood Flow Alteration - enhancing floodplain connection and storage of flood waters
- Groundwater Recharge - increased retention time will allow for surface water infiltration
- Sediment/Toxicant Retention - sediment storage with connected floodplain
- Nutrient Removal - nutrient uptake/assimilation in floodplain and wetlands
- Wildlife Habitat - enhancement of riparian and wetland resources for resident and migrating wildlife
- Educational/Recreational - opportunities to partner with McDonogh School to incorporate environmental stewardship, research, recreation, and “outdoor classroom”

Restoration Concept

- Grading to create wetland depressions along several areas within the riparian corridor
- Bank stabilization and grading to improve floodplain connection; protection of existing utilities; removal of berm located along tributary (race); potential for improving instream habitat
- Riparian plantings to enhance forested stream corridor



BALTIMORE RED LINE

- Potential Stream Sites
- Streams
- 2' Contours
- Potential Wetland Sites
- Potential Buffer Sites
- DNR/NWI Wetlands
- Hydric Soils
- Green Hub
- Green Corridor

N

1 in = 325 feet

0 162.5 325 650 Feet

ASSOCIATED SITE ID:

RL-GF-123W
RL-GF-124S

Red Line
Potential Mitigation Sites

McDonogh School Site

October 2012

Baltimore Red Line Project
Potential Wetland Mitigation Site
Leakin Park Sites

Existing Conditions Summary

Location Information

County:	Baltimore City		
Watershed:	Gwynns Falls (Dead Run subwatershed)		
Coordinates:	39°18'17.33"N / 76°41'24.29"W	**USGS Quad:**	Baltimore West
Location:	N. Franklintown Road, Baltimore, MD		
Property Ownership:	Public Land (Baltimore City Park)		
Constraints:	Utilities		

Site Conditions

Parcel Area:	162.09 Ac	**Existing Land Use:**	Floodplain, Lawn/Field
Landscape Position:	Topographic Low	**Adjacent Land Use:**	Forest
Drainage Area:	Greater than 15:1		
Habitat Location:	Contiguous to wetland/upland forest > 100 Acres		
Mapped Soils:	Fluvents, frequently flooded		
Mapped Wetlands:	No mapped NWI or DNR wetlands exist in the study area.		
Green Infrastructure:	Located within GI Hub and associated with GI Gaps.		

There are two site locations in Leakin Park, RL-GF-120 (120) and RL-GF-121 (121). Site 121 is located east of the parking area off of N. Franklintown Road on the east floodplain of Dead Run. Site 120 is located west of the parking area off of N. Franklintown Road on the south floodplain of Dead Run. Site 121 is currently un-mowed open floodplain dominated by reed canary grass and wild grape. Site 120 is associated with open park area that is mowed and maintained adjacent to an existing emergent/scrub-shrub wetland and forest buffer. Site constraints include sewer and gas line utilities that could limit areas of mitigation opportunities.

Summary of Opportunities

- Floodplain wetland and reconnection, 0.83 Acres (120)
- Wetland Creation, 0.22 Acres (121)

Restoration Objectives

- Flood Flow Alteration - enhancing floodplain connection and storage of flood waters
- Groundwater Recharge - increased retention time will allow for surface water infiltration
- Sediment/Toxicant Retention - sediment storage with connected floodplain
- Nutrient Removal - nutrient uptake/assimilation in floodplain and wetlands
- Wildlife Habitat - enhancement of riparian and wetland resources for resident and migrating wildlife
- Recreation - wetland will provide wildlife viewing opportunities
- Educational - Baltimore City parkland with existing trails could include informational displays

Restoration Concept

- Site 120 - Floodplain grading to create floodplain wetlands
- Site 121 - Grading to expand existing wetland area
- Riparian buffer plantings to enhance forested stream corridors

BALTIMORE RED LINE

Potential Stream Sites
Streams
2' Contours
Potential Wetland Sites
Potential Buffer Sites
DNR/NWI Wetlands
Hydric Soils
Green Hub
Green Corridor

N

1 in = 200 feet

0 100 200 400 Feet

ASSOCIATED SITE ID:

RL-GF-120
RL-GF-121

Red Line Potential Mitigation Sites

Leakin Park Sites

October 2012

Baltimore Red Line Project
Potential Wetland Mitigation Site
Golupski Site

Existing Conditions Summary

Location Information

County:	Baltimore		
Watershed:	Back River		
Coordinates:	39°16'36.02"N / 76°24'27.11"W	**USGS Quad:**	Middle River
Location:	Golupski Road, Essex, MD		
Property Ownership:	Sole Private Owner (Family Farm)		
Constraints:	None		

Site Conditions

Parcel Area:	67.15 Ac	**Existing Land Use:**	Agriculture - Corn
Landscape Position:	Topographic Low	**Adjacent Land Use:**	Agriculture and Forest
Drainage Area:	5:1 to 15:1		
Habitat Location:	Contiguous to wetland/upland forest > 100 Acres		
Mapped Soils:	Beltsville Silt Loam (2-5 percent slopes); Othello Silt Loam		
Mapped Wetlands:	Both DNR and NWI wetlands are mapped on site.		
Green Infrastructure:	Located adjacent to GI Hub.		

The Golupski site is located along the northern margin of Back River and has been farmed by the same family for four generations. The site is currently being cropped specifically for waterfowl habitat. Groundwater appears to be shallow and the site has very low topographic relief. Minimal site clearing and grading of the site would be required to improve the hydrology. Field observations during the site visit did not indicate the presence of any underground utilities. Access to the site is very good.

Summary of Opportunities

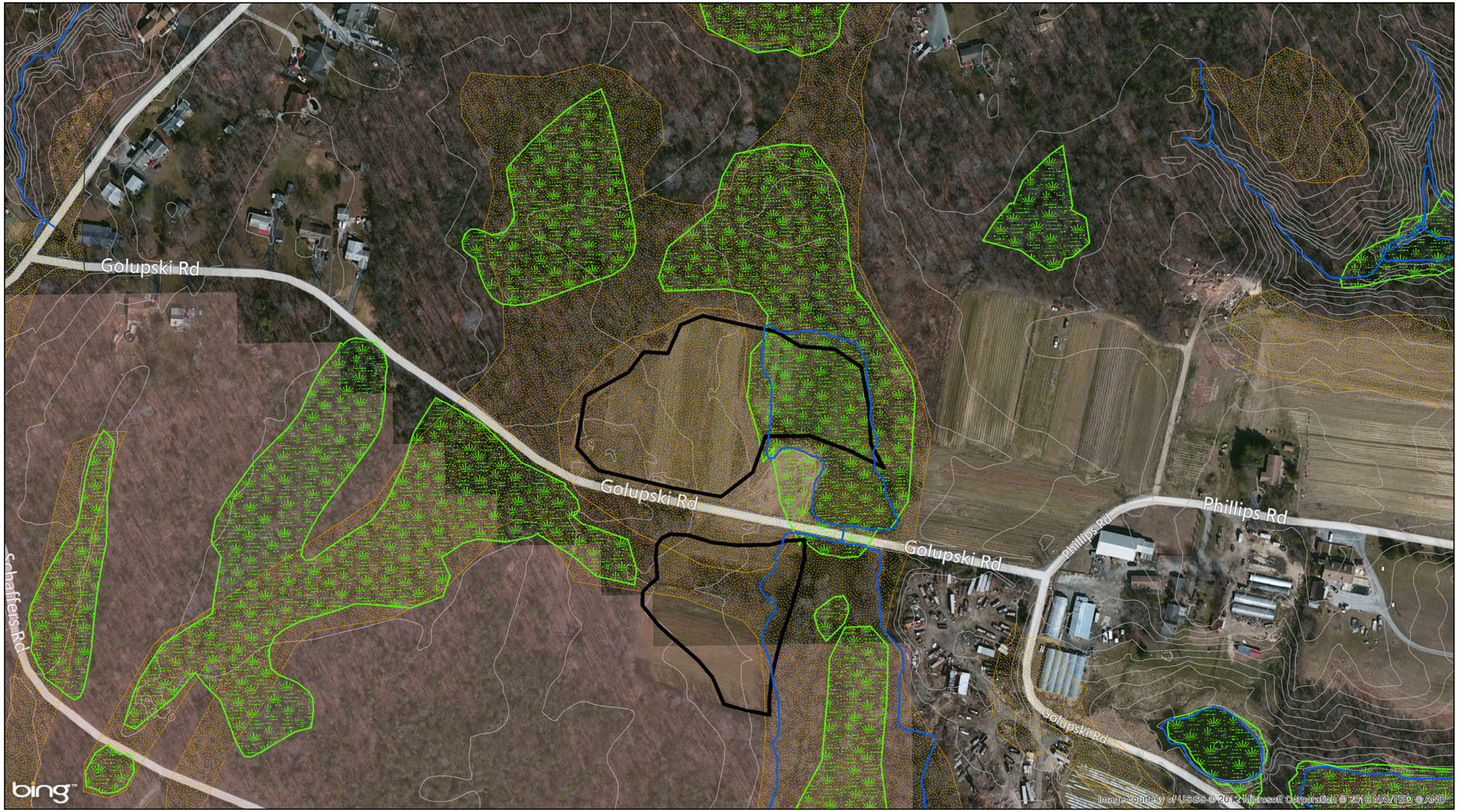
- Wetland Creation, 6.31 Acres

Restoration Objectives

- Groundwater Recharge/Discharge – increased retention time of precipitation and surface water inputs and discharge of seasonally high groundwater
- Nutrient Removal – conversion of upland agriculture fields to wetlands
- Wildlife Habitat – expansion of wetland habitat adjacent to Chesapeake Bay and Back River
- Recreation – wetland could provide enhanced hunting opportunities for property owner

Restoration Concept

- Grading to create mosaic of wetland cover types (forested, scrub shrub, emergent and open water)



BALTIMORE RED LINE

Potential Stream Sites
Streams
2' Contours
Potential Wetland Sites
Potential Buffer Sites
DNR/NWI Wetlands
Hydric Soils
Green Hub
Green Corridor

N

1 in = 200 feet

0 100 200 400 Feet

ASSOCIATED SITE ID:

RL-BR-085W

Red Line
Potential Mitigation Sites

Golupski Site

October 2012

Baltimore Red Line Project
Potential Wetland and Stream Buffer Mitigation Site
Pittsfield Road

Existing Conditions Summary

Location Information

County:	Baltimore		
Watershed:	Gwynns Falls		
Coordinates:	39°23'38.76"N / 76°45'13.75"W	**USGS Quad:**	Reisterstown
Location:	Southeast of McDonough Rd. and Pittsfield Rd., Garrison, MD		
Property Ownership:	Public land and Private Properties		
Constraints:	Backyards		

Site Conditions

Parcel Area:	26.49 Ac	**Existing Land Use:**	Open field
Landscape Position:	Topographic Low	**Adjacent Land Use:**	Residential
Drainage Area:	Less than 5:1		
Habitat Location:	Contiguous to wetland/upland forest between 25 to 100 Acres		
Mapped Soils:	Baile silt loam; Manor loam		
Mapped Wetlands:	No NWI or DNR wetlands mapped on site		
Green Infrastructure:	Located within GI Corridor and associated with GI Gaps		

The site is located southeast of the intersection of McDonough Road and Pittsfield Road. The site is associated with an unnamed tributary of Gwynns Falls (Use III), with open field space within the stream corridor, and adjacent residential development. The site presents several mitigation opportunities for the Redline project including wetland creation/enhancement, and riparian buffer establishment. The potential wetland area is already saturated, and existing wetlands are located upstream of the site. A constraint to these mitigation opportunities is that there are several private property lots located directly adjacent to the stream corridor, and the community appears to use the area as community open space.

Summary of Opportunities

- Wetland Creation, 0.57 Acres
- Stream Buffer Plantings, up to 500 Linear Feet

Restoration Objectives

- Groundwater Recharge - increased retention time will allow for surface water infiltration
- Sediment/Toxicant Retention - sediment storage with connected floodplain
- Nutrient Removal - nutrient uptake/assimilation in floodplain and wetlands
- Wildlife Habitat - enhancement of riparian and wetland resources for resident and migrating wildlife
- Recreation - wetland will provide wildlife viewing opportunities
- Visual Quality/Aesthetics - wetland and stream opportunities will enhance community viewscape

Restoration Concept

- Minor grading and plantings to create wetland depressions along several areas within the riparian corridor
- Riparian plantings to enhance forested stream corridor

BALTIMORE RED LINE

Potential Stream Sites
Streams
2' Contours
Potential Wetland Sites
Potential Buffer Sites
DNR/NWI Wetlands
Hydric Soils
Green Hub
Green Corridor

N

1 in = 200 feet

0 100 200 400 Feet

ASSOCIATED SITE ID:

RL_GF_095

Red Line Potential Mitigation Sites

Pittsfield Road

October 2012

Baltimore Red Line Project
Potential Stream Mitigation Site
Dead Run Tributary

Existing Conditions Summary

Location Information

County: Baltimore County
Watershed: Gwynns Falls
Coordinates: 39°18'51.73"N / 76°43'49.36"W **USGS Quad:** Baltimore West
Location: Up and downstream of the intersection of Woodlawn Dr and Security Blvd, Baltimore, MD
Property Ownership: Public (Baltimore County)
Constraints: Parking Lots

Site Conditions

Parcel Area: 76.28 Ac **Existing Land Use:** Forest
Landscape Position: Stream Valley **Adjacent Land Use:** Commercial, Industrial
Drainage Area: 1,536 Ac
Habitat Location: Contiguous to wetland/upland forest < 25 Acres
Mapped Soils: Watchung-Urban land complex; Watchung silt loam
Mapped Wetlands: No NWI or DNR wetlands mapped on site
Green Infrastructure: Not located adjacent to Green Infrastructure

This stream site is located southwest of the intersection of Gwynn Oak Avenue and Security Boulevard. This stream reach is associated with an unnamed tributary to Dead Run, a tributary of Gwynns Falls (Use III). The land use within the stream corridor is forested, with adjacent commercial and industrial development. Additionally, Woodlawn High School is located at the downstream end of the reach along the left side of the stream. There is a USGS stream gauge (# 01589315) located on the left bank at the school property. Access is limited upstream of Security Blvd. due to large, privately-owned parking lots on either side of the channel, with fences along the stream corridor. The stream channel throughout the reach is disconnected from the floodplain and the stream banks are actively eroding. Opportunities for stream restoration, floodplain improvement, and BMP installation are available at this site.

Summary of Opportunities

- Stream Restoration – Approximately 3,700 Linear Feet

Restoration Objectives

- Stream Stabilization
- Stormwater Management

Restoration Concept

- Installation of in-stream structures and bank grading to improve channel stability, reduce sediment loading, and improve in-stream habitat
- Removal of some parking lot areas and installation of BMPs

BALTIMORE RED LINE

- Potential Stream Sites
- Streams
- 2' Contours
- Potential Wetland Sites
- Potential Buffer Sites
- DNR/NWI Wetlands
- Hydric Soils
- Green Hub
- Green Corridor

N

1 in = 250 feet

0 125 250 500 Feet

ASSOCIATED SITE ID:

DRT-204

Red Line Potential Mitigation Sites

Dead Run Tributary

October 2012

Baltimore Red Line Project
Potential Stream Mitigation Site
Whitestone Road

Existing Conditions Summary

Location Information

County: Baltimore County
Watershed: Gwynns Falls
Coordinates: 39°19'14.86"N / 76°44'35.27"W **USGS Quad:** Baltimore West
Location: Southwest of Dogwood Rd. and Whitestone Rd., Baltimore, MD
Property Ownership: Private Owner (ATI Performance Products, Inc.)
Constraints: Adjacent parking/storage areas encroached on floodplain

Site Conditions

Parcel Area: 4.26 Ac **Existing Land Use:** Forested, Commercial
Landscape Position: Stream Valley **Adjacent Land Use:** Commercial
Drainage Area: 448 Ac
Habitat Location: Contiguous to wetland/upland forest < 25 Acres
Mapped Soils: Hatboro Silt Loams
Mapped Wetlands: No NWI or DNR wetlands mapped on site
Green Infrastructure: No green infrastructure located on site

This site is located southwest of the intersection of Dogwood Road and Whitestone Road. The stream reach is associated with Dead Run, a tributary of Gwynns Falls (Use III). There is a thin patch of forest surrounding the stream corridor, with the remaining land use associated with commercial development. Within the reach, the right bank is actively eroding up to a metal fence on ATI Performance Products Inc. property. The owner of this property is concerned that the fence will soon become undermined by the channel and wants something to be done to prevent further erosion. Parking lots on both sides of the stream are threatened by stream channel widening. Mitigation opportunities for the Redline project include stream restoration/stabilization.

Summary of Opportunities

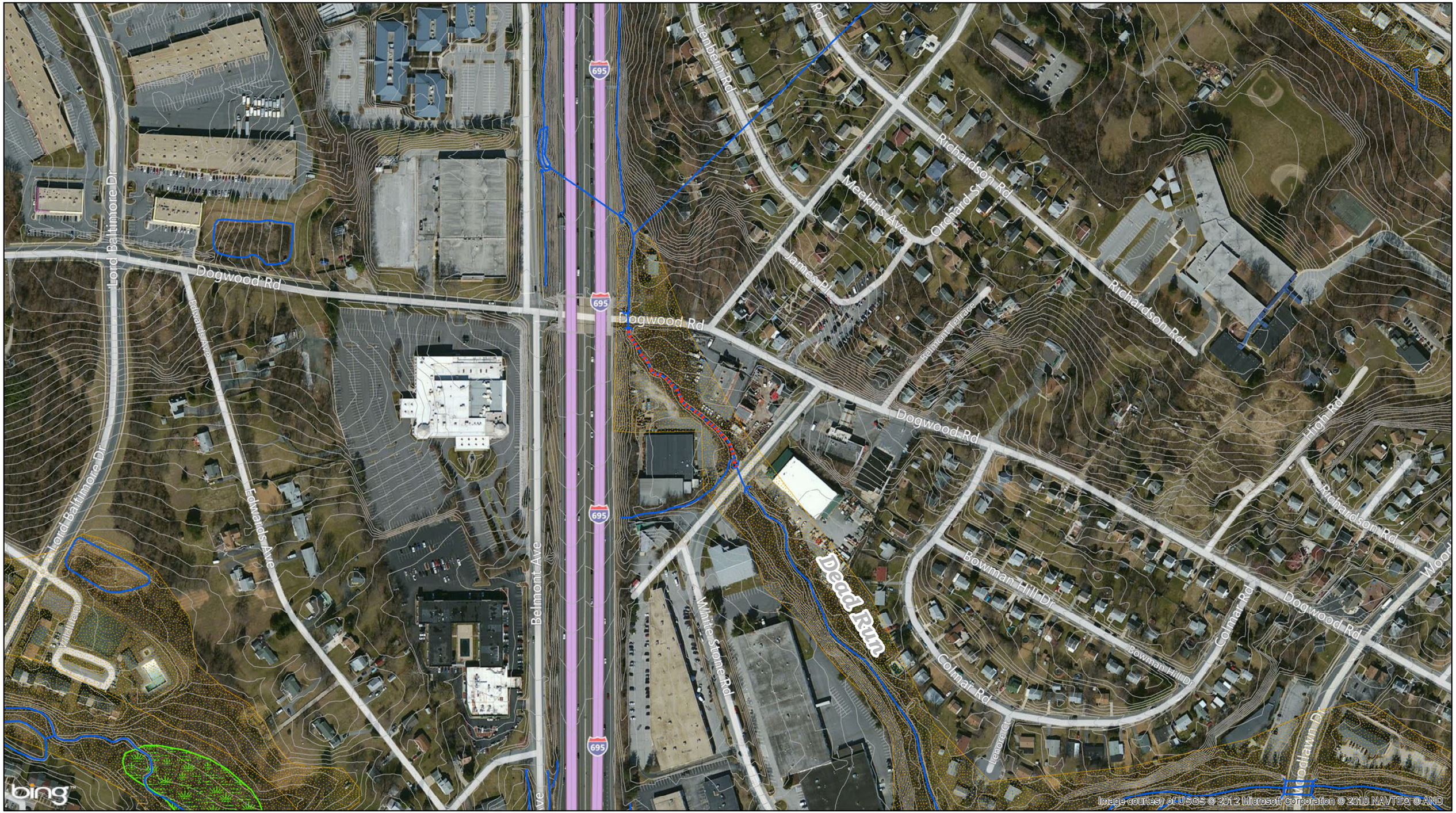
- Stream Restoration – Approximately 500 Linear Feet

Restoration Objectives

- Stabilization of the stream channel and banks

Restoration Concept

- Installation of in-stream structures and bank grading to improve channel stability



BALTIMORE RED LINE

Potential Stream Sites
Streams
2' Contours
Potential Wetland Sites
Potential Buffer Sites
DNR/NWI Wetlands
Hydric Soils
Green Hub
Green Corridor

N

1 in = 250 feet

0 125 250 500 Feet

ASSOCIATED SITE ID:

DR-11-01

Red Line Potential Mitigation Sites

White Stone Road

October 2012

Appendix G
Agency Meeting Minutes

General Engineering Consultant Team
100 South Charles Street, Tower 1, 10th Floor
Baltimore, MD 21201

GEC Red Line Team
Meeting Minutes

TO: Participants

FROM: Sarah Williamson, Red Line GEC (CRI)

SUBJECT: Baltimore Redline, May 9th, 2012 Wetland Field Review

DATE: July 9th, 2012

CC: Richard Fischer – GEC Project Manager

CIN:

An agency field review was conducted on May 9th, 2012 to verify the limits of flagged wetlands and other Waters of the U.S. in the vicinity of the western segment of the Red Line project area. In attendance were the following:

Participants:

Jon Romeo – *U.S. Army Corps of Engineers*
Bill Seiger – *Maryland Department of Environment (MDE) Nontidal, Waters*
Phatta Thapa – *MDE Nontidal, Waters*
Cheryl Kerr –MD*E Nontidal, Wetlands*
Rick Maddox – *Red Line General Engineering Contractors (GEC)*
Earl Leach – *Red Line GEC*
Ray Moravec – *Red Line Project Management Consultants (PMC)*
Sarah Williamson – *Red Line GEC -Coastal Resources, Inc. (CRI)*
Steve Morseberger – *Red Line GEC - CRI*
Derek Rodgers – *Red Line GEC - CRI*

The team met at Security Square shopping mall near Lord Baltimore Drive at 9:30 a.m. Sarah Williamson summarized the plans for the day and Ray Moravec introduced the project to agency representatives.

The first system visited was **Wetland RL-3**, which is located adjacent to the parking area (See JD Map, Sheet 2 of 9). This wetland is a stormwater management basin that was constructed to intercept runoff from surrounding impervious surfaces. Cheryl Kerr, speaking on behalf of MDE, said the agency would likely not take jurisdiction over this wetland if the basin was functioning as intended and associated structures were in good condition. Jon Romeo, representing USACE, asked if the basin may have been built in an area historically occupied by wetlands, and indicated USACE may take jurisdiction if such was the case. However, Earl Leach indicated the project is not slated to impact this wetland; he indicated changes to the LOD could be made to exclude this system. CRI noted that SWM ponds created in uplands are not typically jurisdictional and would

not be flagged, but that this one was flagged because it was located in what appeared to be a historical drainage. Ms. Williamson stated that she would gather historical data on soils and drainage patterns for the area and provide that to the USACE and MDE to assist in their determination of jurisdiction.

This information was provided to the USACE and MDE in a Memorandum dated June 11, 2012. Based on the historical data, the USACE stated by email on June 22nd that it would take jurisdiction over Wetland RL-3 as flagged due to its location in a historical drainage with hydric soils. On June 25th, 2012, also by email, MDE stated it would not take jurisdiction over this area.

Wetlands RL-1 and **Wetland RL-2** were visited next (See JD Mapping, Sheet 1 of 9). Ray Moravec indicated impacts may occur to Wetland RL-1 as a result of construction of tail tracks, which may extend into the forested area adjoining the western terminus of Security Boulevard. The agencies concurred with the wetlands as flagged.

Wetlands and waters located on Social Security Administration (SSA) property were then visited by the project team, along Parallel Drive. The group was not able to access wetlands within the SSA complex at the third party-owned parking lot where the Red Line Corridor touches down after crossing I-695. Resources not reviewed by USACE and MDE in this area included **Wetland RL-10, Wetland RL-31**, **Waters RL-9,** and **Waters RL-32** (See JD Map, Sheet 2 of 9). Regarding the resources near Parallel Drive, the project team visited **Waters RL-11, Waters RL-12**, and **Wetland RL-13**, and concurred with the flagging of these resources (See JD Map, Sheet 6 of 9). Cheryl Kerr noticed the perennial portion of Waters RL-11 was omitted in the Wetland Summary Table; the summary table has since been updated (See Attachment B). MDE also asked if the limits-of-disturbance (LOD) could be pulled back to the west side of Waters 12 to minimize the impact to this perennial waterway. Earl Leach said he believed this was possible and agreed to make this change. He also agreed to investigate other changes to the LOD that might further minimize the small impacts currently shown to Wetland RL-13.

The field review team then accessed **Waters RL-22** from Calvert Road off of Parallel Drive (See JD Map, Sheet 7 of 9). Earl Leach informed the project team that this stream is slated to be placed in a culvert under the current design plan, in order to accommodate a large parking lot servicing the Parallel Drive Station. Bill Seiger, representing MDE, inquired whether there was any way this 230 foot segment of the stream could be daylighted, since MDE prefers this option to a culvert. Earl Leach did not think this would be possible due to the amount of parking needed for the station and the steepness of the adjacent slope. The agencies accepted the flagging of this system as shown.

Waters RL-14 was accessed next by parking on the shoulder of the entrance ramp to I-70 West from Ingleside Avenue (See JD Map, Sheet 7 of 9). This stream was accepted as flagged as an ephemeral channel, but Bill Seiger indicated that the storm drain receiving flow from an unknown source should be considered intermittent or perennial

due to significant audible flow entering the pipe crossing under I-70. CRI has designated the resource a perennial stream due to the observation of similar flow conditions during previous field work. The fact that near-drought conditions have been currently reported for Baltimore County further supports this designation. The mapping has been revised to show the storm drain associated with Waters RL-14 as part of **Waters RL-20**, which is the perennial stream that receives the storm drain flows on the far side of I-70.

The project team then drove to the apartment complex parking lot off of Franklin Avenue south of I-70 in order to access **Waters RL-20** and **Wetland RL-21** (See JD Map, Sheet 7 of 9). Earl Leach notified the team that neither of these systems would be affected as LOD revisions will be undertaken in order to avoid impacts. Nonetheless, the agencies concurred with the flagging of these systems.

Finally, the project team accessed wetlands and waters along the north side of the entrance ramp to the I-70 Park and Ride from Security Boulevard. These included **Wetland RL-28** and **Waters RL-29** (See JD Map, Sheet 9 of 9). At the time of the wetland/waters delineation conducted by CRI (March 1st, 2012), Waters RL-29 had recently been excavated to facilitate drainage of surface runoff and groundwater seepage associated with Wetland RL-28, and as such was designated an intermittent stream. However seeing this system in May of 2012, the agencies decided that sediment deposition and subsequent colonization of the channel by vegetation were sufficient to justify a designation of emergent wetland. Therefore, Wetland RL-28 was extended on the mapping to occupy the channel originally designated as the intermittent portion of Waters RL-29. Furthermore, the agencies felt that the concrete, trapezoidal channel portion of Waters RL-29 which was originally characterized as ephemeral should be labeled intermittent, since it serves as a connection between Wetland RL-28 and a storm drain. This change has also been implemented in the updated mapping. Otherwise, the agencies concurred with the flagging of these systems.

Several other wetlands and waters delineated by CRI were not visited during the May 9th field review due to a combination of factors, including: 1) avoidance/minimization measures taken by the GEC have effectively excluded resources from anticipated impacts, 2) resources are outside the current project LOD, or 3) resources are located in areas unsafe for a large group to access due to heavy traffic. In the case of the latter, wetlands were accepted as flagged based on the agencies' assessment of the mapping provided during the field review. Waters and wetlands not visited during the field review for any of the above reasons included: **Waters RL-4, Wetland RL-5, Wetland RL-6, Waters RL-7, Waters RL-8, portions of Waters RL-11 south of I-70, Wetland RL-15, Waters RL-16, Waters RL-17, Wetland RL-18, Wetland RL-19, Wetland RL-23, Waters RL-24, Waters RL-25, Waters RL-26, Waters RL-27,** and **Waters RL-30.**

The agencies present had no further comments or concerns at the end of the field review. The project team ended the meeting at around 1:00 p.m. with the understanding that a follow-up field review would be scheduled for the eastern section

of the project when property access issues were resolved and delineations could be completed.

General Engineering Consultant Team
100 South Charles Street, Tower 1, 10th Floor
Baltimore, MD 21201

Red Line GEC Team

Meeting Minutes

SUBJECT: Baltimore Redline, Mitigation Approach Meeting

DATE: June 8, 2012

TIME: 10:00 AM

LOCATION: Maryland Department of the Environment (MDE)
1800 Washington Blvd., Baltimore MD 21230

CIN:

Attendees	Organization	Phone	Email
Alaina DeGeorgio	US EPA	215-814-2741	degeorgio.alaina@epa.gov
Karen Jennings	Redline GEC – CRI	410-956-9000	karenj@coastal-resources.net
Cheryl Kerr	MDE	410-537-3911	ckerr@msn.com
Steve Morsberger	Redline GEC – CRI	410-956-9000	stevem@coastal-resources.net
Greg O'Hare	Redline GEC – RKK	410-462-9165	gohare@rkk.com
Jon Romeo	US ACE	410-962-6079	Jon.romeo@usace.army.mil
Phatta Thapa	MDE		pthapa@mde.state.md.us
Josh Tiralla	MDE	410-537-3558	jtiralla@mde.state.md.us
Sarah Williamson	Redline GEC – CRI	410-956-9000	sarahw@coastal-resources.net

A meeting was held on June 8, 2012 between the Red Line GEC team members developing the Red Line Conceptual Mitigation Package and the regulatory agencies responsible for reviewing the package for adequacy and eventual approval. The purpose of the meeting was to present mitigation site search work completed to date and solicit agency recommendations and feedback on the proposed mitigation approach for the Red Line Project.

Packets were distributed to the meeting attendees with a summary of the Redline mitigation site search process and results to date. A preliminary calculation of the project impacts indicates that under current design, stream impacts are below the 2000 LF threshold for an MDSPGP-4; however the wetland impacts are slightly above the 0.5 acre threshold for obtaining a general permit, indicating that the Red Line project may need to pursue an individual permit for impacts to wetlands and waterways. It is possible that future changes to the LOD could reduce wetland impacts below the threshold. MDE recommended that the Red Line team take a conservative approach and assume that an individual permit would be required for the project for both mitigation planning and the FEIS. A conservative approach will allow for greater flexibility during

later phases of the project, as it would be relatively easy to move from an individual permit to a general permit if impacts could be further minimized, but potentially complicated to make a change in the opposite direction. The group agreed that it would be more prudent to proceed based on the higher impact numbers than to rely on impact reductions down the line.

Steve Morsberger, of Coastal Resources, Inc. (CRI), then gave a summary of the mitigation site search process to date. The mitigation site search is being performed according to the federal mitigation rules. Mitigation bank credits are not available within the impacted watersheds, so banking is not an option for the Red Line project at this time. CRI is wrapping up Phase I of the mitigation site search, which is a desktop analysis. They have used the EPA Watershed Resources Registry (WRR) and Published Watershed Studies to find previously-identified sites, and have performed a GIS-based search for additional wetland sites. It was noted that the WRR only lists riparian buffer enhancement areas in the affected watersheds, rather than traditional stream restoration opportunities. Mr. Romeo noted that the USACE sometimes considers riparian plantings to be acceptable mitigation for stream impacts, and that the stream mitigation doesn't always have to be an in-stream restoration project.

Watershed studies that were consulted for the stream mitigation site search focused on the Gwynns Falls watershed. CRI is still looking for wetland opportunities in the Back River watershed. Most of the project impacts are located in the Gwynns Falls watershed, particularly in the Dead Run tributary. Impacts in the Back River and Direct Baltimore Harbor Drainage watersheds are very small and consist of wetlands inadvertently created by un-maintained drainage in developed areas. One of the wetlands has developed in an upland flat area where water ponds due to stockpiling, is dominated by *Phragmities*, and did not exist during previous surveys in 2006. Ms. Kerr mentioned that she suspected that MDE would not regulate a wetland with these characteristics. Since the wetland is located in the Picorp site, and access is highly controlled, it has been very difficult to get access to the site to examine the wetland, which was delineated by the City's consultants, more closely. The Redline GEC hopes to get access at the time of the Jurisdictional Determination, so that MDE and USACE can determine if it would be regulated. Mr. Romeo mentioned that the Jones Falls, which drains to the Harbor, is regulated by the USACE since the stream is considered navigable; however, no mitigation would be required as there are no anticipated impacts to Jones Falls due to the use of a deep tunnel at the Jones Falls crossing.

Mr. Morsberger explained that many of the riparian enhancement sites pulled from the WRR were eliminated from the list because they were showed as being located on roads or buildings, or because the stream corridor was less than 50 feet wide. The list of potential mitigation sites currently includes 34 wetland sites and 19 stream sites. Some of these sites may be eliminated through further screening.

The 8-digit HUC code for the Red Line impacts includes the entire Gunpowder-Patapsco watershed, which CRI hoped could potentially open the possibility for an available mitigation bank in the larger Gunpowder-Patapsco HUC. Mr. Tiralla informed the group that unfortunately all of the mitigation bank credits for the Patapsco watershed have been claimed already.

The Redline GEC asked whether a fee-in-lieu might be an option for this project, as it is a preference in the federal guidelines. Mr. Tiralla said that that MDE still considers fee-in-lieu to be the third option for mitigation. Mr. Romeo stated that the USACE would also prefer a watershed approach for this project.

The Redline GEC asked whether the agencies would prefer to see smaller mitigation sites located within the same subwatersheds as the impacts, or if they would be willing to consider mitigating all of the impacts collectively at one or two larger sites that could potentially provide a greater overall benefit to the Gunpowder-Patapsco HUC than replacing the very small wetland impacts likely to occur in the Back River and Direct Harbor subwatersheds. Depending on the public comments they receive, MDE prefers the consolidated approach since it would have a larger impact on the environment. An effort should be made to locate potential sites in all impacted watersheds, but the greatest effort should be put into finding the best sites in the Gwynns Falls/Dead Run subwatersheds where the majority of the impacts occur. Ms. DeGeorgio said that the EPA is also OK with consolidating mitigation to one or two sites, as long as the mitigation is still done within the same HUC code watershed.

Mr. Tiralla pointed out that the one potential mitigation site identified to date for the Back River watershed may be an existing SHA mitigation site. Mr. Morsberger replied that the site came from the WRR, and thought that it was adjacent to the SHA site. Mr. O'Hare said that he thought that SHA may be planting that entire area. The Redline GEC agreed to get in touch with Bill Buettner at SHA to determine the status of that site.

Mr. Morsberger said that the GEC intends to continue searching for wetland mitigation opportunities in the Back River watershed for Phase I, but may end up consolidating those impacts into a mitigation site in the Gwynns Falls watershed if nothing suitable can be found in the Back River watershed. The GEC will also coordinate with the City of Baltimore on opportunities they have identified within the Direct Harbor Drainage. Mr. Romeo suggested looking for opportunities to install trash interceptors. Although it would be out-of-kind mitigation, the USACE may deem it acceptable for harbor impacts. Ms. Williamson noted that the wetland impacts in the Direct Harbor Drainage are likely to be very small – less than 0.01 Acre. Mr. Tiralla and Ms. Kerr said that MDE prefers to see the mitigation in the Dead Run watershed over the Back River watershed, since that's where the majority of the project impacts are located.

Mr. Morsberger explained that Phase II will be an on-site evaluation of the potential mitigation sites, and a project suitability ranking. He explained how the on-site evaluation works, and the criteria used in the field forms, which are based on what was used for the ICC mitigation process. Mr. Morsberger agreed to email the on-site evaluation forms to Mr. Tiralla and Mr. Romeo for their review. The Red Line GEC will set up an agency review of the top ranked sites when Phase II is completed.

Ms. Williamson explained that the Redline GEC has started the process of acquiring permissions to access the potential mitigation site properties. Phase II can begin once we have permission via phone contact to visit a particular property, or 30 days after the permission letter has been sent. Since the letters will not be sent for a week or two at the earliest, we will probably not have access to all sites until July. That would likely put the agency field review

meeting in late July or August. Concurrence on the conceptual mitigation package is required by November 1st. The mitigation package will include the preferred site(s) as well as some "back-up" sites in case a preferred site falls through for any reason. The ROD is anticipated in February, and the final design will be completed after that. It is not certain when the permit application will be submitted, but it will be sometime after February. Mr. O'Hare and Ms. Williamson explained that the GEC staff have been trained for work along the rail corridors, but do not have permission to work in those areas to complete the wetland delineation in those areas yet. The GEC is relying on the DEIS boundaries and descriptions of the wetlands in the meantime.

Mr. O'Hare pointed out that many of the Baltimore watershed associations have been actively working to plant and expand riparian corridors, which somewhat limits mitigation opportunities for reforestation. Mr. Romeo suggested looking for sites within the City parks, such as Leakin Park and Gwynns Falls Park. Although the parks are largely forested, there may be some reforestation and/or wetland opportunities in meadow areas along the trails. Mr. Tiralla suggested that the GEC contact Ecotone Inc. about any potential sites that they may be aware of in the Patapsco watershed.

Ms. Kerr suggested that the GEC look for opportunities in the Red Run sub-watershed. She said that an old quarry pond is slated to become a subdivision near potential mitigation site 768805 on the mitigation map. Just downstream of the quarry pond may be a good area for stream mitigation. There are known populations of trout that live in that stream and the development will include reclamation of a stream segment that was severely impacted by the quarry activities. Also, farmland drains into the quarry pond near site RL-GF-089 on the map. A stream restoration project either up or downstream of the planned development could add to and enhance the reclamation project currently proposed for that area.

The meeting adjourned at 11:15 a.m.

General Engineering Consultant Team
100 South Charles Street, Tower 1, 10th Floor
Baltimore, MD 21201

Meeting Minutes

SUBJECT: Baltimore Red Line, Field Review of Potential Mitigation Sites

DATE: September 12, 2012

TIME: 9:00 AM

LOCATION: Multiple sites in Baltimore County and City

Attendees	Organization	Phone	Email
Alaina DeGeorgio	US EPA	215-814-2741	degeorgio.alaina@epa.gov
Matt Hubbard	Red Line GEC – CRI	410-956-9000	matth@coastal-resources.net
Karen Jennings	Red Line GEC – CRI	410-956-9000	karenj@coastal-resources.net
Cheryl Kerr	MDE	410-537-3911	ckerr@msn.com
Ray Moravec	MTA/Red Line PMC	443-451-3729	rmoravec@baltimoreredline.com
Steve Morsberger	Red Line GEC – CRI	410-956-9000	stevem@coastal-resources.net
Greg O'Hare	Red Line GEC – RKK	410-462-9165	gohare@rkk.com
Jon Romeo	US ACE	410-962-6079	Jon.romeo@usace.army.mil
Bill Seiger	MDE		wseiger@mde.state.md.us
Phatta Thapa	MDE		pthapa@mde.state.md.us
Josh Tiralla	MDE	410-537-3558	jtiralla@mde.state.md.us
Sarah Williamson	Red Line GEC – CRI	410-956-9000	sarahw@coastal-resources.net

A field meeting was held on September 12, 2012 between the Red Line GEC team members developing the Conceptual Mitigation Package and the regulatory agencies responsible for reviewing the package. The purpose of the meeting was to visit the highest ranked sites identified during the mitigation site search and solicit agency feedback on the suitability of the sites for use in the compensatory mitigation package for the Red Line Project. Packets were distributed to the meeting attendees with a meeting agenda, overview of the proposed mitigation sites, and detailed information and mapping for each site.

Ray Moravec began the meeting with an overview of the project status and milestone dates. The Red Line is a 14 mile transit project, with 2 tunnel segments. Construction is anticipated to begin in 2015. The Red Line Project is on an expedited review schedule as identified by the White House, and the draft FEIS is currently being compiled. The federal expedited review schedule has set a date for federal agency concurrence on the Conceptual Mitigation Package of November 1, 2012, making mitigation planning a critical path item for the overall project schedule. In response to Cheryl Kerr's question regarding the permit submittal schedule, Mr.

Moravec estimated that the Joint Permit Application (JPA) would be submitted after the NEPA record of decision is made and the final design phase begins, probably in June 2013.

Sarah Williamson pointed out that the project team has only just received access to areas along the Northern Suffolk rail lines very recently for wetland delineation, and so a Jurisdictional Determination (JD) will need to be done for that area if the agencies wish to see the wetland first hand. Ms. Williamson will present the findings of the wetland delineation at the interagency meeting, at which time the group can decide if a field review is necessary for the JD. Mr. Moravec mentioned that the project was likely to be permitted and constructed in phases with permit refinements and that even the downtown tunnel segment will need permits because they will be tunneling beneath navigable waterways. Mr. Moravec further explained that MTA's charge is to do as much benefit as possible even though the project has minimal impacts to natural resources. The Red Line team's perspective is that they don't want to only meet the minimum mitigation requirements, but rather they want to have complete mitigation projects with a real ecological benefits, even if that means overcompensating for the Red Line project impacts and applying excess mitigation towards future MTA projects.

Steve Morsberger gave an overview of the mitigation sites to be visited during the meeting. He explained that the mitigation site search followed a watershed approach, and that the field meeting would focus on the two sites where all of the mitigation needs can be resolved at one site. This approach results in a larger ecological benefit for the cost. Mr. Morsberger pointed out that two sites (the Golupski and Jones Falls sites) are shown on the list of sites, but are considered back up sites to demonstrate that potential mitigation sites were identified in each of the impacted watersheds. The Golupski site in particular was recommended to the Red Line Project by SHA, and is a great site, but the project impacts in the Back River watershed are very low (approximately 0.12 acre). Mr. Morsberger also explained that Area 3, shown on the mapping for the DNR Soldier's Delight site, is now excluded because of the presence of RTE plant and insect species in that area. Cheryl Kerr recommended that the Red Line team coordinate with Pam Bush at DNR regarding the Soldier's Delight site, and said that she would forward contact info.

Ms. Kerr also explained that the Columbia gas line is scheduled to be built between Owings Mills and Rutledge, and expressed concern that the gas line might run through some of the proposed mitigation sites. Matt Hubbard replied that he hadn't seen any survey flagging at the proposed mitigation sites, suggesting that they are not located in the gas line right-of-way. Mr. Moravec suggested that a separate meeting be scheduled as soon as possible to coordinate around the gas line location.

McDonogh School Site:

The group drove from the initial meeting location to the McDonogh School to walk the proposed mitigation site. Matt Hubbard gave an overview of the site, which includes opportunities for wetland creation, stream restoration, and riparian buffer creation. Mr. Hubbard explained that the existing narrow and sparse riparian buffer allows space to grade the floodplain for wetland creation. The wetland would provide water quality treatment by detaining nutrients and sediment from adjacent agricultural areas. A small tributary between agricultural fields could be

used for riparian plantings and also diverted to provide hydrology to created wetlands. Any work done on the site would have to consider existing sewer infrastructure and work around existing trees.

The agency representatives expressed concern about removing trees to create floodplain wetlands. Mr. Hubbard and Ms. Williamson explained that the design could work around trees in the floodplain and incorporate as habitat features. The design could also minimize tree impacts along the streambanks by leaving a levee between the stream and the wetlands, similar to what is often naturally created by sediment deposition in active floodplains, that could be breeched at small locations to avoid tree impacts, and increase flood frequency by raising the streambed instead of lowering the floodplain, or by adding roughness to the stream channel with large wood structures.

A straight tributary, located adjacent to Area 3 on the site map, has an abandoned building located on it. The tributary flows under the building and Mr. Hubbard explained that the building is believed to be an old Mill. Karen Jennings suggested that based on the way the flow is diverted through the base of the building, that it could have been an old ice house where the stream was used to keep the building cool. Cheryl Kerr said that MHT would need to be consulted before any work is performed in the area around the abandoned building. The tributary connects to other streams on both the upstream and downstream ends. An exposed manhole exists at the upstream end of the tributary. Proposed mitigation on the tributary could also include removal of an existing berm located on the west side of the channel at the upstream end of the tributary.

Mr. Hubbard showed the group an area of the floodplain that was 1 or 2 feet lower than other parts of the floodplain, and full of rack line debris around the tree trunks. He explained that this area suggests that if the floodplain could be lowered by just a foot, it would flood much more frequently. There are also less non-native invasive plant species in the more frequently flooded area.

Bill Seiger explained that the agencies are moving towards a function-based assessment for both impacts and mitigation to determine credit ratios. The agencies expressed that they would not want a large-scale stream realignment through this site, but that spot fixes may be enough to meet the stream mitigation requirements. A concern was raised that the stream didn't look too bad, and might be fixing itself. Ms. Williamson replied that the stream bank condition can be hard to see at this time of year because of the invasive grasses on the stream banks, and most of the erosion likely happens from high flows and freeze-thaw cycles in the winter months. Mr. Hubbard pointed out that the existing trees are not regenerating because of the dense NNI grasses on the floodplain, and the prevalence of black walnut.

Josh Tiralla expressed concern about the prevalence of NNI grasses on site, and that they may be difficult to control. He explained that the mitigation bank requirements have a 5% NNI maximum allowed, and that it might be difficult to keep the NNIs that low in perpetuity at this site. If the site goes over the mitigation amounts needed for the Red Line Project and MTA wanted to use the excess as a credit, then the site will have to meet the requirements for mitigation banks. Mr. Seiger mentioned that the MDE would not allow the tributary between the

agricultural fields to be diverted if it meant losing base flow. Others pointed out that the school may be using water from that tributary to water the fields. The agencies would want to see a detailed wetland delineation at this site to ensure that the area is not already a wetland.

DNR Soldier's Delight Site:

The group travelled to Soldier's Delight, where they met with Wayne Tyndell from DNR, to walk the proposed mitigation site. Matt Hubbard gave an overview of the site, which includes opportunities for wetland creation, stream restoration, and riparian buffer creation. Wetland creation areas would receive water from the seasonal groundwater table and runoff from upslope areas. Stream banks could be graded to increase flood frequency and provide supplemental hydrology to the wetlands. The stream is eroding into the valley wall in some locations, and could be realigned back to the valley center. Some wetland plants, such as umbrella sedge, are already popping up in the fields marked as Areas 1 and 2 on the mapping.

Cheryl Kerr expressed concern that the project could expose serpentine bedrock which would change the ecosystem pH. Mr. Tyndell explained that DNR is not sure where or how deep the serpentine bedrock might be on this side of the stream. The USDA is in the process of updating the soil maps for this area, and so they will have that information eventually, but the maps won't be done until next year. Mr. Tyndell said that the USDA indicated that areas where Mountain Laurel is growing, or areas where there is mica in the soil, indicates the bedrock is schist and not serpentine. There is a lot of Mountain Laurel growing along the stream channel.

Bill Seiger suggested that DNR stream staff may not approve realigning the stream channel away from the valley wall if there is impacts to existing trees. Ms. Kerr said that the valley wall appears to be eroded mostly from runoff down the steep slopes rather than from stream bank erosion. Mr. Morsberger pointed out an existing overflow channel on the north floodplain that could be utilized for channel relocation with minimal impacts to existing trees.

The agencies agreed that this site seemed more straightforward for wetland creation than the McDonogh site, although it might be short on stream mitigation credit. Mr. Morsberger suggested that more buffer plantings could be added to the site, for example, along drainage swales. Mr. Seiger pointed out that since a swale is not a WUS, planting trees along it wouldn't count towards stream mitigation. The MDE representatives indicate that they prefer to see stormwater management used in conjunction with stream restoration. MDE has, at times, allowed stormwater retrofits in lieu of stream restoration as mitigation. However, Jon Romeo wasn't sure if the USACE would accept that.

One of the stream areas identified for restoration at Soldier's Delight is at a power line crossing. Mr. Tyndell indicated that DNR has had a lot of success with creating warm season grass meadows in the power line right of ways, and that they have a good working relationship with BGE. Hence, a stream restoration project with meadow creation in the power line right-of-way is another possibility at this site.

Leakin Park Site:

The group travelled to Leakin Park to view two proposed mitigation sites. Steve Morsberger gave an overview of the site, which includes opportunities for wetland creation and stream restoration. Mr. Morsberger explained that the site has gas and sewer line constraints, but it is the closest site to the project impacts. The first site viewed, Area 121, is adjacent to an existing wetland, and likely just needs to be graded and planted. The second site, Area 120, doesn't need as much grading, but would require significant NNI control, as porcelain berry and wineberry dominate the vegetation at the site. Area 120 could also be linked to a stream restoration project to promote floodplain access.

Cheryl Kerr pointed out a stone wall near the potential wetland creation site are Area 121, which might indicate that MHT would need to review the area. She also mentioned that a permit was recently issued to KCI for a ~1600 LF stream restoration project downstream of this location.

Ms. Kerr and Josh Tiralla indicated that this was their preferred wetland mitigation site of the three areas we visited. Mr. Seiger doubted that Area 120 could count for both stream and wetland credits. Ms. Kerr suggested that the mitigation package could include the Leakin Park sites, and some stormwater management projects to substitute for the stream mitigation. Mr. Morsberger said that his staff would look through the Gwynns Falls Watershed Management report and pull out any recommended stormwater management projects. The agencies indicated that their first choice for stream restoration of the three sites visited would be the McDonogh site, followed by the Soldier's Delight site. Mr. Tiralla indicated that if the Leakin Park sites would not provide enough wetland credit, he would like to visit the Golupski site to see if that could be added.

Ms. Williamson asked the agencies if the sites presented are adequate to get concurrence that there is enough mitigation opportunities available that the project can move forward. In general, the agencies indicated that all of the sites appeared viable based on the preliminary information provided, though each had its strengths and weaknesses as a stream or wetland site, as discussed during the on-site review. Mr. Tiralla indicated that MDE cannot give official agency concurrence until they have been through a public comment period.

The meeting adjourned at 4pm.

General Engineering Consultant Team
100 South Charles Street, Tower 1, 10th Floor
Baltimore, MD 21201

Meeting Minutes

SUBJECT: Baltimore Red Line, Field Review of Potential Mitigation Sites

DATE: September 27th and 28th, 2012

TIME: 9:00 AM

LOCATION: Multiple sites in Baltimore City and Baltimore County

Attendees	Date in Attendance	Organization	Phone	Email
Karen Jennings	28th	RL GEC – CRI	410-956-9000	karenj@coastal-resources.net
Steve Morsberger	27th & 28th	RL GEC – CRI	410-956-9000	stevem@coastal-resources.net
Jon Romeo	27th & 28th	USACE	410-962-6079	Jon.romeo@usace.army.mil
Cheryl Kerr	27th	MDE		ckerr@mde.state.md.us
Bill Seiger	28th	MDE		wseiger@mde.state.md.us
Phatta Thapa	28th	MDE		pthapa@mde.state.md.us
Sarah Williamson	27th & 28th	RL GEC – CRI	410-956-9000	sarahw@coastal-resources.net

A field meeting was held on September 27th and 28, 2012 between the Red Line GEC wetland and waterways team and the regulatory agencies. The purpose of the meeting was to review the East Segment wetlands delineation and visit the additional wetland and stream sites identified during the mitigation site search. Agency feedback was solicited on the delineation as well as the suitability of the potential mitigation sites for use in the compensatory mitigation package for the Red Line Project.

Thursday September 27th

The group met at the Park and Ride Lot on Boston Street, where maps of the wetlands delineated for the East Segment wetlands were handed out. Thursday's agenda was to complete the agency review of the East Segment wetlands and visit the mitigation site identified within the Back River watershed.

After a little bit of time spent figuring out the best access points, the group visited Wetland RL-34 and Wetland RL-33. Ms. Williamson explained that both wetlands seem to be dependent on surface hydrology which drains from adjacent sites and ponds in the depressional areas of the inactive rail right-of-way. The areas seem to be isolated from other waters. The agencies concurred with these wetlands as shown as well as the assessment of their being of relatively poor quality.

The group then traveled to the eastern terminus of the Red Line project to view Wetland RL-36 and Waterway RL-41 that are located on Norfolk Southern property. These wetlands were viewed from the edge of the wooded areas. The agencies concurred with the overall wetland mapping in this area. However, access could not be obtained on the PiCorp site, so Wetland RL 40 was not reviewed in the field. Ms. Kerr noted that she believed that the PiCorp site may be under an enforcement action at MDE for unauthorized fill to the wetlands and stream at the back of the site. This site visit concluded the agency field review of the wetlands on the Red Line project.

Following the wetlands review, the group traveled to the east side of the Back River Watershed to review the potential mitigation site known as the Golupski site. This site is located in an agricultural area and is currently being managed by the landowner for wildlife forage to increase hunting opportunities. The portion of the site proposed for wetland creation is adjacent to existing forested and emergent wetlands and appears to need relatively low levels of excavation to reach suitable groundwater hydrology as evidenced by the elevations in the existing wetlands. Both MDE and the USACE stated that the site looked like a very good opportunity for creating mitigation wetlands. Ms. Kerr said that Josh Tiralla would have the last word for MDE on the suitability of the site, but that he was planning on visiting the site on another day as he was not able to attend the review meeting. She thought it was likely he would think the site was viable. The group also agreed that wetland mitigation appeared viable on the south side of Golupski Road in the open fields directly across from the current wetland mitigation area. This area is associated with hydric soils (Othello silt loam, 0-2 % slopes) and a small waterway draining to the east. Grading to create wetlands could be performed on the north and south side of the small waterway to intercept seasonal groundwater and capture additional surface water runoff or sheet flow draining to these areas.

Ms. Kerr encouraged the team to conduct an MHT screening on the site, as she was aware of cultural issues that had come up on other projects on an adjacent peninsula in the Back River watershed. The Red Line team noted that an initial cultural screening was underway as requested by MHT for all the potential sites. The meeting adjourned for the day at 1:00 pm.

Friday September 28th

On Friday, the group met at the Milford Mill Metro Station at 9 a.m. Packets were distributed to the meeting attendees with an agenda for the day, an overview of the proposed mitigation sites, and detailed information and mapping for each site.

Jon Romeo pointed out that the site at Powder Mill Park has already been permitted through Baltimore City for stream restoration. However, he wasn't sure if they have funding in place to do the work. Phatta Thapa explained that the site at McDonough Road and Meadow Heights Road has also been permitted as a wetland mitigation project for Baltimore County for one of its road projects. The Red Line team noted that this was two out of the three sites the group planned to visit that day, but that there were other potential sites identified in the Gwynns Falls Watershed Management Plan (2004) that could be added to the list for the day.

Scotts Level Branch Site:

The group drove from the initial meeting location to Tiverton Road to walk the proposed mitigation site. Karen Jennings gave an overview of opportunities at the site, which include stream restoration, riparian buffer enhancement and creation, and stormwater management through BMP installation at currently untreated outfalls. Site constraints include a power line crossing and some sewer infrastructure. There are at least 10 stormwater outfalls that empty into gullies on the floodplain that could be treated with BMPs. Upstream of Tiverton Road, stream restoration to stabilize the channel is particularly needed at the power line crossing and just downstream of the crossing. Downstream of Tiverton Road, the stream channel runs through open areas of an apartment complex where the lawn is mowed to the edge of channel. The lack of riparian vegetation in this reach has led to significant bank slumping. The overall length of the stream segment at this site is 2,600 linear feet, with about 1,500 linear feet upstream of Tiverton Road and 1,100 linear feet downstream of Tiverton Road. Although MDE noted that many of the banks did not appear to be wholly unstable, Mr. Morsberger noted that the drainage area was relatively small and that the stream appeared to be substantially over-widened relative to its drainage area. Ms. Williamson noted that flashy flows from the outfalls within the reach, as well as upstream sources, may be preventing the stream from healing and developing a new floodplain within the over-widened channel.

Bill Seiger said that he liked the idea of combining stream work with stormwater treatment using BMPs. However, he was unsure how mitigation credits would be assigned in that type of situation and would have to talk to Josh Tiralla at MDE about the credit allocation. Jon Romeo thought that it would be acceptable to the USACE to combine BMP and stream work for stream mitigation credits. Bill suggested that a regenerative stormwater conveyance system might work at some of the outfalls at this site, depending on the amount of flow that comes out of the outfalls. Bill suggested that small wetlands could be created in open areas of the floodplain upstream of Tiverton Road.

Since the stream segment downstream of Tiverton Road is located within an apartment complex, Sarah Williamson suggested that a stream project that included riparian plantings might have to be sold to the property owner as “native landscaping.” Jon expressed concern about keeping a mitigation site there protected and maintained in-perpetuity. Sarah suggested that the County might take on the long-term maintenance of any BMPs, since the upstream segment is also County property. She explained that for the SHA ICC project, Montgomery County assumed maintenance responsibilities for the BMPs installed.

Bill said that although there are somewhat limited opportunities for stream work at the Scotts Level Branch Site, he thinks it is a better site than the stream opportunities viewed during the 9/12 meeting. He reiterated that he liked how this site can incorporate stormwater treatment. Jon agreed that this site seems to have more potential than the ones viewed on 9/12. Sarah explained that the types of opportunities here are similar to the nature of the project’s stream impacts. She also pointed out that there are small fish in the channel here, and so in-channel habitat improvements that address the over-widening that currently limits habitat could be made to go hand-in-hand with water quality improvements at the stormwater outfalls. Bill said that it

may be tricky to get a mitigation project approved that includes a combination of in-kind and out-of-kind methods. The project would need to withstand the scrutiny of the public notice and hearing since it is not a traditional stream restoration project. However, if the nature of the impacts were explained well, then the public may be open to the out-of-kind mitigation aspects of a project at this site.

Brenbrook Drive Site:

The group travelled to Brenbrook Drive to walk the proposed mitigation site. Steve Morsberger explained that the site consists of potentially 3100 linear feet of stream restoration and stormwater outfall stabilization. The site is located within a forested corridor, about two miles upstream of the confluence with Gwynns Falls. Near the Brenbrook Road crossing, the stream channel is wide with steep, eroding stream banks that have exposed a manhole along the right bank. The overbank area seems to be forested wetlands. About 500 feet downstream of Brenbrook Road, the stream becomes a concrete-lined channel which is in poor condition. The concrete is cracked and buckled, and the stream is cutting around the concrete and causing erosion on both sides of the channel. Bill Seiger thought that removing the failing concrete would be a good idea, and that a mitigation project here could restore in-stream habitat and reconnect the channel to the floodplain. The USACE agreed with MDE's statements on the viability of the site.

Woodlawn Memorial Park Site:

The group travelled to Woodlawn Memorial Park to view the next proposed stream mitigation site. Steve Morsberger explained that this site was identified as a potential riparian buffer enhancement and stream stabilization project in the Gwynns Falls Watershed Quality Management Plan (2004). The stream channel is very incised with eroding banks. However, there is not much space on either side of the channel to do bank grading. Upstream of the ball fields, the channel is more stable. On site, it seemed that the ball fields would have to be impacted in order to do any stream work. Bill noted that the site seemed limited to a BMP at the parking lot and some riparian plantings. The group agreed that it was not worth moving this site forward in the mitigation process.

N. Rolling Road Site:

The group travelled to N. Rolling Road to view a proposed stream and wetland mitigation site. Steve explained that this site has some constraints due to sewer infrastructure on the floodplain immediately adjacent to the stream channel, but that it might still have some potential for stream and wetland mitigation. The site is a large open area that now contains some shrubs and scattered small trees. An unnamed tributary to Dead Run flows across the northern portion of the parcel, and is concrete-lined for about 300 feet downstream of N. Rolling Road. An adjacent homeowner has been mowing the floodplain. The group observed a consistent rack line of debris that indicated recent flow on the floodplain about 1 foot above the top of bank.

Bill noted that removing the concrete channel and adding a riparian buffer is a benefit to the stream, but the sewer line will be a challenge. The utility company might not want the concrete

channel removed. The stream channel is not in bad shape, so Bill thought it could just be planted and BMPs added at the outfalls to slow down stormwater flow.

Sarah pointed out that if there is sufficient groundwater hydrology and/or drainage area for surface runoff, there is enough space to create wetlands further away from the channel so it would not disturb the sewer line. Then riparian plantings could be placed along the stream channel for the stream mitigation. Bill agreed that it is worth keeping this site in mind for stream buffer plantings, and that Josh Tiralla should perhaps look at the site from the wetland perspective. Bill asked the Red Line Team to look into whether the site is mapped as FEMA floodplain, and also to send the location to Josh Tiralla so that he could visit the site independently.

The group returned to the Milford Mill lot and discussed the overall findings from the various field visits. Bill stated that he does not have any concerns that the Red Line impacts cannot be mitigated. Rather, it is a question of whether the mitigation can be completely addressed at one site, or if it will require multiple smaller mitigation sites. The USACE also noted that there appears to be enough sites presented to meet the mitigation requirements, at least at this conceptual stage.

The meeting adjourned at 3pm.

Appendix H
Wetlands and Waters Photo Documentation

RLWL1 - PEM1C

RLWL2- PFO1C

RLWL3 – PEM2C

RLWL5 – PEM2A

RLWL6-PFO1A

RLWUS7 – Ephemeral Channel

RLWUS4 – R3RB2 –Concrete –No Picture Taken

RLWUS8 – R4UB1

RLWUS11 – R3UB1

RLWUS9 –R3UB1

RLWUS12 – R4UB1

RLWL10 – PEM1/2A

RLWL13 – PFO1A/C

RLWUS14 – Ephemeral Channel

RLWUS16 – R3UB1/3

RLWL15 – PEM1A

RLWUS17 – R4SB5

RLWUS16 – R4RBconcrete

RLWL18 – PFO1A/B

RLWL19 – PEM1B

RLWUS22 – R3UB1

RLWUS20 – R3RBconcrete

RLWL23 – PFO1B

RLWL21 – PFO1B

RLWUS24 – R3UB1 – Dead Run

RLWUS25 – Ephemeral Channel

RLWL28 – PEM1E

RLWUS26 – R3SBConcrete

RLWUS29 – R4SB5

RLWUS27 – R4RBconcrete

RLWL31 – PEM1B (Mowed)

RLWUS32 – R4RB2

RLWL34– PFO1B

RLWL33 – PFO1B

RLWUS35 – E1OW

RLWL34 – PEM1C

RLWL36 – PEM1A

Appendix I Conceptual Mitigation Package – Site Summaries and Maps

Baltimore Red Line Project
Potential Stream Mitigation Site on Scotts Level Branch

Existing Conditions Summary

Location Information

County: Baltimore
Watershed: Gwynns Falls
Coordinates: 39°23'01.52"N / 76°48'59.97"W **USGS Quad:** Reisterstown
Location: Upstream and downstream of Tiverton Road, Randallstown, MD
Property Ownership: Baltimore County and Private Owner (Woodridge Realty LLC)
Constraints: Power Line Crossing; Community Recreational Use

Site Conditions

Parcel Area: 6.7 Ac and 11.5 Ac **Existing Land Use:** Open Space
Landscape Position: Stream Valley **Adjacent Land Use:** Residential
Drainage Area: 320 Ac
Habitat Location: Contiguous to wetland/upland forest, 25 - 100 Acres
Mapped Soils: Baile Silt Loam; Baile-Urban Land Complex; Glenelg-Urban Land Complex; Glenville-Urban Land Complex; Hatboro Silt Loam, Urban Land
Mapped Wetlands: No NWI or DNR wetlands mapped on site
Green Infrastructure: Located adjacent to Green Infrastructure Corridor at downstream end

This site is located between Southall Road and Branchleigh Road, and can be accessed from Tiverton Road. This stream reach is associated with Scotts Level Branch, a tributary of Gwynns Falls (Use III). The land use within the stream corridor is semi-forested open space, with adjacent residential development on either side. Additionally, there is an overhead power line crossing at the middle portion of the County parcel. The stream channel exhibits vertical, eroded banks, and is particularly unstable at the unvegetated power line crossing. Several stormwater outfalls empty into this reach of Scotts Level Branch through incised gullies on the floodplain. The County-owned parcel has a very narrow riparian buffer along most of the channel length. The private parcel has a wider riparian buffer of trees, but with a mowed understory. Mitigation opportunities for the Redline project include stream restoration, riparian buffer improvements, and stormwater management.

Summary of Opportunities

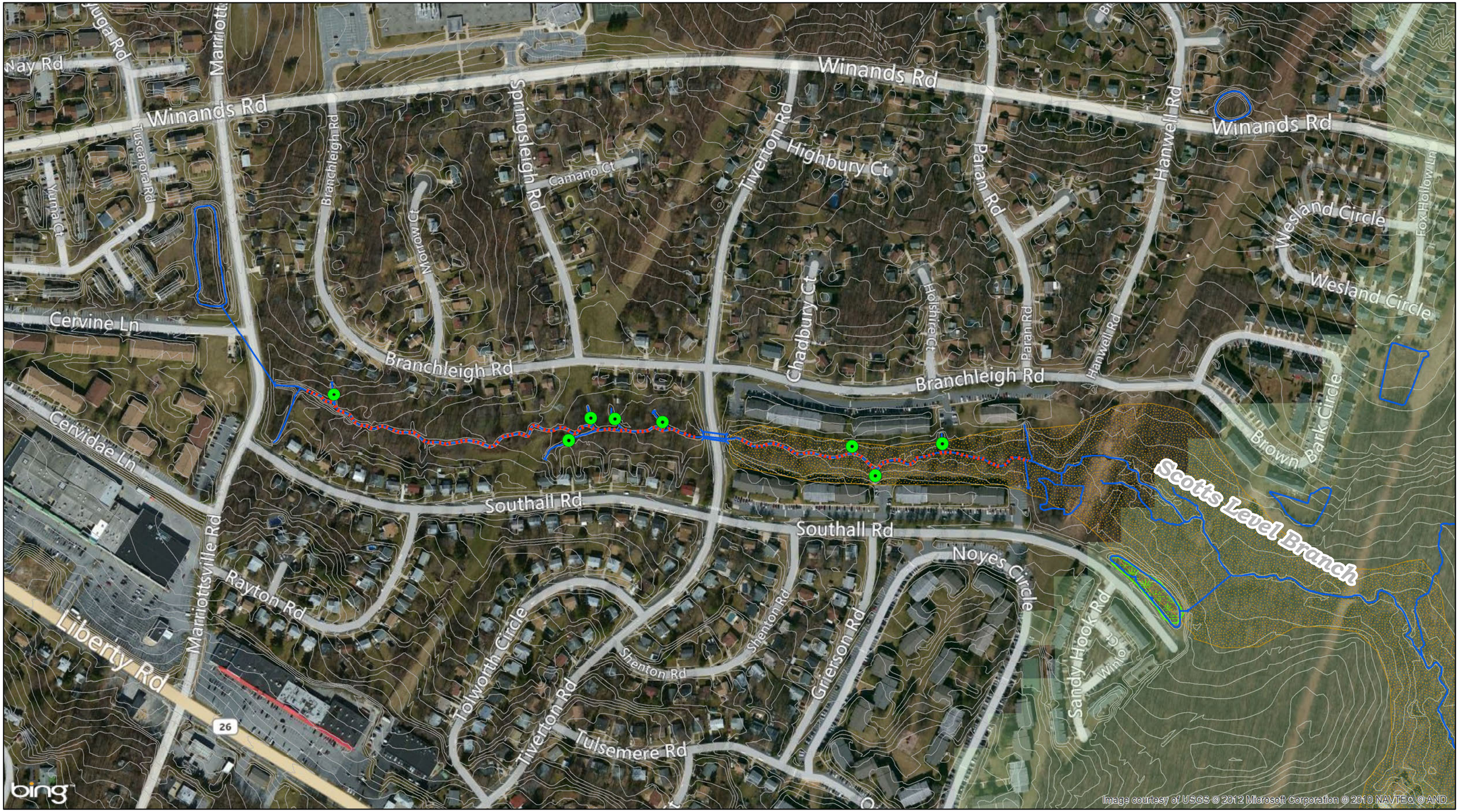
- Stream Restoration – Approximately 2,600 Linear Feet
- SWM BMP Installation

Restoration Objectives

- Stormwater Management
- Riparian Buffer Enhancement
- Stream Stabilization

Restoration Concept

- Installation of BMPs at stormwater outfalls to provide water quality and quantity improvements
- Bank stabilization and grade control to improve floodplain connection and in-stream habitat
- Riparian plantings to enhance the stream corridor



BALTIMORE RED LINE

- Potential BMP Opportunities
- Potential Stream Sites
- Streams
- 2' Contours
- Potential Wetland Sites
- Potential Buffer Sites
- DNR/NWI Wetlands
- Hydric Soils
- Green Hub
- Green Corridor

N

1 in = 300 feet

0 150 300 600 Feet

ASSOCIATED SITE ID:

SL-02

Red Line Potential Mitigation Sites

Scotts Level Br. Stream Site

October 2012

Baltimore Red Line Project
Potential Stream Mitigation Site
Brenbrook Drive

Existing Conditions Summary

Location Information

County: Baltimore County
Watershed: Gwynns Falls
Coordinates: 39°22'20.21"N / 76°47'13.70"W **USGS Quad:** Ellicott City
Location: South of Winterbrook Rd and Brenbrook Dr, Randallstown, MD
Property Ownership: Public drainageway and Private Property
Constraints: Utilities

Site Conditions

Parcel Area: 22.21 Ac **Existing Land Use:** Forest
Landscape Position: Stream Valley **Adjacent Land Use:** Residential, Recreational
Drainage Area: 1,600 Ac
Habitat Location: Contiguous to wetland/upland forest, 25 - 100 Acres
Mapped Soils: Hatboro silt loams
Mapped Wetlands: No NWI or DNR wetlands mapped on site
Green Infrastructure: Not located adjacent to Green Infrastructure

This stream site is located south of the intersection of Winterbrook Road and Brenbrook Drive. This stream reach is associated with Scotts Level Branch, a tributary of Gwynns Falls (Use III). The land use within the stream corridor is forested, with adjacent residential development, and a recreational field at the downstream end, along the right side of the stream. This site includes approximately 3,100 linear feet of potential stream restoration and stabilization, including the removal of a failing concrete channel. This site also includes the potential for the creation of floodplain wetlands for five small (<36”) and one large (42”) stormdrain outfalls.

Summary of Opportunities

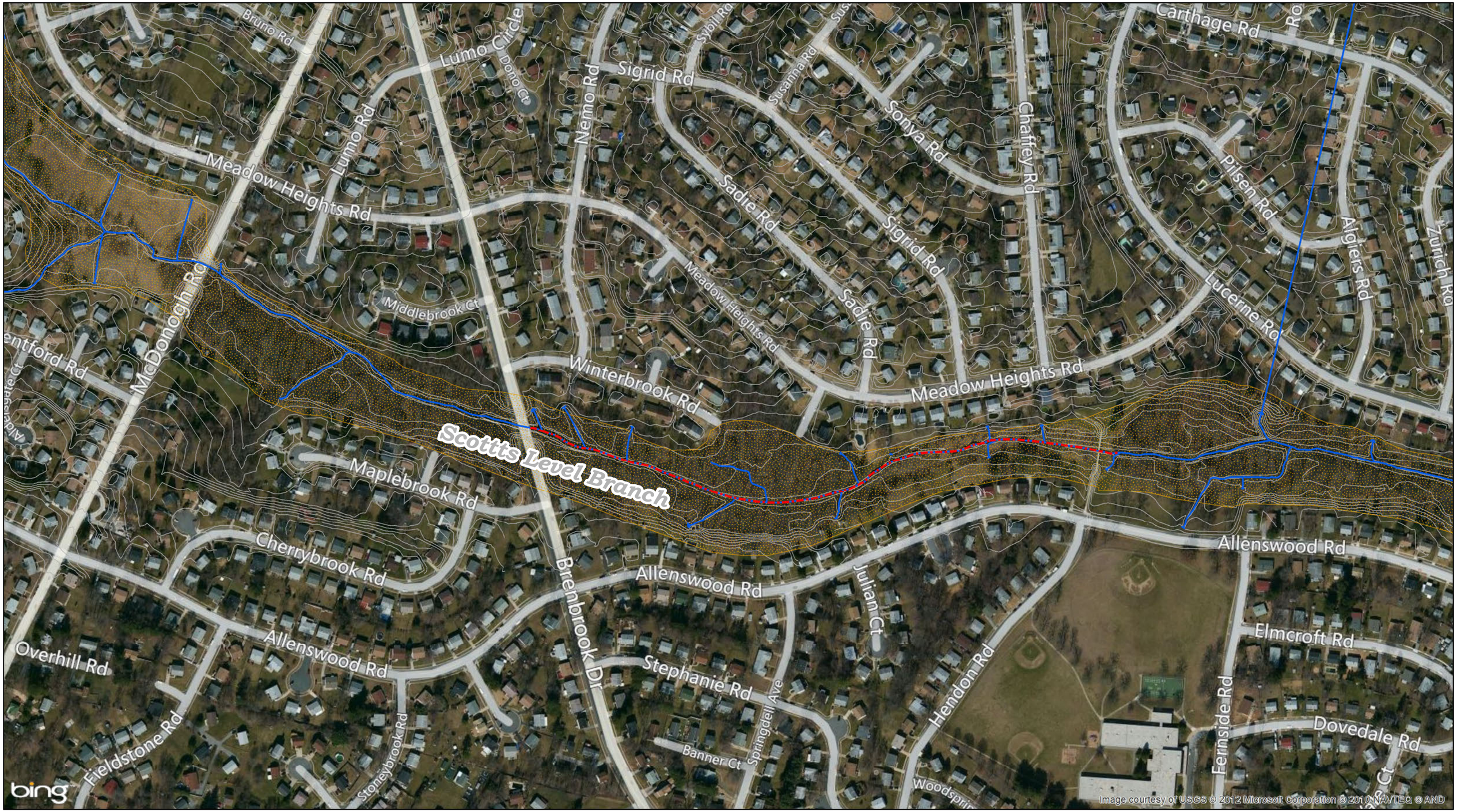
- Stream Restoration – Approximately 3,100 Linear Feet
- SWM BMP Installation

Restoration Objectives

- Stream Stabilization
- Stormwater Management
- Riparian Habitat Improvement

Restoration Concept

- Removal of concrete channel and re-construction of a natural channel form
- Installation of in-stream structures and bank grading to improve channel stability, reduce sediment loading, protect existing utilities, and improve in-stream habitat
- Installation of BMPs at stormwater outfalls to provide water quality and quantity improvements



BALTIMORE RED LINE

- Potential Stream Sites
- Streams
- 2' Contours
- Potential Wetland Sites
- Potential Buffer Sites
- DNR/NWI Wetlands
- Hydric Soils
- Green Hub
- Green Corridor

N

1 in = 300 feet

0 150 300 600 Feet

ASSOCIATED SITE ID:

SL-01

Red Line
Potential Mitigation Sites

Brenbrook Drive

October 2012

Baltimore Red Line Project
Potential Stream Mitigation Site on Powder Mill Run

Existing Conditions Summary

Location Information

County: Baltimore City
Watershed: Gwynns Falls
Coordinates: 39°20'11.71"N / 76°42'32.76"W **USGS Quad:** Baltimore West
Location: Northeast of Northern Parkway and Liberty Heights Ave., Baltimore, MD
Property Ownership: Public (Baltimore City)
Constraints: Utilities

Site Conditions

Parcel Area: 45.64 Ac **Existing Land Use:** Forest
Landscape Position: Stream Valley **Adjacent Land Use:** Residential, Industrial
Drainage Area: 2,368 Ac
Habitat Location: Contiguous to wetland/upland forest > 100 Acres
Mapped Soils: Fluvents; Jackland Silt Loam; Legore loam; Legore-Urban Land Complex; Montalto Silt Loam; Montalto-Urban Land Complex; Udorthents
Mapped Wetlands: No NWI or DNR wetlands mapped on site
Green Infrastructure: Not located adjacent to Green Infrastructure

This stream site is located within Powder Mill Park, northeast of the Northern Parkway and Liberty Heights Ave. intersection. This stream reach is associated with an unnamed tributary of Powder Mill Run, a tributary of Gwynns Falls (Use III). The land use within the stream corridor is forested, with an adjacent residential development to the east and a business park to the west. The stream corridor is densely forested and appears to access the floodplain regularly. However, the stream banks exhibit severe erosion and is moving a large amount of sediment. Sewer line infrastructure on the floodplain adjacent to the channel is also threatened by bank erosion and channel migration in some areas. Mitigation opportunities for the Redline project include stream restoration/stabilization. Based on coordination with USACE, MDE and Baltimore City DPW, this site has already moved forward in the design process and has obtained all necessary permits. However, the project is currently not funded for construction and may provide the opportunity to partner with Baltimore City for Red Line stream mitigation needs.

Summary of Opportunities

- Stream Restoration – Approximately 3,700 Linear Feet

Restoration Objectives

- Stream Stabilization
- Utility Protection

Restoration Concept

- Installation of in-stream structures and bank grading to improve channel stability, reduce sediment loading, protect existing utilities, and improve in-stream habitat

BALTIMORE RED LINE

Potential Stream Sites
Streams
2' Contours
Potential Wetland Sites
Potential Buffer Sites
DNR/NWI Wetlands
Hydric Soils
Green Hub
Green Corridor

N

1 in = 400 feet

0 200 400 800 Feet

ASSOCIATED SITE ID:

PM-04

Red Line
Potential Mitigation Sites

Power Mill Run Stream Site

October 2012

Baltimore Red Line Project
Potential Wetland and Stream Mitigation Site
Rolling Road

Existing Conditions Summary

Location Information

County: Baltimore
Watershed: Gwynns Falls
Coordinates: 39°18'59.66"N / 76°45'21.99"W **USGS Quad:** Ellicott City
Location: Southeast of N. Rolling Rd. and Glen Spring Rd., Woodlawn, MD
Property Ownership: Private
Constraints: Utilities

Site Conditions

Parcel Area: 24.09 Ac **Existing Land Use:** Open Space and Forest
Landscape Position: Topographic Low **Adjacent Land Use:** Residential
Drainage Area: Greater than 15:1
Habitat Location: Contiguous to wetland/upland forest < 25 Acres
Mapped Soils: Hatboro silt loams; Watching-Urban land complex
Mapped Wetlands: No NWI or DNR wetlands mapped on site
Green Infrastructure: No green infrastructure associated with this site

The site is located southeast of the intersection of N. Rolling Road and Glen Spring Road. The site is in the Gwynns Falls (Use III) watershed and associated with an unnamed tributary to Dead Run. Existing landuse consists of open field and meadow with sparse woody vegetation. Adjacent landuse consists of residential, commercial and industrial development. Mitigation opportunities for the Redline project include wetland creation along toe of slope and stream restoration. Stream restoration could include removal of concrete channel near Rolling Road and improving floodplain connection along upstream portions of the stream.

Summary of Opportunities

- Wetland Creation, 1.32 Acres
- Stream Restoration, 330 Linear Feet

Restoration Objectives

- Groundwater Recharge - increased retention time will allow for surface water infiltration
- Sediment/Toxicant Retention - sediment storage with connected floodplain and wetlands
- Nutrient Removal/Retention/Transformation - nutrient uptake/assimilation in floodplain and wetlands
- Flood Flow Alteration - enhancing floodplain connection and storage of flood waters; wetland could receive and retain overland or sheet flow runoff from surrounding uplands
- Wildlife Habitat – opportunity to enhance habitat for local wildlife
- Visual Quality/Aesthetics – opportunity to enhance visual landscape for neighboring residents and office space

Restoration Concept

- Grading to create wetland depressions along several areas within the riparian corridor
- Removal of concrete channel and replacement with natural stream channel
- May be possible to provide greater floodplain connection along upstream portions of channel

BALTIMORE RED LINE

Potential Stream Sites
Streams
2' Contours
Potential Wetland Sites
Potential Buffer Sites
DNR/NWI Wetlands
Hydric Soils
Green Hub
Green Corridor

N

1 in = 200 feet

0 100 200 400 Feet

ASSOCIATED SITE ID:

RL_GF_011

Red Line Potential Mitigation Sites

Rolling Road

October 2012

Baltimore Red Line Project
Potential Wetland and Stream Mitigation Site
McDonogh Riparian Buffer Site

Existing Conditions Summary

Location Information

County:	Baltimore		
Watershed:	Gwynns Falls (Horsehead subwatershed)		
Coordinates:	39°23'20.93"N / 76°46'52.07"W	**USGS Quad:**	Reisterstown
Location:	South side of McDonogh Road, Owings Mills, MD		
Property Ownership:	Private Property and Baltimore County ROW		
Constraints:	Utilities		

Site Conditions

Parcel Area:	11.10 Ac	**Existing Land Use:**	Open Floodplain
Landscape Position:	Topographic Low	**Adjacent Land Use:**	Forest and Residential
Drainage Area:	Greater than 15:1		
Habitat Location:	Contiguous to wetland/upland forest > 100 Acres		
Mapped Soils:	Codorus Silt Loam		
Mapped Wetlands:	No NWI or DNR wetlands mapped on site		
Green Infrastructure:	Located within GI Corridor and associated with GI Gaps		

The site is located on the south side of McDonogh Road just east of Painters Mill Road. The site is associated with the mainstem of Horsehead Branch (Use III) in the Gwynns Falls watershed. A majority of the proposed buffer is located on property owned by the McDonogh School. A small portion of the site is located on Baltimore County right-of-way. Buffer plantings may be limited in some areas of the site due to existing utilities (sanitary sewer).

Summary of Opportunities

- Riparian Buffer Enhancement, Approximately 1,300 Linear Feet

Restoration Concept

- Riparian plantings to enhance forested stream corridor

BALTIMORE RED LINE

Potential Stream Sites
Streams
2' Contours
Potential Wetland Sites
Potential Buffer Sites

DNR/NWI Wetlands
Hydric Soils
Green Hub
Green Corridor

N

1 in = 200 feet

0 100 200 400 Feet

ASSOCIATED SITE ID:

RL-GF-007B

Red Line Potential Mitigation Sites

McDonogh Buffer Site

October 2012

Baltimore Red Line Project
Potential Wetland and Stream Mitigation Site
Jones Falls Riparian Buffer Site

Existing Conditions Summary

Location Information

County: Baltimore
Watershed: Jones Falls
Coordinates: 39°24'29.62"N / 76°43'24.72"W **USGS Quad:** Cockeysville
Location: Southeast of Greenspring Valley Rd and Park Heights Ave, Stevenson, MD
Property Ownership: Private Owner
Constraints: Unknown

Site Conditions

Parcel Area: 91.50 Ac **Existing Land Use:** Agriculture
Landscape Position: Topographic Low **Adjacent Land Use:** Agriculture
Drainage Area: Greater than 15:1
Habitat Location: Contiguous to wetland/upland forest, 25 - 100 Acres
Mapped Soils: Lindside Silt Loam; Melvin Silt Loam
Mapped Wetlands: No NWI or DNR wetlands mapped on site
Green Infrastructure: Located within GI Corridor and associated with GI Gaps

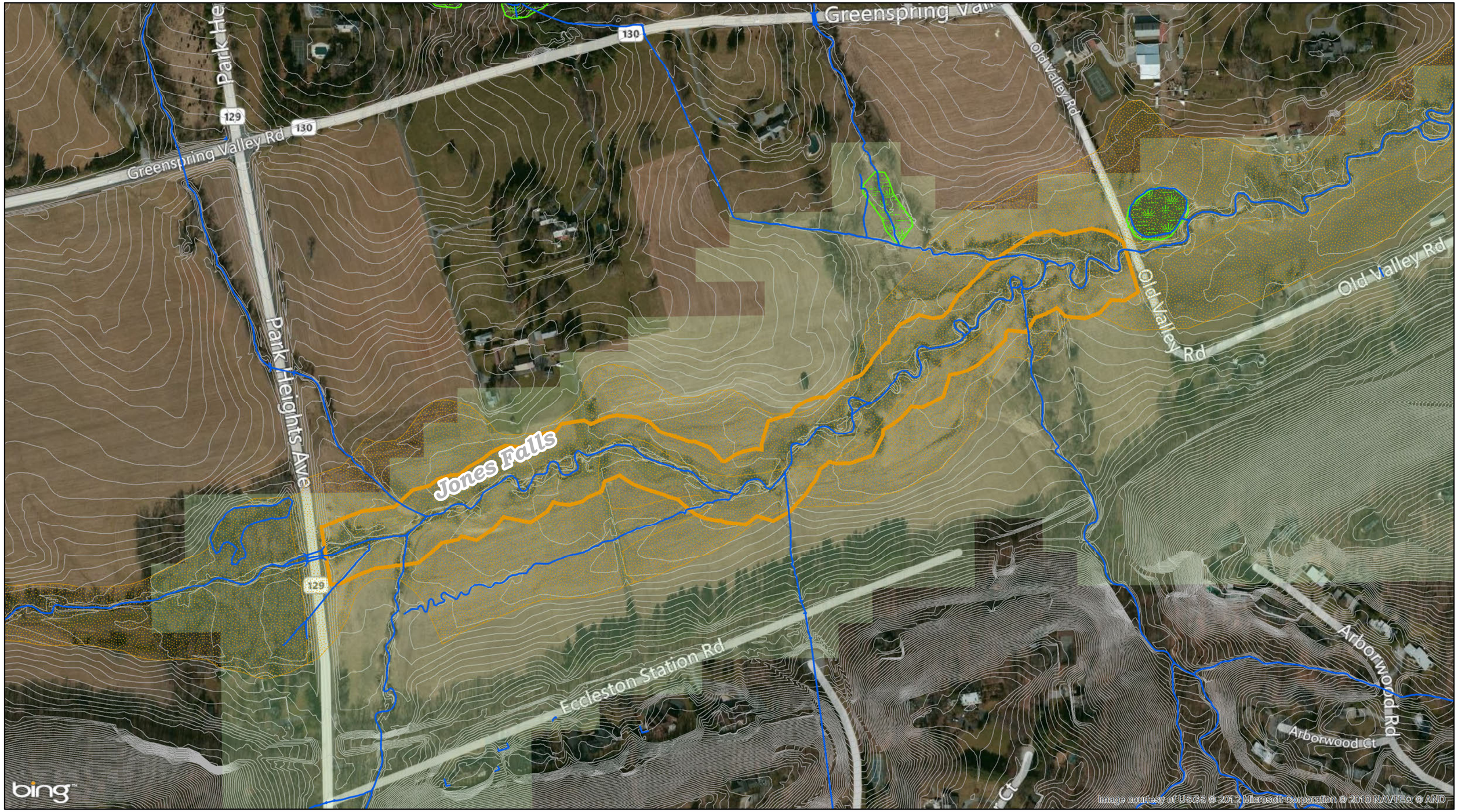
The site is located on the south side of Greenspring Valley Road just east of Park Heights Avenue. The site is associated with the mainstem of the Jones Falls (Use III) on a single farm property.

Summary of Opportunities

- Riparian Buffer Enhancement, Approximately 3,100 Linear Feet

Restoration Concept

- Riparian plantings to enhance forested stream corridor



BALTIMORE RED LINE

- Potential Stream Sites
- Streams
- 2' Contours
- Potential Wetland Sites
- Potential Buffer Sites
- DNR/NWI Wetlands
- Hydric Soils
- Green Hub
- Green Corridor

N

1 in = 300 feet

0 150 300 600 Feet

ASSOCIATED SITE ID:

RL-JF-001B

Red Line
Potential Mitigation Sites

Jones Falls Buffer Site

October 2012

Baltimore Red Line Project
Potential Wetland and Stream Mitigation Site
DNR Soldier's Delight Site

Existing Conditions Summary

Location Information

County: Baltimore
Watershed: Gwynns Falls (Red Run subwatershed)
Coordinates: 39°24'57.52"N / 76°49'18.18"W **USGS Quad:** Reisterstown
Location: Deer Park Road and Sunnyking Road, Owings Mills, MD
Property Ownership: Public Land (DNR Natural Environment Area)
Constraints: None

Site Conditions

Parcel Area: 191.91 Ac **Existing Land Use:** Agriculture - Hay
Landscape Position: Topographic Low **Adjacent Land Use:** Forest and meadow
Drainage Area: Greater than 15:1
Mapped Soils: Hatboro Silt Loam; Baile Silt Loam (3-8 percent slopes)
Habitat Location: Contiguous to wetland/upland forest > 100 Acres
Mapped Wetlands: NWI mapped wetlands exist on site along a tributary upstream of the proposed wetland mitigation areas. No DNR mapped wetlands exist on site.
Green Infrastructure: Located within GI Hub and associated with GI Gaps.

This site is located on the northeastern portion of the 1900 ac. Soldier's Delight State Park, south-southeast of Sunnyking Drive. Upland areas adjacent to the site include agricultural and State Park land uses. The site presents multiple mitigation opportunities for the Redline project. Opportunities include wetland creation, stream restoration/stabilization and riparian buffer enhancement. The site is associated with an unnamed tributary to Red Run (Use III).

Summary of Opportunities

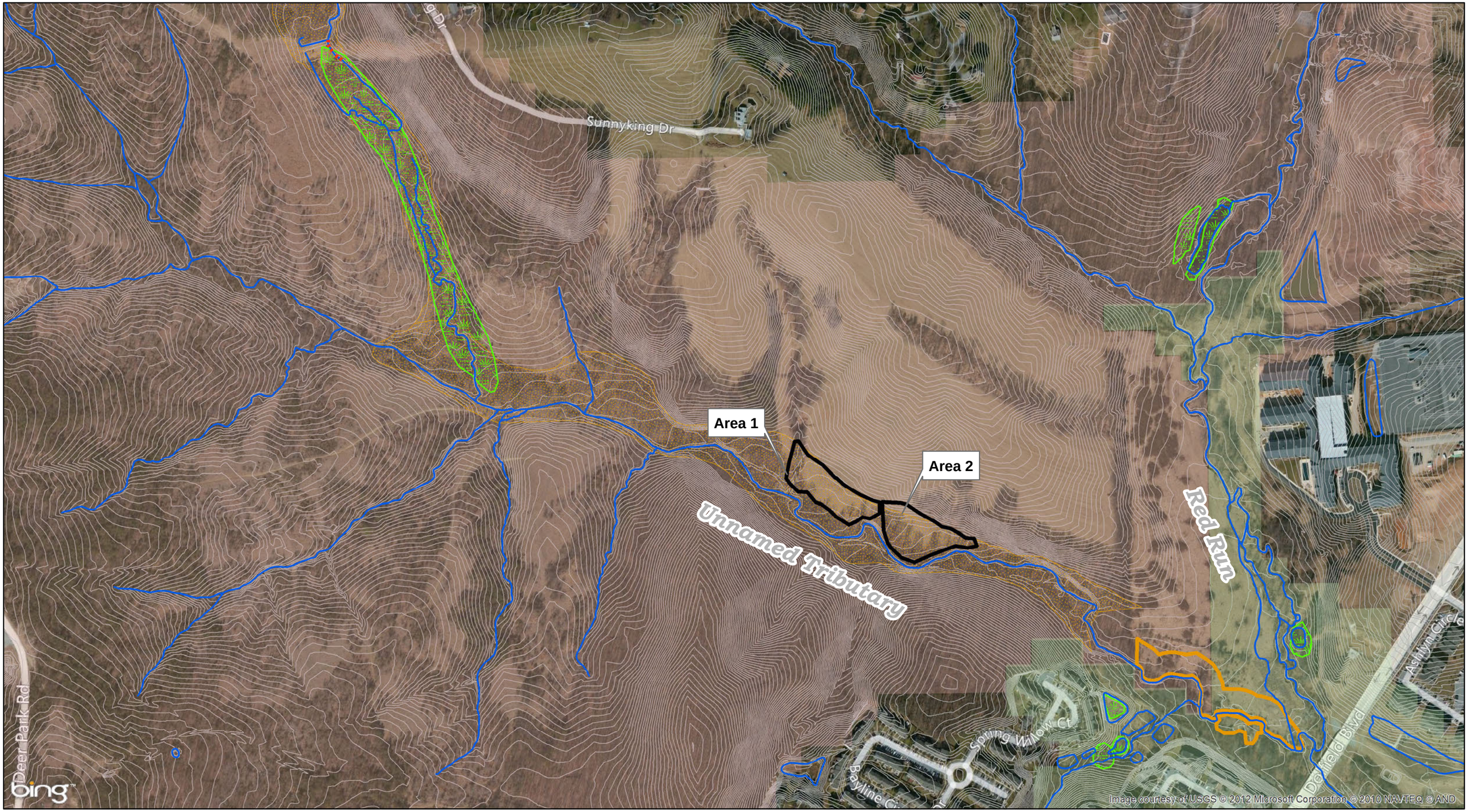
- Wetland Creation, 2.96 Acres
- Stream Restoration, 130 Linear Feet at utility crossing
- Riparian Buffer Planting, 1,000 Linear Feet

Restoration Objectives

- Groundwater Recharge - increased retention time will allow for surface water infiltration
- Nutrient Removal - nutrient uptake/assimilation in wetlands
- Wildlife Habitat - enhancement of riparian and wetland resources for resident and migrating wildlife
- Recreation - wetland will provide wildlife viewing opportunities
- Educational - the nature preserve with existing trails could include informational displays
- Visual Quality/Aesthetics - wetland and stream opportunities will enhance park viewscape

Restoration Concept

- Area 1 and 2 - Grading to create wetland areas
- Stream restoration could include restoration/stabilization at utility crossing
- Riparian buffer plantings to enhance forested stream corridors along downstream area on Baltimore County property



BALTIMORE RED LINE

Potential Stream Sites
Streams
2' Contours
Potential Wetland Sites
Potential Buffer Sites
DNR/NWI Wetlands
Hydric Soils
Green Hub
Green Corridor

N

1 in = 400 feet

0 200 400 800 Feet

ASSOCIATED SITE ID:

RL-GF-008S
RL-GF-008W
RL-GF-008B

Red Line
Potential Mitigation Sites

DNR Solider's Delight Site

October 2012

Baltimore Red Line Project
Potential Wetland and Stream Mitigation Site
McDonogh School Property

Existing Conditions Summary

Location Information

County: Baltimore
Watershed: Gwynns Falls
Coordinates: 39°23'58.16"N / 76°45'55.80"W **USGS Quad:** Reisterstown
Location: Riding Hall Road and Farm Road, Owings Mills, MD
Property Ownership: Sole Private Owner (McDonogh School)
Constraints: Utilities

Site Conditions

Parcel Area: 201.09 Ac **Existing Land Use:** Agriculture - Hay
Landscape Position: Topographic Low **Adjacent Land Use:** Forest and Institutional
Drainage Area: Greater than 15:1
Habitat Location: Contiguous to wetland/upland forest > 100 Acres
Mapped Soils: Codorus Silt Loam; Hatboro Silt Loam
Mapped Wetlands: NWI wetlands mapped along portions of site
Green Infrastructure: Located within GI Corridor and associated with GI Gaps

The site is located north of McDonogh Road and west of MD 795 on a portion of the approximately 800 acres that comprise the McDonogh School, established in 1873. The site is specifically associated with Gwynns Falls (Use III), forested floodplains, and adjacent farm fields of the McDonogh School. The site presents multiple mitigation opportunities for the Redline project. Opportunities include wetland creation, stream restoration/stabilization, floodplain connection, and potential riparian buffer enhancement. Limitations associated with existing utilities (sanitary sewer) may limit wetland creation opportunities on portions of the site (western floodplain).

Summary of Opportunities

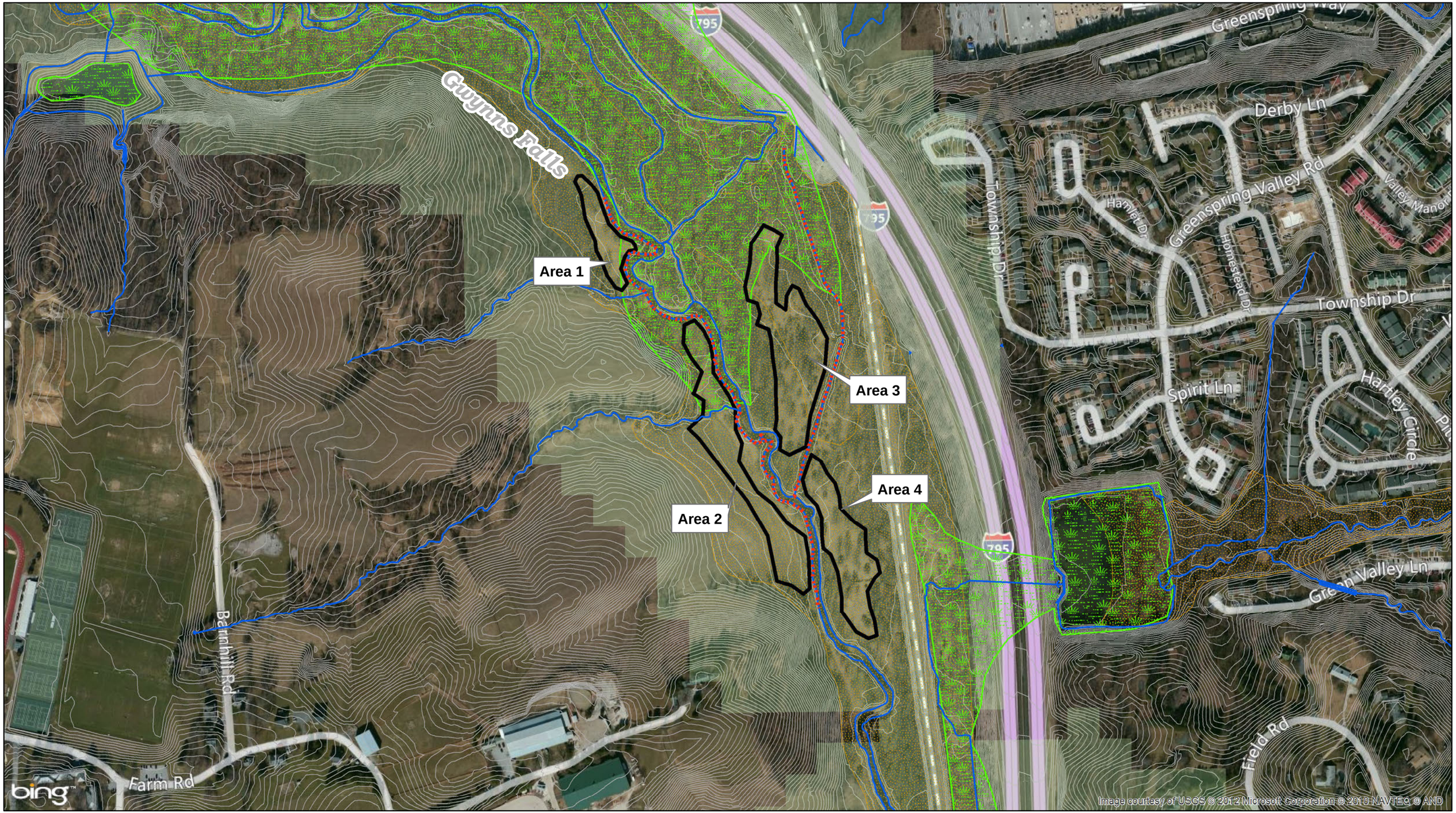
- Wetland Creation, 7.70 Acres
- Stream Restoration, 3,600 Linear Feet

Restoration Objectives

- Flood Flow Alteration - enhancing floodplain connection and storage of flood waters
- Groundwater Recharge - increased retention time will allow for surface water infiltration
- Sediment/Toxicant Retention - sediment storage with connected floodplain
- Nutrient Removal - nutrient uptake/assimilation in floodplain and wetlands
- Wildlife Habitat - enhancement of riparian and wetland resources for resident and migrating wildlife
- Educational/Recreational - opportunities to partner with McDonogh School to incorporate environmental stewardship, research, recreation, and “outdoor classroom”

Restoration Concept

- Grading to create wetland depressions along several areas within the riparian corridor
- Bank stabilization and grading to improve floodplain connection; protection of existing utilities; removal of berm located along tributary (race); potential for improving instream habitat
- Riparian plantings to enhance forested stream corridor



BALTIMORE RED LINE

- Potential Stream Sites
- Streams
- 2' Contours
- Potential Wetland Sites
- Potential Buffer Sites
- DNR/NWI Wetlands
- Hydric Soils
- Green Hub
- Green Corridor

N

1 in = 325 feet

0 162.5 325 650 Feet

ASSOCIATED SITE ID:

RL-GF-123W
RL-GF-124S

Red Line
Potential Mitigation Sites

McDonogh School Site

October 2012

Baltimore Red Line Project
Potential Wetland Mitigation Site
Leakin Park Sites

Existing Conditions Summary

Location Information

County:	Baltimore City		
Watershed:	Gwynns Falls (Dead Run subwatershed)		
Coordinates:	39°18'17.33"N / 76°41'24.29"W	**USGS Quad:**	Baltimore West
Location:	N. Franklintown Road, Baltimore, MD		
Property Ownership:	Public Land (Baltimore City Park)		
Constraints:	Utilities		

Site Conditions

Parcel Area:	162.09 Ac	**Existing Land Use:**	Floodplain, Lawn/Field
Landscape Position:	Topographic Low	**Adjacent Land Use:**	Forest
Drainage Area:	Greater than 15:1		
Habitat Location:	Contiguous to wetland/upland forest > 100 Acres		
Mapped Soils:	Fluvents, frequently flooded		
Mapped Wetlands:	No mapped NWI or DNR wetlands exist in the study area.		
Green Infrastructure:	Located within GI Hub and associated with GI Gaps.		

There are two site locations in Leakin Park, RL-GF-120 (120) and RL-GF-121 (121). Site 121 is located east of the parking area off of N. Franklintown Road on the east floodplain of Dead Run. Site 120 is located west of the parking area off of N. Franklintown Road on the south floodplain of Dead Run. Site 121 is currently un-mowed open floodplain dominated by reed canary grass and wild grape. Site 120 is associated with open park area that is mowed and maintained adjacent to an existing emergent/scrub-shrub wetland and forest buffer. Site constraints include sewer and gas line utilities that could limit areas of mitigation opportunities.

Summary of Opportunities

- Floodplain wetland and reconnection, 0.83 Acres (120)
- Wetland Creation, 0.22 Acres (121)

Restoration Objectives

- Flood Flow Alteration - enhancing floodplain connection and storage of flood waters
- Groundwater Recharge - increased retention time will allow for surface water infiltration
- Sediment/Toxicant Retention - sediment storage with connected floodplain
- Nutrient Removal - nutrient uptake/assimilation in floodplain and wetlands
- Wildlife Habitat - enhancement of riparian and wetland resources for resident and migrating wildlife
- Recreation - wetland will provide wildlife viewing opportunities
- Educational - Baltimore City parkland with existing trails could include informational displays

Restoration Concept

- Site 120 - Floodplain grading to create floodplain wetlands
- Site 121 - Grading to expand existing wetland area
- Riparian buffer plantings to enhance forested stream corridors

BALTIMORE RED LINE

Potential Stream Sites
Streams
2' Contours
Potential Wetland Sites
Potential Buffer Sites
DNR/NWI Wetlands
Hydric Soils
Green Hub
Green Corridor

N

1 in = 200 feet

0 100 200 400 Feet

ASSOCIATED SITE ID:

RL-GF-120
RL-GF-121

Red Line Potential Mitigation Sites

Leakin Park Sites

October 2012

Baltimore Red Line Project
Potential Wetland Mitigation Site
Golupski Site

Existing Conditions Summary

Location Information

County:	Baltimore		
Watershed:	Back River		
Coordinates:	39°16'36.02"N / 76°24'27.11"W	**USGS Quad:**	Middle River
Location:	Golupski Road, Essex, MD		
Property Ownership:	Sole Private Owner (Family Farm)		
Constraints:	None		

Site Conditions

Parcel Area:	67.15 Ac	**Existing Land Use:**	Agriculture - Corn
Landscape Position:	Topographic Low	**Adjacent Land Use:**	Agriculture and Forest
Drainage Area:	5:1 to 15:1		
Habitat Location:	Contiguous to wetland/upland forest > 100 Acres		
Mapped Soils:	Beltsville Silt Loam (2-5 percent slopes); Othello Silt Loam		
Mapped Wetlands:	Both DNR and NWI wetlands are mapped on site.		
Green Infrastructure:	Located adjacent to GI Hub.		

The Golupski site is located along the northern margin of Back River and has been farmed by the same family for four generations. The site is currently being cropped specifically for waterfowl habitat. Groundwater appears to be shallow and the site has very low topographic relief. Minimal site clearing and grading of the site would be required to improve the hydrology. Field observations during the site visit did not indicate the presence of any underground utilities. Access to the site is very good.

Summary of Opportunities

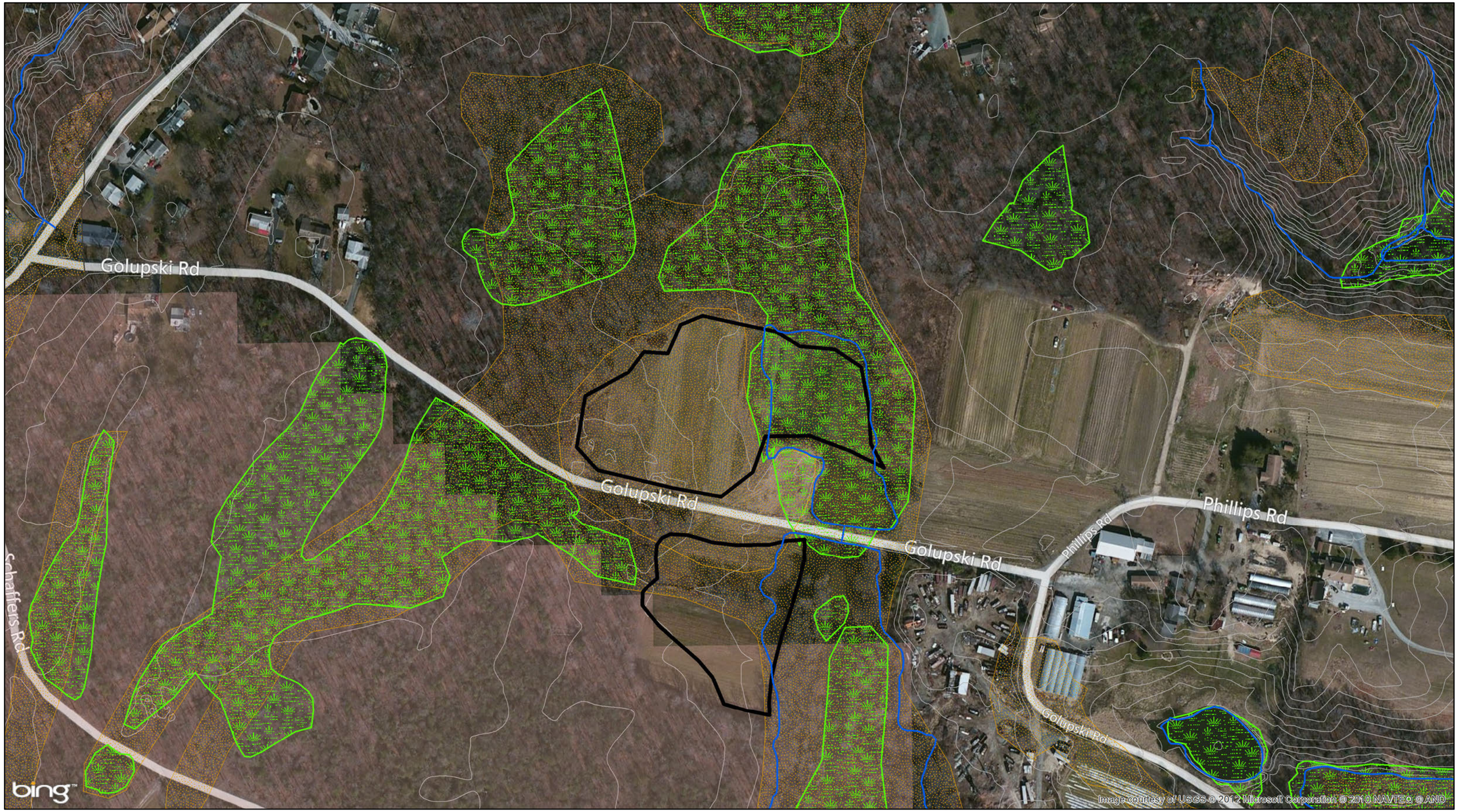
- Wetland Creation, 6.31 Acres

Restoration Objectives

- Groundwater Recharge/Discharge – increased retention time of precipitation and surface water inputs and discharge of seasonally high groundwater
- Nutrient Removal – conversion of upland agriculture fields to wetlands
- Wildlife Habitat – expansion of wetland habitat adjacent to Chesapeake Bay and Back River
- Recreation – wetland could provide enhanced hunting opportunities for property owner

Restoration Concept

- Grading to create mosaic of wetland cover types (forested, scrub shrub, emergent and open water)



BALTIMORE RED LINE

Potential Stream Sites
Streams
2' Contours
Potential Wetland Sites
Potential Buffer Sites
DNR/NWI Wetlands
Hydric Soils
Green Hub
Green Corridor

N

1 in = 200 feet

0 100 200 400 Feet

ASSOCIATED SITE ID:

RL-BR-085W

Red Line
Potential Mitigation Sites

Golupski Site

October 2012

Baltimore Red Line Project
Potential Wetland and Stream Buffer Mitigation Site
Pittsfield Road

Existing Conditions Summary

Location Information

County:	Baltimore		
Watershed:	Gwynns Falls		
Coordinates:	39°23'38.76"N / 76°45'13.75"W	**USGS Quad:**	Reisterstown
Location:	Southeast of McDonough Rd. and Pittsfield Rd., Garrison, MD		
Property Ownership:	Public land and Private Properties		
Constraints:	Backyards		

Site Conditions

Parcel Area:	26.49 Ac	**Existing Land Use:**	Open field
Landscape Position:	Topographic Low	**Adjacent Land Use:**	Residential
Drainage Area:	Less than 5:1		
Habitat Location:	Contiguous to wetland/upland forest between 25 to 100 Acres		
Mapped Soils:	Baile silt loam; Manor loam		
Mapped Wetlands:	No NWI or DNR wetlands mapped on site		
Green Infrastructure:	Located within GI Corridor and associated with GI Gaps		

The site is located southeast of the intersection of McDonough Road and Pittsfield Road. The site is associated with an unnamed tributary of Gwynns Falls (Use III), with open field space within the stream corridor, and adjacent residential development. The site presents several mitigation opportunities for the Redline project including wetland creation/enhancement, and riparian buffer establishment. The potential wetland area is already saturated, and existing wetlands are located upstream of the site. A constraint to these mitigation opportunities is that there are several private property lots located directly adjacent to the stream corridor, and the community appears to use the area as community open space.

Summary of Opportunities

- Wetland Creation, 0.57 Acres
- Stream Buffer Plantings, up to 500 Linear Feet

Restoration Objectives

- Groundwater Recharge - increased retention time will allow for surface water infiltration
- Sediment/Toxicant Retention - sediment storage with connected floodplain
- Nutrient Removal - nutrient uptake/assimilation in floodplain and wetlands
- Wildlife Habitat - enhancement of riparian and wetland resources for resident and migrating wildlife
- Recreation - wetland will provide wildlife viewing opportunities
- Visual Quality/Aesthetics - wetland and stream opportunities will enhance community viewscape

Restoration Concept

- Minor grading and plantings to create wetland depressions along several areas within the riparian corridor
- Riparian plantings to enhance forested stream corridor

BALTIMORE RED LINE

Potential Stream Sites
Streams
2' Contours
Potential Wetland Sites
Potential Buffer Sites
DNR/NWI Wetlands
Hydric Soils
Green Hub
Green Corridor

N

1 in = 200 feet

0 100 200 400 Feet

ASSOCIATED SITE ID:

RL_GF_095

Red Line Potential Mitigation Sites

Pittsfield Road

October 2012

Baltimore Red Line Project
Potential Stream Mitigation Site
Dead Run Tributary

Existing Conditions Summary

Location Information

County: Baltimore County
Watershed: Gwynns Falls
Coordinates: 39°18'51.73"N / 76°43'49.36"W **USGS Quad:** Baltimore West
Location: Up and downstream of the intersection of Woodlawn Dr and Security Blvd, Baltimore, MD
Property Ownership: Public (Baltimore County)
Constraints: Parking Lots

Site Conditions

Parcel Area: 76.28 Ac **Existing Land Use:** Forest
Landscape Position: Stream Valley **Adjacent Land Use:** Commercial, Industrial
Drainage Area: 1,536 Ac
Habitat Location: Contiguous to wetland/upland forest < 25 Acres
Mapped Soils: Watchung-Urban land complex; Watchung silt loam
Mapped Wetlands: No NWI or DNR wetlands mapped on site
Green Infrastructure: Not located adjacent to Green Infrastructure

This stream site is located southwest of the intersection of Gwynn Oak Avenue and Security Boulevard. This stream reach is associated with an unnamed tributary to Dead Run, a tributary of Gwynns Falls (Use III). The land use within the stream corridor is forested, with adjacent commercial and industrial development. Additionally, Woodlawn High School is located at the downstream end of the reach along the left side of the stream. There is a USGS stream gauge (# 01589315) located on the left bank at the school property. Access is limited upstream of Security Blvd. due to large, privately-owned parking lots on either side of the channel, with fences along the stream corridor. The stream channel throughout the reach is disconnected from the floodplain and the stream banks are actively eroding. Opportunities for stream restoration, floodplain improvement, and BMP installation are available at this site.

Summary of Opportunities

- Stream Restoration – Approximately 3,700 Linear Feet

Restoration Objectives

- Stream Stabilization
- Stormwater Management

Restoration Concept

- Installation of in-stream structures and bank grading to improve channel stability, reduce sediment loading, and improve in-stream habitat
- Removal of some parking lot areas and installation of BMPs

BALTIMORE RED LINE

- Potential Stream Sites
- Streams
- 2' Contours
- Potential Wetland Sites
- Potential Buffer Sites
- DNR/NWI Wetlands
- Hydric Soils
- Green Hub
- Green Corridor

N

1 in = 250 feet

0 125 250 500 Feet

ASSOCIATED SITE ID:

DRT-204

Red Line Potential Mitigation Sites

Dead Run Tributary

October 2012

Baltimore Red Line Project
Potential Stream Mitigation Site
Whitestone Road

Existing Conditions Summary

Location Information

County: Baltimore County
Watershed: Gwynns Falls
Coordinates: 39°19'14.86"N / 76°44'35.27"W **USGS Quad:** Baltimore West
Location: Southwest of Dogwood Rd. and Whitestone Rd., Baltimore, MD
Property Ownership: Private Owner (ATI Performance Products, Inc.)
Constraints: Adjacent parking/storage areas encroached on floodplain

Site Conditions

Parcel Area: 4.26 Ac **Existing Land Use:** Forested, Commercial
Landscape Position: Stream Valley **Adjacent Land Use:** Commercial
Drainage Area: 448 Ac
Habitat Location: Contiguous to wetland/upland forest < 25 Acres
Mapped Soils: Hatboro Silt Loams
Mapped Wetlands: No NWI or DNR wetlands mapped on site
Green Infrastructure: No green infrastructure located on site

This site is located southwest of the intersection of Dogwood Road and Whitestone Road. The stream reach is associated with Dead Run, a tributary of Gwynns Falls (Use III). There is a thin patch of forest surrounding the stream corridor, with the remaining land use associated with commercial development. Within the reach, the right bank is actively eroding up to a metal fence on ATI Performance Products Inc. property. The owner of this property is concerned that the fence will soon become undermined by the channel and wants something to be done to prevent further erosion. Parking lots on both sides of the stream are threatened by stream channel widening. Mitigation opportunities for the Redline project include stream restoration/stabilization.

Summary of Opportunities

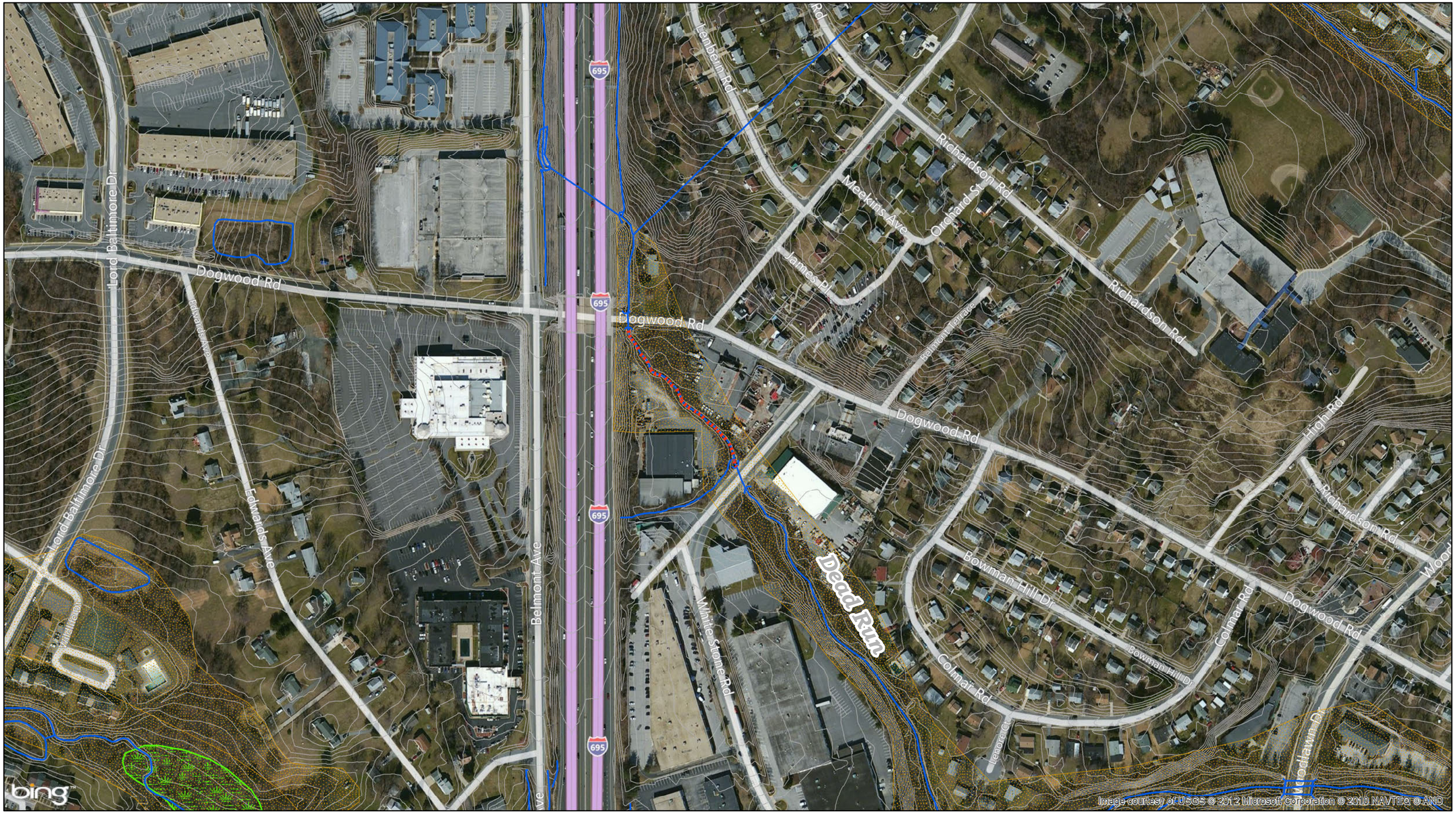
- Stream Restoration – Approximately 500 Linear Feet

Restoration Objectives

- Stabilization of the stream channel and banks

Restoration Concept

- Installation of in-stream structures and bank grading to improve channel stability



BALTIMORE RED LINE

Potential Stream Sites
Streams
2' Contours
Potential Wetland Sites
Potential Buffer Sites
DNR/NWI Wetlands
Hydric Soils
Green Hub
Green Corridor

N

1 in = 250 feet

0 125 250 500 Feet

ASSOCIATED SITE ID:

DR-11-01

Red Line Potential Mitigation Sites

White Stone Road

October 2012

Appendix J
Results from Preliminary MHT Review

Wetland and Stream Mitigation Sites
Preliminary Built Historic Properties Assessment

Note that the following assessments were completed using available Maryland Historical Trust and National Register of Historic Places data to identify the presence of previously identified and/or evaluated built historic properties. Year-built data sources include tax assessment and GIS parcel data for Baltimore County and Baltimore City. For the purposes of this assessment, properties more than 45 years of age were identified to allow for a 5-year construction period. No field views were conducted as part of this assessment. The veracity of the data should be field checked during future intensive-level assessments, as the presence of additional properties more than 45 years of age is possible. Note that in most cases, reforestation and stream restoration efforts may not be considered an adverse effect to historic properties, but additional determinations of eligibility and effect and consultation with the Maryland Historical Trust may be required to fulfill Section 106 requirements.

Site	Presence of Historic Properties/Potential Built Resources and Recommendations
RL_GF_008_DNR	Site is within Soldiers Delight Natural Environmental Area (BA-3149), which has been identified by the Maryland Historical Trust (MHT) but not evaluated; a Determination of Eligibility (DOE) will be required. Additional built resources more than 45 years of age are adjacent to the site and will require DOEs or Short Forms for Ineligible Properties.
SL_02	Built resources more than 45 years of age are adjacent to the site and will require DOEs or Short Forms for Ineligible Properties.
RL_GF_001_RL_GF_054	No known built resources issues.
RL_GF_126	Site is within the Church Lane African-American Survey District (BA-3048), which has been identified by MHT but not evaluated; a DOE will be required.
RL_GF_005_RL_GF_007	No known built resources issues.
RL_GF_007B	Site is located within a parcel that contains a built resource more than 45 years of age; a DOE will be required. Adjacent parcels include the Albert Mace House (BA-685) and McDonogh School for Boys (BA-31), which have been identified by MHT but not evaluated; both may require DOEs.
McDonough	Site contains the McDonogh Pump House (BA-892); which has been identified by MHT but not evaluated. A DOE will be required.
RL_GF_095	Adjacent parcels contain built resources more than 45 years of age and will require DOEs or Short Forms for Ineligible Properties.
RL_JF_001B	Site is within Greenspring Valley Historic District (BA-2216), which is listed in the National Register of Historic Places (note incorrect MHT data, which states the historic district has not been evaluated) and adjacent to Green Spring Punch (BA-46), which has been identified by MHT but not evaluated; it may require a DOE.
RL_GF_125	Adjacent to the Campfield African-American Survey District (BA-3122) which has been identified by MHT but not evaluated. It may require a DOE. Adjacent parcels contain built resources more than 45 years of age and will require DOEs or Short Forms for Ineligible Properties.

Site	Presence of Historic Properties/Potential Built Resources and Recommendations
PM_04	An adjacent parcel contains a built resource more than 45 years of age and will require a DOE or Short Form for Ineligible Properties.
DR_11_00	No known built resources issues.
DR_10_00	Built resources more than 45 years of age are adjacent to the site and will require DOEs or Short Forms for Ineligible Properties.
DR_11_01	Built resources more than 45 years of age are adjacent to the site and will require DOEs or Short Forms for Ineligible Properties.
RL_GF_011	No known built resources issues.
DR_09_00	Built resources more than 45 years of age are adjacent to the site and will require DOEs or Short Forms for Ineligible Properties.
DRT_204	Built resources more than 45 years of age are adjacent to the site and will require DOEs or Short Forms for Ineligible Properties.
DR_07_03_05	Built resources more than 45 years of age are adjacent to the site and will require DOEs or Short Forms for Ineligible Properties.
RL_GF_012	Built resources more than 45 years of age are adjacent to the site and will require DOEs or Short Forms for Ineligible Properties.
DR_07_00	Built resources more than 45 years of age are adjacent to the site and will require DOEs or Short Forms for Ineligible Properties.
RL_GF_121	Site is located within Gwynns Falls Park/Leakin Park (B-4610), which is eligible for listing in the National Register of Historic Places.
RL_GF_120	Site is located within Gwynns Falls Park/Leakin Park (B-4610), which is eligible for listing in the National Register of Historic Places.
RL_GF_122	Site is located within Gwynns Falls Park/Leakin Park (B-4610), which is eligible for listing in the National Register of Historic Places.
RL_BR_084	Site is located within Herring Run Park (B-1374), which is eligible for listing in the National Register of Historic Places.
RF_BR_085	No known built resources issues.

Wetland and Stream Mitigation Sites
Preliminary Archeological Assessment

The archeological assessment represents a preliminary overview of archeological potential within each of the natural resources mitigation sites. The assessment was conducted using a combination of variables, including previously recorded archeological sites within and in proximity to the mitigation sites, soil types, distance to water, topographic setting, and slope. These variables provided a snapshot of the current environmental settings for each site and the potential for each site to contain prehistoric and/or historic archeological deposits based on previously recorded sites in similar settings and current knowledge of land use patterns. No fieldviews were conducted as part of the archeological assessment. Each mitigation site should be visited to confirm the current conditions of the setting and the level of ground disturbance. Consultation with the Maryland Historical Trust may provide further clarification regarding proposed archeological effort for these mitigation sites.

Red Line Conceptual Mitigation

Preliminary Results of Archeological Assessments

Site ID	Site Name	Project Description (ac, type of activity)	Acreage	Soil Types	Slope	Distance to water	Previously Recorded Archeological Sites within 1.5-mi radius	Previously Recorded Archeological Sites within Mitigation Area	Mitigation Area Disturbance	Potential	Recommendations	Likely to need Phase IB
DR_07_00	N/A	N/A	3.93	Watchung-urban land complex 0-8% slopes; Mount Lucas-Urban land complex 0-8% slopes	0-8%	0 ft	2 Historic	0	High	None for both	No action needed	No
DR_07_03_05	N/A	N/A	1.87	Hatboro silt loam 0-3% slopes; Legore-Montalto-Urban land complex 0-8% slopes; Mount Lucas-Urban land complex 0-8% slopes; Watchung-Urban land complex 0-8% slopes	0-8%	1620 ft (0.31 mi)	2 Historic	0	High	None for both	No action needed	No
DR_09_00	N/A	N/A	8.50	Hatboro silt loam 0-3% slopes; Legore silt loam 3-8% slopes; Mount Lucas-Urban land complex 0-8% slopes; Urban land 0-8% slopes; Watchung silt loam 3-8% slopes	0-8%	47 ft (0.01 mi)	4 Historic	0	Low	High for prehistoric, high for historic	Geomorphological study, field reconnaisance, archival and historic map research in order to make recommendations about proceeding to full Phase IB survey	Yes
DR_10_00	N/A	N/A	1.36	Hatboro silt loam 0-3%; Watchung-Urban land complex 0-8% slopes; Watchung silt loam 3-8% slopes	0-8%	847 ft (0.16 mi)	4 Historic	0	Low	High for prehistoric, low for historic	Geomorphological study and field reconnaisance in order to make recommendations about proceeding to a full Phase IB survey	Yes
DR_11_00	N/A	N/A	23.03	Udorthent-highway 0-65% slopes; Urban land 0-8% slopes; Watchung silt loam 3-8% slopes	0-8%	0 ft	3 Historic	0	High	None for both	No action needed	No
DR_11_01	Whitestone Road	Stream	1.27	Hatboro silt loam 0-3% slopes; Udorthents-highway 0-65% slopes	0-3%	0 ft	2 Historic	0	Low	Low for prehistoric, low for historic	Disturbance assessment to ascertain condition of site and chance to locate buried resources	No
DRT_204	Dead Run Tributary	Stream and SWM BMPs	73.50	Legore-Montalto-Urban land complex 0-8% slopes; Udorthents-highway 0-65% slopes; Urban land 0-8% slopes; Watchung-Urban land complex 0-8% slopes; Watchung silt loam 0-3% slopes	0-8%	0 ft	3 Prehistoric, 5 Historic	0	High	Low for prehistoric, low for historic	Disturbance assessment to ascertain condition of site and chance to locate buried resources	No
PM_04	Powder Mill Run	Stream	45.49	Fluvents, frequently flooded; Jackland silt loam 3-8% slopes; Legore-Urban land complex 0-8% slopes; Legore loam 0-8% slopes, stony; Montalto-Urban land complex 0-15%; Montalto silt loam 8-15% slopes; Urban land-Montalto complex 0-8% slopes	0-15%	0 ft	1 Prehistoric, 5 Historic	0	Low	Low for prehistoric, low for historic	Disturbance assessment to ascertain condition of site and chance to locate buried resources	No
RF_BR_085	Golupski Road	Wetland	4.10	Othello silt loam 0-2% slopes; Beltsville silt loam 2-5% slopes	0-5%	686 ft (0.13 miles)	4 Prehistoric, 5 Historic, 9 Multiple	0	Low	High for prehistoric, high for historic	Geomorphological study, field reconnaisance, archival and historic map research in order to make recommendations about proceeding to full Phase IB survey	Yes
RL_BR_084	N/A	N/A	6.76	Urban land 0-15% slopes; Urban land-Udorthents complex-occasionally flooded; Udorthents, smoothed 0-35% slopes	0-35%	962 ft (0.18 mi)	2 Historic	0	Low	Low for prehistoric, low for historic	Disturbance assessment to ascertain condition of site and chance to locate buried resources	No
RL_GF_001_RL_GF_054	N/A	N/A	15.12	Baile silt loam 3-8% slopes; Baltimore-Urban land complex 0-8% slopes; Elsinboro silt loam 8-15% slopes; Glenelg-Urban land complex 0-15% slopes; Glenville silt loam 3-8% slopes; Hatboro silt loam 0-3% slopes	0-15%	0 ft	14 Prehistoric, 12 Historic	0	Low	High for prehistoric, medium for historic	Geomorphological study, field reconnaisance, historic map and photograph research in order to make recommendations about proceeding to a full Phase IB survey	Yes
RL_GF_005_RL_GF_007	N/A	N/A	11.94	Baile silt loam 3-8% slopes; Baltimore-Urban land complex 0-8% slopes; Codorus silt loams 0-3% slopes; Glenelg-Urban land complex 0-8% slopes; Hatboro silt loams 0-3% slopes; Urban land-Udorthents complex 0-15% slopes	0-15%	0 ft	19 Prehistoric, 9 Historic	1 Prehistoric (18BA12)	Low	Prehistoric site present, high for historic	Undertake Phase IB evaluation for prehistoric site 18BA12	Yes
RL_GF_007	McDonogh Buffer Site	Buffer	7.88	Baile silt loam 3-8% slopes; Codorus silt loams 0-3% slopes; Glenelg loam 3-8% slopes	0-8%	0 ft	17 Prehistoric, 11 Historic	0	Low	Medium for prehistoric; high for historic	Field reconnaisance, archival and historic map research, and disturbance assessment in order to make recommendations about proceeding to full Phase IB survey	Yes
RL_GF_008	DNR Soldier's Delight	Wetland, Stream, Stream Buffer	80.21	Baile silt loam 3-8% slopes; Chrome silt loam 3-15% slopes; Codorus silt loams 0-3% slopes; Glenelg loam 3-8% slopes; Glenville silt loam 3-15% slopes; Hatboro silt loam 0-3% slopes; Manor-Brinklow complex 25-45% slopes, very rocky; Manor channery loam 8-25% slopes; Manor loam 15-25% slopes; Travilah silt loam 3-15% slopes; Urban land-Udorthents complex 0-8% slopes	0-45%	0 ft	16 Prehistoric, 14 Historic, 3 Multiple	0	Low	High for prehistoric, high for historic	Geomorphological study, field reconnaisance, archival and historic map research in order to make recommendations about proceeding to full Phase IB survey	Yes
RL_GF_011	Rolling Road	Stream and Wetland	7.16	Hatboro silt loam 0-3% slopes; Legore silt loam 3-8% slopes; Watchung-Urban land complex 0-8% slopes	0-8%	0 ft	5 Historic	0	Low	Medium for prehistoric, high for historic	Field reconnaisance, archival and historic map research, and disturbance assessment in order to make recommendations about proceeding to full Phase IB survey	Yes
RL_GF_012	N/A	N/A	10.54	Hatboro silt loam 0-3% slopes; Mount Lucas-Urban land complex 0-8% slopes	0-8%	2571 ft (0.49 mi)		0	Low	Medium for prehistoric, high for historic	Field reconnaisance, archival and historic map research, and disturbance assessment in order to make recommendations about proceeding to full Phase IB survey	Yes
RL_GF_095	Pittsfield Road	Wetland, Stream Buffer	11.06	Baile silt loam 3-8% slopes; Manor loam 8-45% slopes	3-45%	2745 ft (0.52 mi)	2 Prehistoric, 10 Historic	0	Low	Medium for prehistoric, high for historic	Field reconnaisance, archival and historic map research, and disturbance assessment in order to make recommendations about proceeding to full Phase IB survey	Yes
RL_GF_120	Leakin Park	Wetland	2.22	Fluvents, frequently flooded; Legore loam 15-45% slopes	0-45%	0 ft	15 Historic	0	Low	Low for prehistoric, medium for historic	Field reconnaisance, archival and historic map research, and disturbance assessment in order to make recommendations about proceeding to full Phase IB survey	Yes
RL_GF_121	Leakin Park	Wetland	1.37	Fluvents, frequently flooded; Legore loam 15-45% slopes	0-45%	63 ft (0.01 mi)	13 Historic	1 Historic (18BC101)	Low	Low for prehistoric, historic site present	Undertake Phase IB evaluation for historic site 18BC101	Yes

Red Line Conceptual Mitigation

Preliminary Results of Archeological Assessments

Site ID	Site Name	Project Description (ac, type of activity)	Acreage	Soil Types	Slope	Distance to water	Previously Recorded Archeological Sites within 1.5-mi radius	Previously Recorded Archeological Sites within Mitigation Area	Mitigation Area Disturbance	Potential	Recommendations	Likely to need Phase IB
RL_GF_122	N/A	N/A	0.60	Fluvents, frequently flooded; Relay silt loam 15-60% slopes, very stony; Udorthents-Fluvents complex, occasionally flooded	0-3%	0 ft	13 Historic	0	Low	Medium for prehistoric, medium for historic	Field reconnaissance, historic map and photograph research to ascertain condition of site and make recommendations about proceeding to full Phase IB survey	Yes
RL_GF_123_RL_GF_124	McDonogh School	Wetland, Stream	38.07	Codorus silt loam 0-3% slopes; Glenelg loam 3-8% slopes; Glenville silt loam 3-15% slopes; Hatboro silt loam 0-3%; Manor loam 25-45% slopes; Udorthents-highway 0-65% slopes	0-45%	0 ft	11 Prehistoric, 20 Historic	0	Low	High for prehistoric, high for historic	Geomorphological study, field reconnaisance, archival and historic map research in order to make recommendations about proceeding to full Phase IB survey	Yes
RL_GF_125	N/A	N/A	1.05	Urban land 0-8% slopes; Watchung silt loam 3-8% slopes	0-8%	0 ft	1 Historic	0	High	None for both	No action needed	No
RL_GF_126	N/A	N/A	5.90	Baile-Urban land complex 0-8% slopes; Glenville-Urban land complex 0-8% slopes; Hatboro silt loams 0-3% slopes	0-8%	0 ft	3 Prehistoric, 5 Historic	0	Low	Low for prehistoric, low for historic	Disturbance assessment to ascertain condition of site and chance to locate buried resources	No
RL_JF_001	Jones Falls Site	Buffer	16.35	Conestoga silt loam 3-15% slopes; Lindside silt loam 0-3% slopes; Melvin silt loam 0-3% slopes; Wiltshire silt loam 3-8% slopes	0-15%	0 ft	1 Prehistoric, 8 Historic, 1 Multple	0	Low	High for prehistoric, high for historic	Geomorphological study, field reconnaisance, archival and historic map research in order to make recommendations about proceeding to full Phase IB survey	Yes
SL_01	Brenbrook Drive	Stream and SWM BMPs	9.23	Baile-Urban land complex 0-8% slopes; Glenville-Urban land complex 0-8% slopes; Hatboro silt loams 0-3% slopes	0-8%	0 ft	3 Prehistoric, 5 Historic	0	Low	Low for prehistoric, low for historic	Disturbance assessment to ascertain condition of site and chance to locate buried resources	No
SL_02	Scotts Level Branch	Stream and SWM BMPs	11.18	Baile-Urban land compled 0-8% slopes; Baile silt loam 3-8% slopes; Glenelg-Urban land complex 0-8% slopes; Glenville-Urban land compled 0-8% slopes; Hatboro silt loams 0-3% slopes	0-8%	0 ft	11 Prehistoric, 7 Historic	0	Low	Low for prehistoric, low for historic	Disturbance assessment to ascertain condition of site and chance to locate buried resources	No