APPENDIX E: PUBLIC SITE WALKTHROUGH RATING CRITERIA & FIELD ASSESSMENT FORMS

WETLAND MITIGATION RATING CRITERIA & FIELD SITE ASSESSMENT FORMS

Wetland Mitigation Field Site Assessment Rating Criteria

Instructions

Mitigation Site Number

First four letters of the 8-digit federal HUC watershed name followed by 4 digits. For example, CHOP0001 would represent site 1 of the Choptank watershed.

Estimated Mitigation Needs

Provide the acres of mitigation needed to satisfy the impacts using current replacement ratios or other agency agreed upon ratios for your

Soils Criteria

Estimate percentage from soil map or GIS. Describe any feature or field observation that may verify that the mapping is correct or incorrect. This criteria should be considered when evaluating the Depth of Excavation citeria.

Vegetation

Decribe the vegetation that characterizes the area being considered as potential mitigation. Decribe the dominant species, any invasive species that seem problematic, density of trees and shrubs, maturity of trees, etc. Record a photo to document typical condition.

Hydrology

Determine and describe any hydrologic connectivity that may exist. This criteria should be considered when evaluating the Depth of Excavation criteria

Land Use

Describe how the land is currently being utilized. Make any note if that use is intended to change in the near future.

100 Year Floodplain

Note whether the site is located within a floodplain and how frequently it may be flooded. Absence of a floodplain will score low but does preclude a site from consideration when other factors are considered.

Habitat Value

Describe the surrounding area. Is it large enough to provide significant habitat value? Could the area benefit from a wetland creation?

Geomorphic Position

Describe where the site is within the landscape. Consider whether its position is conducive to creating and sustaining a wetland.

Ease of Access

Judge how easy/difficult it would be for construction access. Consider whether existing paths already exist or whether significant clearing would be needed. Record a photo of the likely access or the deterence to it.

Estimate cut to wetland hydrology

Estimate how much depth of excavation may be needed to reach requisite hydrology for a successful wetland creation/restoration, etc. Evaluator should consider time of year of evaluation, existing soils, surfacewater contributions, and/or other site conditions which provide evidence of the depth of excavation needed to create a wetland.

Utilities Present

Look for and note any utilities that may be in the immediate area and which could affect optimizing the site for wetland creation or serve as an obsticle to construction activity.

Wetland Mitigation Field Site Assessment Form

Project Details

Project Name:	I-495/I-270 Managed Lanes Study	**Mitigation Site Number:**	MPAO0008
Estimated Mitigation Needs (ac):	TBD		
Date:	4/3/2019	**Consultant Firm/Investigator(s):**	KJH, BM

Site Location Details

County:	Prince George's	**Cross Roads:**	Sellman Road and E Line Road
Basin (HUC 8):	Middle Potomoac-Catoctin	**MDE Watershed (8 digit):**	02070010
Proximity to Impacted Wetland (mi.):	0.35	**Lat/Long:**	39.026019 -76.930444

Site Data

Parcel Size (ac):	502	**Potential Creation Area (ac):**	0.0
Lat/Long:	39.026019 -76.930444	**Potential Preservation Area (ac):**	6.8
Land Use:	Agricultural and Forested	**Adjacent Land Use:**	Agricultural and Forested
Mapped Soils:	Water		
Property Address:	Spellman Road, Beltsville, MD		
Property Owner(s):	BARC		

Additional Field Observations

RTE species present? (explain below)	TBD	**Evidence of disturbance? (explain below)**	
Is site currently a wetland?	Yes	**Was site formerly a wetland?**	

Condition: See photos	**Condition:** Site consists of open water man made pond with fringe wetland

Mitigation Site Rating

Criteria	Score	Criteria	Score
Soils	10	**Vegetation**	5
10 - Greater than 50% hydric soil 5 - 10% to 50% hydric soil 1 - Less than 10% hydric soil		10 - Herbaceous cover 5 - Scrub-shrub cover 1 - Mostly forested	
Describe: Water - permanently inundated with fringe wetland		Describe: Surrounded by scrub shrub - river birch, bradford pear, red maple, and sycamore.	
Hydrology	10	**Land Use**	10
10 - Abuts wetland or stream 5 - Adjacent to wetland or stream 1 - No connection to wetland or stream		10 - Agricultural or Open Space 5 - Mariginal Pasture 1 - Old field	
Describe: Majority of site is open water surrounded by PEM fringe.		Describe: Surrounded by agricultural land and scrub shrub.	
100-Year Floodplain	1	**Habitat Value**	1
10 - Yes (active evidence of flooding) 5-Yes (mapped but no eveidence of active flooding) 1 - No		10 - Contiguous to wetland/upland forest > 100 ac 5 - Contiguous to wetland/upland forest 25-100 ac 1 - Contiguous to wetland/upland forest < 25 ac	
Describe: No evidence of flooding. Berm surrounds pond.		Describe: Western side = active agricultural fiels. Eastern side = narrow hedgerow.	
Geomorphic Position	10	**Ease of Access**	1
10 - Low or concave topography 5 - Flat topography 1 - High topography/steep slopes		10 - Yes (with existing direct vehicular access to potential site) 5- yes (open but no existing vehicular access) 1 - No (no vehicular access, clearing needed)	
Describe: Manmade pond		Describe: Clearing of scrub-shrub required.	
Estimated cut to wetland hydrology	10	**Utilities Present**	5
10 - Less than 2' 5-between 3' - 5' 1 - greater than 5'		10 - No utilities on site 5 - Utilities but not within creation area 1 - Utilities within potential creation area	
Describe: Open water 4"-2' deep.		Describe: Powerlines adjacent to site.	
		Total Score out of 100	**63**

Map



Site No.	MPAO0008		Scale: 1 in. =	2,000

Site Photos









Wetland Mitigation Field Site Assessment Form

Project Details

Project Name:	I-495/I-270 Managed Lanes Study	**Mitigation Site Number:**	MPAO0032
Estimated Mitigation Needs (ac):	TBD		
Date:	8/14/2019	**Consultant Firm/Investigator(s):**	RKK; KJH/AJN

Site Location Details

County:	Montgomery	**Cross Roads:**	Mahaska Drive and Oskaloosa Drive
Basin (HUC 8):	Middle Potomac-Anacostia-Occoquan	**MDE Watershed (8 digit):**	02140206
Proximity to Impacted Wetland (mi.):	1.83	**Lat/Long:**	39.115265 -77.145699

Site Data

Parcel Size (ac):	12.2, 5.7, 80.4, 9.7	**Potential Creation Area (ac):**	1.6
Lat/Long:	39.11553546 -77.14594816	**Potential Preservation Area (ac):**	2.1
Land Use:	Forest	**Adjacent Land Use:**	Low to high density residential
Mapped Soils:	Hatboro silt loam & Baile silt loam		
Property Address:	Crabbs Branch Way		
Property Owner(s):	Maryland National Park & Planning Commission		

Additional Field Observations

RTE species present? (explain below)	TBD	**Evidence of disturbance? (explain below)**	
Is site currently a wetland?		**Was site formerly a wetland?**	

Condition: Entire site in Crabbs Branch 100-year FEMA floodplain dominated by reed canary wetlands with scattered trees.	Condition: High quality seep wetland at north western end of site.

Mitigation Site Rating

Criteria	Score	Criteria	Score
Soils	10	**Vegetation**	10
10 - Greater than 50% hydric soil 5 - 10% to 50% hydric soil 1 - Less than 10% hydric soil		10 - Herbaceous cover 5 - Scrub-shrub cover 1 - Mostly forested	
Describe: Entire site located in mapped hydric soils. Hydric soils verified in the field.		Describe: Majority of site is reed canary floodplain with scattered trees.	
Hydrology	10	**Land Use**	5
10 - Abuts wetland or stream 5 - Adjacent to wetland or stream 1 - No connection to wetland or stream		10 - Agricultural or Open Space 5 - Mariginal Pasture 1 - Old field	
Describe: Perennial channel flows through site. Existing wetlands in northern and southern floodplain		Describe: Site located in Crabbs Branch SVP. Mostly reed canary grass.	
100-Year Floodplain	5	**Habitat Value**	10
10 - Yes (active evidence of flooding) 5-Yes (mapped but no evidence of active flooding) 1 - No		10 - Contiguous to wetland/upland forest > 100 ac 5 - Contiguous to wetland/upland forest 25-100 ac 1 - Contiguous to wetland/upland forest < 25 ac	
Describe: Located in 100-year FEMA mapped floodplain. No evidence of flooding.		Describe: Adjacent to 110 acres of contiguous upland forest.	
Geomorphic Position	10	**Ease of Access**	5
10 - Low or concave topography 5 - Flat topography 1 - High topography/steep slopes		10 - Yes (with existing direct vehicular access to potential site) 5- yes (open but no existing vehicular access) 1 - No (no vehicular access, clearing needed)	
Describe: Entire site is low topography in floodplain.		Describe: Site is open, but no existing access. Potential access from maintained HOA roads.	
Estimated cut to wetland hydrology	5	**Utilities Present**	1
10 - Less than 2' 5-between 3' - 5' 1 - greater than 5'		10 - No utilities on site 5 - Utilities but not within creation area 1 - Utilities within potential creation area	
Describe: Groundwater estimated at 3.5' below surface in non-wetland areas.		Describe: Sewerline runs throughout floodplain.	
		Total Score out of 100	**71**

Map



Site No.	MPAO0032		Scale: 1 in. =	2,000

Site Photos









Wetland Mitigation Field Site Assessment Form

Project Details

Project Name:	I-495/I-270 Managed Lanes Study	**Mitigation Site Number:**	MPOC0001
Estimated Mitigation Needs (ac):	TBD		
Date:	3/27/2019	**Consultant Firm/Investigator(s):**	RK&K/KJH, DB

Site Location Details

County:	Montgomery	**Cross Roads:**	River Rd. & Hunting Quarter Rd.
Basin (HUC 8):	Middle Potomac-Catoctin	**MDE Watershed (8 digit):**	02140202
Proximity to Impacted Wetland (mi.):	14	**Lat/Long:**	39.079584 -77.392588

Site Data

Parcel Size (ac):	2,655	**Potential Creation Area (ac):**	7.30
Lat/Long:	39.079584 -77.392588	**Potential Preservation Area (ac):**	0.0
Land Use:	Agriculture	**Adjacent Land Use:**	Forest, Wetlands
Mapped Soils:	Huntington silt loam, 0 to 3 %, occasionally flooded, Lindside silt loam, 0 to 3 %, occasionally flooded, Melvin silt loam, 0 to 2 %, occasionally flooded		
Property Address:	0-0000 River Rd.		
Property Owner(s):	Maryland Department of Natural Resources		

Additional Field Observations

RTE species present? (explain below)	TBD	**Evidence of disturbance? (explain below)**	Yes
Is site currently a wetland?	Partially	**Was site formerly a wetland?**	Possibly

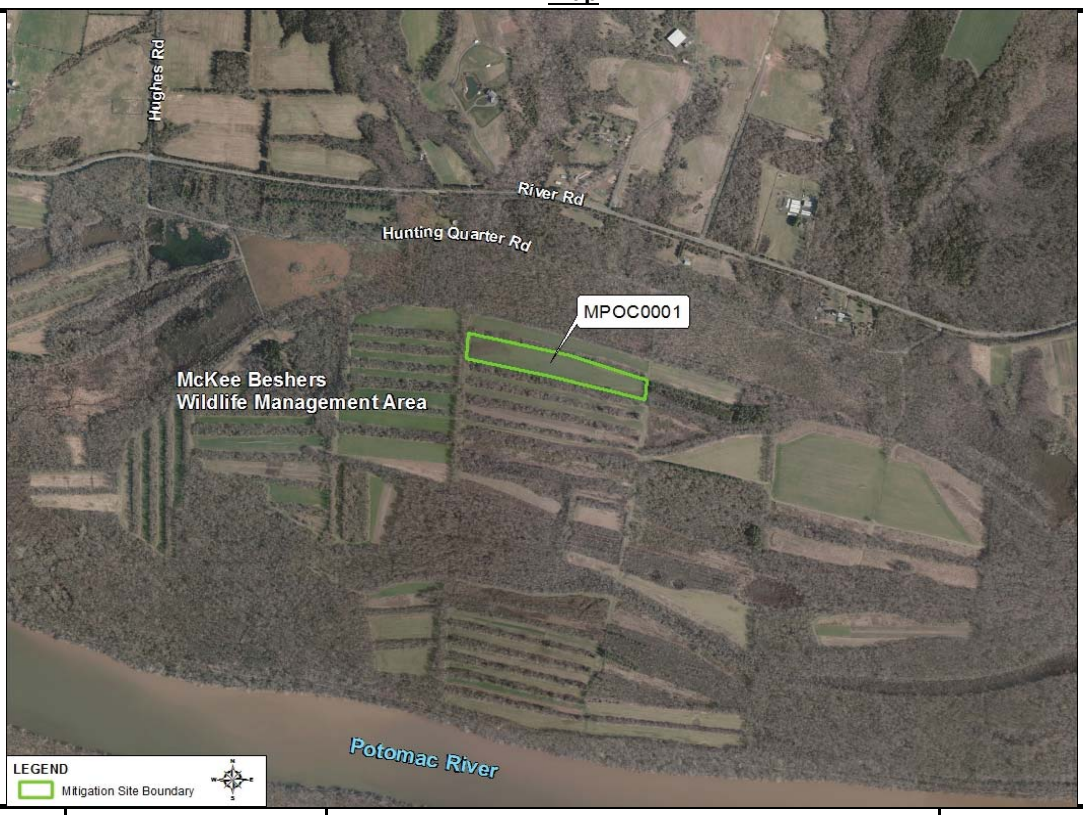
Condition: Site is located in the McKee Beshers Wildlife Management Area. Site consists of active farm field that is partially open water/saturated in the Potomac River 100 YR floodplain.

Condition: Site surrounded by hedgerows that are maintained by DNR for wildlife purposes. Hedgerow to southeast of site consists of PFO wetland. Large PFO just north of site managed for wood duck habitat.

Mitigation Site Rating

Criteria	Score	Criteria	Score
Soils	10	**Vegetation**	10
10 - Greater than 50% hydric soil 5 - 10% to 50% hydric soil 1 - Less than 10% hydric soil		10 - Herbaceous cover 5 - Scrub-shrub cover 1 - Mostly forested	
Describe: 100% of site is mapped as hydric soils. No hydric soil indicators observed during site walk, likely due to active farming of field.		Describe: Active farm field - Remnant soy beans throughout site. No wet veg observed.	
Hydrology	10	**Land Use**	10
10 - Abuts wetland or stream 5 - Adjacent to wetland or stream 1 - No connection to wetland or stream		10 - Agricultural or Open Space 5 - Marginal Pasture 1 - Old field	
Describe: PFO wetland abutting southeast corner of site. Extensive open water areas within site.		Describe: Active farm field - Remnant soy beans throughout site. No wet veg observed.	
100-Year Floodplain	5	**Habitat Value**	10
10 - Yes (active evidence of flooding) 5-Yes (mapped but no evidence of active flooding) 1 - No		10 - Contiguous to wetland/upland forest > 100 ac 5 - Contiguous to wetland/upland forest 25-100 ac 1 - Contiguous to wetland/upland forest < 25 ac	
Describe: Entire site is located in Potomac River 100 YR FEMA floodplain. No evidence of flooding within site.		Describe: Site located in McKee Besher Wildlife Management Area (>100 acres of forest).	
Geomorphic Position	10	**Ease of Access**	10
10 - Low or concave topography 5 - Flat topography 1 - High topography/steep slopes		10 - Yes (with existing direct vehicular access to potential site) 5- yes (open but no existing vehicular access) 1 - No (no vehicular access, clearing needed)	
Describe: Site consists of low/flat topography with gradual open water depressions.		Describe: Existing maintained access just east of site that connects to Hunting Quarter Rd.	
Estimated cut to wetland hydrology	10	**Utilities Present**	10
10 - Less than 2' 5-between 3' - 5' 1 - greater than 5'		10 - No utilities on site 5 - Utilities but not within creation area 1 - Utilities within potential creation area	
Describe: Groundwater observed 14" below ground surface in non-saturated areas.		Describe: No evidence of utilities observed within or adjacent to the site.	
		Total Score out of 100	**95**

Map



Site No.	MPOC0001		Scale: 1 in. =	2,000

Site Photos









Wetland Mitigation Field Site Assessment Form

Project Details

Project Name:	I-495/I-270 Managed Lanes Study	**Mitigation Site Number:**	MPOC0002
Estimated Mitigation Needs (ac):	TBD		
Date:	3/27/2019	**Consultant Firm/Investigator(s):**	RK&K/KJH, DB

Site Location Details

County:	Montgomery	**Cross Roads:**	River Rd. & Pennyfield Lock Rd.
Basin (HUC 8):	Middle Potomac-Catoctin	**MDE Watershed (8 digit):**	02140202
Proximity to Impacted Wetland (mi.):	9	**Lat/Long:**	39.057434 -77.298221

Site Data

Parcel Size (ac):	2,655	**Potential Creation Area (ac):**	0.0
Lat/Long:	39.057434 -77.298221	**Potential Preservation Area (ac):**	12.2
Land Use:	Wildlife Management	**Adjacent Land Use:**	Forest, River
Mapped Soils:	Melvin silt loam, 0 to 2 %, occasionally flooded, Huntington silt loam, 0 to 3 %, occasionally flooded, Water		
Property Address:	0-0000 River Rd.		
Property Owner(s):	Maryland Department of Natural Resources		

Additional Field Observations

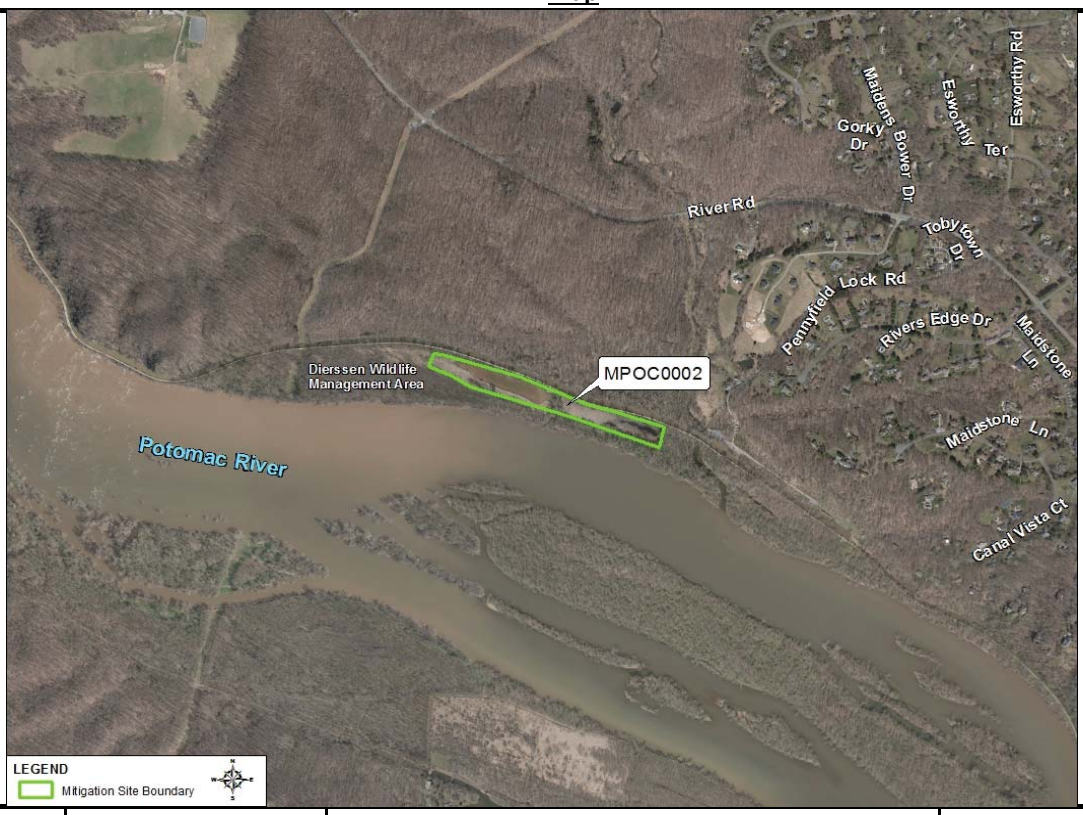
RTE species present? (explain below)	TBD	**Evidence of disturbance? (explain below)**	Yes
Is site currently a wetland?	Partially	**Was site formerly a wetland?**	Possibly

Condition: Site is located in the Dierssen Wildlife Management Area. Site consists of two man-made impoundments managed for waterfowl. Siphons connecting site and C&O canal are not functioning.	**Condition:** Site is surrounded by the C&O canal/path to the north and the Potomac River to the south. Site is located in Potomac River 100 YR floodplain and consists of open water and reed canary wetlands.

Mitigation Site Rating

Criteria	Score	Criteria	Score
Soils	10	**Vegetation**	10
10 - Greater than 50% hydric soil 5 - 10% to 50% hydric soil 1 - Less than 10% hydric soil		10 - Herbaceous cover 5 - Scrub-shrub cover 1 - Mostly forested	
Describe: 100% of site is mapped as hydric soils. Hydric soil indicators observed throughout impoundments during site walk.		Describe: Site dominated by reed canary grass with sparse cattail and black willow.	
Hydrology	10	**Land Use**	5
10 - Abuts wetland or stream 5 - Adjacent to wetland or stream 1 - No connection to wetland or stream		10 - Agricultural or Open Space 5 - Marginal Pasture 1 - Old field	
Describe: Impoundments consist of open water and reed canary wetlands that drain to the Potomac River.		Describe: Site managed for waterfowl. Dominated by reed canary grass with sparse cattail and black willow.	
100-Year Floodplain	5	**Habitat Value**	10
10 - Yes (active evidence of flooding) 5-Yes (mapped but no evidence of active flooding) 1 - No		10 - Contiguous to wetland/upland forest > 100 ac 5 - Contiguous to wetland/upland forest 25-100 ac 1 - Contiguous to wetland/upland forest < 25 ac	
Describe: Entire site is located in Potomac River 100 YR FEMA floodplain. No evidence of flooding within site.		Describe: Site located in Dierssen Wildlife Management Area (40 acres) that connects to other forested parkland along the Potomac (>100 acres of forest).	
Geomorphic Position	10	**Ease of Access**	1
10 - Low or concave topography 5 - Flat topography 1 - High topography/steep slopes		10 - Yes (with existing direct vehicular access to potential site) 5- yes (open but no existing vehicular access) 1 - No (no vehicular access, clearing needed)	
Describe: Site consists of concave manmade impoundment.		Describe: Access is very limited. Would need to go through 10' wide C&O canal trail that would require crossing two foot bridges. One bridge needs replacement.	
Estimated cut to wetland hydrology	10	**Utilities Present**	10
10 - Less than 2' 5-between 3' - 5' 1 - greater than 5'		10 - No utilities on site 5 - Utilities but not within creation area 1 - Utilities within potential creation area	
Describe: Groundwater observed 0-3" below ground surface throughout site.		Describe: No evidence of utilities observed within or adjacent to the site.	
		Total Score out of 100	**81**

Map



Site No.	MPOC0002		Scale: 1 in. =	2,000

Site Photos









Wetland Mitigation Field Site Assessment Form

Project Details

Project Name:	I-495/I-270 Managed Lanes Study	**Mitigation Site Number:**	WSS-150069
Estimated Mitigation Needs (ac):	TBD		
Date:	11/12/2018	**Consultant Firm/Investigator(s):**	RK&K/KJH, CAS

Site Location Details

County:	Montgomery	**Cross Roads:**	Schaeffer Rd. & White Ground Rd.
Basin (HUC 8):	Middle Potomac-Catoctin	**MDE Watershed (8 digit):**	02140208
Proximity to Impacted Wetland (mi.):	6.7	**Lat/Long:**	39.15145062 -77.3353438

Site Data

Parcel Size (ac):	4 parcels - 12.0, 11.5, 12.0 & 12.0	**Potential Creation Area (ac):**	0.0
Lat/Long:	39.15145062 -77.3353438	**Potential Preservation Area (ac):**	0.4
Land Use:	Forest	**Adjacent Land Use:**	Agriculture & Forest
Mapped Soils:	Hatboro silt loam, 0 to 3 percent slopes		
Property Address:	0-000 Schaeffer Rd.		
Property Owner(s):	Maryland National Capital Park & Planning Commission		

Additional Field Observations

RTE species present? (explain below)	TBD	**Evidence of disturbance? (explain below)**	No
Is site currently a wetland?	Yes	**Was site formerly a wetland?**	NA

Condition: Majority of site consists of a PSS wetland located in the Little Seneca Creek 100 YR floodplain. There is an upland island in the center of the site that is dominated by red cedar.

Condition: Site vegetation is a mix of natives and invasives. A 1-3 ' wide perennial channel flows along the western edge of the site boundary.

Mitigation Site Rating

Criteria	Score	Criteria	Score
Soils	10	**Vegetation**	5
10 - Greater than 50% hydric soil 5 - 10% to 50% hydric soil 1 - Less than 10% hydric soil		10 - Herbaceous cover 5 - Scrub-shrub cover 1 - Mostly forested	
Describe: Entire site is located in mapped hydric soils. Hydric soils were verified in the field.		Describe: Majority of site is PSS wetland dominated by persimmon, button bush, black willow, river birch, sycamore, arthraxon, soft rush, swamp rose, and sensitive fern. Upland areas within site dominated by Eastern red cedar saplings.	
Hydrology	10	**Land Use**	1
10 - Abuts wetland or stream 5 - Adjacent to wetland or stream 1 - No connection to wetland or stream		10 - Agricultural or Open Space 5 - Marginal Pasture 1 - Old field	
Describe: Majority of site is wetland located between two perennial channels. 0-2 inches of surface water observed throughout wetland during site investigation.		Describe: Site is located in Little Seneca Stream Valley Park and consists of floodplain with dense herbaceous vegetation and scattered tree and shrub saplings.	
100-Year Floodplain	5	**Habitat Value**	10
10 - Yes (active evidence of flooding) 5-Yes (mapped but no evidence of active flooding) 1 - No		10 - Contiguous to wetland/upland forest > 100 ac 5 - Contiguous to wetland/upland forest 25-100 ac 1 - Contiguous to wetland/upland forest < 25 ac	
Describe: Site located within 100-year FEMA floodplain. No active evidence of flooding observed during site visit.		Describe: Site connects to Seneca Creek State Park (>100 acres of forest).	
Geomorphic Position	10	**Ease of Access**	1
10 - Low or concave topography 5 - Flat topography 1 - High topography/steep slopes		10 - Yes (with existing direct vehicular access to potential site) 5- yes (open but no existing vehicular access) 1 - No (no vehicular access, clearing needed)	
Describe: Low topography. Site located in 100-YR FEMA floodplain.		Describe: Site is is accessible from Schaeffer Rd, however access within the site would require tree clearing.	
Estimated cut to wetland hydrology	10	**Utilities Present**	10
10 - Less than 2' 5-between 3' - 5' 1 - greater than 5'		10 - No utilities on site 5 - Utilities but not within creation area 1 - Utilities within potential creation area	
Describe: Majority of site is already wetland. 0-2 inches of surface water observed throughout most of site in November.		Describe: No evidence of utilities observed within or adjacent to the site.	
		Total Score out of 100	**72**

Map



Site No.	WSS-150069		Scale: 1 in. = 2,000	

Site Photos









Wetland Mitigation Field Site Assessment Form

Project Details

Project Name:	I-495/I-270 Managed Lanes Study	**Mitigation Site Number:**	WSS-150087
Estimated Mitigation Needs (ac):	TBD		
Date:	12/10/2018	**Consultant Firm/Investigator(s):**	RK&K/KJH, CAS

Site Location Details

County:	Montgomery	**Cross Roads:**	River Rd. & Hunting Quarter Rd.
Basin (HUC 8):	Middle Potomac-Catoctin	**MDE Watershed (8 digit):**	02140202
Proximity to Impacted Wetland (mi.):	14	**Lat/Long:**	39.07594861 -77.41050967

Site Data

Parcel Size (ac):	2,655	**Potential Creation Area (ac):**	5.8
Lat/Long:	39.07594861 -77.41050967	**Potential Preservation Area (ac):**	0.7
Land Use:	Agriculture	**Adjacent Land Use:**	Forest, Wetlands
Mapped Soils:	Lindside silt loam, 0 to 3 percent slopes, occasionally flooded, Melvin silt loam, 0 to 2 percent slopes, occasionally floodec		
Property Address:	0-0000 River Rd.		
Property Owner(s):	Maryland Department of Natural Resources		

Additional Field Observations

RTE species present? (explain below)	TBD	**Evidence of disturbance? (explain below)**	No
Is site currently a wetland?	Partially	**Was site formerly a wetland?**	Possibly

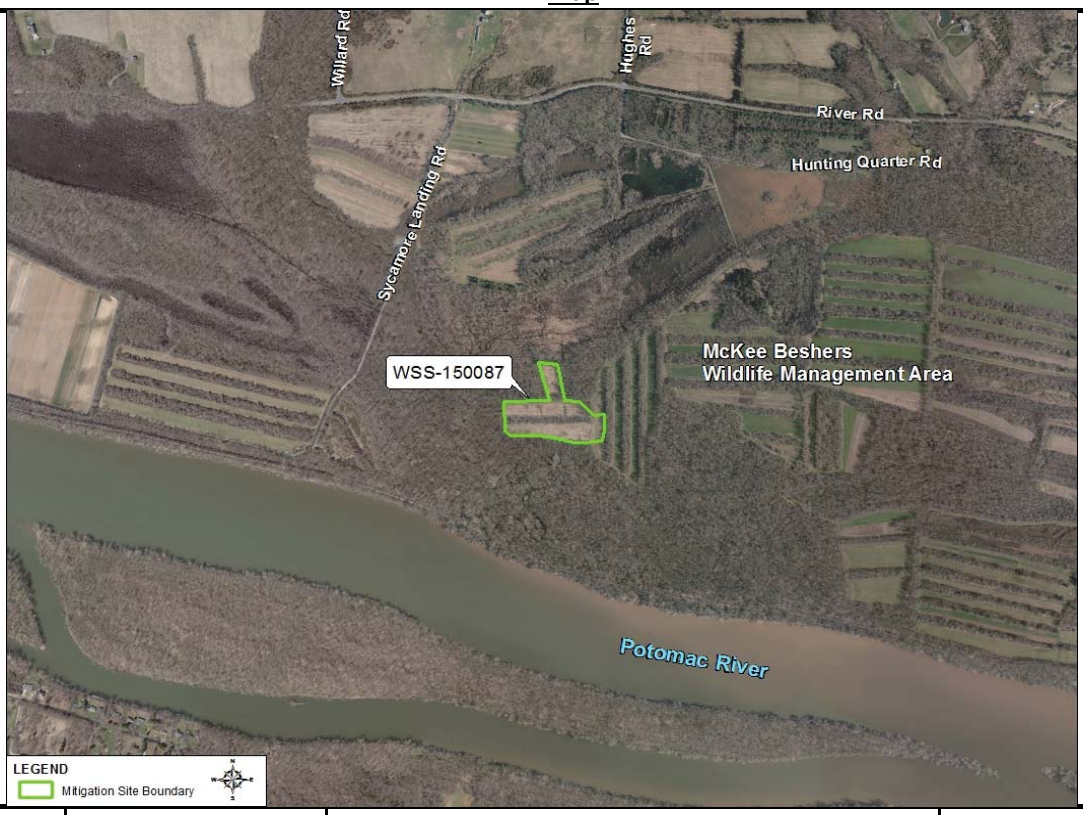
Condition: Site is located in the McKee Beshers Wildlife Management Area. Majority of site consists of dry old field in the Potomac River 100 YR floodplain.

Condition: Site surrounded by PFO wetlands. Couple of wetlands drain through site. Some areas within site appear to have been used for agriculture in the past.

Mitigation Site Rating

Criteria	Score	Criteria	Score
Soils	10	**Vegetation**	10
10 - Greater than 50% hydric soil 5 - 10% to 50% hydric soil 1 - Less than 10% hydric soil		10 - Herbaceous cover 5 - Scrub-shrub cover 1 - Mostly forested	
Describe: 60% of site is mapped as predominately hydric soils. Majority of site is dry field, however a couple of wetlands drain through the site.		Describe: Majority of site is dominated by teasel, reed canary grass, golden rod, and dogbane. Narrow strip of trees runs through the center of the site. Scattered tree saplings and shrubs were observed in the southern field.	
Hydrology	10	**Land Use**	1
10 - Abuts wetland or stream 5 - Adjacent to wetland or stream 1 - No connection to wetland or stream		10 - Agricultural or Open Space 5 - Marginal Pasture 1 - Old field	
Describe: Site is surrounded by PFO wetlands and a couple of PEM wetlands drain through the site.		Describe: Site is located in the McKee Beshers Wildlife Management Area and consists mostly of old field.	
100-Year Floodplain	10	**Habitat Value**	10
10 - Yes (active evidence of flooding) 5-Yes (mapped but no evidence of active flooding) 1 - No		10 - Contiguous to wetland/upland forest > 100 ac 5 - Contiguous to wetland/upland forest 25-100 ac 1 - Contiguous to wetland/upland forest < 25 ac	
Describe: Entire site is located in Potomac River 100 YR FEMA floodplain. Active evidence (debris) of flooding at the southern boundary of the site.		Describe: Site located in McKee Besher Wildlife Management Area (>100 acres of forest).	
Geomorphic Position	10	**Ease of Access**	10
10 - Low or concave topography 5 - Flat topography 1 - High topography/steep slopes		10 - Yes (with existing direct vehicular access to potential site) 5- yes (open but no existing vehicular access) 1 - No (no vehicular access, clearing needed)	
Describe: Site consists of low topography surrounded by wetlands.		Describe: Existing maintained access along edge of adjacent farm fields that connects to Hunting Quarter Rd.	
Estimated cut to wetland hydrology	10	**Utilities Present**	10
10 - Less than 2' 5-between 3' - 5' 1 - greater than 5'		10 - No utilities on site 5 - Utilities but not within creation area 1 - Utilities within potential creation area	
Describe: Groundwater observed 6" - 2' below ground surface.		Describe: No evidence of utilities observed within or adjacent to the site.	
		Total Score out of 100	**91**

Map



Site No.	WSS-150087		Scale: 1 in. =	2,000

Site Photos









Wetland Mitigation Field Site Assessment Form

Project Details

Project Name:	I-495/I-270 Managed Lanes Study	**Mitigation Site Number:**	WSS-150133
Estimated Mitigation Needs (ac):	TBD		
Date: 11/12/18		**Consultant Firm/Investigator(s):**	RK&K/KJH, CAS

Site Location Details

County:	Montgomery	**Cross Roads:**	Great Seneca Hwy & Mateny Rd.
Basin (HUC 8):	Middle Potomac-Catoctin	**MDE Watershed (8 digit):**	02140208
Proximity to Impacted Wetland (mi.):	3.25	**Lat/Long:**	39.14076147 -77.27203494

Site Data

Parcel Size (ac):	1,411.40	**Potential Creation Area (ac):**	0.9
Lat/Long:	39.14076147 -77.27203494	**Potential Preservation Area (ac):**	0.5
Land Use:	Agriculture	**Adjacent Land Use:**	Institutional & Forest
Mapped Soils:	Glenelg silt loam, 3 to 9 percent slopes; Baile silt loam, 0 to 3 percent slopes; & Glenville silt loam, 3 to 8 percent slopes		
Property Address:	11900 Clopper Rd.		
Property Owner(s):	Maryland Department of Natural Resources		

Additional Field Observations

RTE species present? (explain below)	TBD	**Evidence of disturbance? (explain below)**	Yes
Is site currently a wetland?	Partially	**Was site formerly a wetland?**	Possibly

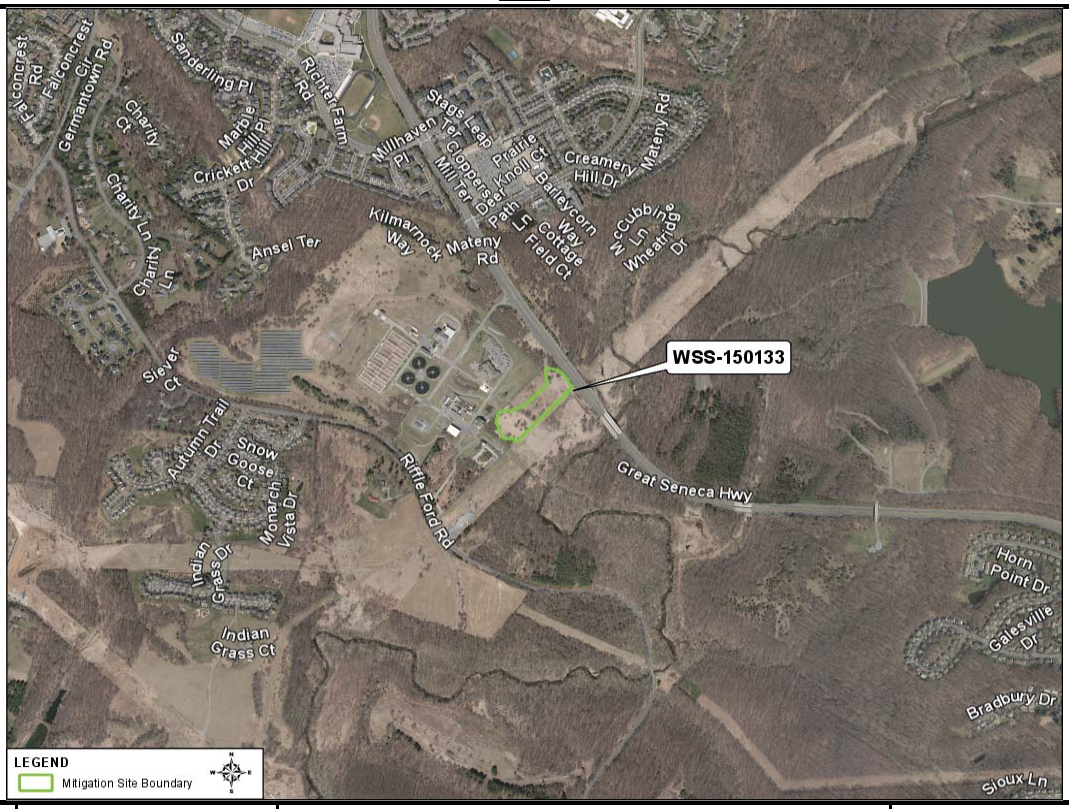
Condition: Western portion of site consists of existing PEM (2.1 acres) with scattered trees that receives drainage from upstream sewage treatment plant.

Condition: Center portion of site (1.8 acres) consists of dry upland on a hillslope dominated by autumn olive. Eastern portion of site (0.9 acres) consists of low area dominated by reed canary that may partially be wetland.

Mitigation Site Rating

Criteria	Score	Criteria	Score
Soils	5	**Vegetation**	10
10 - Greater than 50% hydric soil 5 - 10% to 50% hydric soil 1 - Less than 10% hydric soil		10 - Herbaceous cover 5 - Scrub-shrub cover 1 - Mostly forested	
Describe: 46% of site is mapped as predominately hydric soils. This area consits of existing PEM wetland.		Describe: Majority of PEM wetland is dominated by stilt grass, arthraxon and reed canary grass with scattered black willow, pin oak & autumn olive. Upland area is dominated by autumn olive.	
Hydrology	10	**Land Use**	5
10 - Abuts wetland or stream 5 - Adjacent to wetland or stream 1 - No connection to wetland or stream		10 - Agricultural or Open Space 5 - Marginal Pasture 1 - Old field	
Describe: Portions of site are existing PEM wetland. Source of hydrology is upstream sewage treatment plant. Eastern portion of site appears to abut wetland just south of site.		Describe: Site is located in Seneca Creek State Park and consists mostly of PEM wetland and upland scrub shrub dominated by invasives. Not accessible to public.	
100-Year Floodplain	5	**Habitat Value**	1
10 - Yes (active evidence of flooding) 5-Yes (mapped but no evidence of active flooding) 1 - No		10 - Contiguous to wetland/upland forest > 100 ac 5 - Contiguous to wetland/upland forest 25-100 ac 1 - Contiguous to wetland/upland forest < 25 ac	
Describe: Western portion of site is located in 100 YR FEMA floodplain. No evidence of active flooding.		Describe: Powerlines run between the site and Seneca Creek State Park.	
Geomorphic Position	5	**Ease of Access**	5
10 - Low or concave topography 5 - Flat topography 1 - High topography/steep slopes		10 - Yes (with existing direct vehicular access to potential site) 5- yes (open but no existing vehicular access) 1 - No (no vehicular access, clearing needed)	
Describe: Eastern and western portion of site consist of concave topography. Center portion of site consists of high topography w/ gradual slopes.		Describe: Existing access road from Seneca Creek Hwy to powerlines. Access to rest of site will require access under powerlines or scrub/shrub clearing.	
Estimated cut to wetland hydrology	5	**Utilities Present**	1
10 - Less than 2' 5-between 3' - 5' 1 - greater than 5'		10 - No utilities on site 5 - Utilities but not within creation area 1 - Utilities within potential creation area	
Describe: Eastern and western portion of site would require 0-2' cut to groundwater, however center portion of site would likely require greater than 3' cut to groundwater.		Describe: Gas line and overhead powerlines run along southern border of site.	
		Total Score out of 100	**52**

Map



Site No.	WSS-150133		Scale: 1 in. = 2,000	

Site Photos









Wetland Mitigation Field Site Assessment Form

Project Details

Project Name:	I-495/I-270 Managed Lanes Study	**Mitigation Site Number:**	WSS-150147A
Estimated Mitigation Needs (ac):	TBD		
Date:	11/29/2018	**Consultant Firm/Investigator(s):**	RK&K/KJH, SLY

Site Location Details

County:	Montgomery	**Cross Roads:**	Watkins Rd. & Woodfield Rd.
Basin (HUC 8):	Middle Potomac-Catoctin	**MDE Watershed (8 digit):**	02140208
Proximity to Impacted Wetland (mi.):	6.9	**Lat/Long:**	39.23278219 -77.18832166

Site Data

Parcel Size (ac):	2 Parcels - 42.0 & 24.4	**Potential Creation Area (ac):**	3.98, 3.09
Lat/Long:	39.23278219 -77.18832166	**Potential Preservation Area (ac):**	0.9
Land Use:	Agriculture	**Adjacent Land Use:**	Forest & Low Density Residential
Mapped Soils:	Hatboro silt loam, 0 to 3 percent slopes, frequently flooded		
Property Address:	0-0000 Woodfield Rd. & Watkins Rd. Gaithersburg 20882-0000		
Property Owner(s):	Maryland National Capital Park & Planning Commission		

Additional Field Observations

RTE species present? (explain below)	TBD	**Evidence of disturbance? (explain below)**	No
Is site currently a wetland?	Partially	**Was site formerly a wetland?**	Likely

Condition: Entire site is located in the 100 YR floodplain to Magruder Branch. There are two large PEM wetlands dominated by cattail and reed canary grass in the western floodplain.

Condition: The entire eastern side and portions of the western side of the floodplain are dry and dominated by reed canary grass. There are scattered black willow, black walnut, and pin oak trees within the site.

Mitigation Site Rating

Criteria	Score	Criteria	Score
Soils	10	**Vegetation**	10
10 - Greater than 50% hydric soil 5 - 10% to 50% hydric soil 1 - Less than 10% hydric soil		10 - Herbaceous cover 5 - Scrub-shrub cover 1 - Mostly forested	
Describe: Entire site is located in mapped hydric soils. Two large PEM wetlands were identified in the western floodplain.		Describe: Majority of the site is dominated by reed canary grass with scattered black willow, black walnut and pin oak. Large PEM in northwestern corner of site is dominated by cattail. Inclusions of false nettle and common milkweed observed in floodplain.	
Hydrology	10	**Land Use**	5
10 - Abuts wetland or stream 5 - Adjacent to wetland or stream 1 - No connection to wetland or stream		10 - Agricultural or Open Space 5 - Marginal Pasture 1 - Old field	
Describe: Existing PEM wetlands in site's western floodplain. Perennial channel (Magruder Branch) flows through site.		Describe: Site is located in Lower Magruder Branch Park and consists of reed canary dominated floodplain with scattered black willow and black walnut.	
100-Year Floodplain	10	**Habitat Value**	10
10 - Yes (active evidence of flooding) 5-Yes (mapped but no evidence of active flooding) 1 - No		10 - Contiguous to wetland/upland forest > 100 ac 5 - Contiguous to wetland/upland forest 25-100 ac 1 - Contiguous to wetland/upland forest < 25 ac	
Describe: Majority of site is located in Magruder Branch 100 YR FEMA floodplain. Active evidence of flooding (matted down veg & water staining).		Describe: Site connects downstream to Great Seneca Creek Park (>100 acres of forest).	
Geomorphic Position	10	**Ease of Access**	5
10 - Low or concave topography 5 - Flat topography 1 - High topography/steep slopes		10 - Yes (with existing direct vehicular access to potential site) 5- yes (open but no existing vehicular access) 1 - No (no vehicular access, clearing needed)	
Describe: Site consists of low topography surrounded by upland slopes. Entire site within 100YR floodplain.		Describe: Site is open, but no existing vehicular access. Potential access directly off Watkins Road.	
Estimated cut to wetland hydrology	5	**Utilities Present**	10
10 - Less than 2' 5-between 3' - 5' 1 - greater than 5'		10 - No utilities on site 5 - Utilities but not within creation area 1 - Utilities within potential creation area	
Describe: Groundwater observed 2.5' below ground surface in non-wetland floodplain areas.		Describe: No utilities observed within site, however overhead powerlines along watkins road just outside site boundaries.	
		Total Score out of 100	**85**

Map



Site No.	WSS-150147A		Scale: 1 in. = 2,000	

Site Photos









Wetland Mitigation Field Site Assessment Form

Project Details

Project Name:	I-495/I-270 Managed Lanes Study	**Mitigation Site Number:**	WSS-150147B
Estimated Mitigation Needs (ac):	TBD		
Date:	11/12/2018	**Consultant Firm/Investigator(s):**	RK&K/KJH, CAS

Site Location Details

County:	Montgomery	**Cross Roads:**	Watkins Rd. & Woodfield Rd.
Basin (HUC 8):	Middle Potomac-Catoctin	**MDE Watershed (8 digit):**	02140208
Proximity to Impacted Wetland (mi.):	6.9	**Lat/Long:**	39.23521278 -77.18778527

Site Data

Parcel Size (ac):	2 Parcels - 24.7 & 16.3	**Potential Creation Area (ac):**	1.49
Lat/Long:	39.23521278 -77.18778527	**Potential Preservation Area (ac):**	0.9, 0.2
Land Use:	Forest & Agriculture	**Adjacent Land Use:**	Low Density Residential
Mapped Soils:	Hatboro silt loam, 0 to 3 percent slopes, frequently flooded		
Property Address:	0-0000 Watkins Rd. & 0-0000 Woodfield Rd.		
Property Owner(s):	Maryland National Capital Park & Planning Commission		

Additional Field Observations

RTE species present? (explain below)	TBD	**Evidence of disturbance? (explain below)**	No
Is site currently a wetland?	Partially	**Was site formerly a wetland?**	Likely

Condition: Entire site is located in the 100 YR floodplain to Magruder Branch. Large portions of floodplain consist of PEM wetland dominated by reed canary grass.	**Condition:** Drier portions of floodplain are dominated by reed canary grass or golden rod. Seep wetlands along toe of valley slopes at edge of floodplain. High quality PSS wetland along southeastern side of site.

Mitigation Site Rating

Criteria	Score	Criteria	Score
Soils	10	**Vegetation**	10
10 - Greater than 50% hydric soil 5 - 10% to 50% hydric soil 1 - Less than 10% hydric soil		10 - Herbaceous cover 5 - Scrub-shrub cover 1 - Mostly forested	
Describe: Entire site is located in mapped hydric soils. Large portions of the site were verified as hydric soils in the field.		Describe: Majority of site is dominated by reed canary grass, with scattered black willow. Large area in northeastern corner of site dominated by Canada goldenrod.	
Hydrology	10	**Land Use**	5
10 - Abuts wetland or stream 5 - Adjacent to wetland or stream 1 - No connection to wetland or stream		10 - Agricultural or Open Space 5 - Marginal Pasture 1 - Old field	
Describe: Existing PEM and PSS wetlands within and abutting site. Perennial channel (Magruder Branch) flow through site.		Describe: Site is located in Lower Magruder Branch Park and consists of reed canary dominated floodplain with scattered black willow.	
100-Year Floodplain	10	**Habitat Value**	10
10 - Yes (active evidence of flooding) 5-Yes (mapped but no evidence of active flooding) 1 - No		10 - Contiguous to wetland/upland forest > 100 ac 5 - Contiguous to wetland/upland forest 25-100 ac 1 - Contiguous to wetland/upland forest < 25 ac	
Describe: Entire site is located in Magruder Branch 100 YR FEMA floodplain. Active evidence of flooding at upstream end of site (matted down veg & sediment deposition).		Describe: Site connects upstream to Lower Magruder Branch Park (>100 acres of forest).	
Geomorphic Position	10	**Ease of Access**	5
10 - Low or concave topography 5 - Flat topography 1 - High topography/steep slopes		10 - Yes (with existing direct vehicular access to potential site) 5- yes (open but no existing vehicular access) 1 - No (no vehicular access, clearing needed)	
Describe: Site consists of low topography surrounded by upland slopes. Entire site within 100YR floodplain.		Describe: Site is open, but no existing vehicular access. Potential access directly off Watkins Road.	
Estimated cut to wetland hydrology	5	**Utilities Present**	10
10 - Less than 2' 5-between 3' - 5' 1 - greater than 5'		10 - No utilities on site 5 - Utilities but not within creation area 1 - Utilities within potential creation area	
Describe: Groundwater observed 2-3' below ground surface in non-wetland floodplain areas.		Describe: No utilities observed within site.	
		Total Score out of 100	**85**

Map



Site No.	WSS-150147B		Scale: 1 in. = 2,000	

Site Photos









STREAM MITIGATION RATING CRITERIA & FIELD SITE ASSESSMENT FORMS

Stream Mitigation Field Site Assessment Rating Criteria

Mitigation Rating Instructions

Estimated bank erosion within reach
Determine what percent of bank erosion exist within the reach being assessed. Record a photo that represents the condition.

Degree of Channel Incision
On average, what is the depth of bank height or incision of channel within its valley, i.e., distance from channel invert to top of bank.

Floodplain Access
Estimate how frequent floodplain is being accessed. Factors to consider include: rack lines, flattened grasses or forbs, bank height or gauge data . If easily available. Knowledge of any recent high flows in the area. Any landowner observations may be helpful.

Opportunity for Floodplain Development
Determine whether site conditions allow for the development/creation of a floodplain that can be frequently accessed. Consider any obstacles to creating a floodplain such as existing structures/infrastructure, improved properties or land use.

Drainage Area Evaluation
Using the drainage area calculated and recorded in the **Site Data** section of the form, provide a score which corresponds with the calculated drainage area.

Vegetation
Describe the existing vegetation cover that exists along the channel and within the area on which construction would take place to perform the mitigation. Describe any difficulty the vegetation may play in accessing and constructing the restoration. Record a photo to show typical condition.

Land Use
Characterize the land use along the stream reach and/or floodplain area. Describe condition.

Opportunity for Ecological Lift
Consider what opportunities for ecological lift may exist, such as, sediment reduction, temperature regulation, floodplain connectivity, fish passage, habitat for fish and/or benthics, and water chemistry (quality). Equally consider whether the lift can be realistically achieved and sustained. Consider what obstacles that would need to be overcome to achieve lift. Are the obstacles within SHA's control?

Ease of Access
Consider how easy/difficult it may be to access stream to perform construction or restoration effort. Does considerable clearing or access road construction need to be performed?

Utilities Present
Do utilities exist within or nearby the stream and do they present an issue that may effect construction, access, or reforestation efforts. Describe what utilities are seen such as overhead wires vs. under ground utilities such as sewer lines, gas lines or cables.

Stream Mitigation Field Site Assessment Form

Project Details

Project Name: I-495/I-270 Managed Lanes Study **Mitigation Site Number:** MO-00029

Projects Estimated Stream Mitigation Needs (LF): TBD

Date of Field Assessment: 11/16/2018 **Consultant Firm/Investigator(s):** CRI/MD, SJ

Site Location Details-taken from desktop review

County: Montgomery **Cross Roads:** Old Spring Rd & Beach Dr

Basin (HUC 8): Middle Potomac-Anacostia-Occoquan **MDE Watershed (8 digit):** 2140206

Proximity to Impacted Stream (mi.): 0.04 **Lat/Long:** 39.013798 -77.075727

Site Data

Parcel Size (ac): 5 parcels - 9.5, 72.6, 6.5, 1.7, 4.1 **Potential Restoration Reach (LF):** 4,948

Site Opportunities: __X__Channel Restoration ___Livestock Exclusion _____Riparian Buffer Planting ___Habitat Enhancement ___Fish Passage

Stream Order: 2nd **Stream Hydrology:** Perennial **Stream Use:** I

Drainage Area to Reach (sq. mi.) 1.71

Land Use: Forest, Other Developed Lands **Mapped Soils:** Codorus silt loam

Property Address: Middle Parcel - Kensington Parkway, Kensington, MD 20895

Property Owner(s): Maryland National Capital Park & Planning Commission

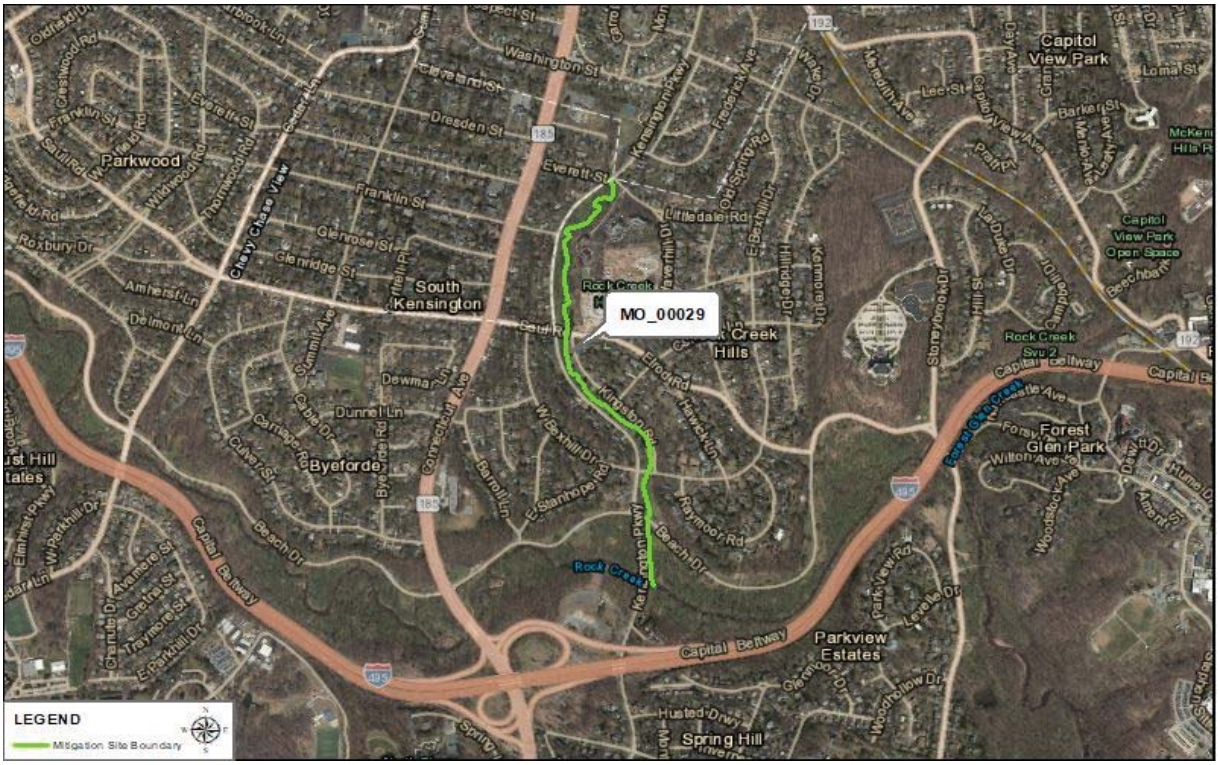
General Field Observations

Is there evidence that the stream has been disturbed by some kind of human action, like grading, dumping, livestock, culvert, etc?	**Can the stream restoration be reasonably done within the confines of the parcel or does it require connections beyond the parcel limits? Explain**
Explain:	Explain:
Yes, previous stabilization evident. Several road crossing over the reach. Exposed sewer crossing in stream, may be a fish passage concern. Manhole riser in center of stream.	Yes, stream on MNCPPC property. Roadways on either side of the site make for good access to the study reach.

Mitigation Site Rating

Criteria	Score	Criteria	Score
Estimated Bank erosion within reach	5	**Vegetation**	10
10 - Greater than 50% 5 - 10% to 50% 1 - Less than 10%		10 - Herbaceous cover (non-wetland) 5 - Scrub-shrub cover (non-wetland) 1 - Mostly forested and/or wetland	
Describe: Approximately 15% of stream banks are eroded.		Describe: Stream is surrounded by mowed lawn.	
Degree of Channel Incision	5	**Land Use**	1
10 - Bank Height greater than 10 feet 5 - Bank Height between 3 and 10 feet 1 - Bank Height less than 3 feet		10 - Agricultural or Open Space 5 - Marginal Pasture 1 - Old field/ Developed/Forested	
Describe: Banks are ~4-6 ft. tall.		Describe: Stream flows parallel to residential road in neighborhood.	
Existing Floodplain Access	10	**Opportunity for Ecological Lift**	5
10 - No evidence of out of bank flooding 5- Yes (Infrequent out of bank flow) 1 - Yes (evidence of frequent flooding)		10 - Conditions exist for several aspects of lift to be achieved and sustained 5 - Lift limited to one or few aspects 1 - Conditions are such that Lift is difficult to achieve and sustain	
Describe: In general, channel is incised ~4-6 feet. Channel is more incised downstream of Beach Dr.		Describe: Site is between two roadways, thus limited potential buffer. Several crossings make bed elevation poor, little room for floodplain connection.	
Opportunity for Floodplain Development	1	**Ease of Access**	10
10 - Existing space for floodplain greater than 10 times stream width 5 - Existing space for floodplain 3 to 10 times stream width 1 - Little to no space for floodplain development		10 - Yes (with existing direct vehicular access to potential site) 5- yes (open but no existing vehicular access) 1 - No (no vehicular access, clearing needed)	
Describe: Potential for 3 times stream width, would require clearing. Contained by two roads Kensington Pkwy. & Kingston Rd.		Describe: Directly off Kensington Pkwy. & Kingston Rd.	
Drainage Area Evaluation	5	**Utilities Present**	1
10 -D.A. less than 1 sq. mi. 5- D. A. between 1 & 3 sq. mi. 1 - D. A. greater than 3 sq. mi.		10 - No utilities on site 5 - Utilities but not within restoration area 1 - Utilities within potential restoration area	
Describe: Drainage area - 1.71 square miles.		Describe: Several exposed crossings in stream.	
		Total Score out of 100	53

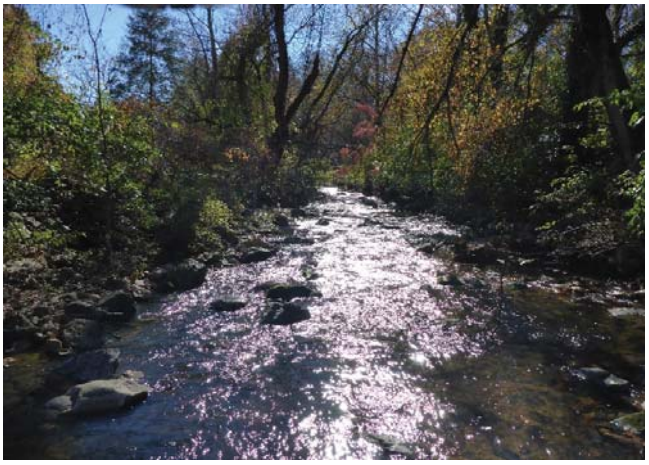
Map



Site No.	MO-00029		Scale: 1 in. = 2,000

Site Photos









Stream Mitigation Field Site Assessment Form

Project Details

Project Name: I-495/I-270 Managed Lanes Study **Mitigation Site Number:** MO-00034

Projects Estimated Stream Mitigation Needs (LF): TBD

Date of Field Assessment: 11/16/2018 **Consultant Firm/Investigator(s):** CRI/MD, SJ

Site Location Details-taken from desktop review

County: Montgomery **Cross Roads:** Campbell Pl. & Campbell Dr.

Basin (HUC 8): Middle Potomac-Anacostia-Occoquan **MDE Watershed (8 digit):** 2140206

Proximity to Impacted Stream (mi.): 0 **Lat/Long:** 39.014726 -77.059196

Site Data

Parcel Size (ac): 3 parcels - 1.2, 1.0, 6.8 **Potential Restoration Reach (LF):** 882

Site Opportunities: __X__Channel Restoration ___Livestock Exclusion _____Riparian Buffer Planting ___Habitat Enhancement ___Fish Passage

Stream Order: 2nd **Stream Hydrology:** Perennial **Stream Use:** I

Drainage Area to Reach (sq. mi.) 0.68

Land Use: Forest, Transportation **Mapped Soils:** Glenelg silt loam, Brinklow-Blocktown channery silt loams

Property Address: Main Parcel - Campbell Drive, Silver Spring, MD 20910

Property Owner(s): Maryland National Capital Park & Planning Commission

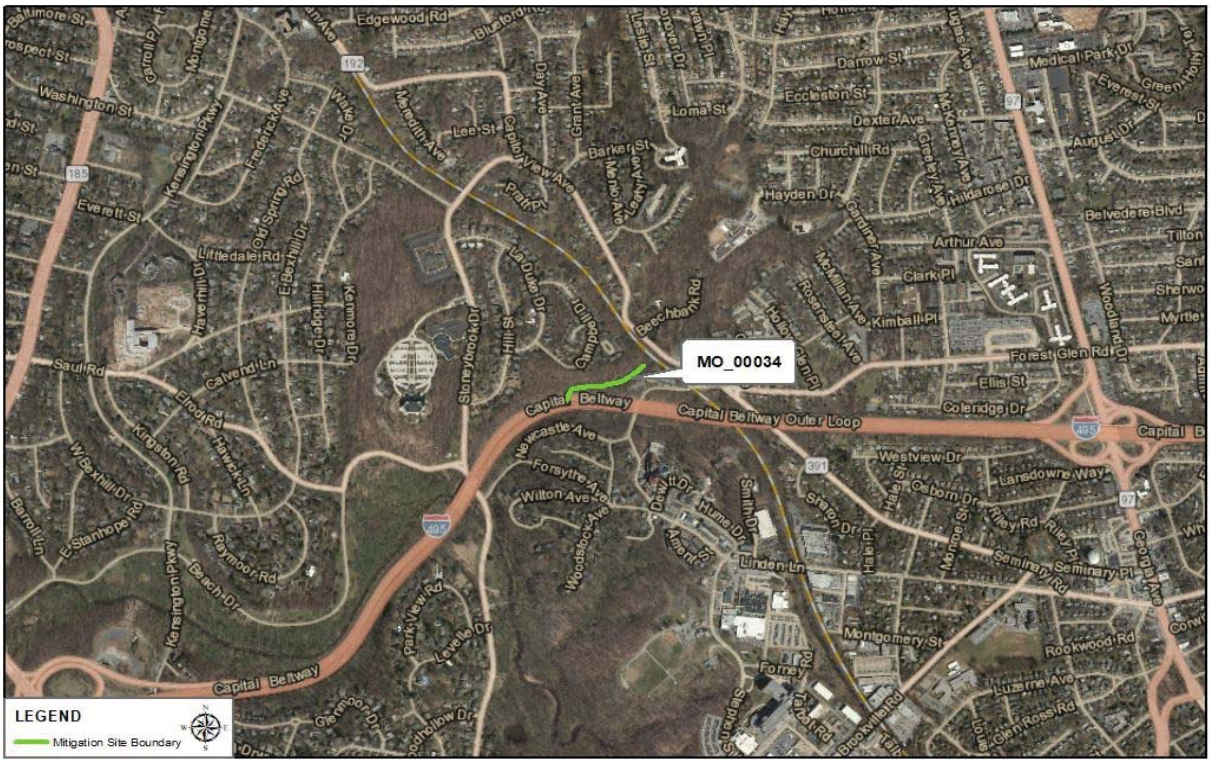
General Field Observations

Is there evidence that the stream has been disturbed by some kind of human action, like grading, dumping, livestock, culvert, etc?	Can the stream restoration be reasonably done within the confines of the parcel or does it require connections beyond the parcel limits? Explain
Explain:	Explain:
Yes, exposed manhole riser on left bank.	No. Will require access through neighborhood at Campbell Dr at the top of the steep, forested valley.

Mitigation Site Rating

Criteria	Score	Criteria	Score
Estimated Bank erosion within reach	5	**Vegetation**	1
10 - Greater than 50% 5 - 10% to 50% 1 - Less than 10%		10 - Herbaceous cover (non-wetland) 5 - Scrub-shrub cover (non-wetland) 1 - Mostly forested and/or wetland	
Describe: Banks and bed controlled by bedrock and large boulders.		Describe: Stream is surrounded by mature forest.	
Degree of Channel Incision	5	**Land Use**	1
10 - Bank Height greater than 10 feet 5 - Bank Height between 3 and 10 feet 1 - Bank Height less than 3 feet		10 - Agricultural or Open Space 5 - Marginal Pasture 1 - Old field/ Developed/Forested	
Describe: Banks are ~3-5 ft. tall.		Describe: Stream is surrounded by residential and commercial uses.	
Existing Floodplain Access	10	**Opportunity for Ecological Lift**	1
10 - No evidence of out of bank flooding 5- Yes (Infrequent out of bank flow) 1 - Yes (evidence of frequent flooding)		10 - Conditions exist for several aspects of lift to be achieved and sustained 5 - Lift limited to one or few aspects 1 - Conditions are such that Lift is difficult to achieve and sustain	
Describe: No evidence of out of bank flooding. Stream is a "V" channel.		Describe: Stable "V" channel, no floodplain reconnection. Bedrock would make construction difficult.	
Opportunity for Floodplain Development	1	**Ease of Access**	1
10 - Existing space for floodplain greater than 10 times stream width 5 - Existing space for floodplain 3 to 10 times stream width 1 - Little to no space for floodplain development		10 - Yes (with existing direct vehicular access to potential site) 5- yes (open but no existing vehicular access) 1 - No (no vehicular access, clearing needed)	
Describe: Stream is a "V" channel, confined valley controlled by bedrock.		Describe: Steep, confined forested valley. Only access is through neighborhood adjacent to housing.	
Drainage Area Evaluation	10	**Utilities Present**	1
10 -D.A. less than 1 sq. mi. 5- D. A. between 1 & 3 sq. mi. 1 - D. A. greater than 3 sq. mi.		10 - No utilities on site 5 - Utilities but not within restoration area 1 - Utilities within potential restoration area	
Describe: Drainage area - 0.68 square miles.		Describe: Sewer line adjacent to stream channel.	
		Total Score out of 100	36

Map



Site No.	MO-00034		Scale: 1 in. = 2,000

Site Photos









Stream Mitigation Field Site Assessment Form

Project Details

Project Name: I-495/I-270 Managed Lanes Study **Mitigation Site Number:** MO-00038

Projects Estimated Stream Mitigation Needs (LF): TBD

Date of Field Assessment: 11/14/2018 **Consultant Firm/Investigator(s):** CRI/MD, DS

Site Location Details-taken from desktop review

County: Montgomery **Cross Roads:** Layhill Rd. & Chapel Hill Rd.

Basin (HUC 8): Middle Potomac-Anacostia-Occoquan **MDE Watershed (8 digit):** 2140205

Proximity to Impacted Stream (mi.): 6.9 **Lat/Long:** 39.116035 -77.040559

Site Data

Parcel Size (ac): 4 parcels - 11.4, 4.7, 4.4, 4.9 **Potential Restoration Reach (LF):** 2,912

Site Opportunities: __X__Channel Restoration ____Livestock Exclusion ___X___Riparian Buffer Planting _X__Habitat Enhancement ___Fish Passage

Stream Order: 3rd **Stream Hydrology:** Perennial **Stream Use:** IV

Drainage Area to Reach (sq. mi.) 3.39

Land Use: Medium Density Residential, Forest **Mapped Soils:** Codorus silt loam, Brinklow-Blocktown channery silt loams

Property Address: Middle Parcel - Chapel Hill Road, Silver Spring, MD 20906

Property Owner(s): Maryland National Capital Park & Planning Commission

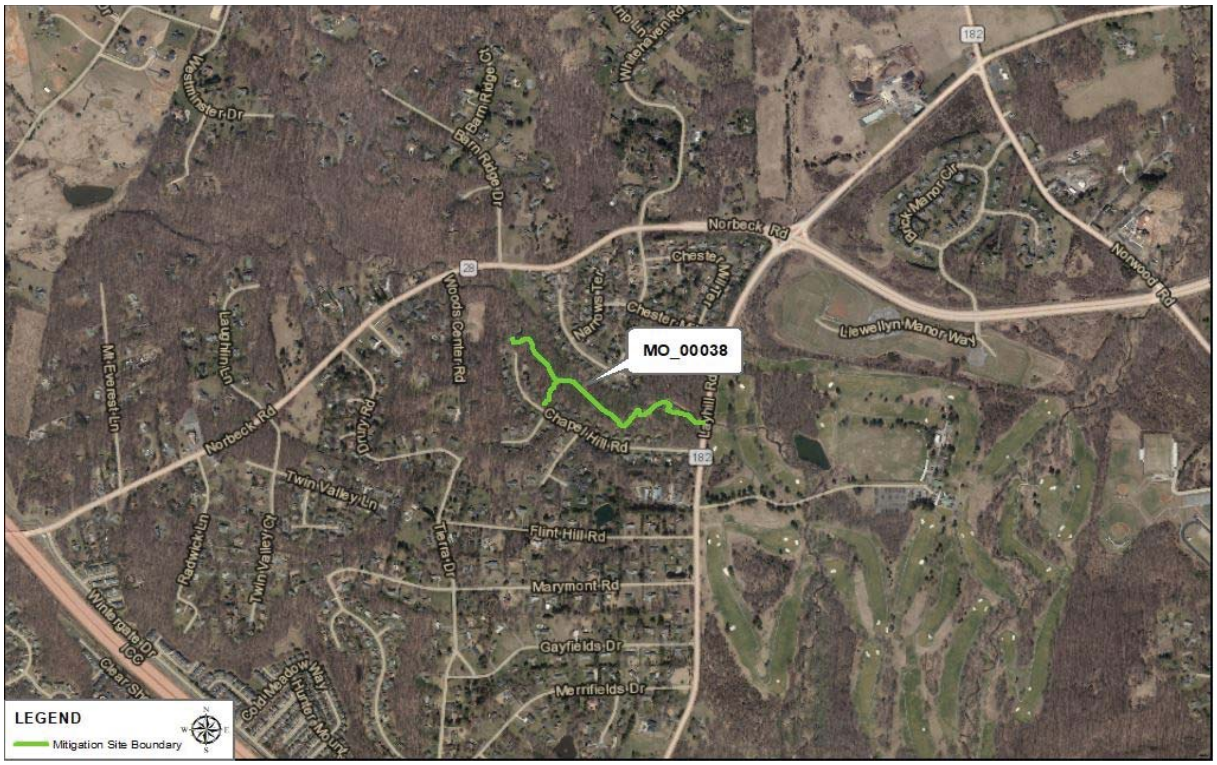
General Field Observations

Is there evidence that the stream has been disturbed by some kind of human action, like grading, dumping, livestock, culvert, etc?	Can the stream restoration be reasonably done within the confines of the parcel or does it require connections beyond the parcel limits? Explain
Explain:	Explain:
Yes; Restoration in 1,100 linear ft. of downstream section. Three sewer crossings present upstream of road crossing.	Yes; Can be done in parcel, could extend upstream within property access.

Mitigation Site Rating

Criteria	Score	Criteria	Score
Estimated Bank erosion within reach	5	**Vegetation**	1
10 - Greater than 50% 5 - 10% to 50% 1 - Less than 10%		10 - Herbaceous cover (non-wetland) 5 - Scrub-shrub cover (non-wetland) 1 - Mostly forested and/or wetland	
Describe:		Describe:	
Approximately 40% of banks eroded. Large stretches of moderate-to-severe erosion on outside meanders, from 4-8 ft. tall.		Mostly mature forest, areas where restoration has taken place are mostly herbaceous cover on banks.	
Degree of Channel Incision	5	**Land Use**	1
10 - Bank Height greater than 10 feet 5 - Bank Height between 3 and 10 feet 1 - Bank Height less than 3 feet		10 - Agricultural or Open Space 5 - Marginal Pasture 1 - Old field/ Developed/Forested	
Describe:		Describe:	
Banks are ~4 ft. tall on average. Some in-channel benches are forming.		Mostly forested, within residential areas encroaching on upstream end.	
Existing Floodplain Access	10	**Opportunity for Ecological Lift**	5
10 - No evidence of out of bank flooding 5- Yes (Infrequent out of bank flow) 1 - Yes (evidence of frequent flooding)		10 - Conditions exist for several aspects of lift to be achieved and sustained 5 - Lift limited to one or few aspects 1 - Conditions are such that Lift is difficult to achieve and sustain	
Describe:		Describe:	
Evidence of high water much lower from top of bank.		Large upstream sediment source, habitat enhancement upstream, floodplain reconnection is low, increase riparian cover, unstable geomorphology.	
Opportunity for Floodplain Development	1	**Ease of Access**	1
10 - Existing space for floodplain greater than 10 times stream width 5 - Existing space for floodplain 3 to 10 times stream width 1 - Little to no space for floodplain development		10 - Yes (with existing direct vehicular access to potential site) 5- yes (open but no existing vehicular access) 1 - No (no vehicular access, clearing needed)	
Describe:		Describe:	
Floodplain development limited by mature forest and residential properties at upstream end of reach.		Some access to sections of stream from Chapel Hill Road, but clearing needed for haul roads and upstream access.	
Drainage Area Evaluation	1	**Utilities Present**	1
10 -D.A. less than 1 sq. mi. 5- D. A. between 1 & 3 sq. mi. 1 - D. A. greater than 3 sq. mi.		10 - No utilities on site 5 - Utilities but not within restoration area 1 - Utilities within potential restoration area	
Describe:		Describe:	
Drainage area - 3.39 square miles.		Three sewer crossings, in-stream manholes observed along banks.	
		Total Score out of 100	31

Map



Site No.	MO-00038		Scale: 1 in. = 2,000

Site Photos









Stream Mitigation Field Site Assessment Form

Project Details

Project Name: I-495/I-270 Managed Lanes Study **Mitigation Site Number:** MO-00042

Projects Estimated Stream Mitigation Needs (LF): TBD

Date of Field Assessment: 11/14/2018 **Consultant Firm/Investigator(s):** CRI/MD, DS

Site Location Details-taken from desktop review

County: Montgomery **Cross Roads:** Adrian St. & Turkey Branch Pkwy.

Basin (HUC 8): Middle Potomac-Anacostia-Occoquan **MDE Watershed (8 digit):** 2140206

Proximity to Impacted Stream (mi.): 2.48 **Lat/Long:** 39.067483 -77.084188

Site Data

Parcel Size (ac): 4 parcels - 5.7, 13.2, 9.0, 35.0 **Potential Restoration Reach (LF):** 6,936

Site Opportunities: __X__Channel Restoration ___Livestock Exclusion _____Riparian Buffer Planting _X__Habitat Enhancement ___Fish Passage

Stream Order: 2nd **Stream Hydrology:** Perennial **Stream Use:** I

Drainage Area to Reach (sq. mi.) 3.66

Land Use: Medium Density Residential, Forest **Mapped Soils:** Glenelg-Urban land complex, Hatboro silt loam, Baile silt loam

Property Address: Middle Parcel - Turkey Branch Parkway, Silver Spring, MD 20906

Property Owner(s): Maryland DNR

General Field Observations

Is there evidence that the stream has been disturbed by some kind of human action, like grading, dumping, livestock, culvert, etc?	Can the stream restoration be reasonably done within the confines of the parcel or does it require connections beyond the parcel limits? Explain
Explain:	Explain:
Yes; Evidence of stream restoration throughout, several sewer crossings.	Yes; the stream is contained with in the parcel and the parcel can be accessed directly from ROW

Mitigation Site Rating

Criteria	Score	Criteria	Score
Estimated Bank erosion within reach	10	**Vegetation**	1
10 - Greater than 50% 5 - 10% to 50% 1 - Less than 10%		10 - Herbaceous cover (non-wetland) 5 - Scrub-shrub cover (non-wetland) 1 - Mostly forested and/or wetland	
Describe:		Describe:	
Approximately 60% of banks are eroded, ranging from 5-15 ft. tall. Moderate-to-severe erosion present.		Forested park, less than 100 ft. buffer on right bank in downstream section.	
Degree of Channel Incision	5	**Land Use**	1
10 - Bank Height greater than 10 feet 5 - Bank Height between 3 and 10 feet 1 - Bank Height less than 3 feet		10 - Agricultural or Open Space 5 - Marginal Pasture 1 - Old field/ Developed/Forested	
Describe:		Describe:	
Banks are ~7 ft. tall on average.		Immediate land use is forested park, drainage area is highly impervious.	
Existing Floodplain Access	5	**Opportunity for Ecological Lift**	5
10 - No evidence of out of bank flooding 5- Yes (Infrequent out of bank flow) 1 - Yes (evidence of frequent flooding)		10 - Conditions exist for several aspects of lift to be achieved and sustained 5 - Lift limited to one or few aspects 1 - Conditions are such that Lift is difficult to achieve and sustain	
Describe:		Describe:	
A few low benches present throughout site provide relief during storm flows.		Increase geomorphic stability, bank stability; however, urban watershed will make improvements to biological water quality difficult.	
Opportunity for Floodplain Development	5	**Ease of Access**	1
10 - Existing space for floodplain greater than 10 times stream width 5 - Existing space for floodplain 3 to 10 times stream width 1 - Little to no space for floodplain development		10 - Yes (with existing direct vehicular access to potential site) 5- yes (open but no existing vehicular access) 1 - No (no vehicular access, clearing needed)	
Describe:		Describe:	
Over widened channel could be narrowed and low benches installed to provide out-of-bank flows in some areas.		Clearing will be required to access entire reach, areas off of Turkey Branch Pkwy. could be used for access.	
Drainage Area Evaluation	1	**Utilities Present**	1
10 -D.A. less than 1 sq. mi. 5- D. A. between 1 & 3 sq. mi. 1 - D. A. greater than 3 sq. mi.		10 - No utilities on site 5 - Utilities but not within restoration area 1 - Utilities within potential restoration area	
Describe:		Describe:	
Drainage area - 3.66 square miles.		Several sewer line crossings, overhead power lines present in sections.	
		Total Score out of 100	35

Map



Site No.	MO-00042		Scale: 1 in. = 2,000

Site Photos









Stream Mitigation Field Site Assessment Form

Project Details

Project Name: I-495/I-270 Managed Lanes Study **Mitigation Site Number:** MPAO0001

Projects Estimated Stream Mitigation Needs (LF): TBD

Date of Field Assessment: 4/3/2019 **Consultant Firm/Investigator(s):** RK&K/KJH, BDM

Site Location Details-taken from desktop review

County: Prince George's **Cross Roads:** 495 & Cherry Hill Road

Basin (HUC 8): Middle Potomac-Anacostia-Occoquan **MDE Watershed (8 digit):** 02140205

Proximity to Impacted Stream (mi.): 0 **Lat/Long:** 39.018526 -76.949208

Site Data

Parcel Size (ac): 363 **Potential Restoration Reach (LF):** 1,202

Site Opportunities: __X__Channel Restoration ____Livestock Exclusion ___X___Riparian Buffer Planting _X__Habitat Enhancement __X__Fish Passage

Stream Order: 1st **Stream Hydrology:** Perennial **Stream Use:** I

Drainage Area to Reach (sq. mi.) 0.17

Land Use: Agriculture and Forested **Mapped Soils:** Russett-Christiana complex

Property Address: Orchard Loop Road, College Park, MD

Property Owner(s): BARC

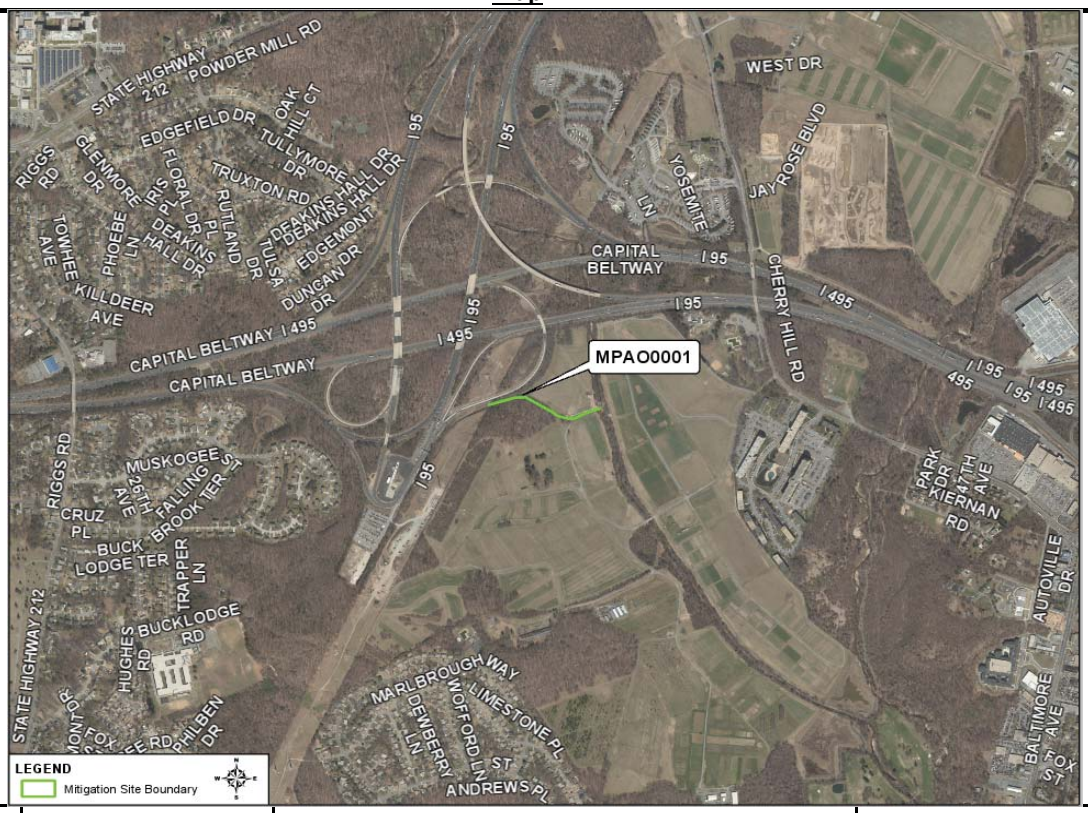
General Field Observations

Is there evidence that the stream has been disturbed by some kind of human action, like grading, dumping, livestock, culvert, etc?	Can the stream restoration be reasonably done within the confines of the parcel or does it require connections beyond the parcel limits? Explain
Explain: Concrete-lined channel in upstream reach. Tires dumped in culvert in downstream reach. Riprap further downstream. Concrete poured onto banks near sewer line.	Explain: Yes - entire stream within BARC property.

Mitigation Site Rating

Criteria	Score	Criteria	Score
Estimated Bank erosion within reach	5	**Vegetation**	5
10 - Greater than 50% 5 - 10% to 50% 1 - Less than 10%		10 - Herbaceous cover (non-wetland) 5 - Scrub-shrub cover (non-wetland) 1 - Mostly forested and/or wetland	
Describe: Downstream reach relatively stable with vegetation on banks. Upstream reach has moderate to severe bank erosion and is unstable.		Describe: Downstream - scrub/shrub Midstream - agricultural field Upstream - mid-successional forest	
Degree of Channel Incision	5	**Land Use**	5
10 - Bank Height greater than 10 feet 5 - Bank Height between 3 and 10 feet 1 - Bank Height less than 3 feet		10 - Agricultural or Open Space 5 - Marginal Pasture 1 - Old field/ Developed/Forested	
Describe: 3 to 8 feet tall, on average 6 to 8 feet tall.		Describe: Agricultural and forested	
Existing Floodplain Access	10	**Opportunity for Ecological Lift**	5
10 - No evidence of out of bank flooding 5- Yes (Infrequent out of bank flow) 1 - Yes (evidence of frequent flooding)		10 - Conditions exist for several aspects of lift to be achieved and sustained 5 - Lift limited to one or few aspects 1 - Conditions are such that Lift is difficult to achieve and sustain	
Describe: No evidence of floodplain connection; channel deeply incised.		Describe: No floodplain potential, no water quality potential. In the upstream reach, potential exists for channel stabilization and instream habitat uplift.	
Opportunity for Floodplain Development	1	**Ease of Access**	5
10 - Existing space for floodplain greater than 10 times stream width 5 - Existing space for floodplain 3 to 10 times stream width 1 - Little to no space for floodplain development		10 - Yes (with existing direct vehicular access to potential site) 5- yes (open but no existing vehicular access) 1 - No (no vehicular access, clearing needed)	
Describe: Downstream = adjacent agricultural fields in use by BARC Upstream = steep slopes and narrow valley		Describe: Downstream = existing access through agricultural field Upstream = forested and steep slopes	
Drainage Area Evaluation	10	**Utilities Present**	1
10 -D.A. less than 1 sq. mi. 5- D. A. between 1 & 3 sq. mi. 1 - D. A. greater than 3 sq. mi.		10 - No utilities on site 5 - Utilities but not within restoration area 1 - Utilities within potential restoration area	
Describe: 0.17 square miles		Describe: Exposed sewer crossing. Gas line and power lines run parallel to stream.	
		Total Score out of 100	52

Map



Site No.	MPAO0001		Scale: 1 in. =	2,000

Site Photos









Stream Mitigation Field Site Assessment Form

Project Details

Project Name: I-495/I-270 Managed Lanes Study **Mitigation Site Number:** MPAO0002

Projects Estimated Stream Mitigation Needs (LF): TBD

Date of Field Assessment: 4/3/2019 **Consultant Firm/Investigator(s):** RK&K/KJH, BDM

Site Location Details-taken from desktop review

County: Prince George's **Cross Roads:** 495 & Cherry Hill Road

Basin (HUC 8): Middle Potomac-Anacostia-Occoquan **MDE Watershed (8 digit):** 02140205

Proximity to Impacted Stream (mi.): 0.13 **Lat/Long:** 39.014569 -76.943005

Site Data

Parcel Size (ac): 363 **Potential Restoration Reach (LF):** 4,795

Site Opportunities: __X__Channel Restoration ____Livestock Exclusion ___X___Riparian Buffer Planting ___Habitat Enhancement ___Fish Passage

Stream Order: 2nd **Stream Hydrology:** Perennial **Stream Use:** I

Drainage Area to Reach (sq. mi.) 17.5

Land Use: Agriculture **Mapped Soils:** CF

Property Address: S Farm Dr and National Agricultural Research Rd, College Park, MD

Property Owner(s): BARC

General Field Observations

Is there evidence that the stream has been disturbed by some kind of human action, like grading, dumping, livestock, culvert, etc?	Can the stream restoration be reasonably done within the confines of the parcel or does it require connections beyond the parcel limits? Explain
Explain:	Explain:
Localized rip-rap areas along stream banks. Two concrete sewer crossings across channel.	Yes. All on BARC property.

Mitigation Site Rating

Criteria	Score	Criteria	Score
Estimated Bank erosion within reach	1	**Vegetation**	5
10 - Greater than 50% 5 - 10% to 50% 1 - Less than 10%		10 - Herbaceous cover (non-wetland) 5 - Scrub-shrub cover (non-wetland) 1 - Mostly forested and/or wetland	
Describe: Majority of banks are stabilized by sycamore roots & rip-rap. 3 localized severe bank erosion areas		Describe: Majority of reach consists of narrow sycamore hedgerow.	
Degree of Channel Incision	10	**Land Use**	10
10 - Bank Height greater than 10 feet 5 - Bank Height between 3 and 10 feet 1 - Bank Height less than 3 feet		10 - Agricultural or Open Space 5 - Marginal Pasture 1 - Old field/ Developed/Forested	
Describe: 8-12' tall		Describe: Agricultural fields and narrow strip of sycamore hedgerow around stream	
Existing Floodplain Access	10	**Opportunity for Ecological Lift**	1
10 - No evidence of out of bank flooding 5- Yes (Infrequent out of bank flow) 1 - Yes (evidence of frequent flooding)		10 - Conditions exist for several aspects of lift to be achieved and sustained 5 - Lift limited to one or few aspects 1 - Conditions are such that Lift is difficult to achieve and sustain	
Describe: No evidence of flooding. Manmade berm surround channel to prevent flooding onto agricultural fields.		Describe: Limited potential for tree plantings in buffer. No potential for floodplain or water quality improvements. Minimal potential for bank stabilization. No habitat potential.	
Opportunity for Floodplain Development	1	**Ease of Access**	10
10 - Existing space for floodplain greater than 10 times stream width 5 - Existing space for floodplain 3 to 10 times stream width 1 - Little to no space for floodplain development		10 - Yes (with existing direct vehicular access to potential site) 5- yes (open but no existing vehicular access) 1 - No (no vehicular access, clearing needed)	
Describe: Adjacent areas are used for USDA agricultural purposes.		Describe: Existing open access along channel.	
Drainage Area Evaluation	1	**Utilities Present**	1
10 -D.A. less than 1 sq. mi. 5- D. A. between 1 & 3 sq. mi. 1 - D. A. greater than 3 sq. mi.		10 - No utilities on site 5 - Utilities but not within restoration area 1 - Utilities within potential restoration area	
Describe: 17.5 square miles		Describe: 2 sewer line crossings. Stormwater pipes. Overhead powerlines.	
		Total Score out of 100	50

Map



Site No.	MPAO0002		Scale: 1 in. =	2,000

Site Photos









Stream Mitigation Field Site Assessment Form

Project Details

Project Name: I-495/I-270 Managed Lanes Study **Mitigation Site Number:** MPAO0003

Projects Estimated Stream Mitigation Needs (LF): TBD

Date of Field Assessment: 4/3/2019 **Consultant Firm/Investigator(s):** RK&K/KJH, BDM

Site Location Details-taken from desktop review

County: Prince George's **Cross Roads:** 495 & Cherry Hill Road

Basin (HUC 8): Middle Potomac-Anacostia-Occoquan **MDE Watershed (8 digit):** 02070010

Proximity to Impacted Stream (mi.): 0.5 **Lat/Long:** 39.012977 -76.945156

Site Data

Parcel Size (ac): 363 **Potential Restoration Reach (LF):** 1,987

Site Opportunities: __X__Channel Restoration ___Livestock Exclusion ___X___Riparian Buffer Planting _X__Habitat Enhancement __X__Fish Passage

Stream Order: 1st **Stream Hydrology:** Perennial **Stream Use:** I

Drainage Area to Reach (sq. mi.) 0.11

Land Use: Agriculture and Forested **Mapped Soils:** Russett-Christiana complex

Property Address: National Agricultural Research Rd, College Park, MD

Property Owner(s): BARC

General Field Observations

Is there evidence that the stream has been disturbed by some kind of human action, like grading, dumping, livestock, culvert, etc?	Can the stream restoration be reasonably done within the confines of the parcel or does it require connections beyond the parcel limits? Explain
Explain:	Explain:
3 culverts along reach. Areas with issues ~ 500LF	Yes - entire stream within BARC property.

Mitigation Site Rating

Criteria	Score	Criteria	Score
Estimated Bank erosion within reach	1	**Vegetation**	1
10 - Greater than 50% 5 - 10% to 50% 1 - Less than 10%		10 - Herbaceous cover (non-wetland) 5 - Scrub-shrub cover (non-wetland) 1 - Mostly forested and/or wetland	
Describe:		Describe:	
Majority of site consists on incised channel with banks stabilized by vegetation. Downstream and upstream segments are only unstable areas		Midstream - scrub-shrub. Upstream and downstream - forested	
Degree of Channel Incision	5	**Land Use**	5
10 - Bank Height greater than 10 feet 5 - Bank Height between 3 and 10 feet 1 - Bank Height less than 3 feet		10 - Agricultural or Open Space 5 - Marginal Pasture 1 - Old field/ Developed/Forested	
Describe:		Describe:	
0-10' tall banks. Downstream - 10' tall. Midstream - 4-6' tall. Upstream - 0-8' tall.		Midstream - Agricultural. Upstream and downstream - forested.	
Existing Floodplain Access	10	**Opportunity for Ecological Lift**	5
10 - No evidence of out of bank flooding 5- Yes (Infrequent out of bank flow) 1 - Yes (evidence of frequent flooding)		10 - Conditions exist for several aspects of lift to be achieved and sustained 5 - Lift limited to one or few aspects 1 - Conditions are such that Lift is difficult to achieve and sustain	
Describe:		Describe:	
Deeply incised channel. No evidence of floodplain access in downstream and midstream. Very minor evidence in upstream.		No floodplain potential, no water quality potential. Some bank stabilization, fish passage instream habitat, and invasive treatment potential	
Opportunity for Floodplain Development	1	**Ease of Access**	5
10 - Existing space for floodplain greater than 10 times stream width 5 - Existing space for floodplain 3 to 10 times stream width 1 - Little to no space for floodplain development		10 - Yes (with existing direct vehicular access to potential site) 5- yes (open but no existing vehicular access) 1 - No (no vehicular access, clearing needed)	
Describe:		Describe:	
Upstream - steep slopes. Downstream - steep slopes. Midstream - active agricultural field.		Midstream - agricultural field Upstream and downstream - forested and steep slopes	
Drainage Area Evaluation	10	**Utilities Present**	1
10 -D.A. less than 1 sq. mi. 5- D. A. between 1 & 3 sq. mi. 1 - D. A. greater than 3 sq. mi.		10 - No utilities on site 5 - Utilities but not within restoration area 1 - Utilities within potential restoration area	
Describe:		Describe:	
0.11 square miles		Powerlines north of culvert. Sewer line at downstream end. Waterline in midstream.	
		Total Score out of 100	44

Map



Site No.	MPAO0003		Scale: 1 in. =	2,000

Site Photos









Stream Mitigation Field Site Assessment Form

Project Details

Project Name: I-495/I-270 Managed Lanes Study **Mitigation Site Number:** MPAO0004A

Projects Estimated Stream Mitigation Needs (LF): TBD

Date of Field Assessment: 4/9/2019 **Consultant Firm/Investigator(s):** RK&K/KJH, BDM

Site Location Details-taken from desktop review

County: Prince George's **Cross Roads:** Sellman Road & E Line Road

Basin (HUC 8): Middle Potomac-Anacostia-Occoquan **MDE Watershed (8 digit):** 02070010

Proximity to Impacted Stream (mi.): 0.22 **Lat/Long:** 39.026726 -76.929588

Site Data

Parcel Size (ac): 502 **Potential Restoration Reach (LF):** 4,212

Site Opportunities: ___Channel Restoration ___Livestock Exclusion _____Riparian Buffer Planting _X__Habitat Enhancement ___Fish Passage

Stream Order: 2nd **Stream Hydrology:** Perennial **Stream Use:** I

Drainage Area to Reach (sq. mi.) 10

Land Use: Agriculture **Mapped Soils:** CF

Property Address: Sellman Road, Beltsville, MD

Property Owner(s): BARC

General Field Observations

Is there evidence that the stream has been disturbed by some kind of human action, like grading, dumping, livestock, culvert, etc?	Can the stream restoration be reasonably done within the confines of the parcel or does it require connections beyond the parcel limits? Explain
Explain:	Explain:
Bridge. Rip-rap in channel and along banks downstream of bridge.	Yes - entire stream within BARC property.

Mitigation Site Rating

Criteria	Score	Criteria	Score
Estimated Bank erosion within reach	1	**Vegetation**	5
10 - Greater than 50% 5 - 10% to 50% 1 - Less than 10%		10 - Herbaceous cover (non-wetland) 5 - Scrub-shrub cover (non-wetland) 1 - Mostly forested and/or wetland	
Describe:		Describe:	
Very minor erosion. Majority of banks are stabilized by vegetation, especially river birch tree roots.		Surrounded by thin strip of early to mid-successional trees. River birch and Bradford Pear	
Degree of Channel Incision	5	**Land Use**	10
10 - Bank Height greater than 10 feet 5 - Bank Height between 3 and 10 feet 1 - Bank Height less than 3 feet		10 - Agricultural or Open Space 5 - Marginal Pasture 1 - Old field/ Developed/Forested	
Describe:		Describe:	
6-10' tall banks. Adjacent floodplain berm		Adjacent BARC agricultural fields. Thin strip of trees around channel.	
Existing Floodplain Access	10	**Opportunity for Ecological Lift**	1
10 - No evidence of out of bank flooding 5- Yes (Infrequent out of bank flow) 1 - Yes (evidence of frequent flooding)		10 - Conditions exist for several aspects of lift to be achieved and sustained 5 - Lift limited to one or few aspects 1 - Conditions are such that Lift is difficult to achieve and sustain	
Describe:		Describe:	
No evidence of flooding. Manmade berm surrounds channel.		Limited potential for habitat improvement. No potential for floodplain development, bank stabilization, or water quality improvement.	
Opportunity for Floodplain Development	1	**Ease of Access**	1
10 - Existing space for floodplain greater than 10 times stream width 5 - Existing space for floodplain 3 to 10 times stream width 1 - Little to no space for floodplain development		10 - Yes (with existing direct vehicular access to potential site) 5- yes (open but no existing vehicular access) 1 - No (no vehicular access, clearing needed)	
Describe:		Describe:	
Surrounded by active BARC agricultural fields.		Majority of channel surrounded by thin strip of trees	
Drainage Area Evaluation	1	**Utilities Present**	1
10 -D.A. less than 1 sq. mi. 5- D. A. between 1 & 3 sq. mi. 1 - D. A. greater than 3 sq. mi.		10 - No utilities on site 5 - Utilities but not within restoration area 1 - Utilities within potential restoration area	
Describe:		Describe:	
10 square miles		1 sewer crossing, waste water effluent. Several powerline crossings. Sewer and powerlines run parallel to stream.	
		Total Score out of 100	36

Map



Site No.	MPAO0004A		Scale: 1 in. =	2,000

Site Photos









Stream Mitigation Field Site Assessment Form

Project Details

Project Name: I-495/I-270 Managed Lanes Study **Mitigation Site Number:** MPAO0004B

Projects Estimated Stream Mitigation Needs (LF): TBD

Date of Field Assessment: 4/9/2019 **Consultant Firm/Investigator(s):** RK&K/KJH, BDM

Site Location Details-taken from desktop review

County: Prince George's **Cross Roads:** Sellman Road & E Line Road

Basin (HUC 8): Middle Potomac-Anacostia-Occoquan **MDE Watershed (8 digit):** 02070010

Proximity to Impacted Stream (mi.): 0.03 **Lat/Long:** 39.021452 -76.931587

Site Data

Parcel Size (ac): 502 **Potential Restoration Reach (LF):** 1,124

Site Opportunities: __X__Channel Restoration ___Livestock Exclusion ___X___Riparian Buffer Planting ____Habitat Enhancement ____Fish Passage

Stream Order: 2nd **Stream Hydrology:** Perennial **Stream Use:** I

Drainage Area to Reach (sq. mi.) 10.2

Land Use: Forested **Mapped Soils:** CF

Property Address: South of Yuma St, Beltsville, MD

Property Owner(s): BARC

General Field Observations

Is there evidence that the stream has been disturbed by some kind of human action, like grading, dumping, livestock, culvert, etc?	Can the stream restoration be reasonably done within the confines of the parcel or does it require connections beyond the parcel limits? Explain
Explain:	Explain:
Downstream culvert.	Yes - entire stream within BARC property.

Mitigation Site Rating

Criteria	Score	Criteria	Score
Estimated Bank erosion within reach	5	**Vegetation**	1
10 - Greater than 50% 5 - 10% to 50% 1 - Less than 10%		10 - Herbaceous cover (non-wetland) 5 - Scrub-shrub cover (non-wetland) 1 - Mostly forested and/or wetland	
Describe: ~20% bank erosion - mostly minor erosion. Localized moderate-severe erosion.		Describe: Mostly mid-successional forest (river birch, sycamore, tulip poplar). Small section of agricultural field.	
Degree of Channel Incision	5	**Land Use**	1
10 - Bank Height greater than 10 feet 5 - Bank Height between 3 and 10 feet 1 - Bank Height less than 3 feet		10 - Agricultural or Open Space 5 - Marginal Pasture 1 - Old field/ Developed/Forested	
Describe: Bank height 3-6'. Mostly stable with roots.		Describe: Forested - mid successional. Small section of agricultural land.	
Existing Floodplain Access	5	**Opportunity for Ecological Lift**	1
10 - No evidence of out of bank flooding 5- Yes (Infrequent out of bank flow) 1 - Yes (evidence of frequent flooding)		10 - Conditions exist for several aspects of lift to be achieved and sustained 5 - Lift limited to one or few aspects 1 - Conditions are such that Lift is difficult to achieve and sustain	
Describe: Old rack lines and sand deposition on banks and floodplain.		Describe: Limited potential for floodplain, stability, instream habitat, and water quality	
Opportunity for Floodplain Development	5	**Ease of Access**	1
10 - Existing space for floodplain greater than 10 times stream width 5 - Existing space for floodplain 3 to 10 times stream width 1 - Little to no space for floodplain development		10 - Yes (with existing direct vehicular access to potential site) 5- yes (open but no existing vehicular access) 1 - No (no vehicular access, clearing needed)	
Describe: Limited potential downstream and in eastern floodplain		Describe: Surrounded by forest	
Drainage Area Evaluation	1	**Utilities Present**	1
10 -D.A. less than 1 sq. mi. 5- D. A. between 1 & 3 sq. mi. 1 - D. A. greater than 3 sq. mi.		10 - No utilities on site 5 - Utilities but not within restoration area 1 - Utilities within potential restoration area	
Describe: 10.2 square miles		Describe: Sewer line runs parallel to stream	
		Total Score out of 100	26

Map



Site No.	MPAO0004B		Scale: 1 in. =	2,000

Site Photos









Stream Mitigation Field Site Assessment Form

Project Details

Project Name: I-495/I-270 Managed Lanes Study **Mitigation Site Number:** MPAO0005

Projects Estimated Stream Mitigation Needs (LF): TBD

Date of Field Assessment: 6/12/2019 **Consultant Firm/Investigator(s):** CRI/MD, DS

Site Location Details-taken from desktop review

County: Prince George's **Cross Roads:** Sunnyside Ave. & Edmonston Rd.

Basin (HUC 8): Middle Potomac-Anacostia-Occoquan **MDE Watershed (8 digit):** 2140205

Proximity to Impacted Stream (mi 0.36 **Lat/Long:** 39.021837 -76.903277

Site Data

Parcel Size (ac): 247 **Potential Restoration Reach (LF):** 5,773

Site Opportunities: __X__Channel Restoration ____Livestock Exclusion _____Riparian Buffer Planting _X__Habitat Enhancement ___Fish Passage

Stream Order: 3rd **Stream Hydrology:** Perennial **Stream Use:** I

Drainage Area to Reach (sq. mi.) 9.75

Land Use: Forest **Mapped Soils:** Zekiah and Issue soils

Property Address: GSA Office Comm Pub Building. 18th & F St. NW. Washington DC 20405

Property Owner(s): BARC, USDA

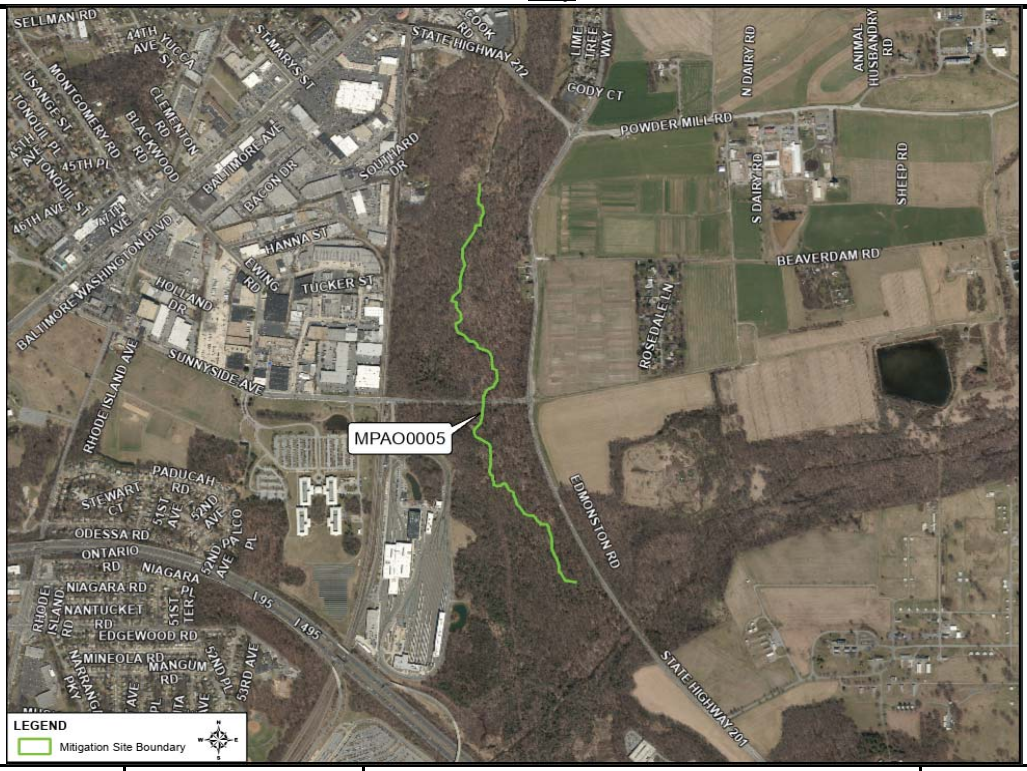
General Field Observations

Is there evidence that the stream has been disturbed by some kind of human action, like grading, dumping, livestock, culvert, etc? Explain	Can the stream restoration be reasonably done within the confines of the parcel or does it require connections beyond the parcel limits? Explain
Explain:	Explain:
Road crossing (Sunnyside Ave, Powder Mill Rd), extensive powerline refuse	Yes, the stream is within 2 BARC parcels

Mitigation Site Rating

Criteria	Score	Criteria	Score
Estimated Bank erosion within reach	1	**Vegetation**	1
10 - Greater than 50% 5 - 10% to 50% 1 - Less than 10%		10 - Herbaceous cover (non-wetland) 5 - Scrub-shrub cover (non-wetland) 1 - Mostly forested and/or wetland	
Describe:		Describe:	
Little erosion present, select locations making up around 5% of the total site		All stream corridor is young/mature deciduous forest with some adjacent wetlands present	
Degree of Channel Incision	1	**Land Use**	1
10 - Bank Height greater than 10 feet 5 - Bank Height between 3 and 10 feet 1 - Bank Height less than 3 feet		10 - Agricultural or Open Space 5 - Marginal Pasture 1 - Old field/ Developed/Forested	
Describe:		Describe:	
Banks are very low throughout the majority of the site. Braids of the stream are present		Stream corridor is forest	
Existing Floodplain Access	1	**Opportunity for Ecological Lift**	5
10 - No evidence of out of bank flooding 5- Yes (Infrequent out of bank flow) 1 - Yes (evidence of frequent flooding)		10 - Conditions exist for several aspects of lift to be achieved and sustained 5 - Lift limited to one or few aspects 1 - Conditions are such that Lift is difficult to achieve and sustain	
Describe:		Describe:	
Banks are generally low, allowing access to the floodplain with multiple channels and braids throughout.		Habitat improvements possible, most lift aspects are relatively stable	
Opportunity for Floodplain Development	10	**Ease of Access**	1
10 - Existing space for floodplain greater than 10 times stream width 5 - Existing space for floodplain 3 to 10 times stream width 1 - Little to no space for floodplain development		10 - Yes (with existing direct vehicular access to potential site) 5- yes (open but no existing vehicular access) 1 - No (no vehicular access, clearing needed)	
Describe:		Describe:	
Space exists and existing floodplain is already 10 times stream width in most of the reach		Possibly access from Sunnyside Ave. for middle of reach. Access at top of site fr	
Drainage Area Evaluation	1	**Utilities Present**	5
10 -D.A. less than 1 sq. mi. 5- D. A. between 1 & 3 sq. mi. 1 - D. A. greater than 3 sq. mi.		10 - No utilities on site 5 - Utilities but not within restoration area 1 - Utilities within potential restoration area	
Describe:		Describe:	
DA = 9.75		One visible utility adjacent to the stream	
		Total Score out of 100	27

Map



Site No.	MPAO0005		Scale: 1 in. =	2,000

Site Photos









Stream Mitigation Field Site Assessment Form

Project Details

Project Name: I-495/270 Managed Lanes Study **Mitigation Site Number:** MPAO0006

Projects Estimated Stream Mitigation Needs (LF): TBD

Date of Field Assessment: 6/12/2019 **Consultant Firm/Investigator(s):** CRI/MD, DS

Site Location Details-taken from desktop review

County: Prince George's **Cross Roads:** MD-201 (Edmonston Road)

Basin (HUC 8): Middle Potomac-Anacostia-Occoquan **MDE Watershed (8 digit):** 2140205

Proximity to Impacted Stream (mi.): 0.16 **Lat/Long:** 39.014942 -76.898731

Site Data

Parcel Size (ac): 116.74 **Potential Restoration Reach (LF):** 1,407

Site Opportunities: __X__Channel Restoration ___Livestock Exclusion _____Riparian Buffer Planting _X__Habitat Enhancement ___Fish Passage

Stream Order: 4th **Stream Hydrology:** Perennial **Stream Use:** I

Drainage Area to Reach (sq. mi.) 23.9

Land Use: Forest **Mapped Soils:** Zekiah and Issue

Property Address: 5601 Sunnyside Ave, Beltsville MD 20405

Property Owner(s): Beltsville Agricultural Research Center, USDA

General Field Observations

Is there evidence that the stream has been disturbed by some kind of human action, like grading, dumping, livestock, culvert, etc?	Can the stream restoration be reasonably done within the confines of the parcel or does it require connections beyond the parcel limits? Explain
Explain:	Explain:
Road crossing/culvert at Edmonston Road providing channelization.	Yes, the stream reach is comprised completely within BARC property.

Mitigation Site Rating

Criteria	Score	Criteria	Score
Estimated Bank erosion within reach	5	**Vegetation**	1
10 - Greater than 50% 5 - 10% to 50% 1 - Less than 10%		10 - Herbaceous cover (non-wetland) 5 - Scrub-shrub cover (non-wetland) 1 - Mostly forested and/or wetland	
Describe: Upstream of the braided area has consistent 3' eroded banks downstream of Edmonston Rd. Throughout braided reach, erosion located on alternating outer meanders.		Describe: Stream corridor is forested (young/mature deciduous).	
Degree of Channel Incision	5	**Land Use**	1
10 - Bank Height greater than 10 feet 5 - Bank Height between 3 and 10 feet 1 - Bank Height less than 3 feet		10 - Agricultural or Open Space 5 - Marginal Pasture 1 - Old field/ Developed/Forested	
Describe: Overall channel incision for the entire site is about 4 feet.		Describe: Forested, young/mature deciduous tree impacts.	
Existing Floodplain Access	5	**Opportunity for Ecological Lift**	5
10 - No evidence of out of bank flooding 5- Yes (Infrequent out of bank flow) 1 - Yes (evidence of frequent flooding)		10 - Conditions exist for several aspects of lift to be achieved and sustained 5 - Lift limited to one or few aspects 1 - Conditions are such that Lift is difficult to achieve and sustain	
Describe: Infrequent out-of-bank flow evident by rack lines and deposition, especially within braided area.		Describe: Lateral stability, habitat enhancement, floodplain reconnection, bedform diversity.	
Opportunity for Floodplain Development	10	**Ease of Access**	1
10 - Existing space for floodplain greater than 10 times stream width 5 - Existing space for floodplain 3 to 10 times stream width 1 - Little to no space for floodplain development		10 - Yes (with existing direct vehicular access to potential site) 5- yes (open but no existing vehicular access) 1 - No (no vehicular access, clearing needed)	
Describe: Space for floodplain exists, but tree impacts may limit.		Describe: No existing access, field on left bank outside of riparian is a potential access point but clearing to the stream would be needed.	
Drainage Area Evaluation	1	**Utilities Present**	10
10 -D.A. less than 1 sq. mi. 5- D. A. between 1 & 3 sq. mi. 1 - D. A. greater than 3 sq. mi.		10 - No utilities on site 5 - Utilities but not within restoration area 1 - Utilities within potential restoration area	
Describe: DA = 23.9 mi^2		Describe: No utilities were visible	
		Total Score out of 100	44

Map



Site No.	MPAO0006		Scale: 1 in. =	2,000

Site Photos









Stream Mitigation Field Site Assessment Form

Project Details

Project Name: I-495/I-270 Managed Lanes Study **Mitigation Site Number:** MPAO0007

Projects Estimated Stream Mitigation Needs (LF): TBD

Date of Field Assessment: 6/12/2019 **Consultant Firm/Investigator(s):** CRI/MD, DS

Site Location Details-taken from desktop review

County: Prince George's **Cross Roads:** Powder Mill Rd. & Beaver Dam Rd.

Basin (HUC 8): Middle Potomac-Anacostia-Occoquan **MDE Watershed (8 digit):** 2140205

Proximity to Impacted Stream (mi.): 1.67 **Lat/Long:** 39.028099 -76.869391

Site Data

Parcel Size (ac): 2,241 **Potential Restoration Reach (LF):** 3,859

Site Opportunities: __X__Channel Restoration ___Livestock Exclusion _____Riparian Buffer Planting _X__Habitat Enhancement __X__Fish Passage

Stream Order: 2nd **Stream Hydrology:** Perennial **Stream Use:** I

Drainage Area to Reach (sq. mi.) 0.66

Land Use: Forested **Mapped Soils:** Russett-Christiana complex; Christiana-Downer complex; Zekiah and Issue

Property Address: Beaver Dam Rd and Bio Control Rd Beltsville, MD 20705

Property Owner(s): Beltsville Agricultural Research Center, USDA

General Field Observations

Is there evidence that the stream has been disturbed by some kind of human action, like grading, dumping, livestock, culvert, etc?	Can the stream restoration be reasonably done within the confines of the parcel or does it require connections beyond the parcel limits? Explain
Explain:	Explain:
A 1.4' fish blockage at Powder Mill Road culvert. Land use historically agriculture causing years of downcutting. Utilities evident (inactive and active). Footbridge present	Yes, stream segment is all on BARC property.

Mitigation Site Rating

Criteria	Score	Criteria	Score
Estimated Bank erosion within reach	10	**Vegetation**	1
10 - Greater than 50% 5 - 10% to 50% 1 - Less than 10%		10 - Herbaceous cover (non-wetland) 5 - Scrub-shrub cover (non-wetland) 1 - Mostly forested and/or wetland	
Describe:		Describe:	
Upper 2/3 of site is 100% eroded due to downcutting, lower 1/3 alternating erosion average ~4'.		Forested stream corridor, mix of mostly young and mature deciduous trees.	
Degree of Channel Incision	5	**Land Use**	1
10 - Bank Height greater than 10 feet 5 - Bank Height between 3 and 10 feet 1 - Bank Height less than 3 feet		10 - Agricultural or Open Space 5 - Marginal Pasture 1 - Old field/ Developed/Forested	
Describe:		Describe:	
Upper 2/3 of site has ~6' high eroded banks, while the lower 1/3 average ~4' high.		Mostly forested within stream corridor.	
Existing Floodplain Access	5	**Opportunity for Ecological Lift**	5
10 - No evidence of out of bank flooding 5- Yes (Infrequent out of bank flow) 1 - Yes (evidence of frequent flooding)		10 - Conditions exist for several aspects of lift to be achieved and sustained 5 - Lift limited to one or few aspects 1 - Conditions are such that Lift is difficult to achieve and sustain	
Describe:		Describe:	
Some areas of floodplain access within old down cut channel at upper 2/3 of site. Lower 1/3 features more frequent access to floodplain.		Opportunities for floodplain access, vertical and lateral stability, habitat creation.	
Opportunity for Floodplain Development	10	**Ease of Access**	5
10 - Existing space for floodplain greater than 10 times stream width 5 - Existing space for floodplain 3 to 10 times stream width 1 - Little to no space for floodplain development		10 - Yes (with existing direct vehicular access to potential site) 5- yes (open but no existing vehicular access) 1 - No (no vehicular access, clearing needed)	
Describe:		Describe:	
Space exists but mature forest may limit expansive floodplain development.		Some existing direct vehicle access from BARC roadways and Powder Mill/Beaver Dam Rd. Clearing needed to access other portions of the reach.	
Drainage Area Evaluation	10	**Utilities Present**	1
10 -D.A. less than 1 sq. mi. 5- D. A. between 1 & 3 sq. mi. 1 - D. A. greater than 3 sq. mi.		10 - No utilities on site 5 - Utilities but not within restoration area 1 - Utilities within potential restoration area	
Describe:		Describe:	
DA = 0.66mi^2		Remnant utilities present as well as active sewer crossing and manholes.	
		Total Score out of 100	53

Map



Site No.	MPAO0007		Scale: 1 in. =	2,000

Site Photos









Stream Mitigation Field Site Assessment Form

Project Details

Project Name: I-495/I-270 Managed Lanes Study **Mitigation Site Number:** MPAO0009

Projects Estimated Stream Mitigation Needs (LF): TBD

Date of Field Assessment: 7/30/2019 **Consultant Firm/Investigator(s):** CRI/DS, SN

Site Location Details-taken from desktop review

County: Montgomery **Cross Roads:** Sligo Creek Parkway and Piney Branch Road

Basin (HUC 8): Middle Potomac-Anacostia-Occoquan **MDE Watershed (8 digit):** 2140205

Proximity to Impacted Stream (mi.): 1.01 **Lat/Long:** 38.996538 -77.009364

Site Data

Parcel Size (ac): 3 parcels - 15.7, 3.1, 28.5 **Potential Restoration Reach (LF):** 2,668

Site Opportunities: __X__Channel Restoration ___Livestock Exclusion _____Riparian Buffer Planting ___Habitat Enhancement _X__Fish Passage

Stream Order: 2nd **Stream Hydrology:** Perennial **Stream Use:** I

Drainage Area to Reach (sq. mi.) 6.12

Land Use: Parkland **Mapped Soils:** Codorus silt loam, 0 to 3 percent slopes, occasionally flooded

Property Address: 8639 Sligo Creek Parkway, Takoma Park MD

Property Owner(s): MNCPPC

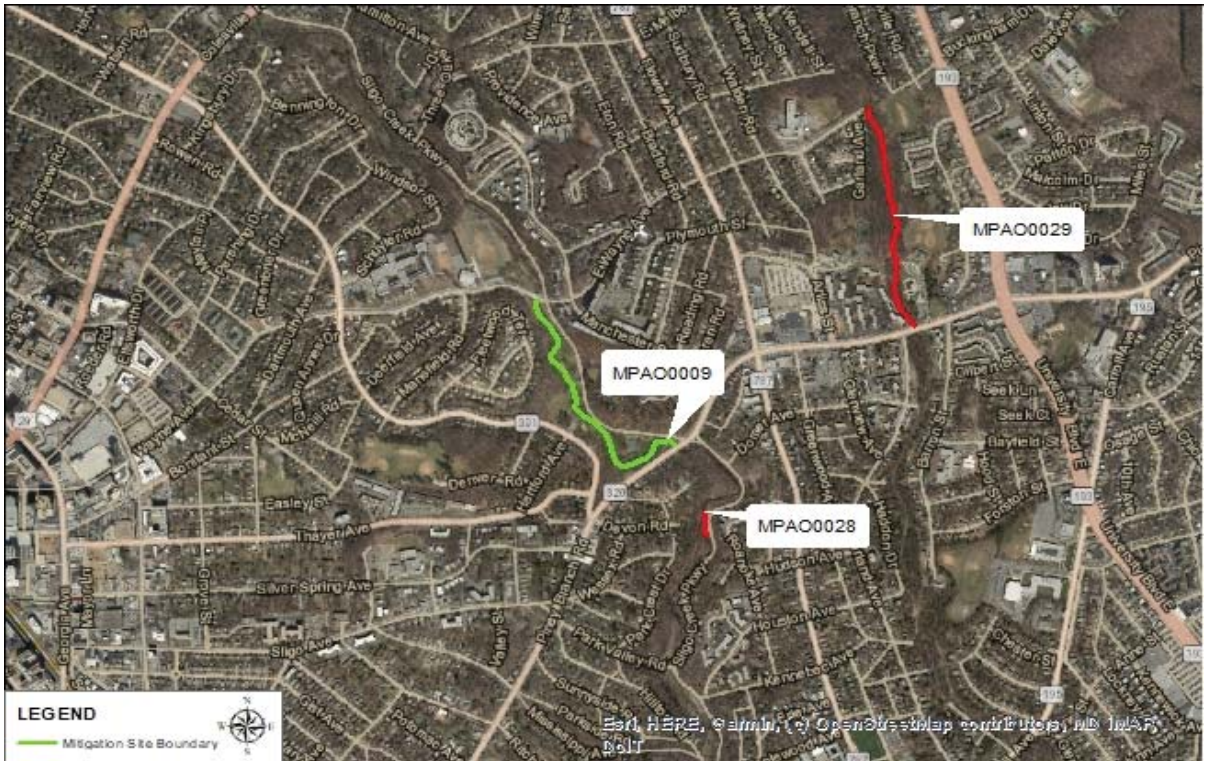
General Field Observations

Is there evidence that the stream has been disturbed by some kind of human action, like grading, dumping, livestock, culvert, etc?	Can the stream restoration be reasonably done within the confines of the parcel or does it require connections beyond the parcel limits? Explain
Explain:	Explain:
Riprap along 70-80% of banks; restoration at upstream footbridge	No; There is no clear start/stop location or need.

Mitigation Site Rating

Criteria	Score	Criteria	Score
Estimated Bank erosion within reach	5	**Vegetation**	1
10 - Greater than 50% 5 - 10% to 50% 1 - Less than 10%		10 - Herbaceous cover (non-wetland) 5 - Scrub-shrub cover (non-wetland) 1 - Mostly forested and/or wetland	
Describe: 20-30% eroded		Describe: Forest	
Degree of Channel Incision	5	**Land Use**	1
10 - Bank Height greater than 10 feet 5 - Bank Height between 3 and 10 feet 1 - Bank Height less than 3 feet		10 - Agricultural or Open Space 5 - Marginal Pasture 1 - Old field/ Developed/Forested	
Describe: ~5'		Describe: Forest	
Existing Floodplain Access	5	**Opportunity for Ecological Lift**	1
10 - No evidence of out of bank flooding 5- Yes (Infrequent out of bank flow) 1 - Yes (evidence of frequent flooding)		10 - Conditions exist for several aspects of lift to be achieved and sustained 5 - Lift limited to one or few aspects 1 - Conditions are such that Lift is difficult to achieve and sustain	
Describe: Certain sections have soft sediment on upper banks		Describe: Lots of riprap, not a lot of existing instabilities.	
Opportunity for Floodplain Development	5	**Ease of Access**	5
10 - Existing space for floodplain greater than 10 times stream width 5 - Existing space for floodplain 3 to 10 times stream width 1 - Little to no space for floodplain development		10 - Yes (with existing direct vehicular access to potential site) 5- yes (open but no existing vehicular access) 1 - No (no vehicular access, clearing needed)	
Describe: Space available. Constricted by adjacent roadway to the east and path/development to the west.		Describe: Next to multiple trails with parking and roads.	
Drainage Area Evaluation	1	**Utilities Present**	1
10 -D.A. less than 1 sq. mi. 5- D. A. between 1 & 3 sq. mi. 1 - D. A. greater than 3 sq. mi.		10 - No utilities on site 5 - Utilities but not within restoration area 1 - Utilities within potential restoration area	
Describe: 6.12 sq. mi		Describe: Multiple sewer crossings and outfalls.	
		Total Score out of 100	30

Map



Site No.	MPAO0009		Scale: 1 in. =	2,000

Site Photos









Stream Mitigation Field Site Assessment Form

Project Details

Project Name: I-495/I-270 Managed Lanes Study **Mitigation Site Number:** MPAO0010

Projects Estimated Stream Mitigation Needs (LF): TBD

Date of Field Assessment: 7/30/2019 **Consultant Firm/Investigator(s):** CRI/DS, SN

Site Location Details-taken from desktop review

County: Montgomery **Cross Roads:** Bruce Drive and Burnett Ave

Basin (HUC 8): Middle Potomac-Anacostia-Occoquan **MDE Watershed (8 digit):** 2140205

Proximity to Impacted Stream (mi.): 0.26 **Lat/Long:** 39.010793 -77.02182

Site Data

Parcel Size (ac): 16 ac; ROW along Burnett Ave **Potential Restoration Reach (LF):** 644

Site Opportunities: __X__Channel Restoration ____Livestock Exclusion _____Riparian Buffer Planting ____Habitat Enhancement ___Fish Passage

Stream Order: 1st **Stream Hydrology:** Perennial **Stream Use:** I

Drainage Area to Reach (sq. mi.) 0.29

Land Use: Parkland **Mapped Soils:** Codorus silt loam; Brinklow-Blocktown channery silt loam; Glenelg silt loam

Property Address: 9406 Bruce Drive, Silver Spring MD

Property Owner(s): MNCPPC

General Field Observations

Is there evidence that the stream has been disturbed by some kind of human action, like grading, dumping, livestock, culvert, etc?	Can the stream restoration be reasonably done within the confines of the parcel or does it require connections beyond the parcel limits? Explain
Explain:	Explain:
Culvert under road, 4 at head of stream, riprap throughout the stream.	No; downstream is confluence with Sligo Creek, upstream is culvert.

Mitigation Site Rating

Criteria	Score	Criteria	Score
Estimated Bank erosion within reach	1	**Vegetation**	5
10 - Greater than 50% 5 - 10% to 50% 1 - Less than 10%		10 - Herbaceous cover (non-wetland) 5 - Scrub-shrub cover (non-wetland) 1 - Mostly forested and/or wetland	
Describe: ~10%, mostly riprap.		Describe: Mix between scrub/shrub and small buffer of forest.	
Degree of Channel Incision	5	**Land Use**	1
10 - Bank Height greater than 10 feet 5 - Bank Height between 3 and 10 feet 1 - Bank Height less than 3 feet		10 - Agricultural or Open Space 5 - Marginal Pasture 1 - Old field/ Developed/Forested	
Describe: Average 3ft with some small areas of 5' and some with lower floodplain bench.		Describe: Roadway, forest, scrub-shrub.	
Existing Floodplain Access	5	**Opportunity for Ecological Lift**	5
10 - No evidence of out of bank flooding 5- Yes (Infrequent out of bank flow) 1 - Yes (evidence of frequent flooding)		10 - Conditions exist for several aspects of lift to be achieved and sustained 5 - Lift limited to one or few aspects 1 - Conditions are such that Lift is difficult to achieve and sustain	
Describe: Low bench in upstream section.		Describe: Right bank is along road, but uplift lateral stability and habitat.	
Opportunity for Floodplain Development	5	**Ease of Access**	10
10 - Existing space for floodplain greater than 10 times stream width 5 - Existing space for floodplain 3 to 10 times stream width 1 - Little to no space for floodplain development		10 - Yes (with existing direct vehicular access to potential site) 5- yes (open but no existing vehicular access) 1 - No (no vehicular access, clearing needed)	
Describe: Constrained to the east by adjacent roadway. Opportunity exists to the west.		Describe: Along roadway and at MNCPPC entrance, with adjacent open field on the downstream right bank.	
Drainage Area Evaluation	10	**Utilities Present**	1
10 -D.A. less than 1 sq. mi. 5- D. A. between 1 & 3 sq. mi. 1 - D. A. greater than 3 sq. mi.		10 - No utilities on site 5 - Utilities but not within restoration area 1 - Utilities within potential restoration area	
Describe: 0.29 sq. miles		Describe: 1; 1 sewer crossing at MNCPPC entrance	
		Total Score out of 100	48

Map



Site No.	MPAO0010		Scale: 1 in. =	2,000

Site Photos









Stream Mitigation Field Site Assessment Form

Project Details

Project Name: I-495/I-270 Managed Lanes Study **Mitigation Site Number:** MPAO0011

Projects Estimated Stream Mitigation Needs (LF): TBD

Date of Field Assessment: 7/25/2019 **Consultant Firm/Investigator(s):** CRI/SJ, MD

Site Location Details-taken from desktop review

County: Montgomery **Cross Roads:** University Blvd and Sligo Creek Parkway

Basin (HUC 8): Middle Potomac-Anacostia-Occoquan **MDE Watershed (8 digit):** 2140205

Proximity to Impacted Stream (mi.): 1.24 **Lat/Long:** 39.035736 -77.030943

Site Data

Parcel Size (ac): 2 parcels - 9.2, 1.2 **Potential Restoration Reach (LF):** 546

Site Opportunities: __X__Channel Restoration ___Livestock Exclusion _____Riparian Buffer Planting _X_Habitat Enhancement _X__Fish Passage

Stream Order: 2nd **Stream Hydrology:** Perennial **Stream Use:** I

Drainage Area to Reach (sq. mi.) 0.87

Land Use: Forest **Mapped Soils:** Hatboro silt loam, 0-3 percent slopes, frequently flooded

Property Address: 1167 University Blvd Silver Spring MD

Property Owner(s): MNCPPC

General Field Observations

Is there evidence that the stream has been disturbed by some kind of human action, like grading, dumping, livestock, culvert, etc?	Can the stream restoration be reasonably done within the confines of the parcel or does it require connections beyond the parcel limits? Explain
Explain:	Explain:
Yes, riprap and culvert	Yes. Entirely on one parcel.

Mitigation Site Rating

Criteria	Score	Criteria	Score
Estimated Bank erosion within reach	5	**Vegetation**	1
10 - Greater than 50% 5 - 10% to 50% 1 - Less than 10%		10 - Herbaceous cover (non-wetland) 5 - Scrub-shrub cover (non-wetland) 1 - Mostly forested and/or wetland	
Describe: ~40%		Describe: Forested park	
Degree of Channel Incision	5	**Land Use**	1
10 - Bank Height greater than 10 feet 5 - Bank Height between 3 and 10 feet 1 - Bank Height less than 3 feet		10 - Agricultural or Open Space 5 - Marginal Pasture 1 - Old field/ Developed/Forested	
Describe: ~4.5 feet		Describe: Forested park	
Existing Floodplain Access	5	**Opportunity for Ecological Lift**	5
10 - No evidence of out of bank flooding 5- Yes (Infrequent out of bank flow) 1 - Yes (evidence of frequent flooding)		10 - Conditions exist for several aspects of lift to be achieved and sustained 5 - Lift limited to one or few aspects 1 - Conditions are such that Lift is difficult to achieve and sustain	
Describe: Gets out on bars, but not out of overall channel.		Describe: Fish passage, lateral migration, floodplain access, bedform diversity.	
Opportunity for Floodplain Development	5	**Ease of Access**	5
10 - Existing space for floodplain greater than 10 times stream width 5 - Existing space for floodplain 3 to 10 times stream width 1 - Little to no space for floodplain development		10 - Yes (with existing direct vehicular access to potential site) 5- yes (open but no existing vehicular access) 1 - No (no vehicular access, clearing needed)	
Describe: Confined by trail and roadway.		Describe: Some clearing required.	
Drainage Area Evaluation	10	**Utilities Present**	1
10 -D.A. less than 1 sq. mi. 5- D. A. between 1 & 3 sq. mi. 1 - D. A. greater than 3 sq. mi.		10 - No utilities on site 5 - Utilities but not within restoration area 1 - Utilities within potential restoration area	
Describe: 0.87 sq. miles		Describe:	
		Total Score out of 100	43

Map



Site No.	MPAO0011		Scale: 1 in. =	2,000

Site Photos









Stream Mitigation Field Site Assessment Form

Project Details

Project Name: I-495/I-270 Managed Lanes Study **Mitigation Site Number:** MPAO0012

Projects Estimated Stream Mitigation Needs (LF): TBD

Date of Field Assessment: 7/25/2019 **Consultant Firm/Investigator(s):** RKK KJH&AJN

Site Location Details-taken from desktop review

County: Montgomery **Cross Roads:** Redland Road and Crabbs Branch Way

Basin (HUC 8): Middle Potomac-Anacostia-Occoquan **MDE Watershed (8 digit):** 02140206

Proximity to Impacted Stream (mi.): 1.75 **Lat/Long:** 39.11553546 -77.14594816

Site Data

Parcel Size (ac): 96.5 **Potential Restoration Reach (LF):** 7,657

Site Opportunities: __X__Channel Restoration ___Livestock Exclusion ___X___Riparian Buffer Planting _X__Habitat Enhancement ___Fish Passage

Stream Order: 1st **Stream Hydrology:** Perennial **Stream Use:** IV

Drainage Area to Reach (sq. mi.) 1.89

Land Use: Forested Parkland **Mapped Soils:** Hatboro silt loam

Property Address: Redland Road and Derwood Road

Property Owner(s): M-NCPPC

General Field Observations

Is there evidence that the stream has been disturbed by some kind of human action, like grading, dumping, livestock, culvert, etc?	Can the stream restoration be reasonably done within the confines of the parcel or does it require connections beyond the parcel limits? Explain
Explain:	Explain:
Yes, rip-rap bank stabilization.	Yes, all on MNCPPC property. MNCPPC recommendation.

Mitigation Site Rating

Criteria	Score	Criteria	Score
Estimated Bank erosion within reach	10	**Vegetation**	10
10 - Greater than 50% 5 - 10% to 50% 1 - Less than 10%		10 - Herbaceous cover (non-wetland) 5 - Scrub-shrub cover (non-wetland) 1 - Mostly forested and/or wetland	
Describe: Severe erosion throughout reach. Torturous meanders.		Describe: Mostly herbaceous. Scattered trees on US forested end.	
Degree of Channel Incision	5	**Land Use**	5
10 - Bank Height greater than 10 feet 5 - Bank Height between 3 and 10 feet 1 - Bank Height less than 3 feet		10 - Agricultural or Open Space 5 - Marginal Pasture 1 - Old field/ Developed/Forested	
Describe: Bank height 3-8'. Average of 5'. Deeply incised.		Describe: Park floodplain dominated by reed canary grass.	
Existing Floodplain Access	10	**Opportunity for Ecological Lift**	10
10 - No evidence of out of bank flooding 5- Yes (Infrequent out of bank flow) 1 - Yes (evidence of frequent flooding)		10 - Conditions exist for several aspects of lift to be achieved and sustained 5 - Lift limited to one or few aspects 1 - Conditions are such that Lift is difficult to achieve and sustain	
Describe: No evidence of out of bank flooding.		Describe: Opportunities exist for sediment reduction, floodplain connectivity, aquatic habitat, riparian buffer plantings, and water quality.	
Opportunity for Floodplain Development	10	**Ease of Access**	5
10 - Existing space for floodplain greater than 10 times stream width 5 - Existing space for floodplain 3 to 10 times stream width 1 - Little to no space for floodplain development		10 - Yes (with existing direct vehicular access to potential site) 5- yes (open but no existing vehicular access) 1 - No (no vehicular access, clearing needed)	
Describe: Greater than 100' wide floodplain on both sides of channel.		Describe: Reed-canary floodplain with scattered trees.	
Drainage Area Evaluation	5	**Utilities Present**	1
10 -D.A. less than 1 sq. mi. 5- D. A. between 1 & 3 sq. mi. 1 - D. A. greater than 3 sq. mi.		10 - No utilities on site 5 - Utilities but not within restoration area 1 - Utilities within potential restoration area	
Describe: 1.89 square miles		Describe: Sewer line present throughout reach.	
		Total Score out of 100	71

Map



Site No.	MPAO0012		Scale: 1 in. =	2,000

Site Photos









Stream Mitigation Field Site Assessment Form

Project Details

Project Name: I-495/I-270 Managed Lanes Study **Mitigation Site Number:** MPAO0013

Projects Estimated Stream Mitigation Needs (LF):

Date of Field Assessment: 7/17/2019 **Consultant Firm/Investigator(s):** RK&K; KJH, AJN

Site Location Details-taken from desktop review

County: Montgomery **Cross Roads:** Layhill Road and Flint Hill Road

Basin (HUC 8): Middle Potomac-Anacostia-Occoquan **MDE Watershed (8 digit):** 02140205

Proximity to Impacted Stream (mi.): 6.55 **Lat/Long:** 39.110435 -77.032964

Site Data

Parcel Size (ac): 286 **Potential Restoration Reach (LF):** 1,014

Site Opportunities: __X__Channel Restoration ___Livestock Exclusion _____Riparian Buffer Planting __Habitat Enhancement _X_Fish Passage

Stream Order: 3rd **Stream Hydrology:** Perennial **Stream Use:** IV

Drainage Area to Reach (sq. mi.) 4.87

Land Use: Forested **Mapped Soils:** Hatboro silt loam

Property Address: Layhill Road

Property Owner(s): M-NCPPC

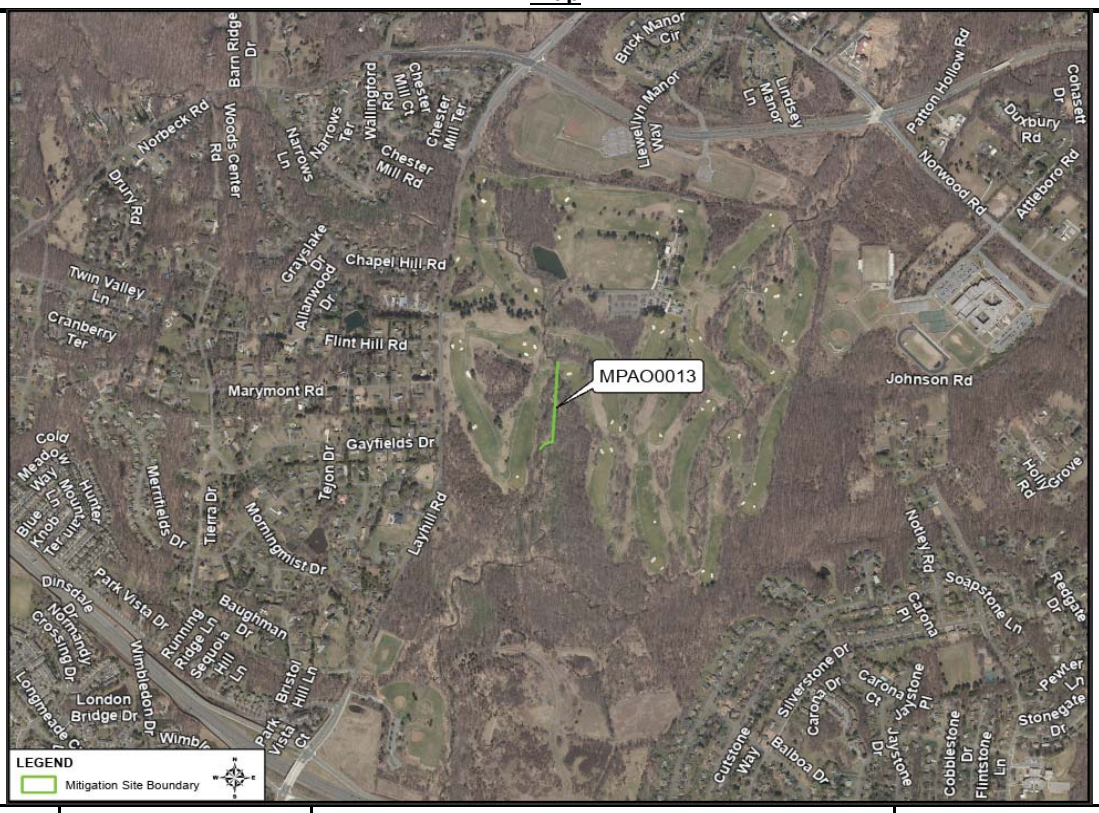
General Field Observations

Is there evidence that the stream has been disturbed by some kind of human action, like grading, dumping, livestock, culvert, etc?	Can the stream restoration be reasonably done within the confines of the parcel or does it require connections beyond the parcel limits? Explain
Explain:	Explain:
Old stone toes, cross vanes, and riffle grade control.	All on MNCPPC property. MNCPPC recommendation.

Mitigation Site Rating

Criteria	Score	Criteria	Score
Estimated Bank erosion within reach	5	**Vegetation**	1
10 - Greater than 50% 5 - 10% to 50% 1 - Less than 10%		10 - Herbaceous cover (non-wetland) 5 - Scrub-shrub cover (non-wetland) 1 - Mostly forested and/or wetland	
Describe: Localized moderate to severe erosion. Mostly stable		Describe: Forested parkland. Mid-successional; red maple, sycamore, tulip polar.	
Degree of Channel Incision	5	**Land Use**	1
10 - Bank Height greater than 10 feet 5 - Bank Height between 3 and 10 feet 1 - Bank Height less than 3 feet		10 - Agricultural or Open Space 5 - Marginal Pasture 1 - Old field/ Developed/Forested	
Describe: Most banks 5' tall		Describe: Forested/ golf course	
Existing Floodplain Access	10	**Opportunity for Ecological Lift**	5
10 - No evidence of out of bank flooding 5- Yes (Infrequent out of bank flow) 1 - Yes (evidence of frequent flooding)		10 - Conditions exist for several aspects of lift to be achieved and sustained 5 - Lift limited to one or few aspects 1 - Conditions are such that Lift is difficult to achieve and sustain	
Describe: No evidence observed		Describe: Limited opportunity for sediment reduction and floodplain development	
Opportunity for Floodplain Development	5	**Ease of Access**	1
10 - Existing space for floodplain greater than 10 times stream width 5 - Existing space for floodplain 3 to 10 times stream width 1 - Little to no space for floodplain development		10 - Yes (with existing direct vehicular access to potential site) 5- yes (open but no existing vehicular access) 1 - No (no vehicular access, clearing needed)	
Describe: Western and northern floodplain limited by golf course. Some potential in eastern floodplain.		Describe: Mostly dense forest. Small upstream segment adjacent to golf course is open.	
Drainage Area Evaluation	1	**Utilities Present**	1
10 -D.A. less than 1 sq. mi. 5- D. A. between 1 & 3 sq. mi. 1 - D. A. greater than 3 sq. mi.		10 - No utilities on site 5 - Utilities but not within restoration area 1 - Utilities within potential restoration area	
Describe: 4.87 square miles		Describe: Sewerlines present throughout floodplain	
		Total Score out of 100	35

Map



Site No.	MPAO0013		Scale: 1 in. =	2,000

Site Photos









Stream Mitigation Field Site Assessment Form

Project Details

Project Name: I-495/I-270 Managed Lanes Study **Mitigation Site Number:** MPAO0014

Projects Estimated Stream Mitigation Needs (LF): TBD

Date of Field Assessment: 7/25/2019 **Consultant Firm/Investigator(s):** RKK KJH&AJN

Site Location Details-taken from desktop review

County: Montgomery **Cross Roads:** Bonifant Road and Notley Road

Basin (HUC 8): Middle Potomac-Anacostia-Occoquan **MDE Watershed (8 digit):** 02140205

Proximity to Impacted Stream (mi.): 4.86 **Lat/Long:** 39.092946 -77.016077

Site Data

Parcel Size (ac): 29 **Potential Restoration Reach (LF):** 5,967

Site Opportunities: __X__Channel Restoration ___Livestock Exclusion ___X___Riparian Buffer Planting __X_Habitat Enhancement _X__Fish Passage

Stream Order: 2nd **Stream Hydrology:** Perennial **Stream Use:** IV

Drainage Area to Reach (sq. mi.) 1.05

Land Use: Forested Parkland **Mapped Soils:** Hatboro silt loam

Property Address: Old Stone Road. Stonewall Drive

Property Owner(s): MNCPPC & South Stonegate HOA

General Field Observations

Is there evidence that the stream has been disturbed by some kind of human action, like grading, dumping, livestock, culvert, etc?	Can the stream restoration be reasonably done within the confines of the parcel or does it require connections beyond the parcel limits? Explain
Explain:	Explain:
Yes, rip-rap and exposed sewer line.	Work would require access to M-NCPPC and South Stonegate HOA properties.

Mitigation Site Rating

Criteria	Score	Criteria	Score
Estimated Bank erosion within reach	10	**Vegetation**	1
10 - Greater than 50% 5 - 10% to 50% 1 - Less than 10%		10 - Herbaceous cover (non-wetland) 5 - Scrub-shrub cover (non-wetland) 1 - Mostly forested and/or wetland	
Describe: Severe erosion throughout		Describe: Disturbed forested land. Lots of dead ash and invasives.	
Degree of Channel Incision	5	**Land Use**	1
10 - Bank Height greater than 10 feet 5 - Bank Height between 3 and 10 feet 1 - Bank Height less than 3 feet		10 - Agricultural or Open Space 5 - Marginal Pasture 1 - Old field/ Developed/Forested	
Describe: Bank Height 3-8', Average of 6'		Describe: Forested parkland	
Existing Floodplain Access	10	**Opportunity for Ecological Lift**	10
10 - No evidence of out of bank flooding 5- Yes (Infrequent out of bank flow) 1 - Yes (evidence of frequent flooding)		10 - Conditions exist for several aspects of lift to be achieved and sustained 5 - Lift limited to one or few aspects 1 - Conditions are such that Lift is difficult to achieve and sustain	
Describe: No evidence. Deeply incised channel.		Describe: Opportunities for sediment reduction, floodplain connectivity, fish passage, water quality, invasive treatment, and aquatic habitat.	
Opportunity for Floodplain Development	5	**Ease of Access**	5
10 - Existing space for floodplain greater than 10 times stream width 5 - Existing space for floodplain 3 to 10 times stream width 1 - Little to no space for floodplain development		10 - Yes (with existing direct vehicular access to potential site) 5- yes (open but no existing vehicular access) 1 - No (no vehicular access, clearing needed)	
Describe: Limited in western floodplain due to valley slope		Describe: Access through old restoration access route that is currently covered with invasives. Requires small tree impacts.	
Drainage Area Evaluation	10	**Utilities Present**	1
10 -D.A. less than 1 sq. mi. 5- D. A. between 1 & 3 sq. mi. 1 - D. A. greater than 3 sq. mi.		10 - No utilities on site 5 - Utilities but not within restoration area 1 - Utilities within potential restoration area	
Describe: 1.05 square miles		Describe: Sewer line throughout reach	
		Total Score out of 100	58

Map



Site No.	MPAO0014		Scale: 1 in. =	2,000

Site Photos









Stream Mitigation Field Site Assessment Form

Project Details

Project Name: I-495/I-270 Managed Lanes Study **Mitigation Site Number:** MPAO0015

Projects Estimated Stream Mitigation Needs (LF):

Date of Field Assessment: 7/17/2019 **Consultant Firm/Investigator(s):** RK&K; KJH, AJN

Site Location Details-taken from desktop review

County: Montgomery **Cross Roads:** Twinbrook Pkwy and Veirs Mill Rd.

Basin (HUC 8): Middle Potomac-Anacostia-Occoquan **MDE Watershed (8 digit):** 02140206

Proximity to Impacted Stream (mi.): 2.45 **Lat/Long:** 39.071546 -77.110477

Site Data

Parcel Size (ac): 24 **Potential Restoration Reach (LF):** 720

Site Opportunities: __X__Channel Restoration ____Livestock Exclusion _____Riparian Buffer Planting __Habitat Enhancement _X_Fish Passage

Stream Order: 1st **Stream Hydrology:** Perennial **Stream Use:** I

Drainage Area to Reach (sq. mi.) 35.8

Land Use: Forested **Mapped Soils:** Hatboro silt loam

Property Address: Veirs Mill Road

Property Owner(s): M-NCPPC

General Field Observations

Is there evidence that the stream has been disturbed by some kind of human action, like grading, dumping, livestock, culvert, etc?	Can the stream restoration be reasonably done within the confines of the parcel or does it require connections beyond the parcel limits? Explain
Explain:	Explain:
Failed culvert and imbricated wall. Sewer crossing.	Yes, all MNCPPC land. MNCPPC recommendation.

Mitigation Site Rating

Criteria	Score	Criteria	Score
Estimated Bank erosion within reach	1	**Vegetation**	1
10 - Greater than 50% 5 - 10% to 50% 1 - Less than 10%		10 - Herbaceous cover (non-wetland) 5 - Scrub-shrub cover (non-wetland) 1 - Mostly forested and/or wetland	
Describe:		Describe:	
Minor erosion throughout. 3 areas of localized severe erosion.		Mid successional forest; tulip poplar, cottonwood, red maple	
Degree of Channel Incision	5	**Land Use**	1
10 - Bank Height greater than 10 feet 5 - Bank Height between 3 and 10 feet 1 - Bank Height less than 3 feet		10 - Agricultural or Open Space 5 - Marginal Pasture 1 - Old field/ Developed/Forested	
Describe:		Describe:	
3-10' tall banks		Forested parkland	
Existing Floodplain Access	1	**Opportunity for Ecological Lift**	1
10 - No evidence of out of bank flooding 5- Yes (Infrequent out of bank flow) 1 - Yes (evidence of frequent flooding)		10 - Conditions exist for several aspects of lift to be achieved and sustained 5 - Lift limited to one or few aspects 1 - Conditions are such that Lift is difficult to achieve and sustain	
Describe:		Describe:	
Debris-racks and scour on northern floodplain		Opportunity for sediment reduction. Good existing in-stream habitat. Limited potential for floodplain development.	
Opportunity for Floodplain Development	5	**Ease of Access**	5
10 - Existing space for floodplain greater than 10 times stream width 5 - Existing space for floodplain 3 to 10 times stream width 1 - Little to no space for floodplain development		10 - Yes (with existing direct vehicular access to potential site) 5- yes (open but no existing vehicular access) 1 - No (no vehicular access, clearing needed)	
Describe:		Describe:	
No potential in southern floodplain - valley slope. Limited potential in northern FP.		Existing sewerline access with small tree plantings	
Drainage Area Evaluation	1	**Utilities Present**	1
10 -D.A. less than 1 sq. mi. 5- D. A. between 1 & 3 sq. mi. 1 - D. A. greater than 3 sq. mi.		10 - No utilities on site 5 - Utilities but not within restoration area 1 - Utilities within potential restoration area	
Describe:		Describe:	
35.8 square miles		Sewerlines/sewer crossing	
		Total Score out of 100	22

Map



Site No.	MPAO0015		Scale: 1 in. =	2,000

Site Photos









Stream Mitigation Field Site Assessment Form

Project Details

Project Name: I-495/I-270 Managed Lanes Study **Mitigation Site Number:** MPAO0016

Projects Estimated Stream Mitigation Needs (LF): TBD

Date of Field Assessment: 7/17/2019 **Consultant Firm/Investigator(s):** RKK KJH&AJN

Site Location Details-taken from desktop review

County: Montgomery **Cross Roads:** Imperial Drive and Woodman Ave

Basin (HUC 8): Middle Potomac-Anacostia-Occoquan **MDE Watershed (8 digit):** 02140205

Proximity to Impacted Stream (mi.): 0.3 **Lat/Long:** 39.020457 -77.03309

Site Data

Parcel Size (ac): 5.2 **Potential Restoration Reach (LF):** 177

Site Opportunities: __X__Channel Restoration ____Livestock Exclusion ___X___Riparian Buffer Planting ___Habitat Enhancement _X__Fish Passage

Stream Order: 1st **Stream Hydrology:** Perennial **Stream Use:** I

Drainage Area to Reach (sq. mi.) 1.32

Land Use: Forested Parkland **Mapped Soils:** Hatboro silt loam

Property Address: Joseph Park, Woodman Ave.

Property Owner(s): M-NCPPC

General Field Observations

Is there evidence that the stream has been disturbed by some kind of human action, like grading, dumping, livestock, culvert, etc?	Can the stream restoration be reasonably done within the confines of the parcel or does it require connections beyond the parcel limits? Explain
Explain:	Explain:
Old ford at US end of site. Combine with MPAO0031.	Yes. M-NCPPC Recommendation.

Mitigation Site Rating

Criteria	Score	Criteria	Score
Estimated Bank erosion within reach	5	**Vegetation**	1
10 - Greater than 50% 5 - 10% to 50% 1 - Less than 10%		10 - Herbaceous cover (non-wetland) 5 - Scrub-shrub cover (non-wetland) 1 - Mostly forested and/or wetland	
Describe: Localized minor to moderate erosion		Describe: Mid successional upland forest. Extensive invasives.	
Degree of Channel Incision	5	**Land Use**	1
10 - Bank Height greater than 10 feet 5 - Bank Height between 3 and 10 feet 1 - Bank Height less than 3 feet		10 - Agricultural or Open Space 5 - Marginal Pasture 1 - Old field/ Developed/Forested	
Describe: 4-8' tall banks.		Describe: Forested parkland	
Existing Floodplain Access	10	**Opportunity for Ecological Lift**	5
10 - No evidence of out of bank flooding 5- Yes (Infrequent out of bank flow) 1 - Yes (evidence of frequent flooding)		10 - Conditions exist for several aspects of lift to be achieved and sustained 5 - Lift limited to one or few aspects 1 - Conditions are such that Lift is difficult to achieve and sustain	
Describe: No evidence of flooding.		Describe: Opportunities for sediment reduction and riparian buffer plantings.	
Opportunity for Floodplain Development	1	**Ease of Access**	5
10 - Existing space for floodplain greater than 10 times stream width 5 - Existing space for floodplain 3 to 10 times stream width 1 - Little to no space for floodplain development		10 - Yes (with existing direct vehicular access to potential site) 5- yes (open but no existing vehicular access) 1 - No (no vehicular access, clearing needed)	
Describe: Limited by adjacent trail and sligo creek		Describe: Forest with patchy open invasive areas. Potential access along trail.	
Drainage Area Evaluation	5	**Utilities Present**	1
10 -D.A. less than 1 sq. mi. 5- D. A. between 1 & 3 sq. mi. 1 - D. A. greater than 3 sq. mi.		10 - No utilities on site 5 - Utilities but not within restoration area 1 - Utilities within potential restoration area	
Describe: 1.32 square miles		Describe: Sewerline in floodplain	
		Total Score out of 100	39

Map


MPAO0016
LEGEND
Mitigation Site Boundary
Republic Rd
Hanby St
Gleason St
Crest Rd
Gridley Ln
Malone St
Snure Rd
Whitehall St
Orange Dr
Helena Dr
Kerwin Rd
Laredo Rd
Robin Rd
Dryden St
Carson St
Dennis Ave
Julep Ave
Folk St
Inwood Ave
Woodman Ave
Imperial Dr
Dublin Dr
Cody Dr
Brisbane St
Belvedere Blvd
Tilton Dr
Sanford Rd
Sherwood Rd
Myrtle Rd
Forest Glen Rd
Capital Beltway
Ellis St
Colenidge Dr
Westview Dr
Lansdowne Way
Osborn Dr
Riley Rd
Locust Grove Rd
Flora Ln
Crosby Rd
Pin Oak Dr
Crestridge Dr
Red Oak Dr
Medwood Pl
Clement Rd
Woodland Dr
Forest Grove Dr
Georgia Ave
Arthur Ave
Bonnywood Dr
Clark Pl
Kimball Pl
Colesville Rd
Granville Dr
Guilford St
Bristol Ave
Argyle Rd
Omaha Beach Dr
Sutherland Rd
Thornhill Rd
Indian Spring Dr
Brewster Ave
Leighton Ave
Hastings Dr
Loraine Ave
Robart Rd
Markham St
Grayson Ave
Brunett Ave
Kinross Ave
Dallas Ave
Portland Pl
Portland Rd
Redfield Rd
Lanark Way
Greenlock Rd
Hereford Pl
Gilmoure Dr
University Blvd
Royalton Rd
Marvin Rd
Belton Rd
Edgewood Ave
Irwin St
Elsner St
Hannes St
Tenbrook Dr
Meurice Ln
Rosewell Way
Quimby St
Stirling Rd
Redrick Rd
Raymond Rd
Godwin Dr
Silver Creek Pky
Dameron Dr
Out St
Medical Park Dr
Green Holly Ter
Alcan Everest Dr
August Dr
Eccleston St
Dexter Ave
Churchill Rd
Leder Rd
Gales Ave
Greeley Ave
McKenney Ave
Hildarose Dr
Gardiner Ave
McMillan Ave
Roosevelt Ave
Hollow Glen Pl
Seminary Rd
Hale St
Sharon Dr
Birch St
Woodland Dr
Darrow St
Homestead Dr
Harmon Dr
Lillian Rd
Haywood Dr
Evans Dr
Evans Pky
Barrie Ave
Clinton Ave
Etna Pl
Eldon Ln
Granada Rd
Florin St
Donald Pl
Hunley Ave
Hunley Pl
Hunley Ln
Hayes Pl
Cascade Rd
Dayton St
Buckwell Dr
Amherst Ave
Patterwood Ter
Douglas Ave
Mill Rd
Players Ln
Mary Barrett Ave
Saint Ave
Donald Ave
Glenhaven Dr
Dunlark Dr
Cascade St
Florin St
Donald Pl
Hunley Ave
Hunley Pl
Hunley Ln
Hayes Pl
Eldon Ln
Granada Rd
Etna Pl
Clinton Ave
Barrie Ave
Evans Pky
Evans Dr
Haywood Dr
Harmon Dr
Lillian Rd
Mill Rd
Players Ln
Mary Barrett Ave
Saint Ave
Donald Ave
Glenhaven Dr
Dunlark Dr
Cascade St
Dayton St
Buckwell Dr
Amherst Ave
Patterwood Ter
Douglas Ave
Homestead Dr
Darrow St
Eccleston St
Dexter Ave
Churchill Rd
Leder Rd
Gales Ave
Greeley Ave
McKenney Ave
Hildarose Dr
Gardiner Ave
McMillan Ave
Roosevelt Ave
Hollow Glen Pl
Seminary Rd
Hale St
Sharon Dr
Birch St
Woodland Dr
Arthur Ave
Bonnywood Dr
Clark Pl
Kimball Pl
Colesville Rd
Granville Dr
Guilford St
Bristol Ave
Argyle Rd
Omaha Beach Dr
Sutherland Rd
Thornhill Rd
Indian Spring Dr
Brewster Ave
Leighton Ave
Hastings Dr
Loraine Ave
Robart Rd
Markham St
Grayson Ave
Brunett Ave
Kinross Ave
Dallas Ave
Portland Pl
Portland Rd
Redfield Rd
Lanark Way
Greenlock Rd
Hereford Pl
Gilmoure Dr
University Blvd
Royalton Rd
Marvin Rd
Belton Rd
Edgewood Ave
Irwin St
Elsner St
Hannes St
Tenbrook Dr
Meurice Ln
Rosewell Way
Quimby St
Stirling Rd
Redrick Rd
Raymond Rd
Godwin Dr
Silver Creek Pky
Dameron Dr
Out St
Medical Park Dr
Green Holly Ter
Alcan Everest Dr
August Dr

Stream Mitigation Field Site Assessment Form

Project Details

Project Name: I-495/I-270 Managed Lanes Study **Mitigation Site Number:** MPAO0017

Projects Estimated Stream Mitigation Needs (LF): TBD

Date of Field Assessment: 7/25/2019 **Consultant Firm/Investigator(s):** CRI/DS, SN

Site Location Details-taken from desktop review

County: Montgomery **Cross Roads:** Bruce Drive and Burnett Ave

Basin (HUC 8): Middle Potomac-Anacostia-Occoquan **MDE Watershed (8 digit):** 2140205

Proximity to Impacted Stream (mi.): 0.3 **Lat/Long:** 39.009773 -77.021112

Site Data

Parcel Size (ac): 16 **Potential Restoration Reach (LF):** 283

Site Opportunities: __X__Channel Restoration ___Livestock Exclusion _____Riparian Buffer Planting _X_Habitat Enhancement ___Fish Passage

Stream Order: 1st **Stream Hydrology:** Perennial **Stream Use:** I

Drainage Area to Reach (sq. mi.) 0.0864

Land Use: Parkland **Mapped Soils:** Codorus silt loam, 0-3 percent slopes, occasionally flooded

Property Address: 9406 Bruce Drive Silver Spring MD

Property Owner(s): MNCPPC

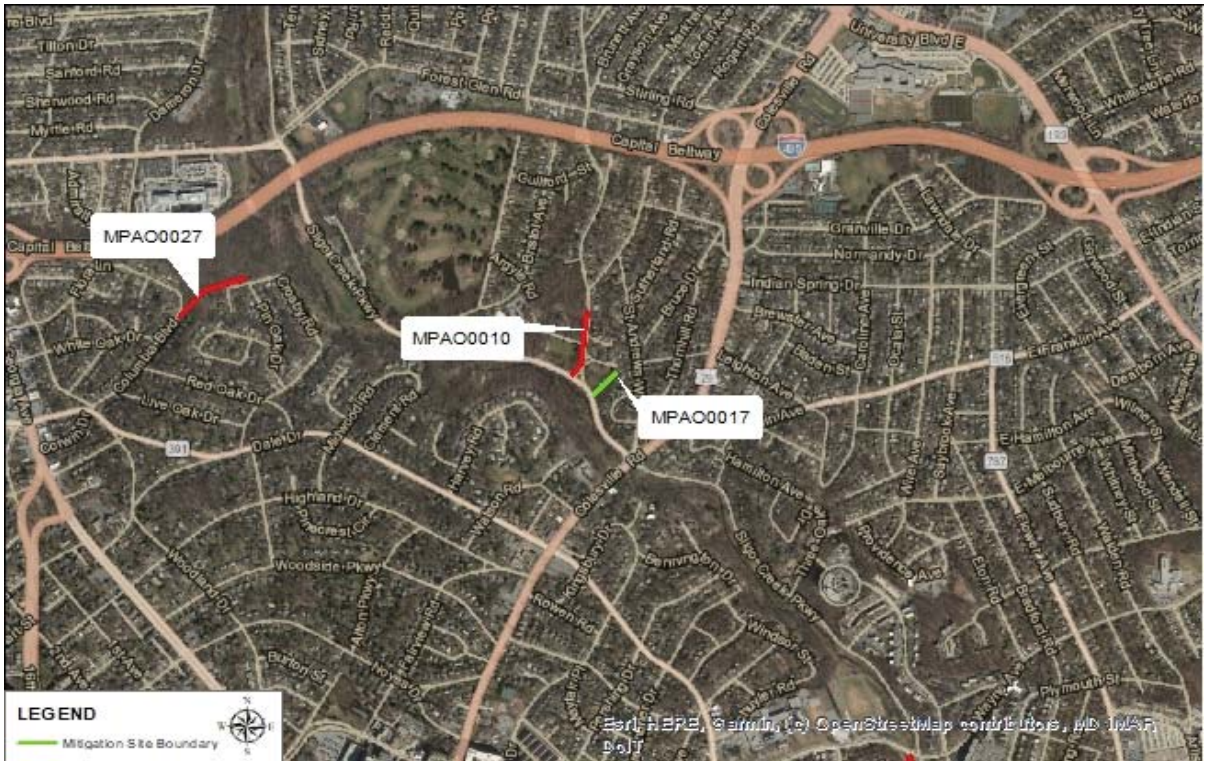
General Field Observations

Is there evidence that the stream has been disturbed by some kind of human action, like grading, dumping, livestock, culvert, etc?	Can the stream restoration be reasonably done within the confines of the parcel or does it require connections beyond the parcel limits? Explain
Explain:	Explain:
Culvert. Need to clean culvert ASAP.	No - Downstream culvert goes to Sligo Creek and originates at perched culvert

Mitigation Site Rating

Criteria	Score	Criteria	Score
Estimated Bank erosion within reach	1	**Vegetation**	5
10 - Greater than 50% 5 - 10% to 50% 1 - Less than 10%		10 - Herbaceous cover (non-wetland) 5 - Scrub-shrub cover (non-wetland) 1 - Mostly forested and/or wetland	
Describe: Just at perched culvert outfall, maybe some previously at downstream end		Describe: Small buffer with trees but only ~10', then open grass/yard.	
Degree of Channel Incision	5	**Land Use**	10
10 - Bank Height greater than 10 feet 5 - Bank Height between 3 and 10 feet 1 - Bank Height less than 3 feet		10 - Agricultural or Open Space 5 - Marginal Pasture 1 - Old field/ Developed/Forested	
Describe: Limited access to downstream end		Describe: Marginal forest with cleared park area - potential to be restored.	
Existing Floodplain Access	5	**Opportunity for Ecological Lift**	5
10 - No evidence of out of bank flooding 5- Yes (Infrequent out of bank flow) 1 - Yes (evidence of frequent flooding)		10 - Conditions exist for several aspects of lift to be achieved and sustained 5 - Lift limited to one or few aspects 1 - Conditions are such that Lift is difficult to achieve and sustain	
Describe: 5' at upstream end, 2' at downstream end, ~3' or less on average		Describe: Buffer, vertical lateral at perched pipe	
Opportunity for Floodplain Development	10	**Ease of Access**	5
10 - Existing space for floodplain greater than 10 times stream width 5 - Existing space for floodplain 3 to 10 times stream width 1 - Little to no space for floodplain development		10 - Yes (with existing direct vehicular access to potential site) 5- yes (open but no existing vehicular access) 1 - No (no vehicular access, clearing needed)	
Describe: Open field along right bank		Describe: Adjacent to road and open field	
Drainage Area Evaluation	10	**Utilities Present**	5
10 -D.A. less than 1 sq. mi. 5- D. A. between 1 & 3 sq. mi. 1 - D. A. greater than 3 sq. mi.		10 - No utilities on site 5 - Utilities but not within restoration area 1 - Utilities within potential restoration area	
Describe: 0.0864 sq. mi		Describe: Sewer line parallel	
		Total Score out of 100	61

Map



Site No.	MPAO0017		Scale: 1 in. =	2,000

Site Photos









Stream Mitigation Field Site Assessment Form

Project Details

Project Name: I-495/I-270 Managed Lanes Study **Mitigation Site Number:** MPAO0018

Projects Estimated Stream Mitigation Needs (LF): TBD

Date of Field Assessment: 7/24/2019 **Consultant Firm/Investigator(s):** CRI/MD, SN

Site Location Details-taken from desktop review

County: Montgomery **Cross Roads:** 2000 Shorefield Rd Silver Spring MD

Basin (HUC 8): Middle Potomac-Anacostia-Occoquan **MDE Watershed (8 digit):** 2140205

Proximity to Impacted Stream (mi.): **Lat/Long:** 39.055863 -77.040362

Site Data

Parcel Size (ac): 2 parcels - 16.9, 18 **Potential Restoration Reach (LF):** 530

Site Opportunities: __X__Channel Restoration ___Livestock Exclusion _____Riparian Buffer Planting ___Habitat Enhancement ___Fish Passage

Stream Order: 1st **Stream Hydrology:** Perennial **Stream Use:** IV

Drainage Area to Reach (sq. mi.) 0.39

Land Use: Forest **Mapped Soils:** Glenelg silt loam, 8 to 15 percent slopes

Property Address: 2000 Shorefield Rd Silver Spring MD

Property Owner(s): MNCPPC

General Field Observations

Is there evidence that the stream has been disturbed by some kind of human action, like grading, dumping, livestock, culvert, etc?	Can the stream restoration be reasonably done within the confines of the parcel or does it require connections beyond the parcel limits? Explain
Explain:	Explain:
Yes; Stabilization used DS of culvert across trail	Yes; Ephemeral channel located entirely in MNCPPC Park, can't extend

Mitigation Site Rating

Criteria	Score	Criteria	Score
Estimated Bank erosion within reach	10	**Vegetation**	1
10 - Greater than 50% 5 - 10% to 50% 1 - Less than 10%		10 - Herbaceous cover (non-wetland) 5 - Scrub-shrub cover (non-wetland) 1 - Mostly forested and/or wetland	
Describe: Approximately 70% of banks are eroded, ranging from 4-7 ft. tall downstream, and 4' tall upstream.		Describe: Mature Forest	
Degree of Channel Incision	5	**Land Use**	1
10 - Bank Height greater than 10 feet 5 - Bank Height between 3 and 10 feet 1 - Bank Height less than 3 feet		10 - Agricultural or Open Space 5 - Marginal Pasture 1 - Old field/ Developed/Forested	
Describe: Upstream banks are 4 ft. tall, and downstream		Describe: Forested parkland	
Existing Floodplain Access	10	**Opportunity for Ecological Lift**	1
10 - No evidence of out of bank flooding 5- Yes (Infrequent out of bank flow) 1 - Yes (evidence of frequent flooding)		10 - Conditions exist for several aspects of lift to be achieved and sustained 5 - Lift limited to one or few aspects 1 - Conditions are such that Lift is difficult to achieve and sustain	
Describe: Very incised ephemeral channel. Lots of bedrock and sand deposition.		Describe: Ephemeral, vertical stability, stable headcut preventing sediment transport to pond downstream.	
Opportunity for Floodplain Development	5	**Ease of Access**	10
10 - Existing space for floodplain greater than 10 times stream width 5 - Existing space for floodplain 3 to 10 times stream width 1 - Little to no space for floodplain development		10 - Yes (with existing direct vehicular access to potential site) 5- yes (open but no existing vehicular access) 1 - No (no vehicular access, clearing needed)	
Describe: 3-10 but would require tree impacts.		Describe: Paved park trail parallel to channel, easy to cut across floodplain.	
Drainage Area Evaluation	10	**Utilities Present**	10
10 -D.A. less than 1 sq. mi. 5- D. A. between 1 & 3 sq. mi. 1 - D. A. greater than 3 sq. mi.		10 - No utilities on site 5 - Utilities but not within restoration area 1 - Utilities within potential restoration area	
Describe: Drainage area - 0.39 square miles.		Describe: None observed	
		Total Score out of 100	63

Map



Site No.	MPAO0018		Scale: 1 in. = 2,000

Site Photos









Stream Mitigation Field Site Assessment Form

Project Details

Project Name: I-495/I-270 Managed Lanes Study **Mitigation Site Number:** MPAO0019

Projects Estimated Stream Mitigation Needs (LF): TBD

Date of Field Assessment: 7/25/2019 **Consultant Firm/Investigator(s):** CRI/SJ, MD

Site Location Details-taken from desktop review

County: Montgomery **Cross Roads:** 10721 Columbia Pike Silver Spring MD

Basin (HUC 8): Middle Potomac-Anacostia-Occoquan **MDE Watershed (8 digit):** 2140205

Proximity to Impacted Stream (mi.): 0.88 **Lat/Long:** 39.034176 -77.010231

Site Data

Parcel Size (ac): 2 parcels - 2.7, 34 **Potential Restoration Reach (LF):** 3,616

Site Opportunities: __X__Channel Restoration ___Livestock Exclusion _____Riparian Buffer Planting _X_Habitat Enhancement _X__Fish Passage

Stream Order: 3rd **Stream Hydrology:** Perennial **Stream Use:** IV

Drainage Area to Reach (sq. mi.) 26.9

Land Use: Parkland **Mapped Soils:** Blocktown channery silt loam, 25-45% slopes, very rocky; Gaila silt loam

Property Address: 10721 Columbia Pike Silver Spring MD

Property Owner(s): MNCPPC

General Field Observations

Is there evidence that the stream has been disturbed by some kind of human action, like grading, dumping, livestock, culvert, etc?	Can the stream restoration be reasonably done within the confines of the parcel or does it require connections beyond the parcel limits? Explain
Explain:	Explain:
Yes, dam and riprap	Yes. All within 1 parcel

Mitigation Site Rating

Criteria	Score	Criteria	Score
Estimated Bank erosion within reach	5	**Vegetation**	1
10 - Greater than 50% 5 - 10% to 50% 1 - Less than 10%		10 - Herbaceous cover (non-wetland) 5 - Scrub-shrub cover (non-wetland) 1 - Mostly forested and/or wetland	
Describe: ~15% alternating meander		Describe: Mature forest	
Degree of Channel Incision	5	**Land Use**	1
10 - Bank Height greater than 10 feet 5 - Bank Height between 3 and 10 feet 1 - Bank Height less than 3 feet		10 - Agricultural or Open Space 5 - Marginal Pasture 1 - Old field/ Developed/Forested	
Describe: ~4' lower towards dam		Describe: Mature forest	
Existing Floodplain Access	1	**Opportunity for Ecological Lift**	10
10 - No evidence of out of bank flooding 5- Yes (Infrequent out of bank flow) 1 - Yes (evidence of frequent flooding)		10 - Conditions exist for several aspects of lift to be achieved and sustained 5 - Lift limited to one or few aspects 1 - Conditions are such that Lift is difficult to achieve and sustain	
Describe: Sand deposits		Describe: Provide access to aquatic species, change ecology, still-flow, release trapped sediment, bank stabilization	
Opportunity for Floodplain Development	5	**Ease of Access**	5
10 - Existing space for floodplain greater than 10 times stream width 5 - Existing space for floodplain 3 to 10 times stream width 1 - Little to no space for floodplain development		10 - Yes (with existing direct vehicular access to potential site) 5- yes (open but no existing vehicular access) 1 - No (no vehicular access, clearing needed)	
Describe: Tree impacts expected		Describe: Some clearing required	
Drainage Area Evaluation	1	**Utilities Present**	1
10 -D.A. less than 1 sq. mi. 5- D. A. between 1 & 3 sq. mi. 1 - D. A. greater than 3 sq. mi.		10 - No utilities on site 5 - Utilities but not within restoration area 1 - Utilities within potential restoration area	
Describe: 26.9 sq. mi		Describe: Sewer line	
		Total Score out of 100	35

Map



Site No.	MPAO0019		Scale: 1 in. =	2,000

Site Photos









Stream Mitigation Field Site Assessment Form

Project Details

Project Name: I-495/I-270 Managed Lanes Study **Mitigation Site Number:** MPAO0020

Projects Estimated Stream Mitigation Needs (LF): TBD

Date of Field Assessment: 7/24/2019 **Consultant Firm/Investigator(s):** CRI/SN, MD

Site Location Details-taken from desktop review

County: Montgomery **Cross Roads:** Randolph Rd and Kemp Mill Rd

Basin (HUC 8): Middle Potomac-Anacostia-Occoquan **MDE Watershed (8 digit):** 2140205

Proximity to Impacted Stream (mi.): 3.21 **Lat/Long:** 39.065186 -77.028844

Site Data

Parcel Size (ac): 2 parcels - 2.7, 34 **Potential Restoration Reach (LF):** 448

Site Opportunities: __X__Channel Restoration ___Livestock Exclusion _____Riparian Buffer Planting _X_Habitat Enhancement _X__Fish Passage

Stream Order: 3rd **Stream Hydrology:** Perennial **Stream Use:** IV

Drainage Area to Reach (sq. mi.) 21.2

Land Use: Forest **Mapped Soils:** Hatboro silt loam, 0-3% slopes, frequently flooded

Property Address: 932 Randolph RD Silver Spring MD

Property Owner(s): MNCPPC

General Field Observations

Is there evidence that the stream has been disturbed by some kind of human action, like grading, dumping, livestock, culvert, etc?	Can the stream restoration be reasonably done within the confines of the parcel or does it require connections beyond the parcel limits? Explain
Explain:	Explain:
Road crossing (Randolph Rd); USGS Gage - weir and house; Old mill race - Kemp Mill	Very limited length, can't extend downstream further - previous restoration

Mitigation Site Rating

Criteria	Score	Criteria	Score
Estimated Bank erosion within reach	5	**Vegetation**	1
10 - Greater than 50% 5 - 10% to 50% 1 - Less than 10%		10 - Herbaceous cover (non-wetland) 5 - Scrub-shrub cover (non-wetland) 1 - Mostly forested and/or wetland	
Describe: 40% slumped banks with deposition; 60% stabilization		Describe: Mature forest with some wetland	
Degree of Channel Incision	5	**Land Use**	1
10 - Bank Height greater than 10 feet 5 - Bank Height between 3 and 10 feet 1 - Bank Height less than 3 feet		10 - Agricultural or Open Space 5 - Marginal Pasture 1 - Old field/ Developed/Forested	
Describe: Averaging 8-10ft		Describe: Mature forest - utility easements and access road	
Existing Floodplain Access	5	**Opportunity for Ecological Lift**	5
10 - No evidence of out of bank flooding 5- Yes (Infrequent out of bank flow) 1 - Yes (evidence of frequent flooding)		10 - Conditions exist for several aspects of lift to be achieved and sustained 5 - Lift limited to one or few aspects 1 - Conditions are such that Lift is difficult to achieve and sustain	
Describe: Loose fine sediment evident on top terrace		Describe: Fish passage at USGS Gage - partial blockage; habitat; vertical incision; some riparian floodplain access; lateral migration with large drainage area	
Opportunity for Floodplain Development	5	**Ease of Access**	10
10 - Existing space for floodplain greater than 10 times stream width 5 - Existing space for floodplain 3 to 10 times stream width 1 - Little to no space for floodplain development		10 - Yes (with existing direct vehicular access to potential site) 5- yes (open but no existing vehicular access) 1 - No (no vehicular access, clearing needed)	
Describe: Not quite 10x width, confined by steep valley and roadway		Describe: Utility access road to a stream crossing	
Drainage Area Evaluation	1	**Utilities Present**	5
10 -D.A. less than 1 sq. mi. 5- D. A. between 1 & 3 sq. mi. 1 - D. A. greater than 3 sq. mi.		10 - No utilities on site 5 - Utilities but not within restoration area 1 - Utilities within potential restoration area	
Describe: 21.2 sq. mi		Describe: Overhead powerline at downstream road crossing	
		Total Score out of 100	43

Map



Site No.	MPAO0020		Scale: 1 in. = 2,000

Site Photos









Stream Mitigation Field Site Assessment Form

Project Details

Project Name: I-495/I-270 Managed Lanes Study **Mitigation Site Number:** MPAO0021

Projects Estimated Stream Mitigation Needs (LF): TBD

Date of Field Assessment: 7/24/2019 **Consultant Firm/Investigator(s):** CRI/SN, MD

Site Location Details-taken from desktop review

County: Montgomery **Cross Roads:** Randolph Rd and Kemp Mill Rd

Basin (HUC 8): Middle Potomac-Anacostia-Occoquan **MDE Watershed (8 digit):** 2140205

Proximity to Impacted Stream (mi.): 1.98 **Lat/Long:** 39.065186 -77.028844

Site Data

Parcel Size (ac): 3 parcels - 64.3, 10.1, 3.6 **Potential Restoration Reach (LF):** 4,832

Site Opportunities: __X__Channel Restoration ___Livestock Exclusion _____Riparian Buffer Planting _X_Habitat Enhancement ___Fish Passage

Stream Order: 1st **Stream Hydrology:** Perennial **Stream Use:** IV

Drainage Area to Reach (sq. mi.) 0.55

Land Use: Forest **Mapped Soils:** Blocktown channery silt loam, very rocky, Glenelg silt loam

Property Address: 200 Lamberton Drive Silver Spring MD

Property Owner(s): MNCPPC & Mo. County

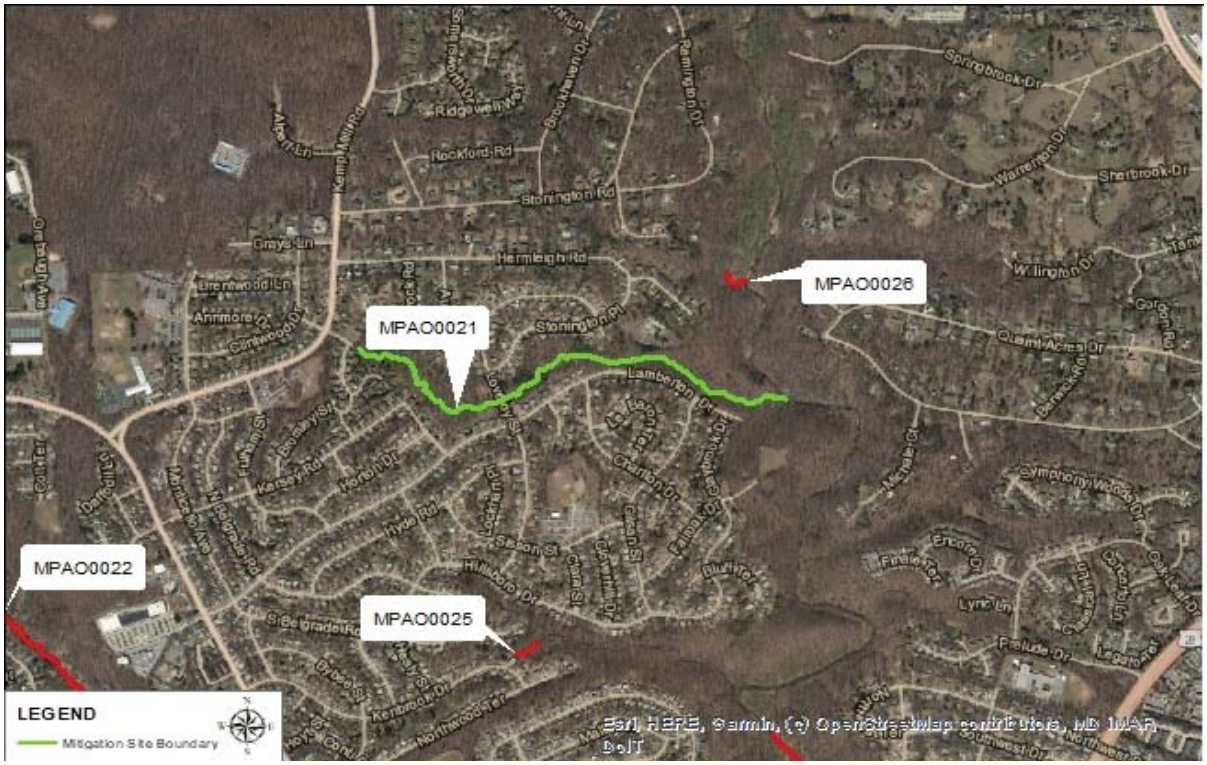
General Field Observations

Is there evidence that the stream has been disturbed by some kind of human action, like grading, dumping, livestock, culvert, etc?	Can the stream restoration be reasonably done within the confines of the parcel or does it require connections beyond the parcel limits? Explain
Explain:	Explain:
Utility crossings and riprap armor	Majority of site is located on M-NCPPC parkland, except for upstream segment within Mo. County ROW.

Mitigation Site Rating

Criteria	Score	Criteria	Score
Estimated Bank erosion within reach	10	**Vegetation**	1
10 - Greater than 50% 5 - 10% to 50% 1 - Less than 10%		10 - Herbaceous cover (non-wetland) 5 - Scrub-shrub cover (non-wetland) 1 - Mostly forested and/or wetland	
Describe: Greater than 50%		Describe: Mature forest	
Degree of Channel Incision	10	**Land Use**	1
10 - Bank Height greater than 10 feet 5 - Bank Height between 3 and 10 feet 1 - Bank Height less than 3 feet		10 - Agricultural or Open Space 5 - Marginal Pasture 1 - Old field/ Developed/Forested	
Describe: Some areas slightly lower than 10		Describe: Mature forest	
Existing Floodplain Access	10	**Opportunity for Ecological Lift**	5
10 - No evidence of out of bank flooding 5- Yes (Infrequent out of bank flow) 1 - Yes (evidence of frequent flooding)		10 - Conditions exist for several aspects of lift to be achieved and sustained 5 - Lift limited to one or few aspects 1 - Conditions are such that Lift is difficult to achieve and sustain	
Describe: No evidence of out of bank flow		Describe: Lateral migration, geomorphic stability, habitat enhancement, bedform diversity	
Opportunity for Floodplain Development	1	**Ease of Access**	5
10 - Existing space for floodplain greater than 10 times stream width 5 - Existing space for floodplain 3 to 10 times stream width 1 - Little to no space for floodplain development		10 - Yes (with existing direct vehicular access to potential site) 5- yes (open but no existing vehicular access) 1 - No (no vehicular access, clearing needed)	
Describe: Steep valley, confined by utility and mature forest buffer		Describe: Several access points off trails, some tree clearing required at roadways (Bromley St, Lovejoy St, Lamberton Dr)	
Drainage Area Evaluation	10	**Utilities Present**	1
10 -D.A. less than 1 sq. mi. 5- D. A. between 1 & 3 sq. mi. 1 - D. A. greater than 3 sq. mi.		10 - No utilities on site 5 - Utilities but not within restoration area 1 - Utilities within potential restoration area	
Describe: 0.55 sq. mi		Describe: Utilities throughout reach	
		Total Score out of 100	54

Map



Site No.	MPAO0021		Scale: 1 in. =	2,000

Site Photos









Stream Mitigation Field Site Assessment Form

Project Details

Project Name: I-495/I-270 Managed Lanes Study **Mitigation Site Number:** MPAO0022

Projects Estimated Stream Mitigation Needs (LF): TBD

Date of Field Assessment: 7/24/2019 **Consultant Firm/Investigator(s):** CRI/SN, MD

Site Location Details-taken from desktop review

County: Montgomery **Cross Roads:** 1399 Lamberton Drive Silver Spring MD

Basin (HUC 8): Middle Potomac-Anacostia-Occoquan **MDE Watershed (8 digit):** 2140205

Proximity to Impacted Stream (mi.): 1.47 **Lat/Long:** 39.041527 -77.036395

Site Data

Parcel Size (ac): 7 parcels (totaling 63.7ac) and ROW **Potential Restoration Reach (LF):** 3,218

Site Opportunities: __X__Channel Restoration ___Livestock Exclusion _____Riparian Buffer Planting __Habitat Enhancement ___Fish Passage

Stream Order: 1st **Stream Hydrology:** Perennial **Stream Use:** I

Drainage Area to Reach (sq. mi.) 0.69

Land Use: Forest **Mapped Soils:** Hatboro silt loam, 0 to 3 percent slopes, frequently flooded

Property Address: 1399 Lamberton Drive Silver Spring MD

Property Owner(s): MNCPPC

General Field Observations

Is there evidence that the stream has been disturbed by some kind of human action, like grading, dumping, livestock, culvert, etc?	Can the stream restoration be reasonably done within the confines of the parcel or does it require connections beyond the parcel limits? Explain
Explain:	Explain:
Yes, dam at downstream extent, culvert outfall at top, multiple utility crossing work sections	No, all can be done on MNCPPC between culvert and dam

Mitigation Site Rating

Criteria	Score	Criteria	Score
Estimated Bank erosion within reach	10	**Vegetation**	1
10 - Greater than 50% 5 - 10% to 50% 1 - Less than 10%		10 - Herbaceous cover (non-wetland) 5 - Scrub-shrub cover (non-wetland) 1 - Mostly forested and/or wetland	
Describe: Consistent vertical banks and active erosion at every outside meander		Describe: Mature forest with some wetlands, especially on the right bank	
Degree of Channel Incision	5	**Land Use**	1
10 - Bank Height greater than 10 feet 5 - Bank Height between 3 and 10 feet 1 - Bank Height less than 3 feet		10 - Agricultural or Open Space 5 - Marginal Pasture 1 - Old field/ Developed/Forested	
Describe: Average 5'		Describe: Forest with wetlands on terrace	
Existing Floodplain Access	1	**Opportunity for Ecological Lift**	5
10 - No evidence of out of bank flooding 5- Yes (Infrequent out of bank flow) 1 - Yes (evidence of frequent flooding)		10 - Conditions exist for several aspects of lift to be achieved and sustained 5 - Lift limited to one or few aspects 1 - Conditions are such that Lift is difficult to achieve and sustain	
Describe: Many wrack lines and sediment deposition on floodplain		Describe: Lateral and vertical instability, floodplain reconnection on upstream end	
Opportunity for Floodplain Development	10	**Ease of Access**	5
10 - Existing space for floodplain greater than 10 times stream width 5 - Existing space for floodplain 3 to 10 times stream width 1 - Little to no space for floodplain development		10 - Yes (with existing direct vehicular access to potential site) 5- yes (open but no existing vehicular access) 1 - No (no vehicular access, clearing needed)	
Describe: Greater than 10, potential to raise bed to access existing floodplain more often		Describe: Some wide trails will get close to stream with utility access and open mature forest for remaining area	
Drainage Area Evaluation	10	**Utilities Present**	1
10 -D.A. less than 1 sq. mi. 5- D. A. between 1 & 3 sq. mi. 1 - D. A. greater than 3 sq. mi.		10 - No utilities on site 5 - Utilities but not within restoration area 1 - Utilities within potential restoration area	
Describe: 0.69 sq. mi		Describe: Water and sewer crossing	
		Total Score out of 100	49

Map



Site No.	MPAO0022		Scale: 1 in. =	2,000

Site Photos









Stream Mitigation Field Site Assessment Form

Project Details

Project Name: I-495/I-270 Managed Lanes Study **Mitigation Site Number:** MPAO0023

Projects Estimated Stream Mitigation Needs (LF):

Date of Field Assessment: 7/17/2019 **Consultant Firm/Investigator(s):** RK&K; KJH, AJN

Site Location Details-taken from desktop review

County: Montgomery **Cross Roads:** Denfeld Ave and Halsey St.

Basin (HUC 8): Middle Potomac-Anacostia-Occoquan **MDE Watershed (8 digit):** 02140206

Proximity to Impacted Stream (mi.): 1.63 **Lat/Long:** 39.037829 -77.080548

Site Data

Parcel Size (ac): 1.45 **Potential Restoration Reach (LF):** 1,078

Site Opportunities: ___Channel Restoration ___Livestock Exclusion __X___Riparian Buffer Planting __Habitat Enhancement _X_Fish Passage

Stream Order: 1st **Stream Hydrology:** Ephemeral **Stream Use:**

Drainage Area to Reach (sq. mi.) 0.05

Land Use: Maintained lawn **Mapped Soils:** Glenelg-Urban land complex

Property Address: County ROW within Denfeld Ave.

Property Owner(s): Montgomery County

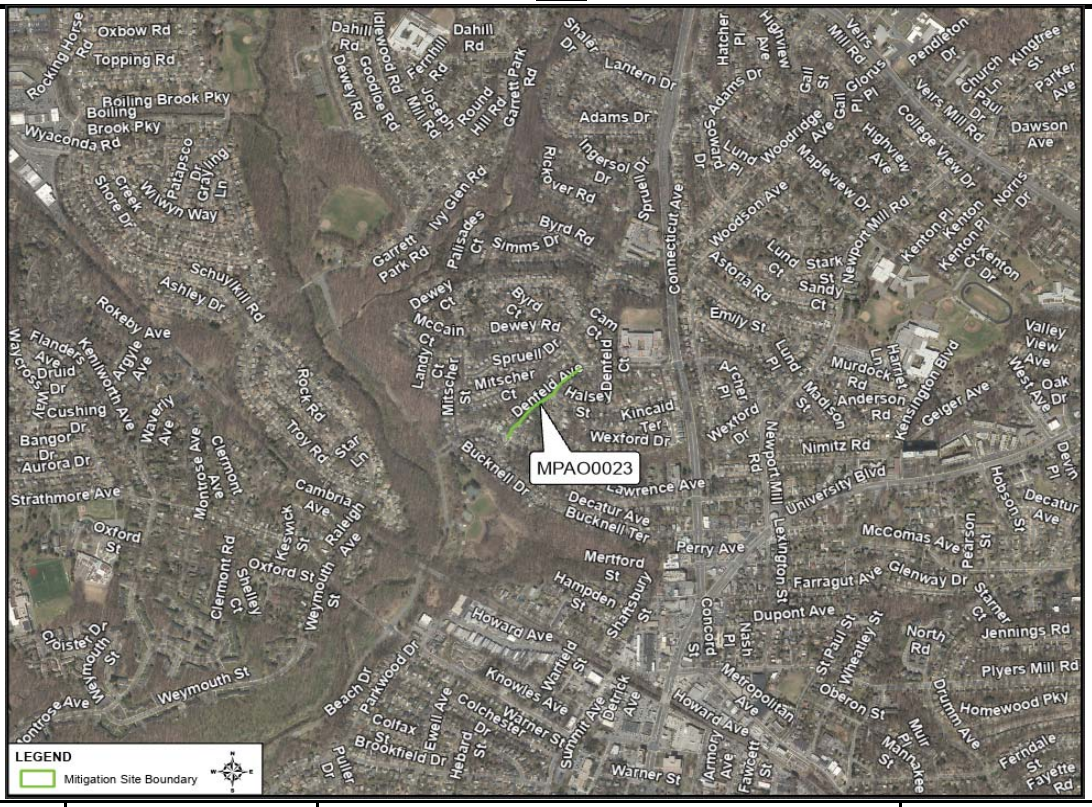
General Field Observations

Is there evidence that the stream has been disturbed by some kind of human action, like grading, dumping, livestock, culvert, etc?	Can the stream restoration be reasonably done within the confines of the parcel or does it require connections beyond the parcel limits? Explain
Explain: Imbricated walls and rip-rap throughout site.	Explain: County ROW. MNCPPC recommendation. Ephemeral channel.

Mitigation Site Rating

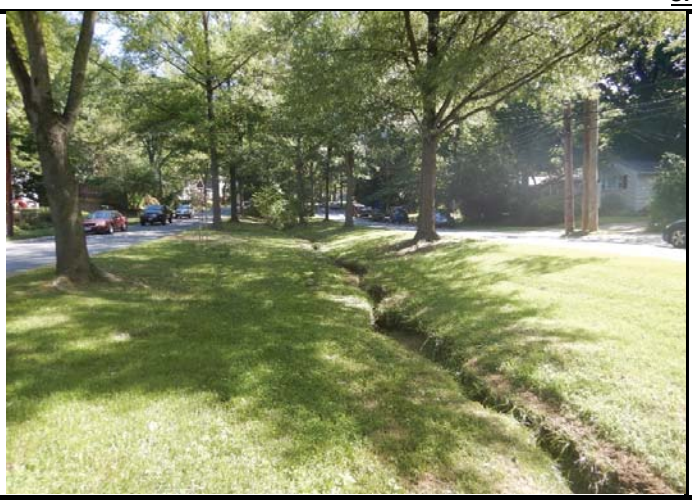
Criteria	Score	Criteria	Score
Estimated Bank erosion within reach	1	**Vegetation**	10
10 - Greater than 50% 5 - 10% to 50% 1 - Less than 10%		10 - Herbaceous cover (non-wetland) 5 - Scrub-shrub cover (non-wetland) 1 - Mostly forested and/or wetland	
Describe: Minor erosion within site		Describe: Mostly maintained lawn with scattered large trees	
Degree of Channel Incision	1	**Land Use**	10
10 - Bank Height greater than 10 feet 5 - Bank Height between 3 and 10 feet 1 - Bank Height less than 3 feet		10 - Agricultural or Open Space 5 - Marginal Pasture 1 - Old field/ Developed/Forested	
Describe: 1-3' tall banks		Describe: Maintained ROW	
Existing Floodplain Access	10	**Opportunity for Ecological Lift**	1
10 - No evidence of out of bank flooding 5- Yes (Infrequent out of bank flow) 1 - Yes (evidence of frequent flooding)		10 - Conditions exist for several aspects of lift to be achieved and sustained 5 - Lift limited to one or few aspects 1 - Conditions are such that Lift is difficult to achieve and sustain	
Describe: No floodplain exists - ephmeral channel		Describe: No opportunities - ephemeral channel	
Opportunity for Floodplain Development	1	**Ease of Access**	10
10 - Existing space for floodplain greater than 10 times stream width 5 - Existing space for floodplain 3 to 10 times stream width 1 - Little to no space for floodplain development		10 - Yes (with existing direct vehicular access to potential site) 5- yes (open but no existing vehicular access) 1 - No (no vehicular access, clearing needed)	
Describe: County Row between roads and houses		Describe: Open lawn with scattered large trees	
Drainage Area Evaluation	10	**Utilities Present**	1
10 -D.A. less than 1 sq. mi. 5- D. A. between 1 & 3 sq. mi. 1 - D. A. greater than 3 sq. mi.		10 - No utilities on site 5 - Utilities but not within restoration area 1 - Utilities within potential restoration area	
Describe: 0.05 square miles		Describe: Sewerlines in floodplain	
		Total Score out of 100	55

Map



Site No.	MPAO0023		Scale: 1 in. =	2,000

Site Photos









Stream Mitigation Field Site Assessment Form

Project Details

Project Name: I-495/I-270 Managed Lanes Study **Mitigation Site Number:** MPAO0024

Projects Estimated Stream Mitigation Needs (LF): TBD

Date of Field Assessment: 7/24/2019 **Consultant Firm/Investigator(s):** CRI/SN, MD

Site Location Details-taken from desktop review

County: Montgomery **Cross Roads:** 1399 Lamberton Drive Silver Spring MD

Basin (HUC 8): Middle Potomac-Anacostia-Occoquan **MDE Watershed (8 digit):** 2140205

Proximity to Impacted Stream (mi.): 3.37 **Lat/Long:** 39.066586 -76.991351

Site Data

Parcel Size (ac): 3 parcels - 18.2, 1.2. 0.6 **Potential Restoration Reach (LF):** 462

Site Opportunities: ___Channel Restoration ___Livestock Exclusion _____Riparian Buffer Planting __Habitat Enhancement _X__Fish Passage

Stream Order: 1st **Stream Hydrology:** Perennial **Stream Use:** I

Drainage Area to Reach (sq. mi.)

Land Use: Forest **Mapped Soils:** Baile silt loam, 0 to 3 percent slopes; Brinklow-Blocktown channery silt loam

Property Address: 12820 Maple Street Silver Spring MD

Property Owner(s): MNCPPC

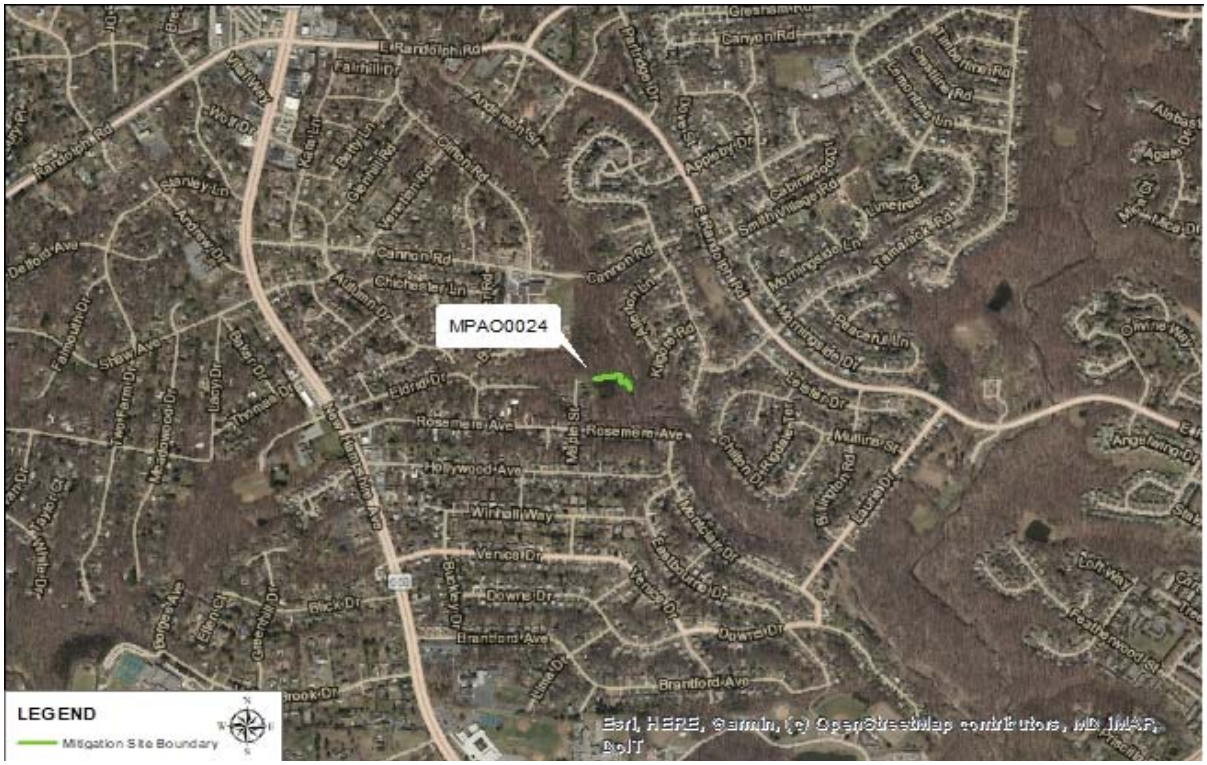
General Field Observations

Is there evidence that the stream has been disturbed by some kind of human action, like grading, dumping, livestock, culvert, etc?	Can the stream restoration be reasonably done within the confines of the parcel or does it require connections beyond the parcel limits? Explain
Explain: Culvert at upstream end, concrete downstream of culvert	Explain: Yes. All within M-NCPPC property

Mitigation Site Rating

Criteria	Score	Criteria	Score
Estimated Bank erosion within reach	10	**Vegetation**	1
10 - Greater than 50% 5 - 10% to 50% 1 - Less than 10%		10 - Herbaceous cover (non-wetland) 5 - Scrub-shrub cover (non-wetland) 1 - Mostly forested and/or wetland	
Describe: 75%-100% eroded banks		Describe: Forested buffer, bamboo stands on right bank	
Degree of Channel Incision	5	**Land Use**	1
10 - Bank Height greater than 10 feet 5 - Bank Height between 3 and 10 feet 1 - Bank Height less than 3 feet		10 - Agricultural or Open Space 5 - Marginal Pasture 1 - Old field/ Developed/Forested	
Describe: 8-9' incised channel		Describe: Forested land use immediately adjacent to stream, residential outside buffer area	
Existing Floodplain Access	10	**Opportunity for Ecological Lift**	5
10 - No evidence of out of bank flooding 5- Yes (Infrequent out of bank flow) 1 - Yes (evidence of frequent flooding)		10 - Conditions exist for several aspects of lift to be achieved and sustained 5 - Lift limited to one or few aspects 1 - Conditions are such that Lift is difficult to achieve and sustain	
Describe: Flows completely confined in channel		Describe: Vertical/lateral	
Opportunity for Floodplain Development	5	**Ease of Access**	5
10 - Existing space for floodplain greater than 10 times stream width 5 - Existing space for floodplain 3 to 10 times stream width 1 - Little to no space for floodplain development		10 - Yes (with existing direct vehicular access to potential site) 5- yes (open but no existing vehicular access) 1 - No (no vehicular access, clearing needed)	
Describe: Mature forest buffer will limit floodplain		Describe: Access from Maple Street, some tree impacts to access entire length off of Maple Street	
Drainage Area Evaluation	10	**Utilities Present**	1
10 -D.A. less than 1 sq. mi. 5- D. A. between 1 & 3 sq. mi. 1 - D. A. greater than 3 sq. mi.		10 - No utilities on site 5 - Utilities but not within restoration area 1 - Utilities within potential restoration area	
Describe: 0.35 sq mi		Describe: Manhole exposed on left bank	
		Total Score out of 100	53

Map



Site No.	MPAO0024		Scale: 1 in. =	2,000

Site Photos









Stream Mitigation Field Site Assessment Form

Project Details

Project Name: I-495/I-270 Managed Lane Study **Mitigation Site Number:** MPAO0025

Projects Estimated Stream Mitigation Needs (LF): TBD

Date of Field Assessment: 8/26/2019 **Consultant Firm/Investigator(s):** CRI/ SJ, MD

Site Location Details-taken from desktop review

County: Montgomery **Cross Roads:** Kenbrook Dr and Northwood Dr

Basin (HUC 8): Middle Potomac-Anacostia-Occoquan **MDE Watershed (8 digit):** 2140205

Proximity to Impacted Stream (mi.): 1.5 **Lat/Long:** 39.04022 -77.01838

Site Data

Parcel Size (ac): 9.5 **Potential Restoration Reach (LF):** 266

Site Opportunities: ___Channel Restoration ___Livestock Exclusion _____Riparian Buffer Planting ___Habitat Enhancement ___Fish Passage

Stream Order: 2nd **Stream Hydrology:** Perennial **Stream Use:** IV

Drainage Area to Reach (sq. mi.) 0.15

Land Use: Forest **Mapped Soils:** Brinlow-Blocktown channery silt loams

Property Address: 606 Kenbrook Drive Silver Spring MD

Property Owner(s): M-NCPPC

General Field Observations

Is there evidence that the stream has been disturbed by some kind of human action, like grading, dumping, livestock, culvert, etc? Explain	Can the stream restoration be reasonably done within the confines of the parcel or does it require connections beyond the parcel limits? Explain
Explain: Yes, Utilities and constructed plunge pool in the channel.	Explain: Yes access through near by trail.

Mitigation Site Rating

Criteria	Score	Criteria	Score
Estimated Bank erosion within reach	10	**Vegetation**	1
10 - Greater than 50% 5 - 10% to 50% 1 - Less than 10%		10 - Herbaceous cover (non-wetland) 5 - Scrub-shrub cover (non-wetland) 1 - Mostly forested and/or wetland	
Describe: Approximately 60% eroded, mostly on the left bank. Eroded banks average 5' tall.		Describe: Mature Forest	
Degree of Channel Incision	5	**Land Use**	1
10 - Bank Height greater than 10 feet 5 - Bank Height between 3 and 10 feet 1 - Bank Height less than 3 feet		10 - Agricultural or Open Space 5 - Marginal Pasture 1 - Old field/ Developed/Forested	
Describe: Left bank approximately 5'. Right bank approximately 4'.		Describe: Mostly forested some developed.	
Existing Floodplain Access	10	**Opportunity for Ecological Lift**	5
10 - No evidence of out of bank flooding 5- Yes (Infrequent out of bank flow) 1 - Yes (evidence of frequent flooding)		10 - Conditions exist for several aspects of lift to be achieved and sustained 5 - Lift limited to one or few aspects 1 - Conditions are such that Lift is difficult to achieve and sustain	
Describe: No evidence.		Describe: Lateral Migration and Vertical Stability	
Opportunity for Floodplain Development	5	**Ease of Access**	1
10 - Existing space for floodplain greater than 10 times stream width 5 - Existing space for floodplain 3 to 10 times stream width 1 - Little to no space for floodplain development		10 - Yes (with existing direct vehicular access to potential site) 5- yes (open but no existing vehicular access) 1 - No (no vehicular access, clearing needed)	
Describe: Tree impacts expected.		Describe: Able to use the trail off of Hillsboro Dr.	
Drainage Area Evaluation	10	**Utilities Present**	1
10 -D.A. less than 1 sq. mi. 5- D. A. between 1 & 3 sq. mi. 1 - D. A. greater than 3 sq. mi.		10 - No utilities on site 5 - Utilities but not within restoration area 1 - Utilities within potential restoration area	
Describe: 0.15 sq.mi		Describe: Sewer utilities within the potential restoration area.	
		Total Score out of 100	49

Map



Site No.	MPAO0025		Scale: 1 in. =	2,000

Site Photos









Stream Mitigation Field Site Assessment Form

Project Details

Project Name: I-495/I-270 Managed Lanes Study **Mitigation Site Number:** MPAOO0026

Projects Estimated Stream Mitigation Needs (LF): TBD

Date of Field Assessment: 7/26/2019 **Consultant Firm/Investigator(s):** CRI - SJ/MD

Site Location Details-taken from desktop review

County: Montgomery **Cross Roads:** 200 Lamberton Dr, Silver Spring

Basin (HUC 8): Middle Potomac-Anacostia-Occoquan **MDE Watershed (8 digit):** 2140205

Proximity to Impacted Stream (mi.): 2.27 **Lat/Long:** 39.050182 -77.011505

Site Data

Parcel Size (ac): 15.8 **Potential Restoration Reach (LF):** 238

Site Opportunities: __X__Channel Restoration ____Livestock Exclusion _____Riparian Buffer Planting _X__Habitat Enhancement ___Fish Passage

Stream Order: 2nd **Stream Hydrology:** Ephemeral **Stream Use:** I

Drainage Area to Reach (sq. mi.) 0.00305

Land Use: Forest **Mapped Soils:** Blacktown channery silt loam

Property Address: 200 Lamberton Dr, Silver Spring, MD

Property Owner(s): MNCPPC

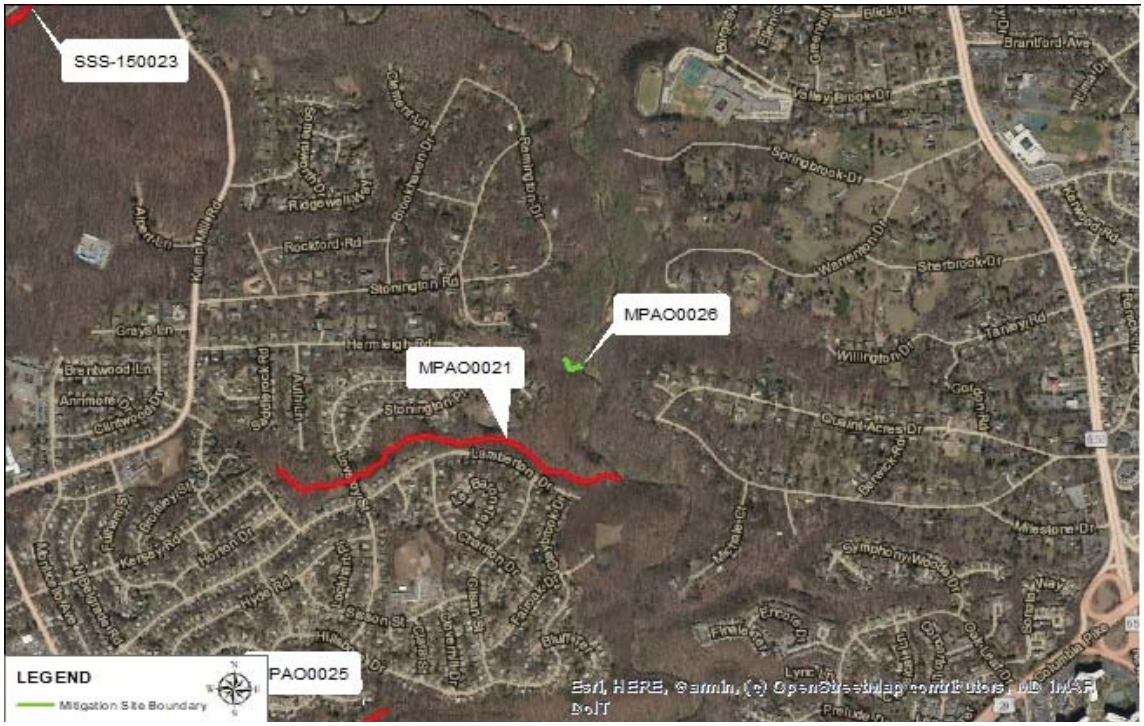
General Field Observations

Is there evidence that the stream has been disturbed by some kind of human action, like grading, dumping, livestock, culvert, etc? Explain	Can the stream restoration be reasonably done within the confines of the parcel or does it require connections beyond the parcel limits? Explain
Explain: Yes; Utility ROWs	Explain: Yes. M-NCPPC Recommendation

Mitigation Site Rating

Criteria	Score	Criteria	Score
Estimated Bank erosion within reach	1	**Vegetation**	1
10 - Greater than 50% 5 - 10% to 50% 1 - Less than 10%		10 - Herbaceous cover (non-wetland) 5 - Scrub-shrub cover (non-wetland) 1 - Mostly forested and/or wetland	
Describe: Bank erosion of approximately 0%; No channel observed; flow dispersed into wetland		Describe: Wetland and forest	
Degree of Channel Incision	1	**Land Use**	1
10 - Bank Height greater than 10 feet 5 - Bank Height between 3 and 10 feet 1 - Bank Height less than 3 feet		10 - Agricultural or Open Space 5 - Marginal Pasture 1 - Old field/ Developed/Forested	
Describe: No channel incision		Describe: Forest	
Existing Floodplain Access	1	**Opportunity for Ecological Lift**	1
10 - No evidence of out of bank flooding 5- Yes (Infrequent out of bank flow) 1 - Yes (evidence of frequent flooding)		10 - Conditions exist for several aspects of lift to be achieved and sustained 5 - Lift limited to one or few aspects 1 - Conditions are such that Lift is difficult to achieve and sustain	
Describe: Flow dispersed into wetland		Describe: Restoration would cause more disturbance than the site requires	
Opportunity for Floodplain Development	10	**Ease of Access**	1
10 - Existing space for floodplain greater than 10 times stream width 5 - Existing space for floodplain 3 to 10 times stream width 1 - Little to no space for floodplain development		10 - Yes (with existing direct vehicular access to potential site) 5- yes (open but no existing vehicular access) 1 - No (no vehicular access, clearing needed)	
Describe: Already very wide flood plain		Describe: Clearing of mature forest for access	
Drainage Area Evaluation	10	**Utilities Present**	1
10 -D.A. less than 1 sq. mi. 5- D. A. between 1 & 3 sq. mi. 1 - D. A. greater than 3 sq. mi.		10 - No utilities on site 5 - Utilities but not within restoration area 1 - Utilities within potential restoration area	
Describe: Drainage Area - .00305		Describe: Outfall present; photo 6	
		Total Score out of 100	28

Map



Site No.	MPAOO0026		Scale: 1 in. =	2,000

Site Photos









Stream Mitigation Field Site Assessment Form

Project Details

Project Name: I-495/270 Managed Lane Study **Mitigation Site Number:** MPAO0027

Projects Estimated Stream Mitigation Needs (LF): TBD

Date of Field Assessment: 7/30/2019 **Consultant Firm/Investigator(s):** CRI - DS/SN

Site Location Details-taken from desktop review

County: Montgomery **Cross Roads:** Flora Terrace and Flora Ln

Basin (HUC 8): Middle Potomac-Anacostia-Occoquan **MDE Watershed (8 digit):** 2140205

Proximity to Impacted Stream (mi.): 0.04 **Lat/Long:** 39.01234 -77.034252

Site Data

Parcel Size (ac): 2 parcels (8.4, 1.4) **Potential Restoration Reach (LF):** 1,369

Site Opportunities: __X__Channel Restoration ___Livestock Exclusion _____Riparian Buffer Planting _X_Habitat Enhancement _X_Fish Passage

Stream Order: 1st **Stream Hydrology:** Perennial **Stream Use:** I

Drainage Area to Reach (sq. mi.) 0.37

Land Use: Parkland/Forest **Mapped Soils:** Baile, hatboro and channery silt loams

Property Address: 1400 Flora Terrace, Silver Spring, MD

Property Owner(s): MNCPPC

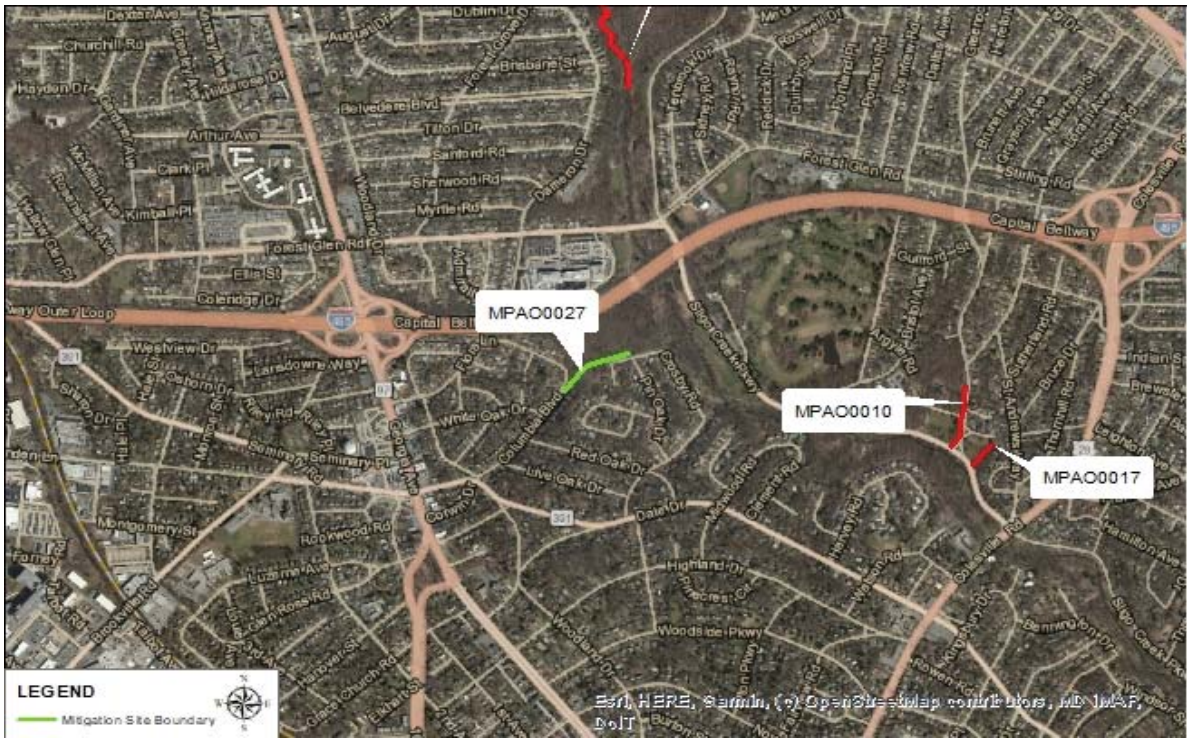
General Field Observations

Is there evidence that the stream has been disturbed by some kind of human action, like grading, dumping, livestock, culvert, etc?	Can the stream restoration be reasonably done within the confines of the parcel or does it require connections beyond the parcel limits? Explain
Explain:	Explain:
Yes; Culverts, concrete weirs and rip-rap bank protection is present	Removing the concrete weirs, confirming more weirs are not further downstream; There is potential to extend downstream with the proper owner coordination.

Mitigation Site Rating

Criteria	Score	Criteria	Score
Estimated Bank erosion within reach	5	**Vegetation**	1
10 - Greater than 50% 5 - 10% to 50% 1 - Less than 10%		10 - Herbaceous cover (non-wetland) 5 - Scrub-shrub cover (non-wetland) 1 - Mostly forested and/or wetland	
Describe: Approximately 40% of the banks are eroded.		Describe: There is a park and shrubs with invasive species on the edge of the forest in a residential area.	
Degree of Channel Incision	5	**Land Use**	1
10 - Bank Height greater than 10 feet 5 - Bank Height between 3 and 10 feet 1 - Bank Height less than 3 feet		10 - Agricultural or Open Space 5 - Marginal Pasture 1 - Old field/ Developed/Forested	
Describe: Banks range from approximately 4-8 feet tall.		Describe: Site consists of developed forest.	
Existing Floodplain Access	5	**Opportunity for Ecological Lift**	5
10 - No evidence of out of bank flooding 5- Yes (Infrequent out of bank flow) 1 - Yes (evidence of frequent flooding)		10 - Conditions exist for several aspects of lift to be achieved and sustained 5 - Lift limited to one or few aspects 1 - Conditions are such that Lift is difficult to achieve and sustain	
Describe: There is no significant evidence of flooding.		Describe: Fish blockage; Lateral and vertical stability is present; Habitat; Bed form diversity with floodplain reconnection.	
Opportunity for Floodplain Development	5	**Ease of Access**	5
10 - Existing space for floodplain greater than 10 times stream width 5 - Existing space for floodplain 3 to 10 times stream width 1 - Little to no space for floodplain development		10 - Yes (with existing direct vehicular access to potential site) 5- yes (open but no existing vehicular access) 1 - No (no vehicular access, clearing needed)	
Describe: Trails located on either side and road located at downstream end.		Describe: Access is adjacent to road and trail with minimal clearing necessary.	
Drainage Area Evaluation	10	**Utilities Present**	1
10 -D.A. less than 1 sq. mi. 5- D. A. between 1 & 3 sq. mi. 1 - D. A. greater than 3 sq. mi.		10 - No utilities on site 5 - Utilities but not within restoration area 1 - Utilities within potential restoration area	
Describe: Drainage Area - 0.37		Describe: There are multiple utility crossings along with low overheard powerlines. Gas and sewer lines are also present.	
		Total Score out of 100	43

Map



Site No.	MPAO0027		Scale: 1 in. =	2,000

Site Photos









Stream Mitigation Field Site Assessment Form

Project Details

Project Name:	I-495/270 Managed lane study	**Mitigation Site Number:**	MPAO0028
Projects Estimated Stream Mitigation Needs (L	TBD		
Date of Field Assessmer	7/30/2019	**Consultant Firm/Investigator(s):**	CRI - DS/SN

Site Location Details-taken from desktop review

County:	Montgomery	**Cross Roads:**	Sligo Creek Pkwy & Doomer Ave		
Basin (HUC 8):	Middle Potomac-Anacostia-Occoquan	**MDE Watershed (8 digit):**	2140205		
Proximity to Impacted Stream (mi.):	1.28	**Lat/Long:**	38.993594	-77.005321	

Site Data

Parcel Size (ac):	21.6	**Potential Restoration Reach (LF):**	766		
Site Opportunities:	__X__Channel Restoration	____Livestock Exclusion	___X___Riparian Buffer Planting	___Habitat Enhancement	_X_Fish Passage
Stream Order:	2nd	**Stream Hydrology:**	Perennial	**Stream Use:**	I
Drainage Area to Reach (sq. mi.)			6.23 sq mi		
Land Use:	Parkland	**Mapped Soils:**	Hatboro Silt Loam, 0 to 3 % slopes		
Property Address:	Sligo Creek Parkway and Doomerville Avenue, Tacoma Park, MD				
Property Owner(s):	MNCPPC				

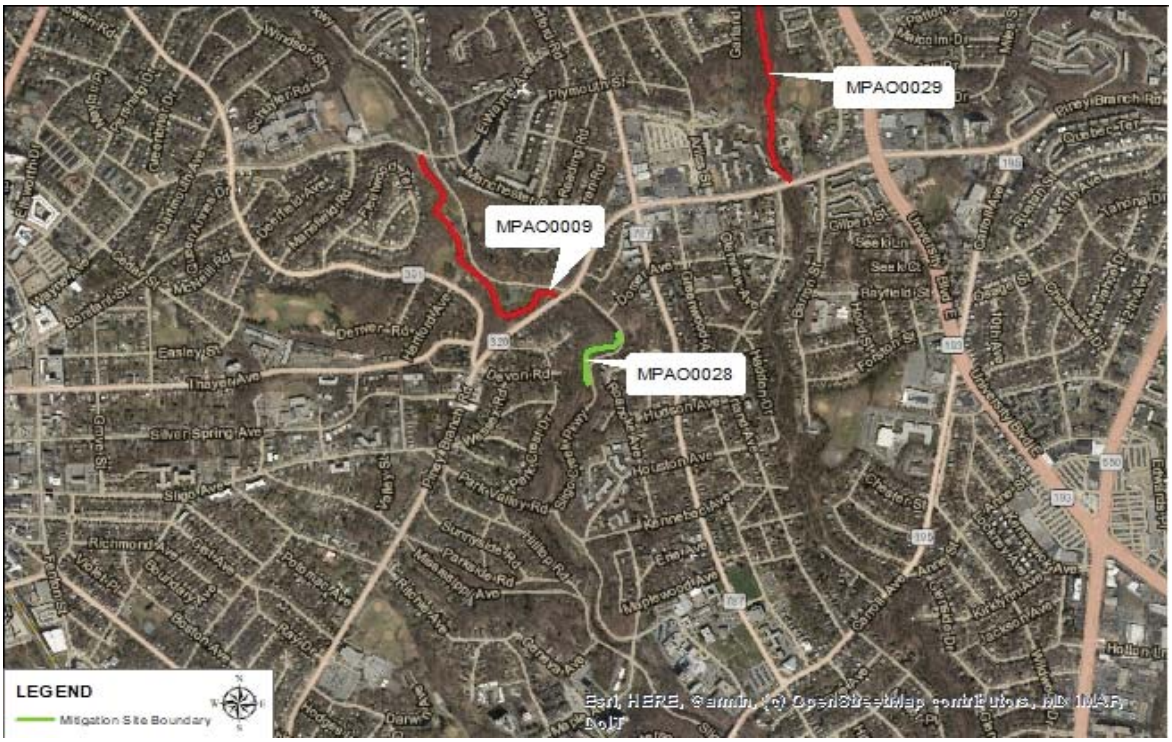
General Field Observations

Is there evidence that the stream has been disturbed by some kind of human action, like grading, dumping, livestock, culvert,	**Can the stream restoration be reasonably done within the confines of the parcel or does it require connections beyond the parcel limits? Explain**
Explain:	Explain:
Yes; asset stabilization and a lot of placed rip-rap boulders	Yes; it could extend if needed stability all the way to next WSSC exposed asset

Mitigation Site Rating

Criteria	Score	Criteria	Score
Estimated Bank erosion within reach	1	**Vegetation**	1
10 - Greater than 50% 5 - 10% to 50% 1 - Less than 10%		10 - Herbaceous cover (non-wetland) 5 - Scrub-shrub cover (non-wetland) 1 - Mostly forested and/or wetland	
Describe: Mostly rip-rap/boulder protection		Describe: Forest	
Degree of Channel Incision	5	**Land Use**	1
10 - Bank Height greater than 10 feet 5 - Bank Height between 3 and 10 feet 1 - Bank Height less than 3 feet		10 - Agricultural or Open Space 5 - Marginal Pasture 1 - Old field/ Developed/Forested	
Describe: Approximately 5 feet		Describe: Forested	
Existing Floodplain Access	5	**Opportunity for Ecological Lift**	5
10 - No evidence of out of bank flooding 5- Yes (Infrequent out of bank flow) 1 - Yes (evidence of frequent flooding)		10 - Conditions exist for several aspects of lift to be achieved and sustained 5 - Lift limited to one or few aspects 1 - Conditions are such that Lift is difficult to achieve and sustain	
Describe: Some evidenece of flooding on trail		Describe: Fish passage; vertical stability	
Opportunity for Floodplain Development	1	**Ease of Access**	5
10 - Existing space for floodplain greater than 10 times stream width 5 - Existing space for floodplain 3 to 10 times stream width 1 - Little to no space for floodplain development		10 - Yes (with existing direct vehicular access to potential site) 5- yes (open but no existing vehicular access) 1 - No (no vehicular access, clearing needed)	
Describe: Steep valley; trail; road		Describe: Adjacent to road and paved trail	
Drainage Area Evaluation	1	**Utilities Present**	1
10 -D.A. less than 1 sq. mi. 5- D. A. between 1 & 3 sq. mi. 1 - D. A. greater than 3 sq. mi.		10 - No utilities on site 5 - Utilities but not within restoration area 1 - Utilities within potential restoration area	
Describe: Drainage area - 6.23 square miles		Describe: Sewer crossing fish blockage	
		Total Score out of 100	26

Map



Site No.	MPAO0028		Scale: 1 in. = 20,000 ft

Site Photos









Stream Mitigation Field Site Assessment Form

Project Details

Project Name: I-495/270 **Mitigation Site Number:** MPAO0029

Projects Estimated Stream Mitigation Needs (LF): TBD

Date of Field Assessment: 7/30/2019 **Consultant Firm/Investigator(s):** CRI - DS/SN

Site Location Details-taken from desktop review

County: Montgomery **Cross Roads:** Piney Branch Parkway and Barron Street

Basin (HUC 8): Middle Potomac-Anacostia-Occoquan **MDE Watershed (8 digit):** 2140205

Proximity to Impacted Stream (mi.): 0.6 **Lat/Long:** 39.00188 -76.999002

Site Data

Parcel Size (ac): 9 parcels (1, 0.6, 0.5, 1.03, 0.47, 0.94, 2.17, 8.74, 2.4) **Potential Restoration Reach (LF):** 2,575

Site Opportunities: _x___Channel Restoration ____Livestock Exclusion _____Riparian Buffer Planting _x__Habitat Enhancement _x__Fish Passage

Stream Order: 2nd **Stream Hydrology:** Perennial **Stream Use:** I

Drainage Area to Reach (sq. mi.) 0.62 sq. mi

Land Use: Park/forest **Mapped Soils:** Hatboro silt loam

Property Address: 8700 Piney Branch Parkway, Silver Spring, MD 20901

Property Owner(s): MNCPPC

General Field Observations

Is there evidence that the stream has been disturbed by some kind of human action, like grading, dumping, livestock, culvert, etc.?	Can the stream restoration be reasonably done within the confines of the parcel or does it require connections beyond the parcel limits? Explain
Explain:	Explain:
There is evidence of restoration near upstream culvert and work has started at downstream end; Mattresses and couches present in stream.	Downstream end appears to be actively worked on. Confirmation is needed to confirm project extent

Mitigation Site Rating

Criteria	Score	Criteria	Score
Estimated Bank erosion within reach	5	**Vegetation**	1
10 - Greater than 50% 5 - 10% to 50% 1 - Less than 10%		10 - Herbaceous cover (non-wetland) 5 - Scrub-shrub cover (non-wetland) 1 - Mostly forested and/or wetland	
Describe: 20% restored; Restoration planned at downstream end		Describe: Forest corridor	
Degree of Channel Incision	5	**Land Use**	1
10 - Bank Height greater than 10 feet 5 - Bank Height between 3 and 10 feet 1 - Bank Height less than 3 feet		10 - Agricultural or Open Space 5 - Marginal Pasture 1 - Old field/ Developed/Forested	
Describe: Approximately 4-7 feet		Describe: Forest corridor	
Existing Floodplain Access	5	**Opportunity for Ecological Lift**	5
10 - No evidence of out of bank flooding 5- Yes (Infrequent out of bank flow) 1 - Yes (evidence of frequent flooding)		10 - Conditions exist for several aspects of lift to be achieved and sustained 5 - Lift limited to one or few aspects 1 - Conditions are such that Lift is difficult to achieve and sustain	
Describe: There is some evidence of flooding primarily In the restored reach		Describe: Lateral and vertical stability; Floodplain reconnection with invasive species	
Opportunity for Floodplain Development	5	**Ease of Access**	5
10 - Existing space for floodplain greater than 10 times stream width 5 - Existing space for floodplain 3 to 10 times stream width 1 - Little to no space for floodplain development		10 - Yes (with existing direct vehicular access to potential site) 5- yes (open but no existing vehicular access) 1 - No (no vehicular access, clearing needed)	
Describe: FP width varies with park and residential along banks, consistently ~3+		Describe: There is easy access for the upstream and downstream section coming from the left bank community center and park. Clearing is required.	
Drainage Area Evaluation	10	**Utilities Present**	5
10 -D.A. less than 1 sq. mi. 5- D. A. between 1 & 3 sq. mi. 1 - D. A. greater than 3 sq. mi.		10 - No utilities on site 5 - Utilities but not within restoration area 1 - Utilities within potential restoration area	
Describe: Drainage area - 0.62 square miles		Describe: Multiple sewer line markers visible; No exposed crossings observed	
		Total Score out of 100	47

Map

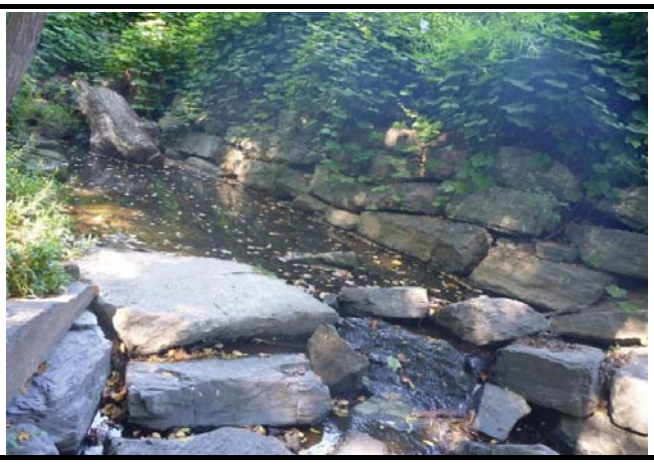


Site No.	MPAO0029		Scale: 1 in. =	2,000

Site Photos









Stream Mitigation Field Site Assessment Form

Project Details

Project Name: 1-495/I-270 Managed Lanes Study **Mitigation Site Number:** MPAO0030

Projects Estimated Stream Mitigation Needs (LF):

Date of Field Assessment: 7/24/2019 **Consultant Firm/Investigator(s):** CRI- MD/SN

Site Location Details-taken from desktop review

County: Montgomery **Cross Roads:** Hugo Circle

Basin (HUC 8): Middle Potomac-Anacostia-Occoquan **MDE Watershed (8 digit):** 2140205

Proximity to Impacted Stream (mi.): 4 **Lat/Long:** 39.072737 -77.038804

Site Data

Parcel Size (ac): 6 parcels (8.4, 14.7, 9.6, 8.0, 3.8, 57.5) **Potential Restoration Reach (LF):** 5,800

Site Opportunities: __X__Channel Restoration ____Livestock Exclusion ___X___Riparian Buffer Planting _X__Habitat Enhancement __X__Fish Passage

Stream Order: 2nd **Stream Hydrology:** Perennial **Stream Use:** IV

Drainage Area to Reach (sq. mi.) 4.3 sq. mi

Land Use: Forest **Mapped Soils:** Hatboro silt loam

Property Address: 1607 Hugo Circle Dr

Property Owner(s): MNCPPC

General Field Observations

Is there evidence that the stream has been disturbed by some kind of human action, like grading, dumping, livestock, culvert, etc.? Explain	Can the stream restoration be reasonably done within the confines of the parcel or does it require connections beyond the parcel limits? Explain
Explain:	Explain:
Yes; Multiple locations have rip-rap lining embankments. Utility crossings are present along with bridges.	Yes; Large MNCPPC floodplain parcel

Mitigation Site Rating

Criteria	Score	Criteria	Score
Estimated Bank erosion within reach	5	**Vegetation**	1
10 - Greater than 50% 5 - 10% to 50% 1 - Less than 10%		10 - Herbaceous cover (non-wetland) 5 - Scrub-shrub cover (non-wetland) 1 - Mostly forested and/or wetland	
Describe:		Describe:	
Approximately 35% of banks eroded. Bank heights were about 4 feet on outside meanders with a few higher max ~7 feet banks at the top of site		Site consists of riparian vegetation on both banks and some wetlands in the terrace	
Degree of Channel Incision	5	**Land Use**	1
10 - Bank Height greater than 10 feet 5 - Bank Height between 3 and 10 feet 1 - Bank Height less than 3 feet		10 - Agricultural or Open Space 5 - Marginal Pasture 1 - Old field/ Developed/Forested	
Describe:		Describe:	
Bank height average is 4 feet. Average increases significantly along the valley wall.		Young mature forest is within the MNCPPC property.	
Existing Floodplain Access	5	**Opportunity for Ecological Lift**	10
10 - No evidence of out of bank flooding 5- Yes (Infrequent out of bank flow) 1 - Yes (evidence of frequent flooding)		10 - Conditions exist for several aspects of lift to be achieved and sustained 5 - Lift limited to one or few aspects 1 - Conditions are such that Lift is difficult to achieve and sustain	
Describe:		Describe:	
Some benches on inside meanders flood but terrace log original flood plain gets occasional flooding.		Bedform diversity; Riparian; Lateral migration; Habitat enhancement; SWM treatment of road in a residential area.	
Opportunity for Floodplain Development	10	**Ease of Access**	5
10 - Existing space for floodplain greater than 10 times stream width 5 - Existing space for floodplain 3 to 10 times stream width 1 - Little to no space for floodplain development		10 - Yes (with existing direct vehicular access to potential site) 5- yes (open but no existing vehicular access) 1 - No (no vehicular access, clearing needed)	
Describe:		Describe:	
Most locations are 10 times stream width; Some areas have residential land along corridor		Access for downstream section fairly easy at the new road crossing. Access for the upstream portion is located at Middle Bridge Dr or the MNCPPC Hickory Hill pool.	
Drainage Area Evaluation	1	**Utilities Present**	1
10 -D.A. less than 1 sq. mi. 5- D. A. between 1 & 3 sq. mi. 1 - D. A. greater than 3 sq. mi.		10 - No utilities on site 5 - Utilities but not within restoration area 1 - Utilities within potential restoration area	
Describe:		Describe:	
Drainage area - 4.3 square miles		Multiple Crossings and utility markers are parallel to stream. No utilities exposed in stream.	
		Total Score out of 100	44

Map



Site No.	MPAO0030		Scale: 1 in. =	2,000

Site Photos









Stream Mitigation Field Site Assessment Form

Project Details

Project Name: I-495/I-270 Managed Lanes Study **Mitigation Site Number:** MPAO0031

Projects Estimated Stream Mitigation Needs (LF): TBD

Date of Field Assessment: 7/17/2019 **Consultant Firm/Investigator(s):** RK&K; KJH, AJN

Site Location Details-taken from desktop review

County: Montgomery **Cross Roads:** Imperial Drive and Woodman Ave

Basin (HUC 8): Middle Potomac-Anacostia-Occoquan **MDE Watershed (8 digit):** 02140205

Proximity to Impacted Stream (mi.): 0.3 **Lat/Long:** 39.022574 -77.034107

Site Data

Parcel Size (ac): 15.5 **Potential Restoration Reach (LF):** 2,156

Site Opportunities: __X__Channel Restoration ___Livestock Exclusion _____Riparian Buffer Planting _X_Habitat Enhancement _X_Fish Passage

Stream Order: 1st **Stream Hydrology:** Perennial **Stream Use:** I

Drainage Area to Reach (sq. mi.) 1.32

Land Use: Forested Parkland **Mapped Soils:** Hatboro silt loam

Property Address: Joseph Park, Woodman Ave.

Property Owner(s): M-NCPPC

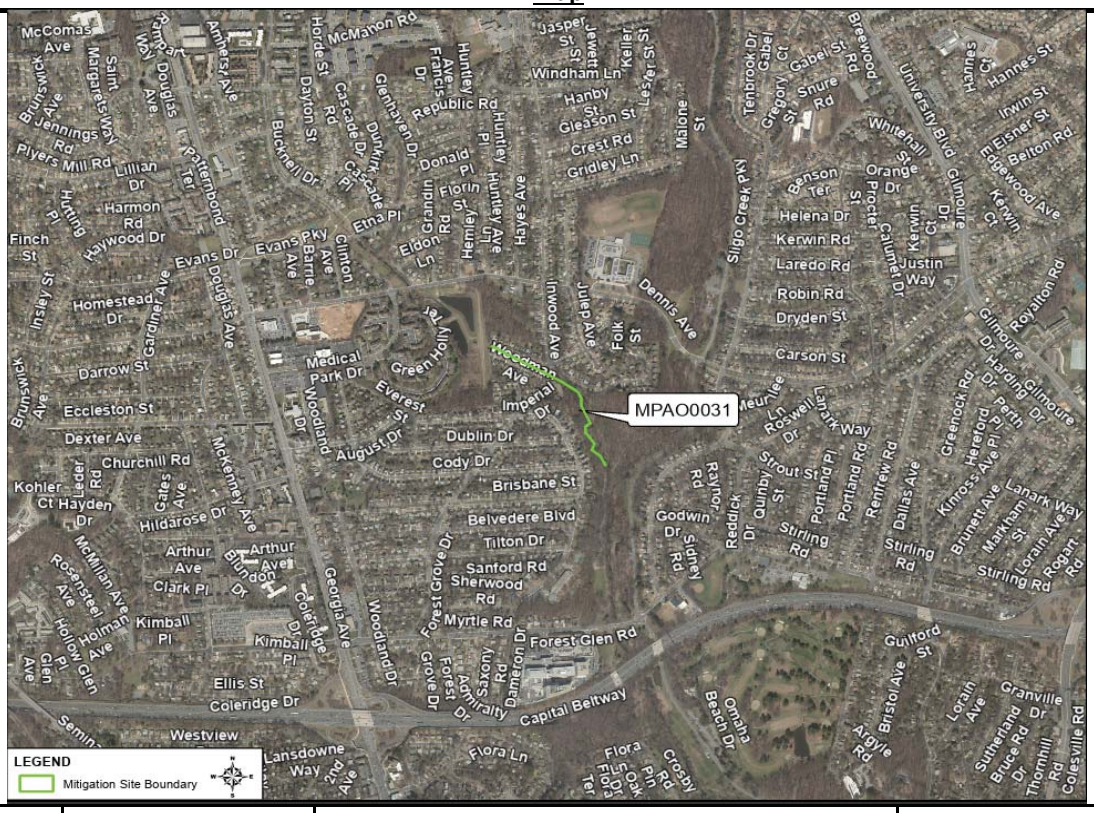
General Field Observations

Is there evidence that the stream has been disturbed by some kind of human action, like grading, dumping, livestock, culvert, etc.?	Can the stream restoration be reasonably done within the confines of the parcel or does it require connections beyond the parcel limits? Explain
Explain:	Explain:
Yes, old restoration; stone toes, log vane, ford crossing.	Wheaton Branch. US end in Montgomery County ROW. MNCPPC recommendation.

Mitigation Site Rating

Criteria	Score	Criteria	Score
Estimated Bank erosion within reach	5	**Vegetation**	1
10 - Greater than 50% 5 - 10% to 50% 1 - Less than 10%		10 - Herbaceous cover (non-wetland) 5 - Scrub-shrub cover (non-wetland) 1 - Mostly forested and/or wetland	
Describe: Localized moderate to severe erosion, some sections stable		Describe: Mid successional upland forest; Tulip poplar, Red maple, Oaks. Invasives in understory.	
Degree of Channel Incision	5	**Land Use**	1
10 - Bank Height greater than 10 feet 5 - Bank Height between 3 and 10 feet 1 - Bank Height less than 3 feet		10 - Agricultural or Open Space 5 - Marginal Pasture 1 - Old field/ Developed/Forested	
Describe: 4-8' tall banks		Describe: Forested parkland	
Existing Floodplain Access	10	**Opportunity for Ecological Lift**	5
10 - No evidence of out of bank flooding 5- Yes (Infrequent out of bank flow) 1 - Yes (evidence of frequent flooding)		10 - Conditions exist for several aspects of lift to be achieved and sustained 5 - Lift limited to one or few aspects 1 - Conditions are such that Lift is difficult to achieve and sustain	
Describe: No evidence of floodplain access		Describe: Opportunity for sediment reduction, fish passage, riparian buffer improvement. Limited opportunity for floodplain development.	
Opportunity for Floodplain Development	5	**Ease of Access**	5
10 - Existing space for floodplain greater than 10 times stream width 5 - Existing space for floodplain 3 to 10 times stream width 1 - Little to no space for floodplain development		10 - Yes (with existing direct vehicular access to potential site) 5- yes (open but no existing vehicular access) 1 - No (no vehicular access, clearing needed)	
Describe: No opportunity in western floodplain due to valley hillslope. ~200' potential development in eastern floodplain.		Describe: Old clearing along stream. Some tree clearing would still be required	
Drainage Area Evaluation	5	**Utilities Present**	1
10 -D.A. less than 1 sq. mi. 5- D. A. between 1 & 3 sq. mi. 1 - D. A. greater than 3 sq. mi.		10 - No utilities on site 5 - Utilities but not within restoration area 1 - Utilities within potential restoration area	
Describe: 1.32 square miles		Describe: Sewer lines in floodplain	
		Total Score out of 100	43

Map



Site No.	MPAO0031		Scale: 1 in. =	2,000

Site Photos









Stream Mitigation Field Site Assessment Form

Project Details

Project Name: I-495/I-270 Managed Lanes Study **Mitigation Site Number:** PG00002

Projects Estimated Stream Mitigation Needs (LF): TBD

Date of Field Assessment: 6/14/2019 **Consultant Firm/Investigator(s):** RK&K/KJH, AJN

Site Location Details-taken from desktop review

County: Prince George's **Cross Roads:** Brinkley Road and Cherryfield Road

Basin (HUC 8): Middle Potomac-Anacostia-Occoquan **MDE Watershed (8 digit):** 02140201

Proximity to Impacted Stream (mi.): 1.15 **Lat/Long:** 38.794602 -76.95533

Site Data

Parcel Size (ac): 253.3 **Potential Restoration Reach (LF):** 9,051

Site Opportunities: __X__Channel Restoration ____Livestock Exclusion _____Riparian Buffer Planting ___Habitat Enhancement ___Fish Passage

Stream Order: 3rd **Stream Hydrology:** Perennial **Stream Use:** I

Drainage Area to Reach (sq. mi.) 16.5

Land Use: Forested Parkland **Mapped Soils:** Widewater and Issue soils

Property Address: Henson Valley Way, Fort Washington

Property Owner(s): MNCPPC - PG County

General Field Observations

Is there evidence that the stream has been disturbed by some kind of human action, like grading, dumping, livestock, culvert, etc?	Can the stream restoration be reasonably done within the confines of the parcel or does it require connections beyond the parcel limits? Explain
Explain:	Explain:
Yes. Several sections of large riprap along banks for sewer protection.	No. Large section on private property.

Mitigation Site Rating

Criteria	Score	Criteria	Score
Estimated Bank erosion within reach	5	**Vegetation**	1
10 - Greater than 50% 5 - 10% to 50% 1 - Less than 10%		10 - Herbaceous cover (non-wetland) 5 - Scrub-shrub cover (non-wetland) 1 - Mostly forested and/or wetland	
Describe: Localized moderate to severe erosion. Most banks vertical and stabilized by tree roots or vegetation.		Describe: Mostly midsuccessional forest. Sycamore, elm, swamp white oak, swamp chestnut oak, spicebush, paw paw.	
Degree of Channel Incision	5	**Land Use**	1
10 - Bank Height greater than 10 feet 5 - Bank Height between 3 and 10 feet 1 - Bank Height less than 3 feet		10 - Agricultural or Open Space 5 - Marginal Pasture 1 - Old field/ Developed/Forested	
Describe: 5-7' tall banks		Describe: Forested parkland	
Existing Floodplain Access	5	**Opportunity for Ecological Lift**	1
10 - No evidence of out of bank flooding 5- Yes (Infrequent out of bank flow) 1 - Yes (evidence of frequent flooding)		10 - Conditions exist for several aspects of lift to be achieved and sustained 5 - Lift limited to one or few aspects 1 - Conditions are such that Lift is difficult to achieve and sustain	
Describe: Some matted down vegetation at top of banks.		Describe: Opportunities for sediment reduction. Very limited otherwise. Decent instream habitat - LWD.	
Opportunity for Floodplain Development	1	**Ease of Access**	10
10 - Existing space for floodplain greater than 10 times stream width 5 - Existing space for floodplain 3 to 10 times stream width 1 - Little to no space for floodplain development		10 - Yes (with existing direct vehicular access to potential site) 5- yes (open but no existing vehicular access) 1 - No (no vehicular access, clearing needed)	
Describe: No. Most of site limited by pedestrian trail, horse track, and adjacent landowners.		Describe: Existing pedestrian trail and grass swale along trail.	
Drainage Area Evaluation	1	**Utilities Present**	1
10 -D.A. less than 1 sq. mi. 5- D. A. between 1 & 3 sq. mi. 1 - D. A. greater than 3 sq. mi.		10 - No utilities on site 5 - Utilities but not within restoration area 1 - Utilities within potential restoration area	
Describe: 16.5 square mile.		Describe: Sewerline, water, and gas lines present within site.	
		Total Score out of 100	31

Map



Site No.	PG00002		Scale: 1 in. =	2,000

Site Photos









Stream Mitigation Field Site Assessment Form

Project Details

Project Name: I-495/I-270 Managed Lanes Study **Mitigation Site Number:** PG_00016

Projects Estimated Stream Mitigation Needs (LF): TBD

Date of Field Assessment: 6/12/2019 **Consultant Firm/Investigator(s):** CRI/MD, DS

Site Location Details-taken from desktop review

County: Prince George's **Cross Roads:** Rte 95 and Rte 212

Basin (HUC 8): Middle Potomac-Anacostia-Occoquan **MDE Watershed (8 digit):** 2140205

Proximity to Impacted Stream (mi.): 0.37 **Lat/Long:** 39.048994 -76.931214

Site Data

Parcel Size (ac): 12.7, 55.9, ROW **Potential Restoration Reach (LF):** 1,569

Site Opportunities: ___Channel Restoration ___Livestock Exclusion ___X___Riparian Buffer Planting _X__Habitat Enhancement ___Fish Passage

Stream Order: 3rd **Stream Hydrology:** Perennial **Stream Use:** I

Drainage Area to Reach (sq. mi.) 7.89

Land Use: ROW, Transportation, Open space **Mapped Soils:** Udorthents, highway; Codorus and Hatboro

Property Address: 11508 Montgomery Rd, Beltsville, MD 20705

Property Owner(s): Maryland National Capital Park & Planning Commission, Potomac Electric

General Field Observations

Is there evidence that the stream has been disturbed by some kind of human action, like grading, dumping, livestock, culvert, etc? Explain	Can the stream restoration be reasonably done within the confines of the parcel or does it require connections beyond the parcel limits? Explain
Explain:	Explain:
Stream is channelized within a concrete trapezoid. Two culverts are present. Evidence of prior bank stabilization (imbricated rock).	Yes, the site is within two parcels and a Right-of-Way.

Mitigation Site Rating

Criteria	Score	Criteria	Score
Estimated Bank erosion within reach	1	**Vegetation**	10
10 - Greater than 50% 5 - 10% to 50% 1 - Less than 10%		10 - Herbaceous cover (non-wetland) 5 - Scrub-shrub cover (non-wetland) 1 - Mostly forested and/or wetland	
Describe: Little to no evidence of bank erosion, concrete channel and prior stabilization.		Describe: Mostly herbaceous with small amounts of forest at the downstream extent.	
Degree of Channel Incision	5	**Land Use**	1
10 - Bank Height greater than 10 feet 5 - Bank Height between 3 and 10 feet 1 - Bank Height less than 3 feet		10 - Agricultural or Open Space 5 - Marginal Pasture 1 - Old field/ Developed/Forested	
Describe: Channelized stream, no access to a floodplain.		Describe: Developed land, ROW between northbound and southbound I-95 and a ROW at powerlines.	
Existing Floodplain Access	10	**Opportunity for Ecological Lift**	5
10 - No evidence of out of bank flooding 5- Yes (Infrequent out of bank flow) 1 - Yes (evidence of frequent flooding)		10 - Conditions exist for several aspects of lift to be achieved and sustained 5 - Lift limited to one or few aspects 1 - Conditions are such that Lift is difficult to achieve and sustain	
Describe: Channelized stream, no access to a floodplain.		Describe: Habitat, riparian, vertical stabilization, floodplain access.	
Opportunity for Floodplain Development	5	**Ease of Access**	10
10 - Existing space for floodplain greater than 10 times stream width 5 - Existing space for floodplain 3 to 10 times stream width 1 - Little to no space for floodplain development		10 - Yes (with existing direct vehicular access to potential site) 5- yes (open but no existing vehicular access) 1 - No (no vehicular access, clearing needed)	
Describe: 3-10 times stream width available given the stream is currently overwidened throughout the reach.		Describe: May require shoulder closure on I-95. Access from the MNCPPC park land. Also potential access from utility ROW.	
Drainage Area Evaluation	1	**Utilities Present**	5
10 -D.A. less than 1 sq. mi. 5- D. A. between 1 & 3 sq. mi. 1 - D. A. greater than 3 sq. mi.		10 - No utilities on site 5 - Utilities but not within restoration area 1 - Utilities within potential restoration area	
Describe: DA = 7.89		Describe: Old (Inactive) utility crossing, Overhead lines (high hanging) at Potomac Electric ROW.	
		Total Score out of 100	53

Map



Site No.	PG_00016		Scale: 1 in. =	2,000

Site Photos









Stream Mitigation Field Site Assessment Form

Project Details

Project Name: I-495/I-270 Managed Lanes Study **Mitigation Site Number:** PG_00077

Projects Estimated Stream Mitigation Needs (LF): TBD

Date of Field Assessment: 12/14/2018 **Consultant Firm/Investigator(s):** CRI/MD, DS

Site Location Details-taken from desktop review

County: Prince George's **Cross Roads:** Columbia Park Rd. & 64th Ave.

Basin (HUC 8): Middle Potomac-Anacostia-Occoquan **MDE Watershed (8 digit):** 02140205

Proximity to Impacted Stream (mi.): 2.58 **Lat/Long:** 38.915426 -76.912602

Site Data

Parcel Size (ac): 8 parcels - 5.8, 0.8, 0.8, 4.0, 1.0, 1.0, 3.1, 0.8 **Potential Restoration Reach (LF):** 1,669

Site Opportunities: __X__Channel Restoration ____Livestock Exclusion _____Riparian Buffer Planting _X__Habitat Enhancement ____Fish Passage

Stream Order: 4th **Stream Hydrology:** Perennial **Stream Use:** I

Drainage Area to Reach (sq. mi.) 4.94

Land Use: Agriculture, Forest **Mapped Soils:** Urban land-Issue complex, Zekiah and Issue soils

Property Address: Middle Parcel - 5540 Columbia Park Road, Landover, MD 20785

Property Owner(s): Washington Metro Area Transportation Authority, Maryland National Capital Park & Planning Commission, Mayor and Town Council of Che

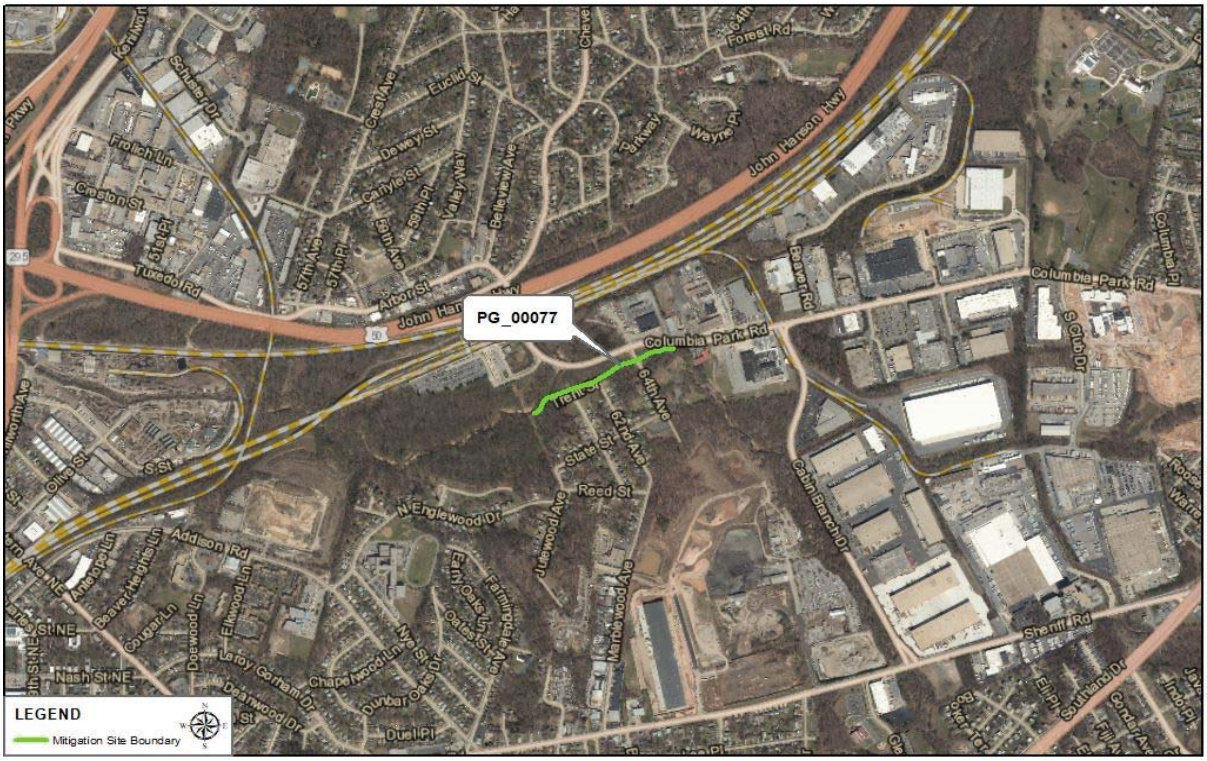
General Field Observations

Is there evidence that the stream has been disturbed by some kind of human action, like grading, dumping, livestock, culvert, etc?	Can the stream restoration be reasonably done within the confines of the parcel or does it require connections beyond the parcel limits? Explain
Explain: Yes; Channelization, road fill confines stream. Prior bank stabilization.	Explain: Yes, site completely confined in parcel. Easily accessible from Trent St.

Mitigation Site Rating

Criteria	Score	Criteria	Score
Estimated Bank erosion within reach	1	**Vegetation**	1
10 - Greater than 50% 5 - 10% to 50% 1 - Less than 10%		10 - Herbaceous cover (non-wetland) 5 - Scrub-shrub cover (non-wetland) 1 - Mostly forested and/or wetland	
Describe: Select areas of sever erosion. Overall, banks protected by gabion.		Describe: Mature deciduous forest with lots of invasive ivy present.	
Degree of Channel Incision	5	**Land Use**	1
10 - Bank Height greater than 10 feet 5 - Bank Height between 3 and 10 feet 1 - Bank Height less than 3 feet		10 - Agricultural or Open Space 5 - Marginal Pasture 1 - Old field/ Developed/Forested	
Describe: Banks are ~8-9 ft. tall on average, but range from 3-10 ft.		Describe: Residential and transportation uses observed.	
Existing Floodplain Access	10	**Opportunity for Ecological Lift**	5
10 - No evidence of out of bank flooding 5- Yes (Infrequent out of bank flow) 1 - Yes (evidence of frequent flooding)		10 - Conditions exist for several aspects of lift to be achieved and sustained 5 - Lift limited to one or few aspects 1 - Conditions are such that Lift is difficult to achieve and sustain	
Describe: No evidence of out-of-bank flooding, incised channel.		Describe: Possibility for vertical geomorphic stability and habitat improvement.	
Opportunity for Floodplain Development	5	**Ease of Access**	1
10 - Existing space for floodplain greater than 10 times stream width 5 - Existing space for floodplain 3 to 10 times stream width 1 - Little to no space for floodplain development		10 - Yes (with existing direct vehicular access to potential site) 5- yes (open but no existing vehicular access) 1 - No (no vehicular access, clearing needed)	
Describe: Heavy tree impacts, upstream is more confined.		Describe: Clearing needed, staging in residential dead-end possible.	
Drainage Area Evaluation	1	**Utilities Present**	10
10 -D.A. less than 1 sq. mi. 5- D. A. between 1 & 3 sq. mi. 1 - D. A. greater than 3 sq. mi.		10 - No utilities on site 5 - Utilities but not within restoration area 1 - Utilities within potential restoration area	
Describe: Drainage area - 4.94		Describe: No utilities observed within reach.	
		Total Score out of 100	40

Map



Site No.	PG_00077		Scale: 1 in. = 2,000

Site Photos









Stream Mitigation Field Site Assessment Form

Project Details

Project Name: I-495/I-270 Managed Lanes Study **Mitigation Site Number:** PG_00079

Projects Estimated Stream Mitigation Needs (LF): TBD

Date of Field Assessment: 11/27/2018 **Consultant Firm/Investigator(s):** RK&K/KJH, BDM

Site Location Details-taken from desktop review

County: Prince George's **Cross Roads:** Birchleaf Ave & Valley Park Rd.

Basin (HUC 8): Middle Potomac-Anacostia-Occoquan **MDE Watershed (8 digit):** 02140205

Proximity to Impacted Stream (mi.): 2.42 **Lat/Long:** 38.89304891 -76.89516754

Site Data

Parcel Size (ac): Several Parcels - 6.29, 17.71, 0.48 **Potential Restoration Reach (LF):** 1,068

Site Opportunities: __X__Channel Restoration ___Livestock Exclusion _____Riparian Buffer Planting __X_Habitat Enhancement ___Fish Passage

Stream Order: 3rd **Stream Hydrology:** Perennial **Stream Use:** I

Drainage Area to Reach (sq. mi.)

Land Use: Forest **Mapped Soils:** Zekiah and Issue soils

Property Address: Main Parcel - 190 Dateleaf Ave, Capital Heights 20743-0000

Property Owner(s): Maryland National Capital Park & Planning Commission, Seat Pleasant Mayor & Comm Cou

General Field Observations

Is there evidence that the stream has been disturbed by some kind of human action, like grading, dumping, livestock, culvert, etc.?	Can the stream restoration be reasonably done within the confines of the parcel or does it require connections beyond the parcel limits? Explain
Explain:	Explain:
No direct evidence of human disturbance.	Restoration would require access to City and MNCPPC properties.

Mitigation Site Rating

Criteria	Score	Criteria	Score
Estimated Bank erosion within reach	10	**Vegetation**	1
10 - Greater than 50% 5 - 10% to 50% 1 - Less than 10%		10 - Herbaceous cover (non-wetland) 5 - Scrub-shrub cover (non-wetland) 1 - Mostly forested and/or wetland	
Describe: Severe bank erosion throughout most of site. Numerous fallen trees in channel.		Describe: Mid-successional forest surrounds site.	
Degree of Channel Incision	10	**Land Use**	1
10 - Bank Height greater than 10 feet 5 - Bank Height between 3 and 10 feet 1 - Bank Height less than 3 feet		10 - Agricultural or Open Space 5 - Marginal Pasture 1 - Old field/ Developed/Forested	
Describe: 6-11 foot tall banks.		Describe: Mid-successional forest on City and M-NCPPC parkland.	
Existing Floodplain Access	10	**Opportunity for Ecological Lift**	10
10 - No evidence of out of bank flooding 5- Yes (Infrequent out of bank flow) 1 - Yes (evidence of frequent flooding)		10 - Conditions exist for several aspects of lift to be achieved and sustained 5 - Lift limited to one or few aspects 1 - Conditions are such that Lift is difficult to achieve and sustain	
Describe: No evidence of out-of-bank flooding. Deeply incised channel.		Describe: High potential for improving instream habitat and reducing erosion. Some opportunity for floodplain development in downstream segment.	
Opportunity for Floodplain Development	5	**Ease of Access**	1
10 - Existing space for floodplain greater than 10 times stream width 5 - Existing space for floodplain 3 to 10 times stream width 1 - Little to no space for floodplain development		10 - Yes (with existing direct vehicular access to potential site) 5- yes (open but no existing vehicular access) 1 - No (no vehicular access, clearing needed)	
Describe: Some opportunity for floodplain development in downstream segment. Floodplain areas in upstream segment limited by steep slopes, narrow valley or adjacent landowners.		Describe: Majority of site surrounded by mid-successional forest, however some of the site is accessible from a sewer line route that was recently planted with small trees.	
Drainage Area Evaluation	5	**Utilities Present**	1
10 -D.A. less than 1 sq. mi. 5- D. A. between 1 & 3 sq. mi. 1 - D. A. greater than 3 sq. mi.		10 - No utilities on site 5 - Utilities but not within restoration area 1 - Utilities within potential restoration area	
Describe: Drainage area - 2.18 square miles.		Describe: Sewer line runs parallel stream in eastern floodplain.	
		Total Score out of 100	54

Map



Site No.	PG_00079		Scale: 1 in. =	2,000

Site Photos







Stream Mitigation Field Site Assessment Form

Project Details

Project Name: I-495/I-270 Managed Lanes Study **Mitigation Site Number:** PG00097

Projects Estimated Stream Mitigation Needs (LF): TBD

Date of Field Assessment: 6/14/2019 **Consultant Firm/Investigator(s):** RK&K/KJH, AJN

Site Location Details-taken from desktop review

County: Prince George's **Cross Roads:** Oxon Hill Road and Livingston Road

Basin (HUC 8): Middle Potomac-Anacostia-Occoquan **MDE Watershed (8 digit):** 02131103

Proximity to Impacted Stream (mi.): 4.85 **Lat/Long:** 38.756622 -77.000749

Site Data

Parcel Size (ac): 56 **Potential Restoration Reach (LF):** 1,568

Site Opportunities: __X__Channel Restoration ____Livestock Exclusion _____Riparian Buffer Planting __X_Habitat Enhancement ___Fish Passage

Stream Order: 3rd **Stream Hydrology:** Perennial **Stream Use:** I

Drainage Area to Reach (sq. mi.) 24.5

Land Use: Forested Parkland **Mapped Soils:** Widewater and Issue soils

Property Address: Henson Creek Stream Valley Park, Oxon Hill Road, Fort Washington

Property Owner(s): MNCPPC - PG County

General Field Observations

Is there evidence that the stream has been disturbed by some kind of human action, like grading, dumping, livestock, culvert, etc?	Can the stream restoration be reasonably done within the confines of the parcel or does it require connections beyond the parcel limits? Explain
Explain: No evidence. Downstream 500 LF are within critical area. Located in a Historic District.	Explain: No. Small sections on PG county and church properties.

Mitigation Site Rating

Criteria	Score	Criteria	Score
Estimated Bank erosion within reach	5	**Vegetation**	1
10 - Greater than 50% 5 - 10% to 50% 1 - Less than 10%		10 - Herbaceous cover (non-wetland) 5 - Scrub-shrub cover (non-wetland) 1 - Mostly forested and/or wetland	
Describe: Localized moderate to severe erosion		Describe: Mid successional forest. Sycamore, pawpaw, sweetgum, spicebush, boxelder. Dense understory.	
Degree of Channel Incision	5	**Land Use**	1
10 - Bank Height greater than 10 feet 5 - Bank Height between 3 and 10 feet 1 - Bank Height less than 3 feet		10 - Agricultural or Open Space 5 - Marginal Pasture 1 - Old field/ Developed/Forested	
Describe: 5-6' tall banks		Describe: Forested parkland	
Existing Floodplain Access	10	**Opportunity for Ecological Lift**	10
10 - No evidence of out of bank flooding 5- Yes (Infrequent out of bank flow) 1 - Yes (evidence of frequent flooding)		10 - Conditions exist for several aspects of lift to be achieved and sustained 5 - Lift limited to one or few aspects 1 - Conditions are such that Lift is difficult to achieve and sustain	
Describe: No evidence of out of bank flooding		Describe: Opportunities for sediment reduction, floodplain connectivity, fish and benthic improvements, water quality.	
Opportunity for Floodplain Development	5	**Ease of Access**	5
10 - Existing space for floodplain greater than 10 times stream width 5 - Existing space for floodplain 3 to 10 times stream width 1 - Little to no space for floodplain development		10 - Yes (with existing direct vehicular access to potential site) 5- yes (open but no existing vehicular access) 1 - No (no vehicular access, clearing needed)	
Describe: Large existing floodplain. Some limitations on eastern side near church.		Describe: Old sewer access and abandoned road will require small tree impacts.	
Drainage Area Evaluation	1	**Utilities Present**	1
10 -D.A. less than 1 sq. mi. 5- D. A. between 1 & 3 sq. mi. 1 - D. A. greater than 3 sq. mi.		10 - No utilities on site 5 - Utilities but not within restoration area 1 - Utilities within potential restoration area	
Describe: 24.5 square miles		Describe: Sewerlines within site. Upstream end has overhad powerlines.	
		Total Score out of 100	44

Map



Site No.	PG00097		Scale: 1 in. =	2,000

Site Photos









Stream Mitigation Field Site Assessment Form

Project Details

Project Name: I-495/I-270 Managed Lanes Study **Mitigation Site Number:** PG_00111

Projects Estimated Stream Mitigation Needs (LF): TBD

Date of Field Assessment: 11/19/2018 **Consultant Firm/Investigator(s):** CRI/MD, CN

Site Location Details-taken from desktop review

County: Prince George's **Cross Roads:** Rt. 295 & Beaver Dam Rd.

Basin (HUC 8): Middle Potomac-Anacostia-Occoquan **MDE Watershed (8 digit):** 02140205

Proximity to Impacted Stream (mi.): 1.1 **Lat/Long:** 38.915426 -76.912602

Site Data

Parcel Size (ac): 2 parcels - 24.2, 759.5 **Potential Restoration Reach (LF):** 3,154

Site Opportunities: __X__Channel Restoration ___Livestock Exclusion _____Riparian Buffer Planting __X__Habitat Enhancement ___Fish Passage

Stream Order: 3rd **Stream Hydrology:** Perennial **Stream Use:** I

Drainage Area to Reach (sq. mi.) 1.84

Land Use: Forest **Mapped Soils:** Zekiah and Issue soils

Property Address: Main Parcel - Edmonstron Road, Greenbelt, MD 20770

Property Owner(s): Beltsville Agricultural Research Center, City of Greenbelt

General Field Observations

Is there evidence that the stream has been disturbed by some kind of human action, like grading, dumping, livestock, culvert, etc?	Can the stream restoration be reasonably done within the confines of the parcel or does it require connections beyond the parcel limits? Explain
Explain: Yes; Sewer crossing observed, riffle upstream of sewer crossing.	Explain: Yes; Well within BARC property.

Mitigation Site Rating

Criteria	Score	Criteria	Score
Estimated Bank erosion within reach	10	**Vegetation**	1
10 - Greater than 50% 5 - 10% to 50% 1 - Less than 10%		10 - Herbaceous cover (non-wetland) 5 - Scrub-shrub cover (non-wetland) 1 - Mostly forested and/or wetland	
Describe: Approximately 50% of banks eroded, specifically in the upstream section where the channel becomes severely incised, 4-9 ft. banks.		Describe: Mature forest and wetlands present at downstream end in the floodplain.	
Degree of Channel Incision	5	**Land Use**	1
10 - Bank Height greater than 10 feet 5 - Bank Height between 3 and 10 feet 1 - Bank Height less than 3 feet		10 - Agricultural or Open Space 5 - Marginal Pasture 1 - Old field/ Developed/Forested	
Describe: Bank heights up to 9 ft. tall. Upstream section deeply incised, downstream section with 3-4 ft. banks.		Describe: Stream is surrounded by forest.	
Existing Floodplain Access	5	**Opportunity for Ecological Lift**	10
10 - No evidence of out of bank flooding 5- Yes (Infrequent out of bank flow) 1 - Yes (evidence of frequent flooding)		10 - Conditions exist for several aspects of lift to be achieved and sustained 5 - Lift limited to one or few aspects 1 - Conditions are such that Lift is difficult to achieve and sustain	
Describe: Downstream end accesses floodplain often. Upstream end (2/3) does not access floodplain.		Describe: Forested buffer present on both banks, stabilize banks and bed, habitat creation, wetland creation, if channel is raised, expand the floodplain.	
Opportunity for Floodplain Development	5	**Ease of Access**	5
10 - Existing space for floodplain greater than 10 times stream width 5 - Existing space for floodplain 3 to 10 times stream width 1 - Little to no space for floodplain development		10 - Yes (with existing direct vehicular access to potential site) 5- yes (open but no existing vehicular access) 1 - No (no vehicular access, clearing needed)	
Describe: Plenty of space, but upstream section is down cut too much to reconnect to the floodplain. Development would require significant tree impacts.		Describe: Could use utilities ROW for access, but would need some clearing for haul roads.	
Drainage Area Evaluation	5	**Utilities Present**	1
10 -D.A. less than 1 sq. mi. 5- D. A. between 1 & 3 sq. mi. 1 - D. A. greater than 3 sq. mi.		10 - No utilities on site 5 - Utilities but not within restoration area 1 - Utilities within potential restoration area	
Describe: Drainage area - 1.84 square miles.		Describe: One crossing noted. No utilities observed on most of the site.	
		Total Score out of 100	48

Map



Site No.	PG_00111		Scale: 1 in. = 2,000

Site Photos









Stream Mitigation Field Site Assessment Form

Project Details

Project Name: I-495/I-270 Managed Lanes Study **Mitigation Site Number:** PG_00112

Projects Estimated Stream Mitigation Needs (LF): TBD

Date of Field Assessment: 11/19/2018 **Consultant Firm/Investigator(s):** CRI/MD, CN

Site Location Details-taken from desktop review

County: Prince George's **Cross Roads:** Rt. 295 & Beaver Dam Rd.

Basin (HUC 8): Middle Potomac-Anacostia-Occoquan **MDE Watershed (8 digit):** 02140205

Proximity to Impacted Stream (mi.): 1.68 **Lat/Long:** 39.023302 -76.85279

Site Data

Parcel Size (ac): 3 parcels - 629.1, 246.4, 798.3 **Potential Restoration Reach (LF):** 4,147

Site Opportunities: __X__Channel Restoration ____Livestock Exclusion _____Riparian Buffer Planting _X__Habitat Enhancement ____Fish Passage

Stream Order: 3rd **Stream Hydrology:** Perennial **Stream Use:** I

Drainage Area to Reach (sq. mi.) 6.58

Land Use: Forest, Transportation **Mapped Soils:** Zekiah and Issue soils, Longmarsh and Indiantown soils, Udorthents

Property Address: Beaver Dam Road, Laurel, MD 20708

Property Owner(s): Beltsville Agricultural Research Center

General Field Observations

Is there evidence that the stream has been disturbed by some kind of human action, like grading, dumping, livestock, culvert, etc?	Can the stream restoration be reasonably done within the confines of the parcel or does it require connections beyond the parcel limits? Explain
Explain:	Explain:
Yes; Culverts at Beaverdam Rd. and Soil Conservation Rd.	Yes; Well within BARC property.

Mitigation Site Rating

Criteria	Score	Criteria	Score
Estimated Bank erosion within reach	1	**Vegetation**	1
10 - Greater than 50% 5 - 10% to 50% 1 - Less than 10%		10 - Herbaceous cover (non-wetland) 5 - Scrub-shrub cover (non-wetland) 1 - Mostly forested and/or wetland	
Describe: Mostly low banks, some minor erosion at the outside meanders.		Describe: Forested and possible wetlands present surrounding stream.	
Degree of Channel Incision	1	**Land Use**	1
10 - Bank Height greater than 10 feet 5 - Bank Height between 3 and 10 feet 1 - Bank Height less than 3 feet		10 - Agricultural or Open Space 5 - Marginal Pasture 1 - Old field/ Developed/Forested	
Describe: Average bank height ~2 ft tall. Some sections greater than 3 ft. tall, but infrequent.		Describe: Site is forested and surrounded by old fields.	
Existing Floodplain Access	1	**Opportunity for Ecological Lift**	5
10 - No evidence of out of bank flooding 5- Yes (Infrequent out of bank flow) 1 - Yes (evidence of frequent flooding)		10 - Conditions exist for several aspects of lift to be achieved and sustained 5 - Lift limited to one or few aspects 1 - Conditions are such that Lift is difficult to achieve and sustain	
Describe: More than 70% of stream channel gets out-of-bank flows regularly.		Describe: Good floodplain access, could create braided channel within floodplain, increase habitat, provide additional floodplain access.	
Opportunity for Floodplain Development	10	**Ease of Access**	5
10 - Existing space for floodplain greater than 10 times stream width 5 - Existing space for floodplain 3 to 10 times stream width 1 - Little to no space for floodplain development		10 - Yes (with existing direct vehicular access to potential site) 5- yes (open but no existing vehicular access) 1 - No (no vehicular access, clearing needed)	
Describe: Forested floodplain present, but could create braided channel and minimize forest impacts.		Describe: It may be possible to use USDA access or utility ROW.	
Drainage Area Evaluation	1	**Utilities Present**	1
10 -D.A. less than 1 sq. mi. 5- D. A. between 1 & 3 sq. mi. 1 - D. A. greater than 3 sq. mi.		10 - No utilities on site 5 - Utilities but not within restoration area 1 - Utilities within potential restoration area	
Describe: Drainage area - 6.58 square miles.		Describe: One overhead powerline crossing present.	
		Total Score out of 100	27

Map



Site No.	PG_00112		Scale: 1 in. = 2,000

Site Photos









Stream Mitigation Field Site Assessment Form

Project Details

Project Name: I-495/I-270 Managed Lanes Study **Mitigation Site Number:** PG-00114

Projects Estimated Stream Mitigation Needs (LF): TBD

Date of Field Assessment: 12/14/2018 **Consultant Firm/Investigator(s):** CRI/DS, MD

Site Location Details-taken from desktop review

County: Prince George's **Cross Roads:** Cherrywood Ln. & I-495

Basin (HUC 8): Middle Potomac-Anacostia-Occoquan **MDE Watershed (8 digit):** 02140205

Proximity to Impacted Stream (mi.): 0.04 **Lat/Long:** 39.008461 -76.904091

Site Data

Parcel Size (ac): 4 parcels - 15.3, 1.1, 7.7, 72.5 **Potential Restoration Reach (LF):** 1,235

Site Opportunities: __X__Channel Restoration ___Livestock Exclusion _____Riparian Buffer Planting ___Habitat Enhancement ___Fish Passage

Stream Order: 2nd **Stream Hydrology:** Perennial **Stream Use:** I

Drainage Area to Reach (sq. mi.) 1.47

Land Use: High Density Residential, Forest **Mapped Soils:** Zekiah and Issue soils, Udorthents

Property Address: Cherrywood Lane, Greenbelt, MD 20770

Property Owner(s): City of Greenbelt, Empirian Village of MD LLC, State of MD, Board of Education

General Field Observations

Is there evidence that the stream has been disturbed by some kind of human action, like grading, dumping, livestock, culvert, etc?	Can the stream restoration be reasonably done within the confines of the parcel or does it require connections beyond the parcel limits? Explain
Explain:	Explain:
Yes; Culvert located under bridge. Possible channel relocation present. Rip rap present along banks and stream bed.	No; No access to most of site with the exception of the downstream reach at Cherrywood Lane where possible previous restoration occurred.

Mitigation Site Rating

Criteria	Score	Criteria	Score
Estimated Bank erosion within reach	5	**Vegetation**	1
10 - Greater than 50% 5 - 10% to 50% 1 - Less than 10%		10 - Herbaceous cover (non-wetland) 5 - Scrub-shrub cover (non-wetland) 1 - Mostly forested and/or wetland	
Describe: Most banks are armored in the parcel where there was access. Approximately 15% of bank erosion present.		Describe: Mature deciduous trees are present with meadow adjacent to stream.	
Degree of Channel Incision	1	**Land Use**	1
10 - Bank Height greater than 10 feet 5 - Bank Height between 3 and 10 feet 1 - Bank Height less than 3 feet		10 - Agricultural or Open Space 5 - Marginal Pasture 1 - Old field/ Developed/Forested	
Describe: Average bank height is <3 ft tall, ranging from 1.5' to 3.5 ft.		Describe: Area consists of developed residential uses in addition to the Greenbelt Metro station.	
Existing Floodplain Access	1	**Opportunity for Ecological Lift**	1
10 - No evidence of out of bank flooding 5- Yes (Infrequent out of bank flow) 1 - Yes (evidence of frequent flooding)		10 - Conditions exist for several aspects of lift to be achieved and sustained 5 - Lift limited to one or few aspects 1 - Conditions are such that Lift is difficult to achieve and sustain	
Describe: Banks are relatively low, evidence of frequent out-of-bank flow is present.		Describe: Possibility for geomorphic stability at confluence with Indian Creek, otherwise low opportunity exists.	
Opportunity for Floodplain Development	10	**Ease of Access**	1
10 - Existing space for floodplain greater than 10 times stream width 5 - Existing space for floodplain 3 to 10 times stream width 1 - Little to no space for floodplain development		10 - Yes (with existing direct vehicular access to potential site) 5- yes (open but no existing vehicular access) 1 - No (no vehicular access, clearing needed)	
Describe: Fairly open areas are present immediately adjacent to stream with low tree impact.		Describe: Access road with clearing is needed. Possible traffic pattern change on Cherrywood Lane.	
Drainage Area Evaluation	5	**Utilities Present**	5
10 -D.A. less than 1 sq. mi. 5- D. A. between 1 & 3 sq. mi. 1 - D. A. greater than 3 sq. mi.		10 - No utilities on site 5 - Utilities but not within restoration area 1 - Utilities within potential restoration area	
Describe: Drainage area - 1.47 square miles.		Describe: Overhead power lines are present at upstream end of stream near bridge, which may restrict access.	
		Total Score out of 100	31

Map



Site No.	PG-00114		Scale: 1 in. = 2,000

Site Photos









Stream Mitigation Field Site Assessment Form

Project Details

Project Name: I-495/I-270 Managed Lanes Study **Mitigation Site Number:** PG-00118

Projects Estimated Stream Mitigation Needs (LF): TBD

Date of Field Assessment: 11/20/2018 **Consultant Firm/Investigator(s):** CRI/DS, CN

Site Location Details-taken from desktop review

County: Prince George's **Cross Roads:** Greenbelt Park; Greenbelt Park Access Rd

Basin (HUC 8): Middle Potomac-Anacostia-Occoquan **MDE Watershed (8 digit):** 02140205

Proximity to Impacted Stream (mi.): 1.24 **Lat/Long:** 38.97658 -76.905648

Site Data

Parcel Size (ac): 1 parcel - 726.5 **Potential Restoration Reach (LF):** 5,067

Site Opportunities: __X__Channel Restoration ___Livestock Exclusion _____Riparian Buffer Planting _X__Habitat Enhancement __X__Fish Passage

Stream Order: 1st **Stream Hydrology:** Perennial **Stream Use:** I

Drainage Area to Reach (sq. mi.) 0.49

Land Use: Forest **Mapped Soils:** Zekiah and Issue soils, Udorthents, Russett-Christiana complex, Downer-Hammonton complex, Christiana-Downer complex

Property Address: Good Luck Road, Greenbelt, MD 20770

Property Owner(s): USA Greenbelt Park

General Field Observations

Is there evidence that the stream has been disturbed by some kind of human action, like grading, dumping, livestock, culvert, etc?	Can the stream restoration be reasonably done within the confines of the parcel or does it require connections beyond the parcel limits? Explain
Explain:	Explain:
Yes; Culvert crossings present, likely impacted by construction of I-295.	Yes, the site is competely within the parcel

Mitigation Site Rating

Criteria	Score	Criteria	Score
Estimated Bank erosion within reach	10	**Vegetation**	1
10 - Greater than 50% 5 - 10% to 50% 1 - Less than 10%		10 - Herbaceous cover (non-wetland) 5 - Scrub-shrub cover (non-wetland) 1 - Mostly forested and/or wetland	
Describe: Severe erosion and headcutting present in the upstream portion of the stream.		Describe: Site located within a national park. Mature forest with dense trees present.	
Degree of Channel Incision	5	**Land Use**	1
10 - Bank Height greater than 10 feet 5 - Bank Height between 3 and 10 feet 1 - Bank Height less than 3 feet		10 - Agricultural or Open Space 5 - Marginal Pasture 1 - Old field/ Developed/Forested	
Describe: Top 2/3 of stream reach with ~6-10 ft banks. Bottom 1/3 of stream reach with ~3-6 ft banks.		Describe: Site located within a national park with mature forest.	
Existing Floodplain Access	10	**Opportunity for Ecological Lift**	5
10 - No evidence of out of bank flooding 5- Yes (Infrequent out of bank flow) 1 - Yes (evidence of frequent flooding)		10 - Conditions exist for several aspects of lift to be achieved and sustained 5 - Lift limited to one or few aspects 1 - Conditions are such that Lift is difficult to achieve and sustain	
Describe: No rack lines or sediment noted outside of banks. Appears to be forming inset "C" channel within eroded gully.		Describe: Possibility for habitat creation and stabilization of bed and banks.	
Opportunity for Floodplain Development	10	**Ease of Access**	1
10 - Existing space for floodplain greater than 10 times stream width 5 - Existing space for floodplain 3 to 10 times stream width 1 - Little to no space for floodplain development		10 - Yes (with existing direct vehicular access to potential site) 5- yes (open but no existing vehicular access) 1 - No (no vehicular access, clearing needed)	
Describe: Steep, narrow valley. Stream is located within a densely forested, incised "B" channel. Floodplain reconnection would require immense tree impacts.		Describe: Site is located within a densely forested national park. Foot trails present.	
Drainage Area Evaluation	10	**Utilities Present**	5
10 -D.A. less than 1 sq. mi. 5- D. A. between 1 & 3 sq. mi. 1 - D. A. greater than 3 sq. mi.		10 - No utilities on site 5 - Utilities but not within restoration area 1 - Utilities within potential restoration area	
Describe: Drainage area = 0.49 square mile.		Describe: Sewer utility present at downstream end of reach.	
		Total Score out of 100	58

Map



Site No.	PG-00118		Scale: 1 in. = 2,000

Site Photos









Stream Mitigation Field Site Assessment Form

Project Details

Project Name: I-495/I-270 Managed Lanes Study **Mitigation Site Number:** PG-00120a

Projects Estimated Stream Mitigation Needs (LF): TBD

Date of Field Assessment: 11/20/2018 **Consultant Firm/Investigator(s):** CRI/DS, CN

Site Location Details-taken from desktop review

County: Prince George's **Cross Roads:** Edmonston Rd & Sunnyside Ave

Basin (HUC 8): Middle Potomac-Anacostia-Occoquan **MDE Watershed (8 digit):** 02140205

Proximity to Impacted Stream (mi.): 0.4 **Lat/Long:** 39.019955 -76.892741

Site Data

Parcel Size (ac): 2 parcels - 759.6, 495.3 **Potential Restoration Reach (LF):** 5,371

Site Opportunities: __X__Channel Restoration ___Livestock Exclusion ___X___Riparian Buffer Planting _X__Habitat Enhancement ____Fish Passage

Stream Order: 4th **Stream Hydrology:** Perennial **Stream Use:** I

Drainage Area to Reach (sq. mi.) 14.1

Land Use: Forest **Mapped Soils:** Zekiah and Issue soils, Longmarsh and Indiantown soils

Property Address: Edmonston Road, Greenbelt, MD 20770

Property Owner(s): Beltsville Agricultural Research Center

General Field Observations

Is there evidence that the stream has been disturbed by some kind of human action, like grading, dumping, livestock, culvert, etc?	Can the stream restoration be reasonably done within the confines of the parcel or does it require connections beyond the parcel limits? Explain
Explain: Yes; Some old, dilapidated infrastructure present within stream including concrete and metal. Geotextile and outfalls present along banks	Explain: Yes, the stream is completely within the parcel

Mitigation Site Rating

Criteria	Score	Criteria	Score
Estimated Bank erosion within reach	10	**Vegetation**	1
10 - Greater than 50% 5 - 10% to 50% 1 - Less than 10%		10 - Herbaceous cover (non-wetland) 5 - Scrub-shrub cover (non-wetland) 1 - Mostly forested and/or wetland	
Describe: Approximately 4 ft. vertical banks are present on both sides of the stream for the majority of the reach.		Describe: Mature forest and wetlands within floodplain present on both sides of the stream for extent of the reach.	
Degree of Channel Incision	5	**Land Use**	1
10 - Bank Height greater than 10 feet 5 - Bank Height between 3 and 10 feet 1 - Bank Height less than 3 feet		10 - Agricultural or Open Space 5 - Marginal Pasture 1 - Old field/ Developed/Forested	
Describe: Approximately 4 ft. vertical banks are present on both sides of the stream. However, stream still accesses the floodplain.		Describe: Mature forest present surrounding site.	
Existing Floodplain Access	1	**Opportunity for Ecological Lift**	10
10 - No evidence of out of bank flooding 5- Yes (Infrequent out of bank flow) 1 - Yes (evidence of frequent flooding)		10 - Conditions exist for several aspects of lift to be achieved and sustained 5 - Lift limited to one or few aspects 1 - Conditions are such that Lift is difficult to achieve and sustain	
Describe: Rack lines and fine sediment deposition on both banks/within the floodplain are present for the extent of the reach.		Describe: Some potential in reducing bank erosion, increasing geomorphic stability, habitat creation, and wetland enhancement.	
Opportunity for Floodplain Development	10	**Ease of Access**	5
10 - Existing space for floodplain greater than 10 times stream width 5 - Existing space for floodplain 3 to 10 times stream width 1 - Little to no space for floodplain development		10 - Yes (with existing direct vehicular access to potential site) 5- yes (open but no existing vehicular access) 1 - No (no vehicular access, clearing needed)	
Describe: Wide, flat valley is present within a mature forest, but sparse trees may allow for minimal tree disturbance.		Describe: Multiple access points from downstream to upstream end of reach with minimal tree removal required.	
Drainage Area Evaluation	1	**Utilities Present**	5
10 -D.A. less than 1 sq. mi. 5- D. A. between 1 & 3 sq. mi. 1 - D. A. greater than 3 sq. mi.		10 - No utilities on site 5 - Utilities but not within restoration area 1 - Utilities within potential restoration area	
Describe: Drainage area - 14.1 square miles.		Describe: Powerline ROW crosses stream.	
		Total Score out of 100	49

Map



Site No.	PG-00120a		Scale: 1 in. = 2,000

Site Photos









Stream Mitigation Field Site Assessment Form

Project Details

Project Name: I-495/I-270 Managed Lanes Study **Mitigation Site Number:** PG-00120b

Projects Estimated Stream Mitigation Needs (LF): TBD

Date of Field Assessment: 11/20/2018 **Consultant Firm/Investigator(s):** CRI/DS, CN

Site Location Details-taken from desktop review

County: Prince George's **Cross Roads:** Research Rd & Beaver Dam Rd

Basin (HUC 8): Middle Potomac-Anacostia-Occoquan **MDE Watershed (8 digit):** 02140205

Proximity to Impacted Stream (mi.): 1.23 **Lat/Long:** 39.023356 -76.879996

Site Data

Parcel Size (ac): 2 parcels - 759.6, 495.3 **Potential Restoration Reach (LF):** 1,420

Site Opportunities: __X__Channel Restoration ___Livestock Exclusion ___X___Riparian Buffer Planting _X__Habitat Enhancement ____Fish Passage

Stream Order: 4th **Stream Hydrology:** Perennial **Stream Use:** I

Drainage Area to Reach (sq. mi.) 13.1

Land Use: Forest **Mapped Soils:** Zekiah and Issue soils, Longmarsh and Indiantown soils

Property Address: Research Road, Greenbelt, MD 20770

Property Owner(s): Beltsville Agricultural Research Center

General Field Observations

Is there evidence that the stream has been disturbed by some kind of human action, like grading, dumping, livestock, culvert, etc?	Can the stream restoration be reasonably done within the confines of the parcel or does it require connections beyond the parcel limits? Explain
Explain: Yes, possibly former agriculture or livestock field	Explain: Yes, the site is completely within the parcel

Mitigation Site Rating

Criteria	Score	Criteria	Score
Estimated Bank erosion within reach	10	**Vegetation**	1
10 - Greater than 50% 5 - 10% to 50% 1 - Less than 10%		10 - Herbaceous cover (non-wetland) 5 - Scrub-shrub cover (non-wetland) 1 - Mostly forested and/or wetland	
Describe: Vertical, unstable banks approximately 4-5 ft. tall present for entire reach with very little root mass.		Describe: Site consists mostly of palustrine emergent wetland. No trees or shrubs were present.	
Degree of Channel Incision	5	**Land Use**	10
10 - Bank Height greater than 10 feet 5 - Bank Height between 3 and 10 feet 1 - Bank Height less than 3 feet		10 - Agricultural or Open Space 5 - Marginal Pasture 1 - Old field/ Developed/Forested	
Describe: Vertical, incised banks approximately 4-5 ft. tall present for entire reach. However, access to floodplain is present.		Describe: Land use consists of open grass fields which may have been used for agriculture in the past, but are now overgrown with grass.	
Existing Floodplain Access	5	**Opportunity for Ecological Lift**	10
10 - No evidence of out of bank flooding 5- Yes (Infrequent out of bank flow) 1 - Yes (evidence of frequent flooding)		10 - Conditions exist for several aspects of lift to be achieved and sustained 5 - Lift limited to one or few aspects 1 - Conditions are such that Lift is difficult to achieve and sustain	
Describe: Evidence of floodplain access is present at the downstream end of the stream reach, but not upstream.		Describe: Some potential in reducing bank erosion, increasing geomorphic stability, habitat creation, floodplain access, and developing stream buffer.	
Opportunity for Floodplain Development	10	**Ease of Access**	5
10 - Existing space for floodplain greater than 10 times stream width 5 - Existing space for floodplain 3 to 10 times stream width 1 - Little to no space for floodplain development		10 - Yes (with existing direct vehicular access to potential site) 5- yes (open but no existing vehicular access) 1 - No (no vehicular access, clearing needed)	
Describe: Wide open flat valley with no trees present.		Describe: Site is in close proximity to roads and powerline ROW.	
Drainage Area Evaluation	1	**Utilities Present**	10
10 -D.A. less than 1 sq. mi. 5- D. A. between 1 & 3 sq. mi. 1 - D. A. greater than 3 sq. mi.		10 - No utilities on site 5 - Utilities but not within restoration area 1 - Utilities within potential restoration area	
Describe: Drainage area - 13.1 square miles.		Describe: No utilities observed.	
		Total Score out of 100	67

Map



Site No.	PG-00120b		Scale: 1 in. = 2,000

Site Photos









Stream Mitigation Field Site Assessment Form

Project Details

Project Name: 495/270 **Mitigation Site Number:** PG-00122

Projects Estimated Stream Mitigation Needs (LF): TBD

Date of Field Assessment: 8/21/2019 **Consultant Firm/Investigator(s):** CRI- MD/DS

Site Location Details-taken from desktop review

County: Prince George's **Cross Roads:** Kepner Ct and Nashville Rd

Basin (HUC 8): Middle Potomac-Anacostia-Occoquan **MDE Watershed (8 digit):** 214025

Proximity to Impacted Stream (mi.): 0.01 **Lat/Long:** 38.985788 -76.888418

Site Data

Parcel Size (ac): 265.6 **Potential Restoration Reach (LF):** 3,548

Site Opportunities: __X__Channel Restoration ____Livestock Exclusion _____Riparian Buffer Planting ___Habitat Enhancement ___Fish Passage

Stream Order: 1st **Stream Hydrology:** Perennial **Stream Use:** I

Drainage Area to Reach (sq. mi.) 0.21

Land Use: Greenbelt Park **Mapped Soils**: Christiana-Downer, Zekiah, and Udorthents

Property Address: 6565 Greenbelt Rd, Greenbelt, MD 20770

Property Owner(s): National Park Service

General Field Observations

Is there evidence that the stream has been disturbed by some kind of human action, like grading, dumping, livestock, culvert, etc.?	**Can the stream restoration be reasonably done within the confines of the parcel or does it require connections beyond the parcel limits? Explain**
Explain:	Explain:
Yes, utilities exposed throughout the site	Yes, all NPS property but will need SHA ROW access

Mitigation Site Rating

Criteria	Score	Criteria	Score
Estimated Bank erosion within reach	10	**Vegetation**	1
10 - Greater than 50% 5 - 10% to 50% 1 - Less than 10%		10 - Herbaceous cover (non-wetland) 5 - Scrub-shrub cover (non-wetland) 1 - Mostly forested and/or wetland	
Describe: Erosion from downcutting impacting ~80% of stream bank		Describe: Forested	
Degree of Channel Incision	10	**Land Use**	1
10 - Bank Height greater than 10 feet 5 - Bank Height between 3 and 10 feet 1 - Bank Height less than 3 feet		10 - Agricultural or Open Space 5 - Marginal Pasture 1 - Old field/ Developed/Forested	
Describe: Between 3-10 feet for most downstream, greater than 10 upstream		Describe: Forested	
Existing Floodplain Access	10	**Opportunity for Ecological Lift**	5
10 - No evidence of out of bank flooding 5- Yes (Infrequent out of bank flow) 1 - Yes (evidence of frequent flooding)		10 - Conditions exist for several aspects of lift to be achieved and sustained 5 - Lift limited to one or few aspects 1 - Conditions are such that Lift is difficult to achieve and sustain	
Describe: No floodplain access outside incised channel		Describe: Lateral/Vertical stability, bedform diversity	
Opportunity for Floodplain Development	5	**Ease of Access**	1
10 - Existing space for floodplain greater than 10 times stream width 5 - Existing space for floodplain 3 to 10 times stream width 1 - Little to no space for floodplain development		10 - Yes (with existing direct vehicular access to potential site) 5- yes (open but no existing vehicular access) 1 - No (no vehicular access, clearing needed)	
Describe: Space for 10 times width with massive tree loss or raising of channel bed		Describe: No access existing, clearing needed with SHA ROW	
Drainage Area Evaluation	10	**Utilities Present**	1
10 -D.A. less than 1 sq. mi. 5- D. A. between 1 & 3 sq. mi. 1 - D. A. greater than 3 sq. mi.		10 - No utilities on site 5 - Utilities but not within restoration area 1 - Utilities within potential restoration area	
Describe: 0.21 square miles		Describe: Utilities exposed throughout site within stream	
		Total Score out of 100	54

Map



Site No.	PG-00122		Scale: 1 in. = 2,000

Site Photos









Stream Mitigation Field Site Assessment Form

Project Details

Project Name: I-495/I-270 Managed Lanes Study **Mitigation Site Number:** PG_00124

Projects Estimated Stream Mitigation Needs (LF): TBD

Date of Field Assessment: 6/11/2019 **Consultant Firm/Investigator(s):** CRI - CN, SJ

Site Location Details-taken from desktop review

County: Prince George's **Cross Roads:** Powder Mill Rd and Bond Rd

Basin (HUC 8): Middle Potomac-Anacostia-Occoquan **MDE Watershed (8 digit):** 2140205

Proximity to Impacted Stream (mi.): 0.01 **Lat/Long:** 39.028914 -76.950838

Site Data

Parcel Size (ac): 4 Parcels: 3.4, 32.3, 19.2, 2.5 **Potential Restoration Reach (LF):** 1,958

Site Opportunities: __X__Channel Restoration ____Livestock Exclusion _____Riparian Buffer Planting ___Habitat Enhancement ___Fish Passage

Stream Order: 4th **Stream Hydrology:** Perennial **Stream Use:** III

Drainage Area to Reach (sq. mi.) 15.8

Land Use: Forest **Mapped Soils:** Codorus and Hatboro soils

Property Address: Main Parcel: 3101 Powder Mill Rd, Adelphi, MD. 20783

Property Owner(s): Maryland National Capital Park & Planning Commission

General Field Observations

Is there evidence that the stream has been disturbed by some kind of human action, like grading, dumping, livestock, culvert, etc?	Can the stream restoration be reasonably done within the confines of the parcel or does it require connections beyond the parcel limits? Explain
Explain:	Explain:
Yes, culverts at US and DS ends of site, sewer armament along LB.	Yes, can be done within parcel.

Mitigation Site Rating

Criteria	Score	Criteria	Score
Estimated Bank erosion within reach	5	**Vegetation**	1
10 - Greater than 50% 5 - 10% to 50% 1 - Less than 10%		10 - Herbaceous cover (non-wetland) 5 - Scrub-shrub cover (non-wetland) 1 - Mostly forested and/or wetland	
Describe: Small patches of erosion, closer to 10%.		Describe: Mature forest	
Degree of Channel Incision	5	**Land Use**	1
10 - Bank Height greater than 10 feet 5 - Bank Height between 3 and 10 feet 1 - Bank Height less than 3 feet		10 - Agricultural or Open Space 5 - Marginal Pasture 1 - Old field/ Developed/Forested	
Describe: ~5' banks, FP access on DS end of reach.		Describe: Mature forest	
Existing Floodplain Access	5	**Opportunity for Ecological Lift**	1
10 - No evidence of out of bank flooding 5- Yes (Infrequent out of bank flow) 1 - Yes (evidence of frequent flooding)		10 - Conditions exist for several aspects of lift to be achieved and sustained 5 - Lift limited to one or few aspects 1 - Conditions are such that Lift is difficult to achieve and sustain	
Describe: Some signs of FP access, sand on FP at DS end of site, may be due to backwater from debris jam at culvert.		Describe: In good condition, only real uplift is FP reconnection, would require extensive impact to mature forest.	
Opportunity for Floodplain Development	5	**Ease of Access**	5
10 - Existing space for floodplain greater than 10 times stream width 5 - Existing space for floodplain 3 to 10 times stream width 1 - Little to no space for floodplain development		10 - Yes (with existing direct vehicular access to potential site) 5- yes (open but no existing vehicular access) 1 - No (no vehicular access, clearing needed)	
Describe: Valley wall on RB, road on LB, mature forest on existing FP.		Describe: Old access road to sewer on RB, young tree planting along road.	
Drainage Area Evaluation	1	**Utilities Present**	1
10 -D.A. less than 1 sq. mi. 5- D. A. between 1 & 3 sq. mi. 1 - D. A. greater than 3 sq. mi.		10 - No utilities on site 5 - Utilities but not within restoration area 1 - Utilities within potential restoration area	
Describe: 15.8 sq. mi		Describe: Sewer line running along LB.	
		Total Score out of 100	30

Map



Site No.	PG_00124		Scale: 1 in. = 2,000 ft

Site Photos









Stream Mitigation Field Site Assessment Form

Project Details

Project Name: I-495/I-270 Managed Lanes Study **Mitigation Site Number:** PG_00132

Projects Estimated Stream Mitigation Needs (LF): TBD

Date of Field Assessment: 11/20/2018 **Consultant Firm/Investigator(s):** CRI/DS, CN

Site Location Details-taken from desktop review

County: Prince George's **Cross Roads:** Edmonston Rd & Sunnyside Ave

Basin (HUC 8): Middle Potomac-Anacostia-Occoquan **MDE Watershed (8 digit):** 02140205

Proximity to Impacted Stream (mi.): 0.35 **Lat/Long:** 39.016993 -76.898683

Site Data

Parcel Size (ac): 1 parcel - 116.7 **Potential Restoration Reach (LF):** 954

Site Opportunities: __X__Channel Restoration ___Livestock Exclusion ___X___Riparian Buffer Planting _X__Habitat Enhancement ____Fish Passage

Stream Order: 4th **Stream Hydrology:** Perennial **Stream Use:** I

Drainage Area to Reach (sq. mi.) 9.77

Land Use: Forest **Mapped Soils:** Zekiah and Issue soils

Property Address: Edmonston Road, Greenbelt, MD 20770

Property Owner(s): Beltsville Agricultural Research Center

General Field Observations

Is there evidence that the stream has been disturbed by some kind of human action, like grading, dumping, livestock, culvert, etc?	Can the stream restoration be reasonably done within the confines of the parcel or does it require connections beyond the parcel limits? Explain
Explain:	Explain:
No, there is no sign of human disturbance.	Yes, the stream is completely within the parcel.

Mitigation Site Rating

Criteria	Score	Criteria	Score
Estimated Bank erosion within reach	5	**Vegetation**	1
10 - Greater than 50% 5 - 10% to 50% 1 - Less than 10%		10 - Herbaceous cover (non-wetland) 5 - Scrub-shrub cover (non-wetland) 1 - Mostly forested and/or wetland	
Describe:		Describe:	
Upper 2/3 of stream reach with ~1-2 ft. eroded banks on outer meanders of stream. Floodplain access, good root density. Lower 1/3 of stream reach with ~2-4 ft. eroded banks on both sides, no floodplain access.		Mature forest buffer present on both sides. A minimum 50 ft. forested buffer is present on the left bank of stream between stream and Edmonston Road.	
Degree of Channel Incision	1	**Land Use**	1
10 - Bank Height greater than 10 feet 5 - Bank Height between 3 and 10 feet 1 - Bank Height less than 3 feet		10 - Agricultural or Open Space 5 - Marginal Pasture 1 - Old field/ Developed/Forested	
Describe:		Describe:	
Bank heights range from ~1-2 ft. in the upper 2/3 of the stream and between ~2-4 ft. in the lower 1/3 of the stream.		Site consists of mature forest.	
Existing Floodplain Access	1	**Opportunity for Ecological Lift**	5
10 - No evidence of out of bank flooding 5- Yes (Infrequent out of bank flow) 1 - Yes (evidence of frequent flooding)		10 - Conditions exist for several aspects of lift to be achieved and sustained 5 - Lift limited to one or few aspects 1 - Conditions are such that Lift is difficult to achieve and sustain	
Describe:		Describe:	
Rack lines on both banks and active overflow channels are present. Sediment deposition present on bars to top of banks and fine sediment deposition present within floodplain.		Good habitat and flow diversity is present, in addition to lots of large woody debris. Other potential exists in reducing bank erosion, floodplain connectivity, and habitat creation.	
Opportunity for Floodplain Development	10	**Ease of Access**	5
10 - Existing space for floodplain greater than 10 times stream width 5 - Existing space for floodplain 3 to 10 times stream width 1 - Little to no space for floodplain development		10 - Yes (with existing direct vehicular access to potential site) 5- yes (open but no existing vehicular access) 1 - No (no vehicular access, clearing needed)	
Describe:		Describe:	
Mature forest with many trees present within a flat, wide valley.		Edmonston Road in close proximity to site.	
Drainage Area Evaluation	1	**Utilities Present**	10
10 -D.A. less than 1 sq. mi. 5- D. A. between 1 & 3 sq. mi. 1 - D. A. greater than 3 sq. mi.		10 - No utilities on site 5 - Utilities but not within restoration area 1 - Utilities within potential restoration area	
Describe:		Describe:	
Drainage area - 9.77 square miles.		No utilities observed.	
		Total Score out of 100	40

Map



Site No.	PG_00132		Scale: 1 in. = 2,000

Site Photos









Stream Mitigation Field Site Assessment Form

Project Details

Project Name: I-495/I-270 Managed Lanes Study **Mitigation Site Number:** PG_00138

Projects Estimated Stream Mitigation Needs (LF): TBD

Date of Field Assessment: 11/27/2018 **Consultant Firm/Investigator(s):** RK&K/KJH, BDM

Site Location Details-taken from desktop review

County: Prince George's **Cross Roads:** Central Ave & Cabin Branch Rd.

Basin (HUC 8): Middle Potomac-Anacostia-Occoquan **MDE Watershed (8 digit):** 02140205

Proximity to Impacted Stream (mi.): 2.02 **Lat/Long:** 38.88651986 -76.88835557

Site Data

Parcel Size (ac): Several Parcels - 16.72, 4.41, 4.65 **Potential Restoration Reach (LF):** 1,940

Site Opportunities: __X__Channel Restoration ____Livestock Exclusion _____Riparian Buffer Planting __X_Habitat Enhancement ___Fish Passage

Stream Order: 2nd **Stream Hydrology:** Perennial **Stream Use:** I

Drainage Area to Reach (sq. mi.) 0.26

Land Use: Forest **Mapped Soils:** Adelphia-Holmdel-Urban Complex & Widewater and Issue soils

Property Address: Main Parcel - 100 Cabin Branch Dr., Capital Heights 20743-0000

Property Owner(s): Board of education, Washington Metro Area Transit Authority, PG. County ROW

General Field Observations

Is there evidence that the stream has been disturbed by some kind of human action, like grading, dumping, livestock, culvert, etc?	Can the stream restoration be reasonably done within the confines of the parcel or does it require connections beyond the parcel limits? Explain
Explain: Trash dumping in and adjacent to channel.	Explain: Restoration would require access to Board of Education, WMATA & PG. County ROW.

Mitigation Site Rating

Criteria	Score	Criteria	Score
Estimated Bank erosion within reach	5	**Vegetation**	1
10 - Greater than 50% 5 - 10% to 50% 1 - Less than 10%		10 - Herbaceous cover (non-wetland) 5 - Scrub-shrub cover (non-wetland) 1 - Mostly forested and/or wetland	
Describe: Moderate bank erosion throughout majority of site. Some localized severe bank erosion.		Describe: Site surrounded by mid-successional forest. Dense understory. Several mature trees growing along channel. One small PFO wetland.	
Degree of Channel Incision	5	**Land Use**	1
10 - Bank Height greater than 10 feet 5 - Bank Height between 3 and 10 feet 1 - Bank Height less than 3 feet		10 - Agricultural or Open Space 5 - Marginal Pasture 1 - Old field/ Developed/Forested	
Describe: 5-10 foot tall banks.		Describe: Mid-successional forest on Board of Education & WMATA properties.	
Existing Floodplain Access	10	**Opportunity for Ecological Lift**	10
10 - No evidence of out of bank flooding 5- Yes (Infrequent out of bank flow) 1 - Yes (evidence of frequent flooding)		10 - Conditions exist for several aspects of lift to be achieved and sustained 5 - Lift limited to one or few aspects 1 - Conditions are such that Lift is difficult to achieve and sustain	
Describe: No evidence of out-of-bank flooding. Small channel that is deeply incised.		Describe: Opportunities for improving instream habitat and reducing erosion. Some opportunities for floodplain development in southern floodplain.	
Opportunity for Floodplain Development	5	**Ease of Access**	1
10 - Existing space for floodplain greater than 10 times stream width 5 - Existing space for floodplain 3 to 10 times stream width 1 - Little to no space for floodplain development		10 - Yes (with existing direct vehicular access to potential site) 5- yes (open but no existing vehicular access) 1 - No (no vehicular access, clearing needed)	
Describe: Some opportunities for floodplain development in southern floodplain, however northern floodplain development is limited by metro embankment.		Describe: Majority of site is surrounded by mid-successional forest, however there is an old sewer line access route along the site that consists of open areas with scattered smaller trees.	
Drainage Area Evaluation	10	**Utilities Present**	1
10 -D.A. less than 1 sq. mi. 5- D. A. between 1 & 3 sq. mi. 1 - D. A. greater than 3 sq. mi.		10 - No utilities on site 5 - Utilities but not within restoration area 1 - Utilities within potential restoration area	
Describe: Drainage area - 0.26 square miles		Describe: Sewer line runs parallel to stream in southern floodplain.	
		Total Score out of 100	49

Map



Site No.	PG_00138		Scale: 1 in. =	2,000

Site Photos









Stream Mitigation Field Site Assessment Form

Project Details

Project Name: I-495/I-270 Managed Lanes Study **Mitigation Site Number:** SSS-150020

Projects Estimated Stream Mitigation Needs (LF): TBD

Date of Field Assessment: 11/16/2018 **Consultant Firm/Investigator(s):** CRI/MD, SJ

Site Location Details-taken from desktop review

County: Montgomery **Cross Roads:** Randolph Rd & Kemp Mill Rd

Basin (HUC 8): Middle Potomac-Anacostia-Occoquan **MDE Watershed (8 digit):** 02140205

Proximity to Impacted Stream (mi.): 3.5 **Lat/Long:** 39.068978 -77.028791

Site Data

Parcel Size (ac): 3 parcels - 14.5, 83.5, 57.2 **Potential Restoration Reach (LF):** 2,583

Site Opportunities: _X_ Channel Restoration ___ Livestock Exclusion _____ Riparian Buffer Planting _X_ Habitat Enhancement ___ Fish Passage

Stream Order: 3rd **Stream Hydrology:** Perennial **Stream Use:** IV

Drainage Area to Reach (sq. mi.) 4.5

Land Use: Forest **Mapped Soils:** Hatboro silt loam

Property Address: Randolph Road, Silver Spring, MD 20906

Property Owner(s): M-NCPPC

General Field Observations

Is there evidence that the stream has been disturbed by some kind of human action, like grading, dumping, livestock, culvert, etc?	Can the stream restoration be reasonably done within the confines of the parcel or does it require connections beyond the parcel limits? Explain
Explain:	Explain:
Yes, rip rap armored sewer crossing observed	Yes, best access will be from Tivoli which is pretty far from the study site.

Mitigation Site Rating

Criteria	Score	Criteria	Score
Estimated Bank erosion within reach	5	**Vegetation**	1
10 - Greater than 50% 5 - 10% to 50% 1 - Less than 10%		10 - Herbaceous cover (non-wetland) 5 - Scrub-shrub cover (non-wetland) 1 - Mostly forested and/or wetland	
Describe: Outside meander, banks range from ~4-5 ft. tall, approximately 30% of total length of reach.		Describe: Mature forest is present on floodplain. Possible floodplain wetlands present at toe-of-slope.	
Degree of Channel Incision	5	**Land Use**	1
10 - Bank Height greater than 10 feet 5 - Bank Height between 3 and 10 feet 1 - Bank Height less than 3 feet		10 - Agricultural or Open Space 5 - Marginal Pasture 1 - Old field/ Developed/Forested	
Describe: Banks are incised and range from ~4-5 ft. tall. It may be difficult to raise the channel at confluence with Northwest Branch Anacostia River.		Describe: Mature forest is present on floodplain.	
Existing Floodplain Access	10	**Opportunity for Ecological Lift**	5
10 - No evidence of out of bank flooding 5- Yes (Infrequent out of bank flow) 1 - Yes (evidence of frequent flooding)		10 - Conditions exist for several aspects of lift to be achieved and sustained 5 - Lift limited to one or few aspects 1 - Conditions are such that Lift is difficult to achieve and sustain	
Describe: No evidence of rack lines or sediment deposition on floodplain.		Describe: Potential for habitat enhancement, increasing geomorphic stability.	
Opportunity for Floodplain Development	1	**Ease of Access**	1
10 - Existing space for floodplain greater than 10 times stream width 5 - Existing space for floodplain 3 to 10 times stream width 1 - Little to no space for floodplain development		10 - Yes (with existing direct vehicular access to potential site) 5- yes (open but no existing vehicular access) 1 - No (no vehicular access, clearing needed)	
Describe: It may be difficult to raise the channel at confluence with Northwest Branch Anacostia River. Floodplain consists of mature forest.		Describe: The best access to site is through neighborhood west of site or via Trivoli Lake Blvd.	
Drainage Area Evaluation	1	**Utilities Present**	1
10 -D.A. less than 1 sq. mi. 5- D. A. between 1 & 3 sq. mi. 1 - D. A. greater than 3 sq. mi.		10 - No utilities on site 5 - Utilities but not within restoration area 1 - Utilities within potential restoration area	
Describe: Drainage area - 4.5 square miles.		Describe: Sewer crossing observed at upstream end, but may be possible to avoid. Sewer within floodplain.	
		Total Score out of 100	31

Map



Site No.	SSS-150020		Scale: 1 in. = 2,000

Site Photos









Stream Mitigation Field Site Assessment Form

Project Details

Project Name: I-495/I-270 Managed Lanes Study **Mitigation Site Number:** SSS-150021

Projects Estimated Stream Mitigation Needs (LF): TBD

Date of Field Assessment: 11/12/2018 **Consultant Firm/Investigator(s):** CRI/MD, SN

Site Location Details-taken from desktop review

County: Montgomery **Cross Roads:** Wick Ln & Keats Ter

Basin (HUC 8): Middle Potomac-Anacostia-Occoquan **MDE Watershed (8 digit):** 02140206

Proximity to Impacted Stream (mi.): 2.5 **Lat/Long:** 39.127546 -77.139088

Site Data

Parcel Size (ac): 3 parcels - 30.4, 80.4, 0.9 **Potential Restoration Reach (LF):** 1,781

Site Opportunities: __X__Channel Restoration ___Livestock Exclusion _____Riparian Buffer Planting ___Habitat Enhancement __X__Fish Passage

Stream Order: 1st **Stream Hydrology:** Perennial **Stream Use:** IV

Drainage Area to Reach (sq. mi.) 0.32

Land Use: Forest **Mapped Soils:** Hatboro silt loam, Codorus silt loam, Glenelg silt loam

Property Address: Main Parcel - Needwood Road, Rockville, MD 20855

Property Owner(s): M-NCPPC

General Field Observations

Is there evidence that the stream has been disturbed by some kind of human action, like grading, dumping, livestock, culvert, etc?	Can the stream restoration be reasonably done within the confines of the parcel or does it require connections beyond the parcel limits? Explain
Explain:	Explain:
Yes; Culvert present at head, placed rip rap at upstream end, downstream of culvert.	Yes; Stream site completely within M-NCPPC property.

Mitigation Site Rating

Criteria	Score	Criteria	Score
Estimated Bank erosion within reach	10	**Vegetation**	1
10 - Greater than 50% 5 - 10% to 50% 1 - Less than 10%		10 - Herbaceous cover (non-wetland) 5 - Scrub-shrub cover (non-wetland) 1 - Mostly forested and/or wetland	
Describe:		Describe:	
Approximately 70% of banks are eroded, ranging from ~4-9 ft. tall, alternating at meanders. Several areas of severe erosion.		Vegetation is mostly forested, with many vines and invasive species noted.	
Degree of Channel Incision	5	**Land Use**	1
10 - Bank Height greater than 10 feet 5 - Bank Height between 3 and 10 feet 1 - Bank Height less than 3 feet		10 - Agricultural or Open Space 5 - Marginal Pasture 1 - Old field/ Developed/Forested	
Describe:		Describe:	
Bank heights range between ~3-10 ft. tall for most of the stream length. Approximately 40% of banks are over 5 ft. tall.		Land use consists of forest.	
Existing Floodplain Access	5	**Opportunity for Ecological Lift**	10
10 - No evidence of out of bank flooding 5- Yes (Infrequent out of bank flow) 1 - Yes (evidence of frequent flooding)		10 - Conditions exist for several aspects of lift to be achieved and sustained 5 - Lift limited to one or few aspects 1 - Conditions are such that Lift is difficult to achieve and sustain	
Describe:		Describe:	
Few indicators of out-of-bank flow in parts of the reach. Bent over vegetation and rack lines present.		Potential for bank height and encroachment ration improvement, floodplain reconnectivity, stabilizing severely eroded banks, and improving vegetative cover with plantings.	
Opportunity for Floodplain Development	10	**Ease of Access**	5
10 - Existing space for floodplain greater than 10 times stream width 5 - Existing space for floodplain 3 to 10 times stream width 1 - Little to no space for floodplain development		10 - Yes (with existing direct vehicular access to potential site) 5- yes (open but no existing vehicular access) 1 - No (no vehicular access, clearing needed)	
Describe:		Describe:	
Wide valley present, but stream is incised so the channel would have to be raised to floodplain.		There appears to be good access from Wick Lane with little maintenance of traffic needed and minor tree trimming.	
Drainage Area Evaluation	10	**Utilities Present**	5
10 -D.A. less than 1 sq. mi. 5- D. A. between 1 & 3 sq. mi. 1 - D. A. greater than 3 sq. mi.		10 - No utilities on site 5 - Utilities but not within restoration area 1 - Utilities within potential restoration area	
Describe:		Describe:	
Drainage area - 0.32 square mile.		Sewer manhole present at upstream end and approximately 150 feet from channel at edge of valley.	
		Total Score out of 100	62

Map



Site No.	SSS-150021		Scale: 1 in. = 2,000

Site Photos









Stream Mitigation Field Site Assessment Form

Project Details

Project Name: I-495/I-270 Managed Lanes Study **Mitigation Site Number:** SSS-150023

Projects Estimated Stream Mitigation Needs (LF): TBD

Date of Field Assessment: 11/14/2018 **Consultant Firm/Investigator(s):** CRI/MD, DS

Site Location Details-taken from desktop review

County: Montgomery **Cross Roads:** Glenallan Ave & Kemp Mill Rd

Basin (HUC 8): Middle Potomac-Anacostia-Occoquan **MDE Watershed (8 digit):** 02140205

Proximity to Impacted Stream (mi.): 2.9 **Lat/Long:** 39.061106 -77.028795

Site Data

Parcel Size (ac): 4 parcels - 97.0, 4.0, 5.3, 49.6 **Potential Restoration Reach (LF):** 3,069

Site Opportunities: __X__Channel Restoration ____Livestock Exclusion _____Riparian Buffer Planting _X__Habitat Enhancement ____Fish Passage

Stream Order: 2nd **Stream Hydrology:** Perennial **Stream Use:** IV

Drainage Area to Reach (sq. mi.) 1.18

Land Use: Forest **Mapped Soils:** Hatboro silt loam, Glenelg silt loam

Property Address: Main Parcel - Kemp Mill Road, Silver Spring 20902

Property Owner(s): M-NCPPC, Montgomery County

General Field Observations

Is there evidence that the stream has been disturbed by some kind of human action, like grading, dumping, livestock, culvert, etc?	Can the stream restoration be reasonably done within the confines of the parcel or does it require connections beyond the parcel limits? Explain
Explain:	Explain:
Yes; Road culvert present at Kemp Mill Road. Pedestrian bridge and horse trail bridge also present.	Yes; Possible to extend upstream into adjacent parcels for additional length.

Mitigation Site Rating

Criteria	Score	Criteria	Score
Estimated Bank erosion within reach	5	**Vegetation**	1
10 - Greater than 50% 5 - 10% to 50% 1 - Less than 10%		10 - Herbaceous cover (non-wetland) 5 - Scrub-shrub cover (non-wetland) 1 - Mostly forested and/or wetland	
Describe: A few spots of minor-to-moderate bank erosion are present with sparse areas of high bank erosion. Banks are highly erodible.		Describe: Vegetation consists mostly of a forested riparian buffer. The left bank upstream of Kemp Mill Road contains a ~20-50 ft. forested buffer and the right bank contains greater than 200 feet of mature forest buffer.	
Degree of Channel Incision	5	**Land Use**	1
10 - Bank Height greater than 10 feet 5 - Bank Height between 3 and 10 feet 1 - Bank Height less than 3 feet		10 - Agricultural or Open Space 5 - Marginal Pasture 1 - Old field/ Developed/Forested	
Describe: Bank heights are approximately 4 ft. on average.		Describe: Land use consists of forested park land.	
Existing Floodplain Access	5	**Opportunity for Ecological Lift**	10
10 - No evidence of out of bank flooding 5- Yes (Infrequent out of bank flow) 1 - Yes (evidence of frequent flooding)		10 - Conditions exist for several aspects of lift to be achieved and sustained 5 - Lift limited to one or few aspects 1 - Conditions are such that Lift is difficult to achieve and sustain	
Describe: Few areas get out-of-bank flow during storm events. Evidence of fine sediment deposits present.		Describe: Potential for geomorphic uplift, increase floodplain access, provide sediment deposition, enhance habitat.	
Opportunity for Floodplain Development	5	**Ease of Access**	5
10 - Existing space for floodplain greater than 10 times stream width 5 - Existing space for floodplain 3 to 10 times stream width 1 - Little to no space for floodplain development		10 - Yes (with existing direct vehicular access to potential site) 5- yes (open but no existing vehicular access) 1 - No (no vehicular access, clearing needed)	
Describe: Floodplain development would require moderate tree impacts. Potential exists specifically on left stream bank.		Describe: Potential access off of Glenallan Ave and Kemp Mill Rd. Minor clearing may be required.	
Drainage Area Evaluation	5	**Utilities Present**	10
10 -D.A. less than 1 sq. mi. 5- D. A. between 1 & 3 sq. mi. 1 - D. A. greater than 3 sq. mi.		10 - No utilities on site 5 - Utilities but not within restoration area 1 - Utilities within potential restoration area	
Describe: Drainage area - 1.18 square miles.		Describe: No utilities observed.	
		Total Score out of 100	52

Map



Site No.	SSS-150023		Scale: 1 in. = 2,000

Site Photos









Stream Mitigation Field Site Assessment Form

Project Details

Project Name: I-495/I-270 Managed Lanes Study **Mitigation Site Number:** SSS-150040

Projects Estimated Stream Mitigation Needs (LF): TBD

Date of Field Assessment: 11/12/2018 **Consultant Firm/Investigator(s):** CRI/MD, SN

Site Location Details-taken from desktop review

County: Montgomery **Cross Roads:** Olney Laytonsville Rd & Stanbrook Ln

Basin (HUC 8): Middle Potomac-Anacostia-Occoquan **MDE Watershed (8 digit):** 02140206

Proximity to Impacted Stream (mi.): 5.4 **Lat/Long:** 39.183457 -77.120731

Site Data

Parcel Size (ac): 2 parcels - 62.7, 31.8 **Potential Restoration Reach (LF):** 1,477

Site Opportunities: ___Channel Restoration ___Livestock Exclusion ___X___Riparian Buffer Planting ___Habitat Enhancement ___Fish Passage

Stream Order: 1st **Stream Hydrology:** Intermittent **Stream Use:** III

Drainage Area to Reach (sq. mi.) N/A

Land Use: Forest, Agriculture **Mapped Soils:** Baile silt loam

Property Address: East Parcel - 19820 Muncaster Road, Rockville, MD 20855

Property Owner(s): Montgomery County

General Field Observations

Is there evidence that the stream has been disturbed by some kind of human action, like grading, dumping, livestock, culvert, etc?	Can the stream restoration be reasonably done within the confines of the parcel or does it require connections beyond the parcel limits? Explain
Explain:	Explain:
No, no evidence of human action	Yes; Stream is well within Montgomery County property. Access from roadway within property present.

Mitigation Site Rating

Criteria	Score	Criteria	Score
Estimated Bank erosion within reach	5	**Vegetation**	1
10 - Greater than 50% 5 - 10% to 50% 1 - Less than 10%		10 - Herbaceous cover (non-wetland) 5 - Scrub-shrub cover (non-wetland) 1 - Mostly forested and/or wetland	
Describe: Minor erosion present. Stream slightly incised downstream of minor headcuts, characteristic of stable "E"channel.		Describe: Wetland meadow present with adjacent tree plantings. Section of palustrine scrub-shrub wetland present. Some multiflora rose observed.	
Degree of Channel Incision	1	**Land Use**	1
10 - Bank Height greater than 10 feet 5 - Bank Height between 3 and 10 feet 1 - Bank Height less than 3 feet		10 - Agricultural or Open Space 5 - Marginal Pasture 1 - Old field/ Developed/Forested	
Describe: Incision characteristic of stable "E" channel (~1.5 ft. tall banks).		Describe: Wet meadow and tree plantings present. Riparian buffer will develop into forest.	
Existing Floodplain Access	1	**Opportunity for Ecological Lift**	1
10 - No evidence of out of bank flooding 5- Yes (Infrequent out of bank flow) 1 - Yes (evidence of frequent flooding)		10 - Conditions exist for several aspects of lift to be achieved and sustained 5 - Lift limited to one or few aspects 1 - Conditions are such that Lift is difficult to achieve and sustain	
Describe: Low banks present throughout reach. Flatland grasses present. Standing water noted within floodplain.		Describe: Potential exists for lift as stable channel is present with existing wetlands and tree plantings to enhance riparian buffer.	
Opportunity for Floodplain Development	5	**Ease of Access**	10
10 - Existing space for floodplain greater than 10 times stream width 5 - Existing space for floodplain 3 to 10 times stream width 1 - Little to no space for floodplain development		10 - Yes (with existing direct vehicular access to potential site) 5- yes (open but no existing vehicular access) 1 - No (no vehicular access, clearing needed)	
Describe: Floodplain is already 3-10 times the stream width for most of the reach.		Describe: Existing park entrance is present, in addition to a maintained path parallel to the stream.	
Drainage Area Evaluation	10	**Utilities Present**	10
10 -D.A. less than 1 sq. mi. 5- D. A. between 1 & 3 sq. mi. 1 - D. A. greater than 3 sq. mi.		10 - No utilities on site 5 - Utilities but not within restoration area 1 - Utilities within potential restoration area	
Describe: Drainage area is less than 1 square mile.		Describe: No utilities observed.	
		Total Score out of 100	45

Map



Site No.	SSS-150040		Scale: 1 in. = 2,000

Site Photos









Stream Mitigation Field Site Assessment Form

Project Details

Project Name: I-495/I-270 Managed Lanes Study **Mitigation Site Number:** SSS-150041

Projects Estimated Stream Mitigation Needs (LF): TBD

Date of Field Assessment: 11/12/2018 **Consultant Firm/Investigator(s):** CRI/MD, SN

Site Location Details-taken from desktop review

County: Montgomery **Cross Roads:** Olney Laytonsville Rd & Wickham Rd

Basin (HUC 8): Middle Potomac-Anacostia-Occoquan **MDE Watershed (8 digit):** 02140206

Proximity to Impacted Stream (mi.): 5.8 **Lat/Long:** 39.17486 -77.100179

Site Data

Parcel Size (ac): 1 parcel - 19.4 **Potential Restoration Reach (LF):** 925

Site Opportunities: ___Channel Restoration ___Livestock Exclusion ___X___Riparian Buffer Planting _X__Habitat Enhancement ____Fish Passage

Stream Order: 1st **Stream Hydrology:** Perennial **Stream Use:** III

Drainage Area to Reach (sq. mi.) 0.13

Land Use: Forest, Agriculture **Mapped Soils:** Baile silt loam

Property Address: Olney Laytonsville Road, Olney, MD 20832

Property Owner(s): M-NCPPC

General Field Observations

Is there evidence that the stream has been disturbed by some kind of human action, like grading, dumping, livestock, culvert, etc?	Can the stream restoration be reasonably done within the confines of the parcel or does it require connections beyond the parcel limits? Explain
Explain:	Explain:
Yes; Signs of historic straightening. Culvert present at road crossing seems too low.	No; May need use of County ROW along Olney Laytonsville Road or access from community at Wickham Road.

Mitigation Site Rating

Criteria	Score	Criteria	Score
Estimated Bank erosion within reach	1	**Vegetation**	1
10 - Greater than 50% 5 - 10% to 50% 1 - Less than 10%		10 - Herbaceous cover (non-wetland) 5 - Scrub-shrub cover (non-wetland) 1 - Mostly forested and/or wetland	
Describe:		Describe:	
No bank erosion observed.		Wetland meadow present throughout site.	
Degree of Channel Incision	1	**Land Use**	5
10 - Bank Height greater than 10 feet 5 - Bank Height between 3 and 10 feet 1 - Bank Height less than 3 feet		10 - Agricultural or Open Space 5 - Marginal Pasture 1 - Old field/ Developed/Forested	
Describe:		Describe:	
Bank height is less than 1 foot tall throughout site.		Possible fallow agricultural field, currently wetland meadow.	
Existing Floodplain Access	1	**Opportunity for Ecological Lift**	5
10 - No evidence of out of bank flooding 5- Yes (Infrequent out of bank flow) 1 - Yes (evidence of frequent flooding)		10 - Conditions exist for several aspects of lift to be achieved and sustained 5 - Lift limited to one or few aspects 1 - Conditions are such that Lift is difficult to achieve and sustain	
Describe:		Describe:	
Stream banks are low. Standing water and saturated soils are present within the floodplain. Vegetation bent over.		Potential to improve riparian buffer and enhance habitat. Stream is stable but has been historically straightened.	
Opportunity for Floodplain Development	10	**Ease of Access**	5
10 - Existing space for floodplain greater than 10 times stream width 5 - Existing space for floodplain 3 to 10 times stream width 1 - Little to no space for floodplain development		10 - Yes (with existing direct vehicular access to potential site) 5- yes (open but no existing vehicular access) 1 - No (no vehicular access, clearing needed)	
Describe:		Describe:	
Stream situated in a large, wet meadow within an open field. Banks are already low, so floodplain development would not require a lot of grading.		No direct vehicular access. Path may be needed through wetlands. Maintenance of traffic required along road.	
Drainage Area Evaluation	10	**Utilities Present**	10
10 -D.A. less than 1 sq. mi. 5- D. A. between 1 & 3 sq. mi. 1 - D. A. greater than 3 sq. mi.		10 - No utilities on site 5 - Utilities but not within restoration area 1 - Utilities within potential restoration area	
Describe:		Describe:	
Drainage area - 0.13 square mile.		No utilities observed.	
		Total Score out of 100	49

Map



Site No.	SSS-150041		Scale: 1 in. = 2,000

Site Photos









Stream Mitigation Field Site Assessment Form

Project Details

Project Name: I-495/I-270 Managed Lanes Study **Mitigation Site Number:** SSS-160039

Projects Estimated Stream Mitigation Needs (LF): TBD

Date of Field Assessment: 6/14/2019 **Consultant Firm/Investigator(s):** CRI - SN/DS

Site Location Details-taken from desktop review

County: Prince George's **Cross Roads:** Hamilton St and 38th Avenue

Basin (HUC 8): Middle Potomac-Anacostia-Occoquan **MDE Watershed (8 digit):** 2140205

Proximity to Impacted Stream (mi.): 4.5 **Lat/Long:** 38.950194 -76.951858

Site Data

Parcel Size (ac): 2.5, 17.4, 6< 1ac **Potential Restoration Reach (LF):** 1,123

Site Opportunities: __X__Channel Restoration ____Livestock Exclusion _____Riparian Buffer Planting ___Habitat Enhancement _X__Fish Passage

Stream Order: 1st **Stream Hydrology:** Perennial **Stream Use:** I

Drainage Area to Reach (sq. mi.) 0.46

Land Use: Forest, open space **Mapped Soils:** Codorus-Hatboro-Urban land complex and Codorus-Hatboro

Property Address: 3901 Hamilton St Hyattsville, MD 20781

Property Owner(s): M-NCPPC, WSSC

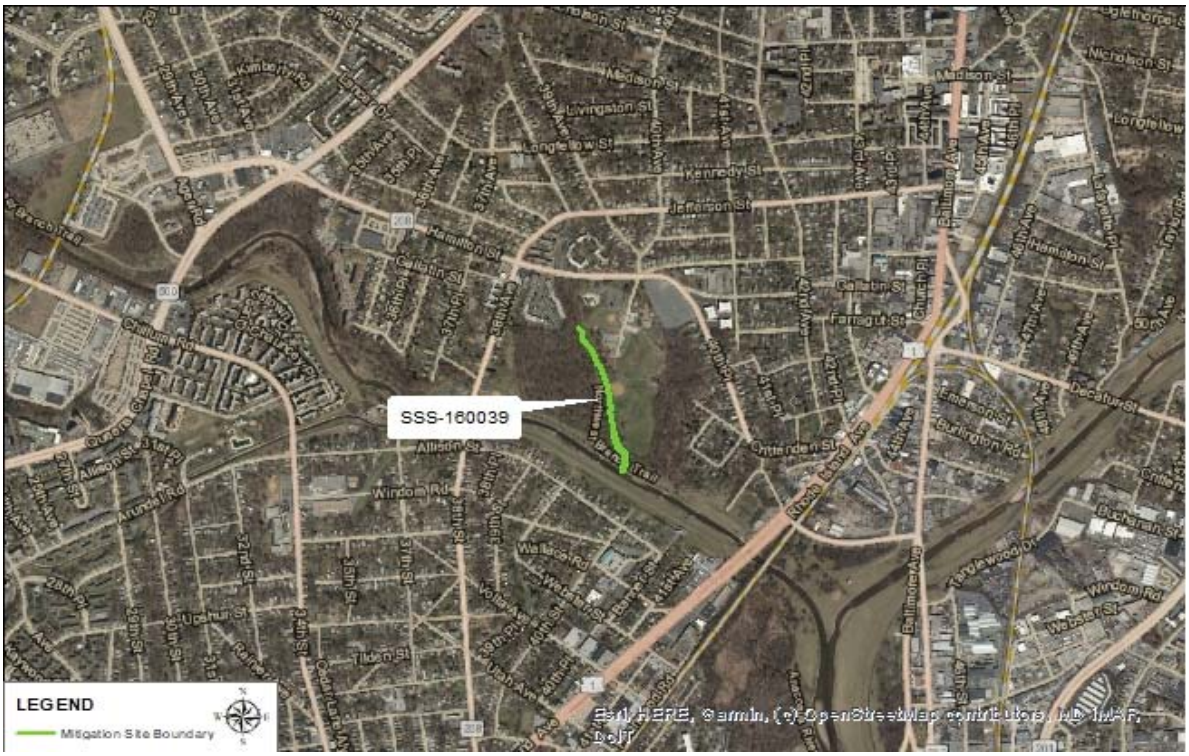
General Field Observations

Is there evidence that the stream has been disturbed by some kind of human action, like grading, dumping, livestock, culvert, etc?	Can the stream restoration be reasonably done within the confines of the parcel or does it require connections beyond the parcel limits? Explain
Explain:	Explain:
Yes, bridges and parkland directly adjacent, lots of trash in stream, footbridge over stream, perhaps historically straightened.	Yes, all within M-NCPPS property. Could extend downstream to one additional private property owner to extend approx. 1000 lf.

Mitigation Site Rating

Criteria	Score	Criteria	Score
Estimated Bank erosion within reach	5	**Vegetation**	1
10 - Greater than 50% 5 - 10% to 50% 1 - Less than 10%		10 - Herbaceous cover (non-wetland) 5 - Scrub-shrub cover (non-wetland) 1 - Mostly forested and/or wetland	
Describe:		Describe:	
Erosion looks to be old, stream most likely previously downcut and now stream banks look more stable.		Mature to old deciduous forest along left bank, some forest and parking lot along right bank.	
Degree of Channel Incision	5	**Land Use**	5
10 - Bank Height greater than 10 feet 5 - Bank Height between 3 and 10 feet 1 - Bank Height less than 3 feet		10 - Agricultural or Open Space 5 - Marginal Pasture 1 - Old field/ Developed/Forested	
Describe:		Describe:	
Approximately 5' tall eroded banks, entrenched stream channel and over widened.		Adjacent land use is forest and developed/ park and open space.	
Existing Floodplain Access	5	**Opportunity for Ecological Lift**	5
10 - No evidence of out of bank flooding 5- Yes (Infrequent out of bank flow) 1 - Yes (evidence of frequent flooding)		10 - Conditions exist for several aspects of lift to be achieved and sustained 5 - Lift limited to one or few aspects 1 - Conditions are such that Lift is difficult to achieve and sustain	
Describe:		Describe:	
Mostly 5' banks but some inside banks and other locations have small vegetated benches.		Poor water quality is limiting, increase floodplain, provide lateral stability, increase habitat.	
Opportunity for Floodplain Development	10	**Ease of Access**	5
10 - Existing space for floodplain greater than 10 times stream width 5 - Existing space for floodplain 3 to 10 times stream width 1 - Little to no space for floodplain development		10 - Yes (with existing direct vehicular access to potential site) 5- yes (open but no existing vehicular access) 1 - No (no vehicular access, clearing needed)	
Describe:		Describe:	
Stream is over widened		Adjacent to public park with ample parking.	
Drainage Area Evaluation	10	**Utilities Present**	1
10 -D.A. less than 1 sq. mi. 5- D. A. between 1 & 3 sq. mi. 1 - D. A. greater than 3 sq. mi.		10 - No utilities on site 5 - Utilities but not within restoration area 1 - Utilities within potential restoration area	
Describe:		Describe:	
DA = 0.46 ac		Sewer manhole potentially near site, crossing at footbridge, gas line crossing.	
		Total Score out of 100	52

Map



Site No.	SSS-160039		Scale: 1 in. = 2,000 ft

Site Photos









Stream Mitigation Field Site Assessment Form

Project Details

Project Name: 495/270 **Mitigation Site Number:** SSS-160041
Projects Estimated Stream Mitigation Needs (LF): TBD

Date of Field Assessment: 8/21/2019 **Consultant Firm/Investigator(s):** CRI- MD/DS

Site Location Details-taken from desktop review

County: Prince George's **Cross Roads:** Nashville Rd/Newburg Dr
Basin (HUC 8): Middle Potomac-Anacostia-Occoquan **MDE Watershed (8 digit):** 214025
Proximity to Impacted Stream (mi.): 0 **Lat/Long:** 38.983586 -76.884114

Site Data

Parcel Size (ac): 265.6 **Potential Restoration Reach (LF):** 2,408
Site Opportunities: __X__Channel Restoration ____Livestock Exclusion _____Riparian Buffer Planting ___Habitat Enhancement ___Fish Passage
Stream Order: 1st **Stream Hydrology:** Perennial **Stream Use:** I
Drainage Area to Reach (sq. mi.) 0.97
Land Use: Greenbelt Park/Residential **Mapped Soils**: Christiana-Downer-Urban, Zekiah, and Russett-Christiana-Urban
Property Address: 6565 Greenbelt Rd, Greenbelt, MD 20770
Property Owner(s): National Parks Service/Private residence (access only)

General Field Observations

Is there evidence that the stream has been disturbed by some kind of human action, like grading, dumping, livestock, culvert, etc.?	Can the stream restoration be reasonably done within the confines of the parcel or does it require connections beyond the parcel limits? Explain
Explain:	Explain:
Channelization from road and culvert	Yes, NPS parcel but may need additional access at upstream neighborhood

Mitigation Site Rating

Criteria	Score	Criteria	Score
Estimated Bank erosion within reach	10	**Vegetation**	1
10 - Greater than 50% 5 - 10% to 50% 1 - Less than 10%		10 - Herbaceous cover (non-wetland) 5 - Scrub-shrub cover (non-wetland) 1 - Mostly forested and/or wetland	
Describe: Greater than 50% of banks experiencing erosion, ~80%		Describe: Forested	
Degree of Channel Incision	5	**Land Use**	1
10 - Bank Height greater than 10 feet 5 - Bank Height between 3 and 10 feet 1 - Bank Height less than 3 feet		10 - Agricultural or Open Space 5 - Marginal Pasture 1 - Old field/ Developed/Forested	
Describe: Average bank height ~6 feet		Describe: Forested	
Existing Floodplain Access	10	**Opportunity for Ecological Lift**	5
10 - No evidence of out of bank flooding 5- Yes (Infrequent out of bank flow) 1 - Yes (evidence of frequent flooding)		10 - Conditions exist for several aspects of lift to be achieved and sustained 5 - Lift limited to one or few aspects 1 - Conditions are such that Lift is difficult to achieve and sustain	
Describe: Very little if any out of bank flow evident		Describe: Vertical/lateral stability , bedform diversity, floodplain reconnection	
Opportunity for Floodplain Development	10	**Ease of Access**	1
10 - Existing space for floodplain greater than 10 times stream width 5 - Existing space for floodplain 3 to 10 times stream width 1 - Little to no space for floodplain development		10 - Yes (with existing direct vehicular access to potential site) 5- yes (open but no existing vehicular access) 1 - No (no vehicular access, clearing needed)	
Describe: Existing space for ten times stream width with tree loss, or channel bed being raised		Describe: No access existing, clearing needed. Potential access from Kepner rd	
Drainage Area Evaluation	10	**Utilities Present**	10
10 -D.A. less than 1 sq. mi. 5- D. A. between 1 & 3 sq. mi. 1 - D. A. greater than 3 sq. mi.		10 - No utilities on site 5 - Utilities but not within restoration area 1 - Utilities within potential restoration area	
Describe: 0.97		Describe: No utilities within NPS parcel	
		Total Score out of 100	63

Map



Site No.	0		Scale: 1 in. =	2,000

Site Photos









Stream Mitigation Field Site Assessment Form

Project Details

Project Name: I-495/I-270 Managed Lanes Study **Mitigation Site Number:** SSS-160042

Projects Estimated Stream Mitigation Needs (LF): TBD

Date of Field Assessment: 11/20/2018 **Consultant Firm/Investigator(s):** CRI/CN, DS

Site Location Details-taken from desktop review

County: Prince George's **Cross Roads:** I-295 & Greenbelt Park

Basin (HUC 8): Middle Potomac-Anacostia-Occoquan **MDE Watershed (8 digit):** 02140205

Proximity to Impacted Stream (mi.): 0.48 **Lat/Long:** 38.994218 -76.899435

Site Data

Parcel Size (ac): 1 parcel - 726.5 **Potential Restoration Reach (LF):** 1,091

Site Opportunities: __X__Channel Restoration ___Livestock Exclusion _____Riparian Buffer Planting _X__Habitat Enhancement ____Fish Passage

Stream Order: 1st **Stream Hydrology:** Perennial **Stream Use:** I

Drainage Area to Reach (sq. mi.) 0.03

Land Use: Forest **Mapped Soils:** Zekiah and Issue soils

Property Address: Greenbelt Road, Greenbelt, MD 20770

Property Owner(s): USA Greenbelt National Park

General Field Observations

Is there evidence that the stream has been disturbed by some kind of human action, like grading, dumping, livestock, culvert, etc?	Can the stream restoration be reasonably done within the confines of the parcel or does it require connections beyond the parcel limits? Explain
Explain:	Explain:
Yes; Upstream end of reach begins at outfall. Rip rap dumped as headcut stabilization, flows through pipe under Greenbelt Park access road.	Yes, the stream is completely within the parcel

Mitigation Site Rating

Criteria	Score	Criteria	Score
Estimated Bank erosion within reach	10	**Vegetation**	1
10 - Greater than 50% 5 - 10% to 50% 1 - Less than 10%		10 - Herbaceous cover (non-wetland) 5 - Scrub-shrub cover (non-wetland) 1 - Mostly forested and/or wetland	
Describe:		Describe:	
Both banks eroded through entire reach. Bank height ranges from ~5-15 ft. tall.		Site is located within a forested national park.	
Degree of Channel Incision	10	**Land Use**	1
10 - Bank Height greater than 10 feet 5 - Bank Height between 3 and 10 feet 1 - Bank Height less than 3 feet		10 - Agricultural or Open Space 5 - Marginal Pasture 1 - Old field/ Developed/Forested	
Describe:		Describe:	
Banks are severely incised due to difference in culvert elevations between upstream and downstream end.		Land use is forested national park.	
Existing Floodplain Access	10	**Opportunity for Ecological Lift**	1
10 - No evidence of out of bank flooding 5- Yes (Infrequent out of bank flow) 1 - Yes (evidence of frequent flooding)		10 - Conditions exist for several aspects of lift to be achieved and sustained 5 - Lift limited to one or few aspects 1 - Conditions are such that Lift is difficult to achieve and sustain	
Describe:		Describe:	
Banks are severely incised, no evidence of out-of-bank flooding.		Stream situated within very steep valley. Culvert invert elevations prevent significant changes. Headcut/grade control only realistic option for lift.	
Opportunity for Floodplain Development	1	**Ease of Access**	1
10 - Existing space for floodplain greater than 10 times stream width 5 - Existing space for floodplain 3 to 10 times stream width 1 - Little to no space for floodplain development		10 - Yes (with existing direct vehicular access to potential site) 5- yes (open but no existing vehicular access) 1 - No (no vehicular access, clearing needed)	
Describe:		Describe:	
Flows down valley wall of mainstem, no real floodplain present.		Roads at upstream and downstream end, but dense forest present throughout reach.	
Drainage Area Evaluation	10	**Utilities Present**	10
10 -D.A. less than 1 sq. mi. 5- D. A. between 1 & 3 sq. mi. 1 - D. A. greater than 3 sq. mi.		10 - No utilities on site 5 - Utilities but not within restoration area 1 - Utilities within potential restoration area	
Describe:		Describe:	
Drainage area - 0.03 square mile.		No utilities observed.	
		Total Score out of 100	55

Map



Site No.	SSS-160042		Scale: 1 in. = 2,000

Site Photos









Stream Mitigation Field Site Assessment Form

Project Details

Project Name: I-495/I-270 Managed Lanes Study **Mitigation Site Number:** SSS-160053

Projects Estimated Stream Mitigation Needs (LF): TBD

Date of Field Assessment: 6/11/2019 **Consultant Firm/Investigator(s):** CRI- CN, SJ

Site Location Details-taken from desktop review

County: Prince George's **Cross Roads:** University Blvd E/W Park Dr

Basin (HUC 8): Middle Potomac-Anacostia-Occoquan **MDE Watershed (8 digit):** 2140205

Proximity to Impacted Stream (mi.): 1.8 **Lat/Long:** 38.987488 -76.964188

Site Data

Parcel Size (ac): 4 Parcels: 1.3, 21.7, 18.5, 8.5 **Potential Restoration Reach (LF):** 2378

Site Opportunities: __X__Channel Restoration ____Livestock Exclusion _____Riparian Buffer Planting ___Habitat Enhancement ___Fish Passage

Stream Order: 4th **Stream Hydrology:** Perennial **Stream Use:** IV

Drainage Area to Reach (33.7

Land Use: Forest **Mapped Soils:** Codorus and Hatboro soils

Property Address: Main Parcel: 8000 W Park Dr, Adelphi, MD, 20783

Property Owner(s): Maryland National Capital Park & Planning Commission

General Field Observations

Is there evidence that the stream has been disturbed by some kind of human action, like grading, dumping, livestock, culvert, etc?	Can the stream restoration be reasonably done within the confines of the parcel or does it require connections beyond the parcel limits? Explain
Explain:	Explain:
Yes, bank armoring in multiple places, bridges US and DS of reach	Yes, can be done within parcel

Mitigation Site Rating

Criteria	Score	Criteria	Score
Estimated Bank erosion within reach	5	**Vegetation**	1
10 - Greater than 50% 5 - 10% to 50% 1 - Less than 10%		10 - Herbaceous cover (non-wetland) 5 - Scrub-shrub cover (non-wetland) 1 - Mostly forested and/or wetland	
Describe: Closer to 10%, some patches of hig - very high erosion on outer meand		Describe: Mature forest	
Degree of Channel Incision	5	**Land Use**	1
10 - Bank Height greater than 10 feet 5 - Bank Height between 3 and 10 feet 1 - Bank Height less than 3 feet		10 - Agricultural or Open Space 5 - Marginal Pasture 1 - Old field/ Developed/Forested	
Describe: 5-8' banks but good bars and FP benches		Describe: Mature forest	
Existing Floodplain Access	1	**Opportunity for Ecological Lift**	1
10 - No evidence of out of bank flooding 5- Yes (Infrequent out of bank flow) 1 - Yes (evidence of frequent flooding)		10 - Conditions exist for several aspects of lift to be achieved and sustained 5 - Lift limited to one or few aspects 1 - Conditions are such that Lift is difficult to achieve and sustain	
Describe: Sand deposition and racklines on FP		Describe: Not much needed other than some minor bank rehab/stabilization	
Opportunity for Floodplain Development	10	**Ease of Access**	5
10 - Existing space for floodplain greater than 10 times stream width 5 - Existing space for floodplain 3 to 10 times stream width 1 - Little to no space for floodplain development		10 - Yes (with existing direct vehicular access to potential site) 5- yes (open but no existing vehicular access) 1 - No (no vehicular access, clearing needed)	
Describe: Flat, wide floodplain area		Describe: Could access without extensive forest impacts	
Drainage Area Evaluation	1	**Utilities Present**	5
10 -D.A. less than 1 sq. mi. 5- D. A. between 1 & 3 sq. mi. 1 - D. A. greater than 3 sq. mi.		10 - No utilities on site 5 - Utilities but not within restoration area 1 - Utilities within potential restoration area	
Describe: 33.7 sq mi		Describe: Sewer present but not close to stream	
		Total Score out of 100	35

Map



Site No.	SSS-160053		Scale: 1 in. = 2,000 ft

Site Photos









Stream Mitigation Field Site Assessment Form

Project Details

Project Name: I-495/I-270 Managed Lanes Study **Mitigation Site Number:** SSS-160058

Projects Estimated Stream Mitigation Needs (LF): TBD

Date of Field Assessment: 6/11/2019 **Consultant Firm/Investigator(s):** RK&K/KJH, CAS

Site Location Details-taken from desktop review

County: Prince George's **Cross Roads:** Seat Pleasant Drive and Hill Road

Basin (HUC 8): Middle Potomac-Anacostia-Occoquan **MDE Watershed (8 digit):** 02140205

Proximity to Impacted Stream (mi.): 2.1 miles **Lat/Long:** 38.901499 -76.891591

Site Data

Parcel Size (ac): 9.6 **Potential Restoration Reach (LF):** 1,361

Site Opportunities: __X__Channel Restoration ___Livestock Exclusion _____Riparian Buffer Planting __X_Habitat Enhancement ___Fish Passage

Stream Order: 1st **Stream Hydrology:** Perennial **Stream Use:** I

Drainage Area to Reach (sq. mi.) 0.18

Land Use: Forested Parkland **Mapped Soils:** Christiana-Downer-Urban land complex

Property Address: Highland Park

Property Owner(s): MNCPPC - PG County

General Field Observations

Is there evidence that the stream has been disturbed by some kind of human action, like grading, dumping, livestock, culvert, etc?	Can the stream restoration be reasonably done within the confines of the parcel or does it require connections beyond the parcel limits? Explain
Explain: Extensive trash dumping	Explain: Yes

Mitigation Site Rating

Criteria	Score	Criteria	Score
Estimated Bank erosion within reach	5	**Vegetation**	1
10 - Greater than 50% 5 - 10% to 50% 1 - Less than 10%		10 - Herbaceous cover (non-wetland) 5 - Scrub-shrub cover (non-wetland) 1 - Mostly forested and/or wetland	
Describe: Localized areas of moderate to severe erosion. Some sections are stable.		Describe: Mid-successional forest - upland. Beech, tulip poplar, mixed oaks, spicebush, musslewood.	
Degree of Channel Incision	5	**Land Use**	1
10 - Bank Height greater than 10 feet 5 - Bank Height between 3 and 10 feet 1 - Bank Height less than 3 feet		10 - Agricultural or Open Space 5 - Marginal Pasture 1 - Old field/ Developed/Forested	
Describe: 5-10' tall banks		Describe: Forested parkland	
Existing Floodplain Access	10	**Opportunity for Ecological Lift**	5
10 - No evidence of out of bank flooding 5- Yes (Infrequent out of bank flow) 1 - Yes (evidence of frequent flooding)		10 - Conditions exist for several aspects of lift to be achieved and sustained 5 - Lift limited to one or few aspects 1 - Conditions are such that Lift is difficult to achieve and sustain	
Describe: No evidence, deeply incised channel		Describe: Opportunities for sediment reduction, instream habitat. Limited to a few aspects.	
Opportunity for Floodplain Development	1	**Ease of Access**	5
10 - Existing space for floodplain greater than 10 times stream width 5 - Existing space for floodplain 3 to 10 times stream width 1 - Little to no space for floodplain development		10 - Yes (with existing direct vehicular access to potential site) 5- yes (open but no existing vehicular access) 1 - No (no vehicular access, clearing needed)	
Describe: Limited by adjacent houses and recreational fields		Describe: No existing access. Old WSSC path with small tree impacts.	
Drainage Area Evaluation	10	**Utilities Present**	1
10 -D.A. less than 1 sq. mi. 5- D. A. between 1 & 3 sq. mi. 1 - D. A. greater than 3 sq. mi.		10 - No utilities on site 5 - Utilities but not within restoration area 1 - Utilities within potential restoration area	
Describe: 0.18 square miles		Describe: Sewerline runs along northern side of channel.	
		Total Score out of 100	44

Map



Site No.	SSS-160058		Scale: 1 in. =	2,000

Site Photos









Stream Mitigation Field Site Assessment Form

Project Details

Project Name: I-495/I-270 Managed Lanes Study **Mitigation Site Number:** SSS-160059

Projects Estimated Stream Mitigation Needs (LF): TBD

Date of Field Assessment: 6/14/2019 **Consultant Firm/Investigator(s):** CRI-SN/DS

Site Location Details-taken from desktop review

County: Prince George's **Cross Roads:** Hillside Ave and Oak Forest Ct

Basin (HUC 8): Middle Potomac-Anacostia-Occoquan **MDE Watershed (8 digit):** 02140205

Proximity to Impacted Stream (mi.): 1.7 **Lat/Long:** 38.929105 -76.902346

Site Data

Parcel Size (ac): 4 parcels (0.84, 1.57, 0.66, 4.82) **Potential Restoration Reach (LF):** 1347

Site Opportunities: __X__Channel Restoration ___Livestock Exclusion _____Riparian Buffer Planting __X_Habitat Enhancement ___Fish Passage

Stream Order: 1st **Stream Hydrology:** Perennial **Stream Use:** I

Drainage Area to Reach (sq. mi.) 0.17

Land Use: Forest, Residential **Mapped Soils:** Christiana-Downer-Urban land complex; Russett-Christiana-Urban land complex

Property Address: Oak St, Cheverly, MD 20785

Property Owner(s): Cheverly Mayor & Town Council, M-NCPPC

General Field Observations

Is there evidence that the stream has been disturbed by some kind of human action, like grading, dumping, livestock, culvert, etc?	Can the stream restoration be reasonably done within the confines of the parcel or does it require connections beyond the parcel limits? Explain
Explain: Yes, remnant restoration (bed/bank stabilization), culvert at RTE 50	Explain: Yes- within M-NCPPC property

Mitigation Site Rating

Criteria	Score	Criteria	Score
Estimated Bank erosion within reach	5	**Vegetation**	1
10 - Greater than 50% 5 - 10% to 50% 1 - Less than 10%		10 - Herbaceous cover (non-wetland) 5 - Scrub-shrub cover (non-wetland) 1 - Mostly forested and/or wetland	
Describe: DS section has previous restoration but was still eroding, overall stream appears to be downcutting, multiple man made grade control structures with localized success		Describe: Stream corridor is mostly forested young/mature deciduous	
Degree of Channel Incision	5	**Land Use**	1
10 - Bank Height greater than 10 feet 5 - Bank Height between 3 and 10 feet 1 - Bank Height less than 3 feet		10 - Agricultural or Open Space 5 - Marginal Pasture 1 - Old field/ Developed/Forested	
Describe: Average eroded bank height is approximately 4-5'		Describe: Forested adjacent to stream and residential housing encroaching in a few areas	
Existing Floodplain Access	5	**Opportunity for Ecological Lift**	5
10 - No evidence of out of bank flooding 5- Yes (Infrequent out of bank flow) 1 - Yes (evidence of frequent flooding)		10 - Conditions exist for several aspects of lift to be achieved and sustained 5 - Lift limited to one or few aspects 1 - Conditions are such that Lift is difficult to achieve and sustain	
Describe: Rarely accesses FP and only in specific areas		Describe: Lateral migration, vertical instability, habitat enhancement	
Opportunity for Floodplain Development	5	**Ease of Access**	1
10 - Existing space for floodplain greater than 10 times stream width 5 - Existing space for floodplain 3 to 10 times stream width 1 - Little to no space for floodplain development		10 - Yes (with existing direct vehicular access to potential site) 5- yes (open but no existing vehicular access) 1 - No (no vehicular access, clearing needed)	
Describe: Lower end of stream may be over 10 times, but majority of the stream only has an opportunity for 3-10 times the stream width		Describe: Stream ins entirely within forested buffer	
Drainage Area Evaluation	10	**Utilities Present**	1
10 -D.A. less than 1 sq. mi. 5- D. A. between 1 & 3 sq. mi. 1 - D. A. greater than 3 sq. mi.		10 - No utilities on site 5 - Utilities but not within restoration area 1 - Utilities within potential restoration area	
Describe: DA=0.17 sq mi		Describe: Overhead lines and possible sewer crossing observed	
		Total Score out of 100	39

Map



Site No.	SSS-160059		Scale: 1 in. = 2,000 ft

Site Photos









Stream Mitigation Field Site Assessment Form

Project Details

Project Name: I-495/I-270 Managed Lanes Study **Mitigation Site Number:** SSS-160060

Projects Estimated Stream Mitigation Needs (LF): TBD

Date of Field Assessment: 11/27/2018 **Consultant Firm/Investigator(s):** RK&K/KJH, BDM

Site Location Details-taken from desktop review

County: Prince George's **Cross Roads:** Seat Pleasant Dr. & Ashleaf Ave.

Basin (HUC 8): Middle Potomac-Anacostia-Occoquan **MDE Watershed (8 digit):** 02140205

Proximity to Impacted Stream (mi.): 2.53 **Lat/Long:** 38.89717533 -76.8994935

Site Data

Parcel Size (ac): Several parcels - 2.39, 17.71, 1.39, 4.89 **Potential Restoration Reach (LF):** 4,478

Site Opportunities: __X__Channel Restoration ____Livestock Exclusion ___X___Riparian Buffer Planting _X__Habitat Enhancement ___Fish Passage

Stream Order: 3rd **Stream Hydrology:** Perennial **Stream Use:** I

Drainage Area to Reach (sq. mi.) 3.08

Land Use: Forest **Mapped Soils:** Zekiah and Issue soils

Property Address: Martin Luther King Jr. Hwy, Capitol Heights 20743-0000

Property Owner(s): State of MD, Seat Pleasant Mayor & Comm Cou, Acuna Hugo R, Maryland National Capital Park & Planning Commissior

General Field Observations

Is there evidence that the stream has been disturbed by some kind of human action, like grading, dumping, livestock, culvert, etc?	Can the stream restoration be reasonably done within the confines of the parcel or does it require connections beyond the parcel limits? Explain
Explain:	Explain:
Entire site consists of concrete lined channel.	Restoration and access would be required on numerous property owner parcels.

Mitigation Site Rating

Criteria	Score	Criteria	Score
Estimated Bank erosion within reach	1	**Vegetation**	1
10 - Greater than 50% 5 - 10% to 50% 1 - Less than 10%		10 - Herbaceous cover (non-wetland) 5 - Scrub-shrub cover (non-wetland) 1 - Mostly forested and/or wetland	
Describe: Very minor erosion. Entire site consists of concrete lined channel.		Describe: Majority of site is surrounded by forest. Downstream reach is a mix of scrub-shrub, mowed lawn, and forest.	
Degree of Channel Incision	5	**Land Use**	1
10 - Bank Height greater than 10 feet 5 - Bank Height between 3 and 10 feet 1 - Bank Height less than 3 feet		10 - Agricultural or Open Space 5 - Marginal Pasture 1 - Old field/ Developed/Forested	
Describe: 6' foot tall concrete lined banks.		Describe: Majority of site is surrounded by forest located on a mix of county parkland, city parcels, and private properties.	
Existing Floodplain Access	10	**Opportunity for Ecological Lift**	1
10 - No evidence of out of bank flooding 5- Yes (Infrequent out of bank flow) 1 - Yes (evidence of frequent flooding)		10 - Conditions exist for several aspects of lift to be achieved and sustained 5 - Lift limited to one or few aspects 1 - Conditions are such that Lift is difficult to achieve and sustain	
Describe: No evidence of out-of-bank flows. Stream appears to stay within the concrete lined channel.		Describe: Limited potential for improving instream habitat. No potential for floodplain development, improving water quality, or reducing erosion.	
Opportunity for Floodplain Development	1	**Ease of Access**	5
10 - Existing space for floodplain greater than 10 times stream width 5 - Existing space for floodplain 3 to 10 times stream width 1 - Little to no space for floodplain development		10 - Yes (with existing direct vehicular access to potential site) 5- yes (open but no existing vehicular access) 1 - No (no vehicular access, clearing needed)	
Describe: Very limited space for floodplain development due to adjacent communities, recreational parks, roads or steep slopes.		Describe: Clear access in some segments from past sewer repairs. Other segments would require tree clearing.	
Drainage Area Evaluation	1	**Utilities Present**	1
10 -D.A. less than 1 sq. mi. 5- D. A. between 1 & 3 sq. mi. 1 - D. A. greater than 3 sq. mi.		10 - No utilities on site 5 - Utilities but not within restoration area 1 - Utilities within potential restoration area	
Describe: Drainage area - 3.08 square miles.		Describe: Sewer line runs parallel to stream.	
		Total Score out of 100	27

Map



Site No.	SSS-160060		Scale: 1 in. = 2,000

Site Photos









Stream Mitigation Field Site Assessment Form

Project Details

Project Name: 495/270 **Mitigation Site Number:** SSS-160062a

Projects Estimated Stream Mitigation Needs (LF): TBD

Date of Field Assessment: 8/21/2019 **Consultant Firm/Investigator(s):** CRI- MD/DS

Site Location Details-taken from desktop review

County: Prince George's **Cross Roads:** Nashville Rd

Basin (HUC 8): Middle Potomac-Anacostia-Occoquan **MDE Watershed (8 digit):** 214025

Proximity to Impacted Stream (mi.): 0.41 **Lat/Long:** 38.981681 -76.889402

Site Data

Parcel Size (ac): 265.6 **Potential Restoration Reach (LF):** 3341

Site Opportunities: __X__Channel Restoration ____Livestock Exclusion _____Riparian Buffer Planting ___Habitat Enhancement ___Fish Passage

Stream Order: 2nd **Stream Hydrology:** Perennial **Stream Use:** I

Drainage Area to Reach (sq. mi.) 1.85

Land Use: Greenbelt Park **Mapped Soils**: Zekiah and Issue soils

Property Address: 6565 Greenbelt Rd, Greenbelt, MD 20770

Property Owner(s): National Park Service

General Field Observations

Is there evidence that the stream has been disturbed by some kind of human action, like grading, dumping, livestock, culvert, etc?	**Can the stream restoration be reasonably done within the confines of the parcel or does it require connections beyond the parcel limits? Explain**
Explain: Channelization at upstream extent, multiple 295 culverts	Explain: Yes, NPS property. Addressing concrete apron at upstream extent may require additional access

Mitigation Site Rating

Criteria	Score	Criteria	Score
Estimated Bank erosion within reach	5	**Vegetation**	1
10 - Greater than 50% 5 - 10% to 50% 1 - Less than 10%		10 - Herbaceous cover (non-wetland) 5 - Scrub-shrub cover (non-wetland) 1 - Mostly forested and/or wetland	
Describe: ~40% of banks eroded		Describe: Forested	
Degree of Channel Incision	5	**Land Use**	1
10 - Bank Height greater than 10 feet 5 - Bank Height between 3 and 10 feet 1 - Bank Height less than 3 feet		10 - Agricultural or Open Space 5 - Marginal Pasture 1 - Old field/ Developed/Forested	
Describe: Average bank height 4 feet		Describe: Forested	
Existing Floodplain Access	5	**Opportunity for Ecological Lift**	10
10 - No evidence of out of bank flooding 5- Yes (Infrequent out of bank flow) 1 - Yes (evidence of frequent flooding)		10 - Conditions exist for several aspects of lift to be achieved and sustained 5 - Lift limited to one or few aspects 1 - Conditions are such that Lift is difficult to achieve and sustain	
Describe: Infrequent access, some section with access and some with none		Describe: Lateral/Vertical stability, bedform, floodplain reconnection, Habitat enhancement, riparian buffer planting	
Opportunity for Floodplain Development	10	**Ease of Access**	1
10 - Existing space for floodplain greater than 10 times stream width 5 - Existing space for floodplain 3 to 10 times stream width 1 - Little to no space for floodplain development		10 - Yes (with existing direct vehicular access to potential site) 5- yes (open but no existing vehicular access) 1 - No (no vehicular access, clearing needed)	
Describe: Greater than 10 times stream width, clearing needed		Describe: No existing access, may be able to access at upstream extent	
Drainage Area Evaluation	5	**Utilities Present**	5
10 -D.A. less than 1 sq. mi. 5- D. A. between 1 & 3 sq. mi. 1 - D. A. greater than 3 sq. mi.		10 - No utilities on site 5 - Utilities but not within restoration area 1 - Utilities within potential restoration area	
Describe: 1.85		Describe: Sewer crossing	
		Total Score out of 100	48

Map



Unmapped stream, extend potential restoration upstream. Aggradation occurring upstream of 295 road crossings.

Site No.	SSS-160062a		Scale: 1 in. =	2,000

Site Photos









Stream Mitigation Field Site Assessment Form

Project Details

Project Name: 495/270 **Mitigation Site Number:** SSS-160062b

Projects Estimated Stream Mitigation Needs (LF): TBD

Date of Field Assessment: 8/21/2019 **Consultant Firm/Investigator(s):** CRI- MD/DS

Site Location Details-taken from desktop review

County: Prince George's **Cross Roads:** Park Central Rd/Good Luck Rd

Basin (HUC 8): Middle Potomac-Anacostia-Occoquan **MDE Watershed (8 digit):** 214025

Proximity to Impacted Stream (mi.): 0.1 **Lat/Long:** 38.988876 -76.895401

Site Data

Parcel Size (ac): 726.5 **Potential Restoration Reach (LF):** 6,669

Site Opportunities: __X__Channel Restoration ____Livestock Exclusion _____Riparian Buffer Planting ___Habitat Enhancement ___Fish Passage

Stream Order: 2nd **Stream Hydrology:** Perennial **Stream Use:** I

Drainage Area to Reach (sq. mi.) 0.59

Land Use: Greenbelt Park **Mapped Soils**: Zekiah and Issue soils

Property Address: 6565 Greenbelt Rd, Greenbelt MD 20770

Property Owner(s): National Park Service

General Field Observations

Is there evidence that the stream has been disturbed by some kind of human action, like grading, dumping, livestock, culvert, etc.?	Can the stream restoration be reasonably done within the confines of the parcel or does it require connections beyond the parcel limits? Explain
Explain: Multiple culverts and road crossings, areas of rip rap armoring	Explain: Yes within NPS property. Overall highly incised stream, many overland flow head cut, extend stream restoration up to you SHA right of way, erodible soil, split 160062A to be at confluence of 10062C

Mitigation Site Rating

Criteria	Score	Criteria	Score
Estimated Bank erosion within reach	10	**Vegetation**	1
10 - Greater than 50% 5 - 10% to 50% 1 - Less than 10%		10 - Herbaceous cover (non-wetland) 5 - Scrub-shrub cover (non-wetland) 1 - Mostly forested and/or wetland	
Describe: Greater than 50% for most of the reach. Site was experiencing erosion for around 80% of banks		Describe: Forested	
Degree of Channel Incision	5	**Land Use**	1
10 - Bank Height greater than 10 feet 5 - Bank Height between 3 and 10 feet 1 - Bank Height less than 3 feet		10 - Agricultural or Open Space 5 - Marginal Pasture 1 - Old field/ Developed/Forested	
Describe: Average bank height around 6 feet with some areas exceeding 10 feet		Describe: Forested	
Existing Floodplain Access	5	**Opportunity for Ecological Lift**	10
10 - No evidence of out of bank flooding 5- Yes (Infrequent out of bank flow) 1 - Yes (evidence of frequent flooding)		10 - Conditions exist for several aspects of lift to be achieved and sustained 5 - Lift limited to one or few aspects 1 - Conditions are such that Lift is difficult to achieve and sustain	
Describe: Infrequent access		Describe: Vertical/Lateral stability, bedform diversity, habitat enhancement, floodplain access	
Opportunity for Floodplain Development	10	**Ease of Access**	5
10 - Existing space for floodplain greater than 10 times stream width 5 - Existing space for floodplain 3 to 10 times stream width 1 - Little to no space for floodplain development		10 - Yes (with existing direct vehicular access to potential site) 5- yes (open but no existing vehicular access) 1 - No (no vehicular access, clearing needed)	
Describe: Greater than 10 times stream width exists with tree clearing		Describe: Some areas of direct access via road and trail, clearing needed in most areas	
Drainage Area Evaluation	10	**Utilities Present**	1
10 -D.A. less than 1 sq. mi. 5- D. A. between 1 & 3 sq. mi. 1 - D. A. greater than 3 sq. mi.		10 - No utilities on site 5 - Utilities but not within restoration area 1 - Utilities within potential restoration area	
Describe: 0.59		Describe: Sewer utility throughout site parallels stream	
		Total Score out of 100	58

Map



Site No.	SSS-160062b		Scale: 1 in. = 2,000 ft

Site Photos









Stream Mitigation Field Site Assessment Form

Project Details

Project Name: 495/270 **Mitigation Site Number:** SSS-160062c

Projects Estimated Stream Mitigation Needs (LF): TBD

Date of Field Assessment: 8/22/2019 **Consultant Firm/Investigator(s):** CRI- MD/DS

Site Location Details-taken from desktop review

County: Prince George's **Cross Roads:** Kenilworth Ave/Knoxville Dr

Basin (HUC 8): Middle Potomac-Anacostia-Occoquan **MDE Watershed (8 digit):** 214025

Proximity to Impacted Stream (mi.): 0.71 **Lat/Long:** 38.982327 -76.906283

Site Data

Parcel Size (ac): 736.5 **Potential Restoration Reach (LF):** 8894

Site Opportunities: __X__Channel Restoration ____Livestock Exclusion _____Riparian Buffer Planting ___Habitat Enhancement ___Fish Passage

Stream Order: 3rd **Stream Hydrology:** Perennial **Stream Use:** I

Drainage Area to Reach (sq. mi.) 3.23

Land Use: Greenbelt Park **Mapped Soils**: Issue-Urban land complex, and Zekiah and Issue soils

Property Address: 6565 Greenbelt Rd, Greenbelt, MD 20770

Property Owner(s): National Park Service

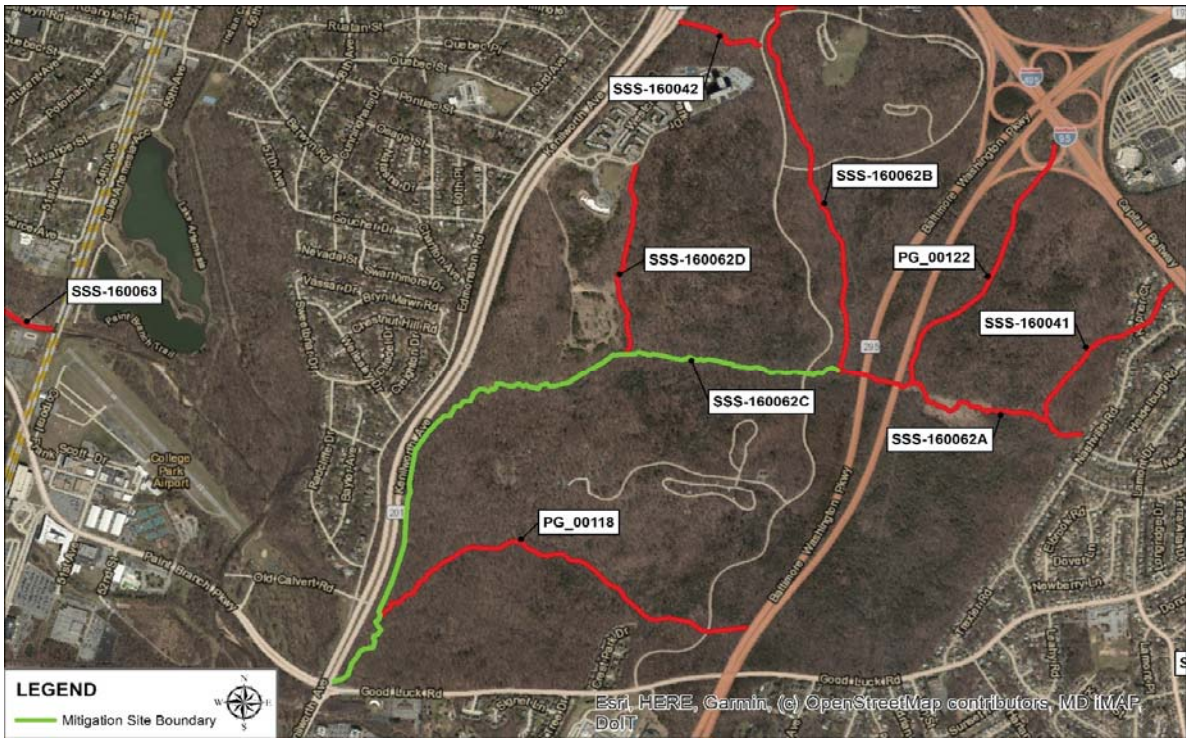
General Field Observations

Is there evidence that the stream has been disturbed by some kind of human action, like grading, dumping, livestock, culvert, etc.?	Can the stream restoration be reasonably done within the confines of the parcel or does it require connections beyond the parcel limits? Explain
Explain: Multiple sewer crossings, bank armoring, culverts	Explain: Yes within NPS property. Will need SHA ROW in downstream section that parallels MD 201

Mitigation Site Rating

Criteria	Score	Criteria	Score
Estimated Bank erosion within reach	5	**Vegetation**	1
10 - Greater than 50% 5 - 10% to 50% 1 - Less than 10%		10 - Herbaceous cover (non-wetland) 5 - Scrub-shrub cover (non-wetland) 1 - Mostly forested and/or wetland	
Describe: About 40% of site experiencing erosion		Describe: Forested	
Degree of Channel Incision	5	**Land Use**	1
10 - Bank Height greater than 10 feet 5 - Bank Height between 3 and 10 feet 1 - Bank Height less than 3 feet		10 - Agricultural or Open Space 5 - Marginal Pasture 1 - Old field/ Developed/Forested	
Describe: Average bank height of 6 feet with some areas exceeding 15’		Describe: Forested	
Existing Floodplain Access	10	**Opportunity for Ecological Lift**	10
10 - No evidence of out of bank flooding 5- Yes (Infrequent out of bank flow) 1 - Yes (evidence of frequent flooding)		10 - Conditions exist for several aspects of lift to be achieved and sustained 5 - Lift limited to one or few aspects 1 - Conditions are such that Lift is difficult to achieve and sustain	
Describe: No evidence of floodplain access		Describe: Vertical/lateral stability, bedform diversity, habitat enhancement, floodplain access	
Opportunity for Floodplain Development	5	**Ease of Access**	5
10 - Existing space for floodplain greater than 10 times stream width 5 - Existing space for floodplain 3 to 10 times stream width 1 - Little to no space for floodplain development		10 - Yes (with existing direct vehicular access to potential site) 5- yes (open but no existing vehicular access) 1 - No (no vehicular access, clearing needed)	
Describe: 3-10 times stream width exists with tree impact		Describe: Access in some areas existing for Sewer ROW and park road/ trails but clearing needed for most of site	
Drainage Area Evaluation	1	**Utilities Present**	1
10 -D.A. less than 1 sq. mi. 5- D. A. between 1 & 3 sq. mi. 1 - D. A. greater than 3 sq. mi.		10 - No utilities on site 5 - Utilities but not within restoration area 1 - Utilities within potential restoration area	
Describe: DA=3.23		Describe: Multiple sewer crossings instream and line parallels stream	
		Total Score out of 100	44

Map



Site No.	SSS-160062c		Scale: 1 in. = 2000 ft

Site Photos









Stream Mitigation Field Site Assessment Form

Project Details

Project Name: 495/270 **Mitigation Site Number:** SSS-160062D

Projects Estimated Stream Mitigation Needs (LF): TBD

Date of Field Assessment: 8/22/2019 **Consultant Firm/Investigator(s):** CRI- MD/DS

Site Location Details-taken from desktop review

County: Prince George's **Cross Roads:** Westchester Park Dr

Basin (HUC 8): Middle Potomac-Anacostia-Occoquan **MDE Watershed (8 digit):** 214025

Proximity to Impacted Stream (mi.): 0.89 **Lat/Long:** 38.98628 -76.903171

Site Data

Parcel Size (ac): 726.5 **Potential Restoration Reach (LF):** 2423

Site Opportunities: __X__Channel Restoration ____Livestock Exclusion _____Riparian Buffer Planting ___Habitat Enhancement ___Fish Passage

Stream Order: 1st **Stream Hydrology:** Perennial **Stream Use:** I

Drainage Area to Reach (sq. mi.) 0.14

Land Use: Greenbelt Park **Mapped Soils**: Sassafras and Croom, and Zekiah and Issue soils

Property Address: 6565 Greenbelt Rd, Greenbelt, MD 20770

Property Owner(s): National Park Service

General Field Observations

Is there evidence that the stream has been disturbed by some kind of human action, like grading, dumping, livestock, culvert, etc?	Can the stream restoration be reasonably done within the confines of the parcel or does it require connections beyond the parcel limits? Explain
Explain: Multiple stormwater inputs and culvert at stream head. Approx. 30' of bank armoring	Explain: Will need to extend upstream into Friends Community School property in order to tie in at stormwater facilities, Extend up to Winchester Park Dr to stabilize downstream of stormwater pipes

Mitigation Site Rating

Criteria	Score	Criteria	Score
Estimated Bank erosion within reach	10	**Vegetation**	1
10 - Greater than 50% 5 - 10% to 50% 1 - Less than 10%		10 - Herbaceous cover (non-wetland) 5 - Scrub-shrub cover (non-wetland) 1 - Mostly forested and/or wetland	
Describe: About 85% eroded due to downcutting		Describe: Forested	
Degree of Channel Incision	10	**Land Use**	1
10 - Bank Height greater than 10 feet 5 - Bank Height between 3 and 10 feet 1 - Bank Height less than 3 feet		10 - Agricultural or Open Space 5 - Marginal Pasture 1 - Old field/ Developed/Forested	
Describe: Average bank height around 12', some lower banks near confluence		Describe: Forested	
Existing Floodplain Access	10	**Opportunity for Ecological Lift**	5
10 - No evidence of out of bank flooding 5- Yes (Infrequent out of bank flow) 1 - Yes (evidence of frequent flooding)		10 - Conditions exist for several aspects of lift to be achieved and sustained 5 - Lift limited to one or few aspects 1 - Conditions are such that Lift is difficult to achieve and sustain	
Describe: No evidence of floodplain access		Describe: Vertical/lateral stability, bedform diversity, floodplain access at downstream extent	
Opportunity for Floodplain Development	5	**Ease of Access**	5
10 - Existing space for floodplain greater than 10 times stream width 5 - Existing space for floodplain 3 to 10 times stream width 1 - Little to no space for floodplain development		10 - Yes (with existing direct vehicular access to potential site) 5- yes (open but no existing vehicular access) 1 - No (no vehicular access, clearing needed)	
Describe: Existing space for about 3-10 times width		Describe: Roadway at top of site with potential access, otherwise clearing needed	
Drainage Area Evaluation	10	**Utilities Present**	10
10 -D.A. less than 1 sq. mi. 5- D. A. between 1 & 3 sq. mi. 1 - D. A. greater than 3 sq. mi.		10 - No utilities on site 5 - Utilities but not within restoration area 1 - Utilities within potential restoration area	
Describe: DA=0.14 sq. mi.		Describe: No utility	
		Total Score out of 100	67

Map



Site No.	SSS-160062D		Scale: 1 in. = 2,000 ft

Site Photos









Stream Mitigation Field Site Assessment Form

Project Details

Project Name: I-495/I-270 Managed Lanes Study **Mitigation Site Number:** SSS-160063

Projects Estimated Stream Mitigation Needs (LF): TBD

Date of Field Assessment: 12/13/2018 **Consultant Firm/Investigator(s):** CRI/MD, DS

Site Location Details-taken from desktop review

County: Prince George's **Cross Roads:** Baltimore Ave & Campus Dr

Basin (HUC 8): Middle Potomac-Anacostia-Occoquan **MDE Watershed (8 digit):** 02140205

Proximity to Impacted Stream (mi.): 1.7 **Lat/Long:** 38.986491 -76.930313

Site Data

Parcel Size (ac): 11 parcels - 20.0, 10 parcels <0.5 **Potential Restoration Reach (LF):** 3,069

Site Opportunities: __X__Channel Restoration ____Livestock Exclusion _____Riparian Buffer Planting _X__Habitat Enhancement ____Fish Passage

Stream Order: 4th **Stream Hydrology:** Perennial **Stream Use:** I

Drainage Area to Reach (sq. mi.) 30.9

Land Use: Forest **Mapped Soils:** Fallsington-Urban land complex, Codorus and Hatboro soils

Property Address: East Parcel - 5051 Pierce Avenu, College Park, MD 20740

Property Owner(s): M-NCPPC, WSSC

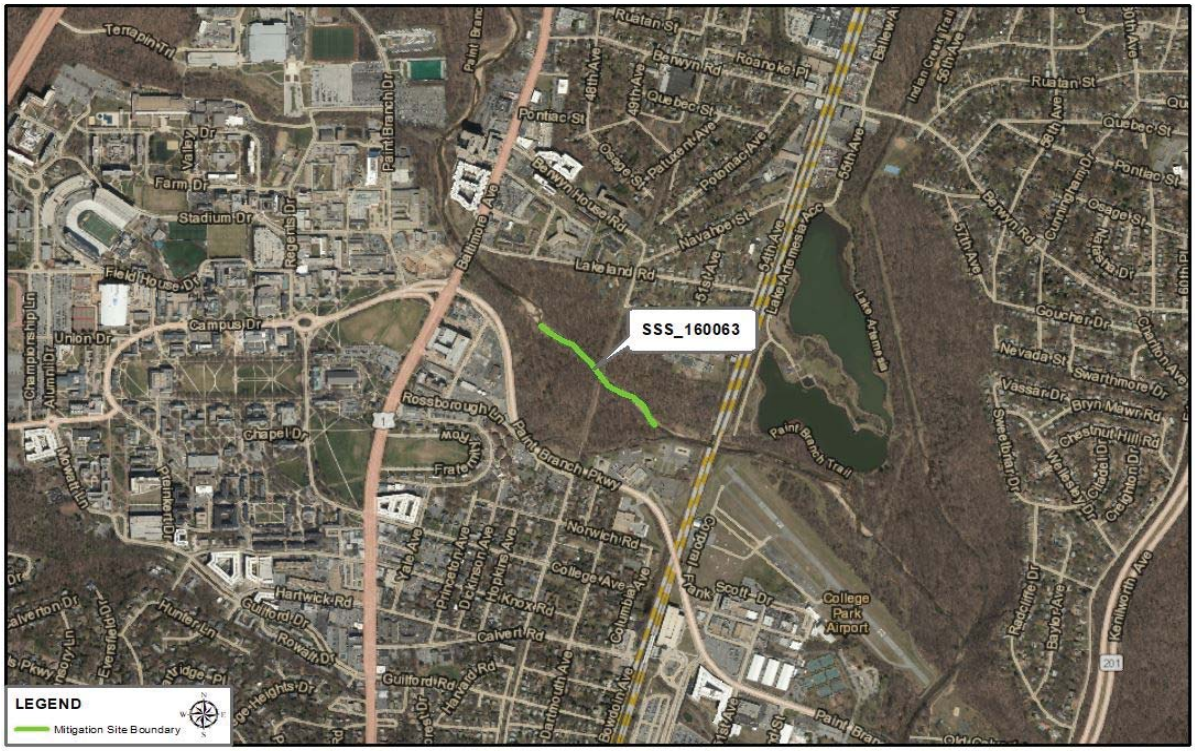
General Field Observations

Is there evidence that the stream has been disturbed by some kind of human action, like grading, dumping, livestock, culvert, etc?	Can the stream restoration be reasonably done within the confines of the parcel or does it require connections beyond the parcel limits? Explain
Explain:	Explain:
Yes; Rip rap armoring in several locations. Sewer crossing, pedestrian bridges, and railroad crossing present at downstream end of reach.	No; Sections of stream parcel were not given access permission, but would be required if a restoration was done.

Mitigation Site Rating

Criteria	Score	Criteria	Score
Estimated Bank erosion within reach	5	**Vegetation**	1
10 - Greater than 50% 5 - 10% to 50% 1 - Less than 10%		10 - Herbaceous cover (non-wetland) 5 - Scrub-shrub cover (non-wetland) 1 - Mostly forested and/or wetland	
Describe: Approximately 20% of banks are eroded. Bank heights were consistently high, ranging from ~4-8 ft. tall.		Describe: Vegetation consists of mature deciduous trees within park land.	
Degree of Channel Incision	5	**Land Use**	1
10 - Bank Height greater than 10 feet 5 - Bank Height between 3 and 10 feet 1 - Bank Height less than 3 feet		10 - Agricultural or Open Space 5 - Marginal Pasture 1 - Old field/ Developed/Forested	
Describe: Banks range from ~4-8 ft. tall.		Describe: Site consists of high impervious developed watershed and park land immediately adjacent to the stream reach.	
Existing Floodplain Access	5	**Opportunity for Ecological Lift**	10
10 - No evidence of out of bank flooding 5- Yes (Infrequent out of bank flow) 1 - Yes (evidence of frequent flooding)		10 - Conditions exist for several aspects of lift to be achieved and sustained 5 - Lift limited to one or few aspects 1 - Conditions are such that Lift is difficult to achieve and sustain	
Describe: Limited low benches and some evidence of deposition at extremely high flows on top of eroded banks.		Describe: Potential for channel stabilization, floodplain reconnection, habitat improvement, connection to restoration projects upstream and downstream of reach.	
Opportunity for Floodplain Development	10	**Ease of Access**	1
10 - Existing space for floodplain greater than 10 times stream width 5 - Existing space for floodplain 3 to 10 times stream width 1 - Little to no space for floodplain development		10 - Yes (with existing direct vehicular access to potential site) 5- yes (open but no existing vehicular access) 1 - No (no vehicular access, clearing needed)	
Describe: Park land on left bank for most of site, although many mature trees present.		Describe: Access present parallel to site with trails, but clearing is likely needed.	
Drainage Area Evaluation	1	**Utilities Present**	1
10 -D.A. less than 1 sq. mi. 5- D. A. between 1 & 3 sq. mi. 1 - D. A. greater than 3 sq. mi.		10 - No utilities on site 5 - Utilities but not within restoration area 1 - Utilities within potential restoration area	
Describe: Drainage area - 30.9 square miles.		Describe: Sewer utility crossing and exposed pipe present downstream of pedestrian bridge on right bank. Overhead powerline present at pedestrian bridge.	
		Total Score out of 100	40

Map



Site No.	SSS-160063		Scale: 1 in. = 2,000

Site Photos









Stream Mitigation Field Site Assessment Form

Project Details

Project Name: I-495/I-270 Managed Lanes Study **Mitigation Site Number:** SSS-160065

Projects Estimated Stream Mitigation Needs (LF): TBD

Date of Field Assessment: 6/14/2019 **Consultant Firm/Investigator(s):** CRI-SN/DS

Site Location Details-taken from desktop review

County: Prince George's **Cross Roads:** 2nd Ave andTanglewood Dr

Basin (HUC 8): Middle Potomac-Anacostia-Occoquan **MDE Watershed (8 digit):** 02140205

Proximity to Impacted Stream (mi.): 2.6 **Lat/Long:** 38.929105 -76.902346

Site Data

Parcel Size (ac): 4 parcels (38.3, 0.97, 40.0, 0.72) **Potential Restoration Reach (LF):** 1,904

Site Opportunities: __X__Channel Restoration ____Livestock Exclusion ____X__Riparian Buffer Planting __X_Habitat Enhancement _X__Fish Passage

Stream Order: 1st **Stream Hydrology:** Perennial **Stream Use:** I

Drainage Area to Reach (sq. mi.) 0.54

Land Use: Forest, Open space **Mapped Soils:** Issue-Urban land complex; Codorus-Hatboro-Urban land complex, frequently flooded

Property Address: 5671 Tanglewood Dr, Riverdale, MD 20737

Property Owner(s): M-NCPPC

General Field Observations

Is there evidence that the stream has been disturbed by some kind of human action, like grading, dumping, livestock, culvert, etc?	Can the stream restoration be reasonably done within the confines of the parcel or does it require connections beyond the parcel limits? Explain
Explain:	Explain:
Yes, evidence of straightening around park, 2 crossings, site is very open, trash in stream	Yes- within M-NCPPC property

Mitigation Site Rating

Criteria	Score	Criteria	Score
Estimated Bank erosion within reach	5	**Vegetation**	5
10 - Greater than 50% 5 - 10% to 50% 1 - Less than 10%		10 - Herbaceous cover (non-wetland) 5 - Scrub-shrub cover (non-wetland) 1 - Mostly forested and/or wetland	
Describe:		Describe:	
Previoiusly downcut channel with minor to moderate erosion throughout		Mowed grass to top of stream bank, slopes and small buffer of herbaceous vegetation and invasives, few large trees scattered in the floodplain	
Degree of Channel Incision	5	**Land Use**	5
10 - Bank Height greater than 10 feet 5 - Bank Height between 3 and 10 feet 1 - Bank Height less than 3 feet		10 - Agricultural or Open Space 5 - Marginal Pasture 1 - Old field/ Developed/Forested	
Describe:		Describe:	
Bank height averages approximately 4'		Upstream section is mostly ope park with a few trees, downstream section is forested to the confluence with Northeast Branch	
Existing Floodplain Access	10	**Opportunity for Ecological Lift**	5
10 - No evidence of out of bank flooding 5- Yes (Infrequent out of bank flow) 1 - Yes (evidence of frequent flooding)		10 - Conditions exist for several aspects of lift to be achieved and sustained 5 - Lift limited to one or few aspects 1 - Conditions are such that Lift is difficult to achieve and sustain	
Describe:		Describe:	
Channel does not have access to the floodplain		Vertical stability, latral stability, habitat enhancement, riparian buffer enhancement	
Opportunity for Floodplain Development	10	**Ease of Access**	10
10 - Existing space for floodplain greater than 10 times stream width 5 - Existing space for floodplain 3 to 10 times stream width 1 - Little to no space for floodplain development		10 - Yes (with existing direct vehicular access to potential site) 5- yes (open but no existing vehicular access) 1 - No (no vehicular access, clearing needed)	
Describe:		Describe:	
Space exists fo expansive floodplaindownstream of the footbridge		Parking lot access for much of the potential site	
Drainage Area Evaluation	10	**Utilities Present**	1
10 -D.A. less than 1 sq. mi. 5- D. A. between 1 & 3 sq. mi. 1 - D. A. greater than 3 sq. mi.		10 - No utilities on site 5 - Utilities but not within restoration area 1 - Utilities within potential restoration area	
Describe:		Describe:	
Less than 1 sqmi		Sewer crossing (fishblockage) at downstream section	
		Total Score out of 100	66

Map

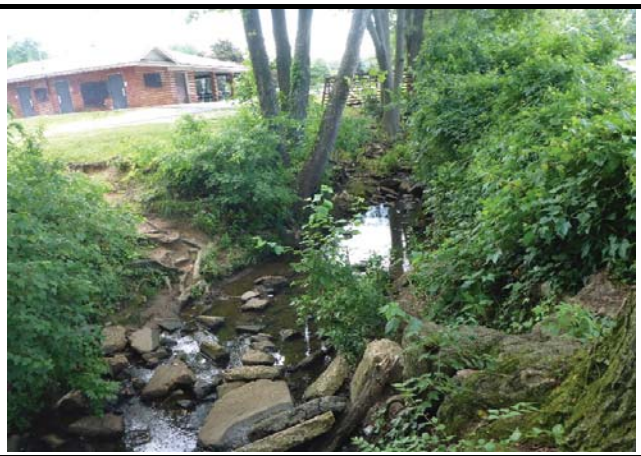


Site No.	SSS-160065		Scale: 1 in. =	2,000

Site Photos









Stream Mitigation Field Site Assessment Form

Project Details

Project Name: I-495/I-270 Managed Lanes Study **Mitigation Site Number:** SSS-160066

Projects Estimated Stream Mitigation Needs (LF): TBD

Date of Field Assessment: 6/14/2019 **Consultant Firm/Investigator(s):** CRI-SN/DS

Site Location Details-taken from desktop review

County: Prince George's **Cross Roads:** 2nd Ave andTanglewood Dr

Basin (HUC 8): Middle Potomac-Anacostia-Occoquan **MDE Watershed (8 digit):** 02140205

Proximity to Impacted Stream (mi.): 2.6 **Lat/Long:** 38.955864 -76.926032

Site Data

Parcel Size (ac): 38.3 **Potential Restoration Reach (LF):** 1,552

Site Opportunities: __X__Channel Restoration ____Livestock Exclusion _____Riparian Buffer Planting ___Habitat Enhancement ___Fish Passage

Stream Order: 1st **Stream Hydrology:** Perennial **Stream Use:** I

Drainage Area to Reach (sq. mi.) 0.08

Land Use: Forest, Open space **Mapped Soils:** Issue-Urban land complex, occasionally flooded

Property Address: 5671 Tanglewood Dr, Riverdale, MD 20737

Property Owner(s): M-NCPPC

General Field Observations

Is there evidence that the stream has been disturbed by some kind of human action, like grading, dumping, livestock, culvert, etc?	Can the stream restoration be reasonably done within the confines of the parcel or does it require connections beyond the parcel limits? Explain
Explain: Yes, looks to be straightened/ditched, originates at an outfall	Explain: Yes- within M-NCPPC property

Mitigation Site Rating

Criteria	Score	Criteria	Score
Estimated Bank erosion within reach	5	**Vegetation**	5
10 - Greater than 50% 5 - 10% to 50% 1 - Less than 10%		10 - Herbaceous cover (non-wetland) 5 - Scrub-shrub cover (non-wetland) 1 - Mostly forested and/or wetland	
Describe: 20% actively eroding, historical downcutting and ditching		Describe: Mostly mowed grass with ocassional trees, limited herbaceous and shrub buffer	
Degree of Channel Incision	5	**Land Use**	5
10 - Bank Height greater than 10 feet 5 - Bank Height between 3 and 10 feet 1 - Bank Height less than 3 feet		10 - Agricultural or Open Space 5 - Marginal Pasture 1 - Old field/ Developed/Forested	
Describe: Approximately 5-6' in the upper section and 3-4' in the lower section		Describe: Mostly open park with a few trees	
Existing Floodplain Access	10	**Opportunity for Ecological Lift**	5
10 - No evidence of out of bank flooding 5- Yes (Infrequent out of bank flow) 1 - Yes (evidence of frequent flooding)		10 - Conditions exist for several aspects of lift to be achieved and sustained 5 - Lift limited to one or few aspects 1 - Conditions are such that Lift is difficult to achieve and sustain	
Describe: No existing floodplain access		Describe: Vertical stability, lateral stability, floodplain access, habitat enhancement	
Opportunity for Floodplain Development	10	**Ease of Access**	10
10 - Existing space for floodplain greater than 10 times stream width 5 - Existing space for floodplain 3 to 10 times stream width 1 - Little to no space for floodplain development		10 - Yes (with existing direct vehicular access to potential site) 5- yes (open but no existing vehicular access) 1 - No (no vehicular access, clearing needed)	
Describe: Sape exists for ten times the stream width		Describe: Access form the park parking lot or adjacent roadway	
Drainage Area Evaluation	10	**Utilities Present**	10
10 -D.A. less than 1 sq. mi. 5- D. A. between 1 & 3 sq. mi. 1 - D. A. greater than 3 sq. mi.		10 - No utilities on site 5 - Utilities but not within restoration area 1 - Utilities within potential restoration area	
Describe: Less than 1 sqmi		Describe: No utilities visible	
		Total Score out of 100	75

Map



Site No.	SSS-160066		Scale: 1 in. =	2,000

Site Photos









Stream Mitigation Field Site Assessment Form

Project Details

Project Name: I-495/I-270 Managed Lanes Study **Mitigation Site Number:** SSS-160068

Projects Estimated Stream Mitigation Needs (LF): TBD

Date of Field Assessment: 6/11/2019 **Consultant Firm/Investigator(s):** CRI-CN, SJ

Site Location Details-taken from desktop review

County: Prince George's **Cross Roads:** Rolander St/22nd Place

Basin (HUC 8): Middle Potomac-Anacostia-Occoquan **MDE Watershed (8 digit):** 2140205

Proximity to Impacted Stream (mi.): 1.3 **Lat/Long:** 38.997809 -76.967345

Site Data

Parcel Size (ac): 43.2 **Potential Restoration Reach (LF):** 663

Site Opportunities: __X__Channel Restoration ____Livestock Exclusion _____Riparian Buffer Planting _X__Habitat Enhancement ___Fish Passage

Stream Order: 2nd **Stream Hydrology:** Perennial **Stream Use:** IV

Drainage Area to Reach (sq. mi.) 0.25

Land Use: Forest, Medium Density Residential **Mapped Soils:** Manor loam

Property Address: Main Parcel: 2405 Tecumseh St, Adelphi, MD 20783

Property Owner(s): Maryland National Capital Park & Planning Commission

General Field Observations

Is there evidence that the stream has been disturbed by some kind of human action, like grading, dumping, livestock, culvert, etc?	Can the stream restoration be reasonably done within the confines of the parcel or does it require connections beyond the parcel limits? Explain
Explain: Yes, riprap dumped in stream, pipe outfall into stream	Explain: Yes, can be done within parcel

Mitigation Site Rating

Criteria	Score	Criteria	Score
Estimated Bank erosion within reach	10	**Vegetation**	1
10 - Greater than 50% 5 - 10% to 50% 1 - Less than 10%		10 - Herbaceous cover (non-wetland) 5 - Scrub-shrub cover (non-wetland) 1 - Mostly forested and/or wetland	
Describe: Severe erosion on outer meanderbends throughout reach, stream very sinuous		Describe: Mature forest w/ thick understory	
Degree of Channel Incision	5	**Land Use**	1
10 - Bank Height greater than 10 feet 5 - Bank Height between 3 and 10 feet 1 - Bank Height less than 3 feet		10 - Agricultural or Open Space 5 - Marginal Pasture 1 - Old field/ Developed/Forested	
Describe: 6-7' eroded banks		Describe: Mature forest	
Existing Floodplain Access	10	**Opportunity for Ecological Lift**	10
10 - No evidence of out of bank flooding 5- Yes (Infrequent out of bank flow) 1 - Yes (evidence of frequent flooding)		10 - Conditions exist for several aspects of lift to be achieved and sustained 5 - Lift limited to one or few aspects 1 - Conditions are such that Lift is difficult to achieve and sustain	
Describe: Stream very incised, no evidence of FP access		Describe: FP connection, lateral stability, habitat availability, flow diversity	
Opportunity for Floodplain Development	10	**Ease of Access**	1
10 - Existing space for floodplain greater than 10 times stream width 5 - Existing space for floodplain 3 to 10 times stream width 1 - Little to no space for floodplain development		10 - Yes (with existing direct vehicular access to potential site) 5- yes (open but no existing vehicular access) 1 - No (no vehicular access, clearing needed)	
Describe: Plenty of room but would require forest impacts		Describe: Forested, no existing access	
Drainage Area Evaluation	10	**Utilities Present**	5
10 -D.A. less than 1 sq. mi. 5- D. A. between 1 & 3 sq. mi. 1 - D. A. greater than 3 sq. mi.		10 - No utilities on site 5 - Utilities but not within restoration area 1 - Utilities within potential restoration area	
Describe: 0.25 sq mi		Describe: Sewer present on LB	
		Total Score out of 100	63

Map



Site No.	SSS-160068		Scale: 1 in. = 2,000 ft

Site Photos









Stream Mitigation Field Site Assessment Form

Project Details

Project Name: I-495/I-270 Managed Lanes Study **Mitigation Site Number:** SSS-160070

Projects Estimated Stream Mitigation Needs (LF): TBD

Date of Field Assessment: 12/13/2018 **Consultant Firm/Investigator(s):** CRI/MD, DS

Site Location Details-taken from desktop review

County: Prince George's **Cross Roads:** Carrollton Pky & Lamont Dr

Basin (HUC 8): Middle Potomac-Anacostia-Occoquan **MDE Watershed (8 digit):** 02140205

Proximity to Impacted Stream (mi.): 0.1 **Lat/Long:** 38.969981 -76.878142

Site Data

Parcel Size (ac): N/A, completely within ROW **Potential Restoration Reach (LF):** 4,332

Site Opportunities: __X__Channel Restoration ____Livestock Exclusion _____Riparian Buffer Planting ____Habitat Enhancement ____Fish Passage

Stream Order: 4th **Stream Hydrology:** Perennial **Stream Use:** I

Drainage Area to Reach (sq. mi.) 10.5

Land Use: Medium Density Residential, Institutional **Mapped Soils:** Issue-Urban land complex

Property Address: Carrollton Parkway, Hyattsville, MD 20784

Property Owner(s): SHA (Completely within ROW)

General Field Observations

Is there evidence that the stream has been disturbed by some kind of human action, like grading, dumping, livestock, culvert, etc?	Can the stream restoration be reasonably done within the confines of the parcel or does it require connections beyond the parcel limits? Explain
Explain: Yes; Site is confined by roads on both sides. Stream has been historically straightened.	Explain: Yes; Site is within the confines of top roads.

Mitigation Site Rating

Criteria	Score	Criteria	Score
Estimated Bank erosion within reach	10	**Vegetation**	10
10 - Greater than 50% 5 - 10% to 50% 1 - Less than 10%		10 - Herbaceous cover (non-wetland) 5 - Scrub-shrub cover (non-wetland) 1 - Mostly forested and/or wetland	
Describe: Approximately 65% of banks are eroded. Banks are highly incised in several areas with heights ranging from ~2-6 ft. tall.		Describe: Vegetation consists of mostly mowed grass with some trees along banks (specifically downstream end).	
Degree of Channel Incision	5	**Land Use**	1
10 - Bank Height greater than 10 feet 5 - Bank Height between 3 and 10 feet 1 - Bank Height less than 3 feet		10 - Agricultural or Open Space 5 - Marginal Pasture 1 - Old field/ Developed/Forested	
Describe: Average bank height is ~4 ft. tall.		Describe: Land use is developed, stream is located between two residential roads.	
Existing Floodplain Access	5	**Opportunity for Ecological Lift**	5
10 - No evidence of out of bank flooding 5- Yes (Infrequent out of bank flow) 1 - Yes (evidence of frequent flooding)		10 - Conditions exist for several aspects of lift to be achieved and sustained 5 - Lift limited to one or few aspects 1 - Conditions are such that Lift is difficult to achieve and sustain	
Describe: Some fine sediment deposits and rack lines observed in a few areas along benches.		Describe: Potential to increase geomorphic stability, treat stormwater inputs to slow release.	
Opportunity for Floodplain Development	5	**Ease of Access**	10
10 - Existing space for floodplain greater than 10 times stream width 5 - Existing space for floodplain 3 to 10 times stream width 1 - Little to no space for floodplain development		10 - Yes (with existing direct vehicular access to potential site) 5- yes (open but no existing vehicular access) 1 - No (no vehicular access, clearing needed)	
Describe: Floodplain is limited by two roadways, thus highly confined. Possible to develop floodplain ~3-5 times stream width.		Describe: Roadways are present parallel to site, areas marked for possible stockpiles.	
Drainage Area Evaluation	5	**Utilities Present**	1
10 -D.A. less than 1 sq. mi. 5- D. A. between 1 & 3 sq. mi. 1 - D. A. greater than 3 sq. mi.		10 - No utilities on site 5 - Utilities but not within restoration area 1 - Utilities within potential restoration area	
Describe: Drainage area - 1.05 square miles.		Describe: Few overhead line crossings present, possible sewer crossings.	
		Total Score out of 100	57

Map



Site No.	SSS-160070		Scale: 1 in. =	2,000

Site Photos









Stream Mitigation Field Site Assessment Form

Project Details

Project Name: I-495/I-270 Managed Lanes Study **Mitigation Site Number:** SSS-160075

Projects Estimated Stream Mitigation Needs (LF): TBD

Date of Field Assessment: 6/11/2019 **Consultant Firm/Investigator(s):** CRI - CN, SJ

Site Location Details-taken from desktop review

County: Prince George's **Cross Roads:** East-West Hwy/W Park Dr/Highview Terrace

Basin (HUC 8): Middle Potomac-Anacostia-Occoquan **MDE Watershed (8 digit):** 2140205

Proximity to Impacted Stream (mi.): 2.5 **Lat/Long:** 38.972272 -76.964481

Site Data

Parcel Size (ac): 2 Parcels: 60, 8.1 **Potential Restoration Reach (LF):** 4,806

Site Opportunities: __X__Channel Restoration ____Livestock Exclusion ___X___Riparian Buffer Planting __X_Habitat Enhancement ___Fish Passage

Stream Order: 4th **Stream Hydrology:** Perennial **Stream Use:** IV

Drainage Area to Reach (sq. mi.) 35.1

Land Use: Forest **Mapped Soils:** Codorus and Hatboro soils

Property Address: Main Parcel: 7601 W Park Dr, Adelphi, MD 20783

Property Owner(s): Maryland National Capital Park & Planning Commission

General Field Observations

Is there evidence that the stream has been disturbed by some kind of human action, like grading, dumping, livestock, culvert, etc?	Can the stream restoration be reasonably done within the confines of the parcel or does it require connections beyond the parcel limits? Explain
Explain: Yes, bank armoring in some places, bridge at DS end	Explain: Yes, but might be close at development along Highview Terrace

Mitigation Site Rating

Criteria	Score	Criteria	Score
Estimated Bank erosion within reach	5	**Vegetation**	1
10 - Greater than 50% 5 - 10% to 50% 1 - Less than 10%		10 - Herbaceous cover (non-wetland) 5 - Scrub-shrub cover (non-wetland) 1 - Mostly forested and/or wetland	
Describe: Mostly stable, some stretches of high-very high erosion and vertical banks		Describe: Mostly mature forest, some areas lacking buffer (along Highview Terrace)	
Degree of Channel Incision	5	**Land Use**	1
10 - Bank Height greater than 10 feet 5 - Bank Height between 3 and 10 feet 1 - Bank Height less than 3 feet		10 - Agricultural or Open Space 5 - Marginal Pasture 1 - Old field/ Developed/Forested	
Describe: US half of site more incised and overwidened. Some benches. Few signs of FP access. DS half of site has lower FP, more signs of FP access, better benches and bars		Describe: Mostly forested, some development adjacent to stream	
Existing Floodplain Access	5	**Opportunity for Ecological Lift**	5
10 - No evidence of out of bank flooding 5- Yes (Infrequent out of bank flow) 1 - Yes (evidence of frequent flooding)		10 - Conditions exist for several aspects of lift to be achieved and sustained 5 - Lift limited to one or few aspects 1 - Conditions are such that Lift is difficult to achieve and sustain	
Describe: More frequent FP access at DS end of site than US end		Describe: Bank stabilization, habitat, FP access, flow diversity, geomorph	
Opportunity for Floodplain Development	5	**Ease of Access**	5
10 - Existing space for floodplain greater than 10 times stream width 5 - Existing space for floodplain 3 to 10 times stream width 1 - Little to no space for floodplain development		10 - Yes (with existing direct vehicular access to potential site) 5- yes (open but no existing vehicular access) 1 - No (no vehicular access, clearing needed)	
Describe: Changes throughout reach depending on development/valley walls, but some space to reconnect to FP		Describe: Access from park without extensive forest impacts	
Drainage Area Evaluation	1	**Utilities Present**	5
10 -D.A. less than 1 sq. mi. 5- D. A. between 1 & 3 sq. mi. 1 - D. A. greater than 3 sq. mi.		10 - No utilities on site 5 - Utilities but not within restoration area 1 - Utilities within potential restoration area	
Describe: 35.1 sq mi		Describe: Sewer along RB, 1 utility crossing at approximate mid point of reach	
		Total Score out of 100	38

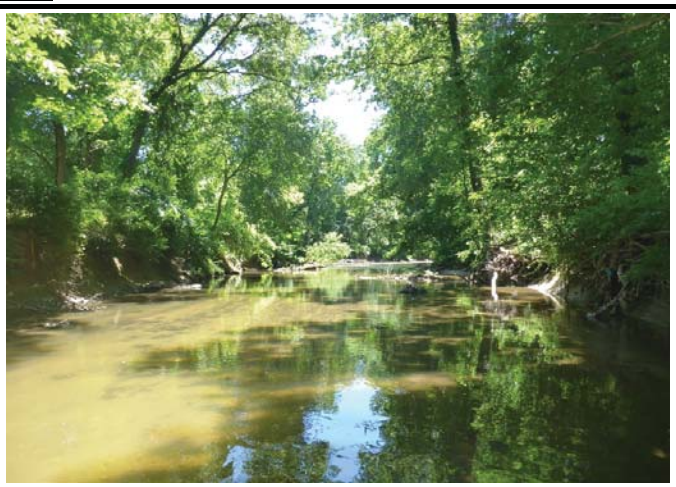
Map



Site No.	SSS-160075		Scale: 1 in. = 2,000 ft

Site Photos









Stream Mitigation Field Site Assessment Form

Project Details

Project Name: I-495/I-270 Managed Lanes Study **Mitigation Site Number:** SSS-160081

Projects Estimated Stream Mitigation Needs (LF): TBD

Date of Field Assessment: 12/14/2018 **Consultant Firm/Investigator(s):** CRI/MD, DS

Site Location Details-taken from desktop review

County: Prince George's **Cross Roads:** Metzerott Rd & Riggs Rd

Basin (HUC 8): Middle Potomac-Anacostia-Occoquan **MDE Watershed (8 digit):** 02140205

Proximity to Impacted Stream (mi.): 0.85 **Lat/Long:** 39.002885 -76.975103

Site Data

Parcel Size (ac): 2 parcels - 21.1, 5.7 **Potential Restoration Reach (LF):** 973

Site Opportunities: _X_ Channel Restoration ___ Livestock Exclusion _____ Riparian Buffer Planting _X_ Habitat Enhancement ____ Fish Passage

Stream Order: 2nd **Stream Hydrology:** Perennial **Stream Use:** IV

Drainage Area to Reach (sq. mi.) 0.92

Land Use: Institutional, Forest **Mapped Soils:** Codorus and Hatboro soils

Property Address: Main Parcel - 8910 Riggs Road, Hyattsville, MD 20783

Property Owner(s): Board of Education, 1811 Metzerott Rd LLC

General Field Observations

Is there evidence that the stream has been disturbed by some kind of human action, like grading, dumping, livestock, culvert, etc?	Can the stream restoration be reasonably done within the confines of the parcel or does it require connections beyond the parcel limits? Explain
Explain:	Explain:
Yes; Lots of discarded concrete located downstream of road and bridge apron. Remnants of old dam in reach.	Yes; Access permitted.

Mitigation Site Rating

Criteria	Score	Criteria	Score
Estimated Bank erosion within reach	5	**Vegetation**	1
10 - Greater than 50% 5 - 10% to 50% 1 - Less than 10%		10 - Herbaceous cover (non-wetland) 5 - Scrub-shrub cover (non-wetland) 1 - Mostly forested and/or wetland	
Describe: Approximately 15% of banks are eroded, primarily near the upstream end of site.		Describe: Mature deciduous trees present adjacent to stream.	
Degree of Channel Incision	5	**Land Use**	1
10 - Bank Height greater than 10 feet 5 - Bank Height between 3 and 10 feet 1 - Bank Height less than 3 feet		10 - Agricultural or Open Space 5 - Marginal Pasture 1 - Old field/ Developed/Forested	
Describe: Bank heights range from ~3-10 ft. tall with an average of ~5 ft. tall.		Describe: Land use is developed/residential.	
Existing Floodplain Access	10	**Opportunity for Ecological Lift**	5
10 - No evidence of out of bank flooding 5- Yes (Infrequent out of bank flow) 1 - Yes (evidence of frequent flooding)		10 - Conditions exist for several aspects of lift to be achieved and sustained 5 - Lift limited to one or few aspects 1 - Conditions are such that Lift is difficult to achieve and sustain	
Describe: No evidence of out of bank flooding, despite downstream bank height being lower.		Describe: Potential exists for habitat enhancement and increasing geomorphic stability.	
Opportunity for Floodplain Development	5	**Ease of Access**	1
10 - Existing space for floodplain greater than 10 times stream width 5 - Existing space for floodplain 3 to 10 times stream width 1 - Little to no space for floodplain development		10 - Yes (with existing direct vehicular access to potential site) 5- yes (open but no existing vehicular access) 1 - No (no vehicular access, clearing needed)	
Describe: Confined stream valley is present, especially upstream, but potential to develop floodplain exists.		Describe: No access road present. Lots of clearing would be required or possible lane closure needed as site is a steep valley.	
Drainage Area Evaluation	10	**Utilities Present**	1
10 -D.A. less than 1 sq. mi. 5- D. A. between 1 & 3 sq. mi. 1 - D. A. greater than 3 sq. mi.		10 - No utilities on site 5 - Utilities but not within restoration area 1 - Utilities within potential restoration area	
Describe: Drainage area - 0.92 square mile.		Describe: Sewer crossing stream (exposed) with sewer parallel to stream for much of reach.	
		Total Score out of 100	44

Map



Site No.	SSS-160081		Scale: 1 in. = 2,000

Site Photos









Stream Mitigation Field Site Assessment Form

Project Details

Project Name: I-495/I-270 Managed Lanes Study **Mitigation Site Number:** MO_00013A

Projects Estimated Stream Mitigation Needs (LF): TBD

Date of Field Assessment: 11/20/2018 **Consultant Firm/Investigator(s):** RK&K/KJH, BDM

Site Location Details-taken from desktop review

County: Montgomery **Cross Roads:** Woodfield Rd. & Watkins Rd.

Basin (HUC 8): Middle Potomac-Catoctin **MDE Watershed (8 digit):** 02140208

Proximity to Impacted Stream (mi.): 6.4 **Lat/Long:** 39.23201509 -77.18753066

Site Data

Parcel Size (ac): 2 parcels - 42.01, 24.44 **Potential Restoration Reach (LF):** 2,934

Site Opportunities: __X__Channel Restoration ____Livestock Exclusion ___X___Riparian Buffer Planting __X_Habitat Enhancement __X_Fish Passage

Stream Order: 2nd **Stream Hydrology:** Perennial **Stream Use:** I

Drainage Area to Reach (sq. mi.) 3.48

Land Use: Agriculture **Mapped Soils:** Hatboro silt loam

Property Address: 0-000 Woodfield Rd.

Property Owner(s): Maryland National Capital Park & Planning Commission

General Field Observations

Is there evidence that the stream has been disturbed by some kind of human action, like grading, dumping, livestock, culvert, etc? Explain	Can the stream restoration be reasonably done within the confines of the parcel or does it require connections beyond the parcel limits? Explain
Explain: Culvert at upstream end of site creating fish blockage - 1 foot drop.	Explain: Restoration and access is feasible within 2 M-NCPPC parcels.

Mitigation Site Rating

Criteria	Score	Criteria	Score
Estimated Bank erosion within reach	5	**Vegetation**	10
10 - Greater than 50% 5 - 10% to 50% 1 - Less than 10%		10 - Herbaceous cover (non-wetland) 5 - Scrub-shrub cover (non-wetland) 1 - Mostly forested and/or wetland	
Describe: Moderate to severe erosion on outside banks. Reed canary grass stabilizing some areas. Freeze thaw evident. Torturous meanders.		Describe: Site dominated by reed canary grass with scattered black walnut trees.	
Degree of Channel Incision	5	**Land Use**	5
10 - Bank Height greater than 10 feet 5 - Bank Height between 3 and 10 feet 1 - Bank Height less than 3 feet		10 - Agricultural or Open Space 5 - Marginal Pasture 1 - Old field/ Developed/Forested	
Describe: 3-4 foot tall banks		Describe: Located in Lower Magruder Branch Park. Site dominated by reed canary grass with scattered black walnut trees. Provides limited habitat.	
Existing Floodplain Access	5	**Opportunity for Ecological Lift**	10
10 - No evidence of out of bank flooding 5- Yes (Infrequent out of bank flow) 1 - Yes (evidence of frequent flooding)		10 - Conditions exist for several aspects of lift to be achieved and sustained 5 - Lift limited to one or few aspects 1 - Conditions are such that Lift is difficult to achieve and sustain	
Describe: Some evidence of out-of-bank flows in floodplain near channel-matted down veg.		Describe: High potential for reducing erosion, improving instream habitat, floodplain connection, wetland creation/enhancement & improving water quality.	
Opportunity for Floodplain Development	10	**Ease of Access**	5
10 - Existing space for floodplain greater than 10 times stream width 5 - Existing space for floodplain 3 to 10 times stream width 1 - Little to no space for floodplain development		10 - Yes (with existing direct vehicular access to potential site) 5- yes (open but no existing vehicular access) 1 - No (no vehicular access, clearing needed)	
Describe: Broad, flat floodplain greater than 10 times stream width.		Describe: No existing access into site from Watkins Road. Majority of site is open field dominated by reed canary grass.	
Drainage Area Evaluation	1	**Utilities Present**	5
10 -D.A. less than 1 sq. mi. 5- D. A. between 1 & 3 sq. mi. 1 - D. A. greater than 3 sq. mi.		10 - No utilities on site 5 - Utilities but not within restoration area 1 - Utilities within potential restoration area	
Describe: Drainage area - 3.48 square miles.		Describe: Powerlines along Watkins Rd. just north of site.	
		Total Score out of 100	61

Map



Site No.	MO_00013A		Scale: 1 in. =	2,000

Site Photos









Stream Mitigation Field Site Assessment Form

Project Details

Project Name: I-495/I-270 Managed Lanes Study **Mitigation Site Number:** MO_00013B

Projects Estimated Stream Mitigation Needs (LF): TBD

Date of Field Assessment: 11/20/2018 **Consultant Firm/Investigator(s):** RK&K/KJH, BDM

Site Location Details-taken from desktop review

County: Montgomery **Cross Roads:** Woodfield Rd. & Watkins Rd.

Basin (HUC 8): Middle Potomac-Catoctin **MDE Watershed (8 digit):** 02140208

Proximity to Impacted Stream (mi.): 6.4 **Lat/Long:** 39.23579123 -77.18752835

Site Data

Parcel Size (ac): 2 Parcels - 24.7, 16.3 **Potential Restoration Reach (LF):** 1,053

Site Opportunities: __X__Channel Restoration ___Livestock Exclusion ___X___Riparian Buffer Planting __X_Habitat Enhancement __X_Fish Passage

Stream Order: 2nd **Stream Hydrology:** Perennial **Stream Use:** I

Drainage Area to Reach (sq. mi.) 3.35

Land Use: Forest & Agriculture **Mapped Soils:** Hatboro silt loam

Property Address: 0-0000 Watkins Rd.

Property Owner(s): Maryland National Capital Park & Planning Commission

General Field Observations

Is there evidence that the stream has been disturbed by some kind of human action, like grading, dumping, livestock, culvert, etc?	Can the stream restoration be reasonably done within the confines of the parcel or does it require connections beyond the parcel limits? Explain
Explain:	Explain:
Culvert at downstream end of site is creating fish blockage - 1 foot drop.	Restoration and access is feasible within 2 M-NCPPC parcels.

Mitigation Site Rating

Criteria	Score	Criteria	Score
Estimated Bank erosion within reach	5	**Vegetation**	10
10 - Greater than 50% 5 - 10% to 50% 1 - Less than 10%		10 - Herbaceous cover (non-wetland) 5 - Scrub-shrub cover (non-wetland) 1 - Mostly forested and/or wetland	
Describe: Moderate bank erosion throughout most of site. Reed canary grass stabilizing some areas.		Describe: Site dominated by reed canary grass with scattered red maple & black willow trees.	
Degree of Channel Incision	5	**Land Use**	5
10 - Bank Height greater than 10 feet 5 - Bank Height between 3 and 10 feet 1 - Bank Height less than 3 feet		10 - Agricultural or Open Space 5 - Marginal Pasture 1 - Old field/ Developed/Forested	
Describe: 2-4 foot tall banks		Describe: Located in Lower Magruder Branch Park. Site dominated by reed canary grass with scattered red maple & black willow trees. Provides limited habitat.	
Existing Floodplain Access	5	**Opportunity for Ecological Lift**	10
10 - No evidence of out of bank flooding 5- Yes (Infrequent out of bank flow) 1 - Yes (evidence of frequent flooding)		10 - Conditions exist for several aspects of lift to be achieved and sustained 5 - Lift limited to one or few aspects 1 - Conditions are such that Lift is difficult to achieve and sustain	
Describe: Some evidence of out-of-bank flows in floodplain near channel-matted down veg.		Describe: High potential for reducing erosion, improving instream habitat, floodplain connection, wetland creation/enhancement & improving water quality.	
Opportunity for Floodplain Development	10	**Ease of Access**	5
10 - Existing space for floodplain greater than 10 times stream width 5 - Existing space for floodplain 3 to 10 times stream width 1 - Little to no space for floodplain development		10 - Yes (with existing direct vehicular access to potential site) 5- yes (open but no existing vehicular access) 1 - No (no vehicular access, clearing needed)	
Describe: Broad, flat floodplain greater than 10 times stream width.		Describe: No existing access into site from Watkins Road. Majority of site is open field dominated by reed canary grass.	
Drainage Area Evaluation	1	**Utilities Present**	10
10 -D.A. less than 1 sq. mi. 5- D. A. between 1 & 3 sq. mi. 1 - D. A. greater than 3 sq. mi.		10 - No utilities on site 5 - Utilities but not within restoration area 1 - Utilities within potential restoration area	
Describe: Drainage area - 3.35 square miles.		Describe: No utilities observed within or adjacent to site.	
		Total Score out of 100	66

Map



Site No.	MO_00013B		Scale: 1 in. =	2,000

Site Photos









Stream Mitigation Field Site Assessment Form

Project Details

Project Name: I-495/I-270 Managed Lanes Study **Mitigation Site Number:** MO_00018

Projects Estimated Stream Mitigation Needs (LF): TBD

Date of Field Assessment: 11/8/2018 **Consultant Firm/Investigator(s):** RK&K/KJH, DB

Site Location Details-taken from desktop review

County: Montgomery **Cross Roads:** Falls Road & Falls Bridge Lane

Basin (HUC 8): Middle Potomac-Catoctin **MDE Watershed (8 digit):** 2140202

Proximity to Impacted Stream (mi.): 3.0 **Lat/Long:** 39.01127779 -77.21091459

Site Data

Parcel Size (ac): 4 parcels - 6.4, 6.4, 3.4, 5.6 **Potential Restoration Reach (LF):** 3,723

Site Opportunities: __X__Channel Restoration ____Livestock Exclusion ___X___Riparian Buffer Planting __X_Habitat Enhancement _X__Fish Passage

Stream Order: 2nd **Stream Hydrology:** Perennial **Stream Use:** I

Drainage Area to Reach (sq. mi.) 1.13

Land Use: Forest **Mapped Soils:** Hatboro silt loam, 0 to 3 percent slopes

Property Address: Falls Bridge Lane 0-0000

Property Owner(s): Maryland National Capital Park & Planning Commission

General Field Observations

Is there evidence that the stream has been disturbed by some kind of human action, like grading, dumping, livestock, culvert, etc?	Can the stream restoration be reasonably done within the confines of the parcel or does it require connections beyond the parcel limits? Explain
Explain:	Explain:
Sewer crossing and old bridge foundation within stream at northern end of site. Bank just upstream of Logan Dr. has been stabilized with boulders.	Restoration is feasible within 4 M-NCPPC parcels.

Mitigation Site Rating

Criteria	Score	Criteria	Score
Estimated Bank erosion within reach	5	**Vegetation**	1
10 - Greater than 50% 5 - 10% to 50% 1 - Less than 10%		10 - Herbaceous cover (non-wetland) 5 - Scrub-shrub cover (non-wetland) 1 - Mostly forested and/or wetland	
Describe: Minor to moderate bank erosion. Low bank erosion at downstream end of site. Bank erosion increases at upstream end.		Describe: Entire site consists of mid-successional tulip poplar forest. Several PFO wetlands east of stream.	
Degree of Channel Incision	5	**Land Use**	1
10 - Bank Height greater than 10 feet 5 - Bank Height between 3 and 10 feet 1 - Bank Height less than 3 feet		10 - Agricultural or Open Space 5 - Marginal Pasture 1 - Old field/ Developed/Forested	
Describe: Banks are ~1-5 ft. tall.		Describe: Site consists of mid-successional tulip poplar forest located on park land.	
Existing Floodplain Access	5	**Opportunity for Ecological Lift**	10
10 - No evidence of out of bank flooding 5- Yes (Infrequent out of bank flow) 1 - Yes (evidence of frequent flooding)		10 - Conditions exist for several aspects of lift to be achieved and sustained 5 - Lift limited to one or few aspects 1 - Conditions are such that Lift is difficult to achieve and sustain	
Describe: Floodplain is broad and flat. Some segments appear to be connected to floodplain with minor evidence of out of bank flows.		Describe: Potential in reducing bank erosion, improving floodplain connection, providing fish passage, and improving fish/benthic habitat.	
Opportunity for Floodplain Development	5	**Ease of Access**	5
10 - Existing space for floodplain greater than 10 times stream width 5 - Existing space for floodplain 3 to 10 times stream width 1 - Little to no space for floodplain development		10 - Yes (with existing direct vehicular access to potential site) 5- yes (open but no existing vehicular access) 1 - No (no vehicular access, clearing needed)	
Describe: Floodplain is broad and flat. Floodplain development is limited in some segments by adjacent landowners and valley slopes.		Describe: Potential access through old sewer line clearing east of stream. Some tree clearing would likely be required to access stream.	
Drainage Area Evaluation	5	**Utilities Present**	1
10 -D.A. less than 1 sq. mi. 5- D. A. between 1 & 3 sq. mi. 1 - D. A. greater than 3 sq. mi.		10 - No utilities on site 5 - Utilities but not within restoration area 1 - Utilities within potential restoration area	
Describe: Drainage area is 1.13 sq. mi.		Describe: Sewer line runs parallel to stream in eastern floodplain.	
		Total Score out of 100	43

Map



Site No.	MO_00018		Scale: 1 in. =	2,000

Site Photos









Stream Mitigation Field Site Assessment Form

Project Details

Project Name: I-495/I-270 Managed Lanes Study **Mitigation Site Number:** MO-00037

Projects Estimated Stream Mitigation Needs (LF): TBD

Date of Field Assessment: 11/19/2018 **Consultant Firm/Investigator(s):** CRI/MD, CN

Site Location Details-taken from desktop review

County: Montgomery **Cross Roads:** Helmsdale Rd. & Selkirk Dr.

Basin (HUC 8): Middle Potomac-Catoctin **MDE Watershed (8 digit):** 2140207

Proximity to Impacted Stream (mi.): 0 **Lat/Long:** 38.985373 -77.151998

Site Data

Parcel Size (ac): 6 parcels - 4.8, 6.0, 5.8, 4.7, 2.1, 0.4 **Potential Restoration Reach (LF):** 4,032

Site Opportunities: __X__Channel Restoration ___Livestock Exclusion ___X___Riparian Buffer Planting __X_Habitat Enhancement ___Fish Passage

Stream Order: 2nd **Stream Hydrology:** Perennial **Stream Use:** I

Drainage Area to Reach (sq. mi.) 4.3

Land Use: Low Density Residential, Institutional, Transportation **Mapped Soils:** Baile silt loam, Codorus silt loam

Property Address: Middle Parcel - Royal Dominion Court, Bethesda, MD 20817

Property Owner(s): Maryland National Capital Park & Planning Commission

General Field Observations

Is there evidence that the stream has been disturbed by some kind of human action, like grading, dumping, livestock, culvert, etc?	Can the stream restoration be reasonably done within the confines of the parcel or does it require connections beyond the parcel limits? Explain
Explain:	Explain:
Yes; Culverts present at upstream and downstream ends, previous restoration throughout reach.	Yes; Well within M-NCPPC property.

Mitigation Site Rating

Criteria	Score	Criteria	Score
Estimated Bank erosion within reach	5	**Vegetation**	1
10 - Greater than 50% 5 - 10% to 50% 1 - Less than 10%		10 - Herbaceous cover (non-wetland) 5 - Scrub-shrub cover (non-wetland) 1 - Mostly forested and/or wetland	
Describe: Approximately 25% of banks eroded, ranging from 3-9 ft. (6 ft. average).		Describe: Mostly forested on both sides of stream.	
Degree of Channel Incision	5	**Land Use**	1
10 - Bank Height greater than 10 feet 5 - Bank Height between 3 and 10 feet 1 - Bank Height less than 3 feet		10 - Agricultural or Open Space 5 - Marginal Pasture 1 - Old field/ Developed/Forested	
Describe: Banks are ~3-8 ft. tall. Average bank height is ~5 ft.		Describe: Forested land use in immediate vicinity, residential land use adjacent to property.	
Existing Floodplain Access	5	**Opportunity for Ecological Lift**	10
10 - No evidence of out of bank flooding 5- Yes (Infrequent out of bank flow) 1 - Yes (evidence of frequent flooding)		10 - Conditions exist for several aspects of lift to be achieved and sustained 5 - Lift limited to one or few aspects 1 - Conditions are such that Lift is difficult to achieve and sustain	
Describe: Inset floodplain in some areas of the incised channel, evidence of flows on top of low benches.		Describe: Increase bank stability, provide low benches for storm relief, increase available habitat, increase vegetative cover in areas	
Opportunity for Floodplain Development	5	**Ease of Access**	10
10 - Existing space for floodplain greater than 10 times stream width 5 - Existing space for floodplain 3 to 10 times stream width 1 - Little to no space for floodplain development		10 - Yes (with existing direct vehicular access to potential site) 5- yes (open but no existing vehicular access) 1 - No (no vehicular access, clearing needed)	
Describe: Area exists to narrow flows and provide inset floodplain benches.		Describe: Access paths from previous restoration can be used, off of Cabin John Parkway and off of Helmsdale Road.	
Drainage Area Evaluation	1	**Utilities Present**	1
10 -D.A. less than 1 sq. mi. 5- D. A. between 1 & 3 sq. mi. 1 - D. A. greater than 3 sq. mi.		10 - No utilities on site 5 - Utilities but not within restoration area 1 - Utilities within potential restoration area	
Describe: Drainage area - 4.3 square miles.		Describe: Exposed manholes along streambank; One observed crossing exposed.	
		Total Score out of 100	44

Map



Site No.	MO-00037		Scale: 1 in. = 2,000

Site Photos









Stream Mitigation Field Site Assessment Form

Project Details

Project Name: I-495/I-270 Managed Lanes Study **Mitigation Site Number:** MO_00047A

Projects Estimated Stream Mitigation Needs (LF): TBD

Date of Field Assessment: 11/8/2018 **Consultant Firm/Investigator(s):** RK&K/KJH, DB

Site Location Details-taken from desktop review

County: Montgomery **Cross Roads:** Clopper Rd. & Allspice Dr.

Basin (HUC 8): Middle Potomac-Catoctin **MDE Watershed (8 digit):** 02140208

Proximity to Impacted Stream (mi.): 2.36 **Lat/Long:** 39.15853055 -77.26036442

Site Data

Parcel Size (ac): 2 Parcels - 9.8, 28.8 **Potential Restoration Reach (LF):** 3,131

Site Opportunities: __X__Channel Restoration ____Livestock Exclusion ___X___Riparian Buffer Planting __X_Habitat Enhancement __X_Fish Passage

Stream Order: 2nd **Stream Hydrology:** Perennial **Stream Use:** I

Drainage Area to Reach (sq. mi.) 2.92

Land Use: Forest & Institutional **Mapped Soils:** Hatboro silt loam

Property Address: Main Parcel - 0-000 Clopper Rd.

Property Owner(s): Maryland National Capital Park & Planning Commission

General Field Observations

Is there evidence that the stream has been disturbed by some kind of human action, like grading, dumping, livestock, culvert, etc?	**Can the stream restoration be reasonably done within the confines of the parcel or does it require connections beyond the parcel limits? Explain**
Explain:	Explain:
Old riprap bank stabilization near foot bridge. Railroad crossing/culvert at upstream end of site.	Restoration is feasible within 2 M-NCPPC parcels.

Mitigation Site Rating

Criteria	Score	Criteria	Score
Estimated Bank erosion within reach	5	**Vegetation**	1
10 - Greater than 50% 5 - 10% to 50% 1 - Less than 10%		10 - Herbaceous cover (non-wetland) 5 - Scrub-shrub cover (non-wetland) 1 - Mostly forested and/or wetland	
Describe:		Describe:	
Moderate bank erosion throughout most of site.		Majority of site is surrounded by mid-successional forest or PEM/PSS wetlands.	
Degree of Channel Incision	5	**Land Use**	1
10 - Bank Height greater than 10 feet 5 - Bank Height between 3 and 10 feet 1 - Bank Height less than 3 feet		10 - Agricultural or Open Space 5 - Marginal Pasture 1 - Old field/ Developed/Forested	
Describe:		Describe:	
Banks are ~3 -5 foot tall.		Stream is surrounded by mid-successional forest or PEM/PSS wetlands located on park land.	
Existing Floodplain Access	5	**Opportunity for Ecological Lift**	5
10 - No evidence of out of bank flooding 5- Yes (Infrequent out of bank flow) 1 - Yes (evidence of frequent flooding)		10 - Conditions exist for several aspects of lift to be achieved and sustained 5 - Lift limited to one or few aspects 1 - Conditions are such that Lift is difficult to achieve and sustain	
Describe:		Describe:	
Some evidence of matted down vegetation near top of bank.		Some opportunity for sediment reduction, wetland creation/enhancement, riparian plantings, aquatic habitat improvements, and fish passage.	
Opportunity for Floodplain Development	5	**Ease of Access**	10
10 - Existing space for floodplain greater than 10 times stream width 5 - Existing space for floodplain 3 to 10 times stream width 1 - Little to no space for floodplain development		10 - Yes (with existing direct vehicular access to potential site) 5- yes (open but no existing vehicular access) 1 - No (no vehicular access, clearing needed)	
Describe:		Describe:	
Floodplain development limited in certain areas due to adjacent park recreation areas and parking lots.		Existing access route from sewer line repairs.	
Drainage Area Evaluation	5	**Utilities Present**	1
10 -D.A. less than 1 sq. mi. 5- D. A. between 1 & 3 sq. mi. 1 - D. A. greater than 3 sq. mi.		10 - No utilities on site 5 - Utilities but not within restoration area 1 - Utilities within potential restoration area	
Describe:		Describe:	
Drainage Area - 2.92 square miles.		Sewer line runs parallel to stream in western floodplain.	
		Total Score out of 100	43

Map



Site No.	MO_00047A		Scale: 1 in. = 2,000

Site Photos









Stream Mitigation Field Site Assessment Form

Project Details

Project Name:	I-495/I-270 Managed Lanes Study	**Mitigation Site Number:**	MO_00047B
Projects Estimated Stream Mitigation Needs (LF):	TBD		
Date of Field Assessment:	11/16/2018	**Consultant Firm/Investigator(s):**	RK&K/KJH, DB

Site Location Details-taken from desktop review

County:	Montgomery	**Cross Roads:**	Clopper Rd. & Allspice Dr.		
Basin (HUC 8):	Middle Potomac-Catoctin		**MDE Watershed (8 digit):**	02140208	
Proximity to Impacted Stream (mi.):	2.36		**Lat/Long:**	39.15113494	-77.26403347

Site Data

Parcel Size (ac):	1,411.39	**Potential Restoration Reach (LF):**	5,232		
Site Opportunities:	__X__Channel Restoration	____Livestock Exclusion	___X___Riparian Buffer Planting	_X_Habitat Enhancement	__X_Fish Passage
Stream Order:	2nd	**Stream Hydrology:**	Perennial	**Stream Use:**	I
Drainage Area to Reach (sq. mi.)	4.35				
Land Use:	Forest	**Mapped Soils:**	Hatboro silt loam		
Property Address:	11900 Clopper Rd.				
Property Owner(s):	Maryland Department of Natural Resources				

General Field Observations

Is there evidence that the stream has been disturbed by some kind of human action, like grading, dumping, livestock, culvert, etc? Explain	**Can the stream restoration be reasonably done within the confines of the parcel or does it require connections beyond the parcel limits? Explain**
Explain:	Explain:
Sewer encroaches into stream in several locations. Bank stabilization (riprap) is evident in one area to protect the sewer line.	Restoration is feasible within DNR parcel - Strider Wildlife Management Area.

Mitigation Site Rating

Criteria	Score	Criteria	Score
Estimated Bank erosion within reach	5	**Vegetation**	1
10 - Greater than 50% 5 - 10% to 50% 1 - Less than 10%		10 - Herbaceous cover (non-wetland) 5 - Scrub-shrub cover (non-wetland) 1 - Mostly forested and/or wetland	
Describe: Some bank sections are stabilized with vegetation, while others have moderate erosion.		Describe: Majority of site is surrounded by mid-successional floodplain forest. Upstream end of site has extensive PEM/PSS wetlands.	
Degree of Channel Incision	5	**Land Use**	1
10 - Bank Height greater than 10 feet 5 - Bank Height between 3 and 10 feet 1 - Bank Height less than 3 feet		10 - Agricultural or Open Space 5 - Marginal Pasture 1 - Old field/ Developed/Forested	
Describe: 3-5' tall vertical banks.		Describe: Majority of site is surrounded by mid-successional floodplain forest located on parkland. Upstream end of site has extensive PEM/PSS wetlands.	
Existing Floodplain Access	5	**Opportunity for Ecological Lift**	5
10 - No evidence of out of bank flooding 5- Yes (Infrequent out of bank flow) 1 - Yes (evidence of frequent flooding)		10 - Conditions exist for several aspects of lift to be achieved and sustained 5 - Lift limited to one or few aspects 1 - Conditions are such that Lift is difficult to achieve and sustain	
Describe: Some wrack lines observed in floodplain near top of bank.		Describe: Some potential for reducing erosion and improving aquatic habitat and floodplain connection.	
Opportunity for Floodplain Development	5	**Ease of Access**	5
10 - Existing space for floodplain greater than 10 times stream width 5 - Existing space for floodplain 3 to 10 times stream width 1 - Little to no space for floodplain development		10 - Yes (with existing direct vehicular access to potential site) 5- yes (open but no existing vehicular access) 1 - No (no vehicular access, clearing needed)	
Describe: Floodplain development in center and downstream sections of site are limited by adjacent neighborhoods and valley slopes. Some floodplain development potential at upstream end of site.		Describe: Existing sewer line access for northern section of site. Center and downstream sections would require tree clearing.	
Drainage Area Evaluation	1	**Utilities Present**	1
10 -D.A. less than 1 sq. mi. 5- D. A. between 1 & 3 sq. mi. 1 - D. A. greater than 3 sq. mi.		10 - No utilities on site 5 - Utilities but not within restoration area 1 - Utilities within potential restoration area	
Describe: Drainage area - 4.35 square miles		Describe: Sewer line runs parallel to stream in western floodplain.	
		Total Score out of 100	34

Map



Site No.	MO_00047B		Scale: 1 in. = 2,000

Site Photos









Stream Mitigation Field Site Assessment Form

Project Details

Project Name: I-495/I-270 Managed Lanes Study **Mitigation Site Number:** MO_00048

Projects Estimated Stream Mitigation Needs (LF): TBD

Date of Field Assessment: 11/20/2018 **Consultant Firm/Investigator(s):** RK&K/KJH, BDM

Site Location Details-taken from desktop review

County: Montgomery **Cross Roads:** Game Preserve Rd. & I-270

Basin (HUC 8): Middle Potomac-Catoctin **MDE Watershed (8 digit):** 02140208

Proximity to Impacted Stream (mi.): 1.89 **Lat/Long:** 39.15680585 -77.23925466

Site Data

Parcel Size (ac): 213.52 **Potential Restoration Reach (LF):** 1,489

Site Opportunities: __X__Channel Restoration ____Livestock Exclusion _____Riparian Buffer Planting ___Habitat Enhancement ___Fish Passage

Stream Order: 1st **Stream Hydrology:** Perennial **Stream Use:** I

Drainage Area to Reach (sq. mi.) 0.0002

Land Use: Forest **Mapped Soils:** Hatboro silt loam

Property Address: 11131 Game Preserve Rd, Gaithersburg 20878-0000

Property Owner(s): Maryland Department of Natural Resources

General Field Observations

Is there evidence that the stream has been disturbed by some kind of human action, like grading, dumping, livestock, culvert, etc?	Can the stream restoration be reasonably done within the confines of the parcel or does it require connections beyond the parcel limits? Explain
Explain:	Explain:
Rip-rap slope/bank stabilization next to roadway.	Restoration access is feasible within MDNR property. Upstream segment on private properties has been removed from site.

Mitigation Site Rating

Criteria	Score	Criteria	Score
Estimated Bank erosion within reach	1	**Vegetation**	1
10 - Greater than 50% 5 - 10% to 50% 1 - Less than 10%		10 - Herbaceous cover (non-wetland) 5 - Scrub-shrub cover (non-wetland) 1 - Mostly forested and/or wetland	
Describe: Majority of site has minor erosion. Localized areas with moderate to severe erosion.		Describe: Site is surrounded by high quality, mid-successional forest.	
Degree of Channel Incision	5	**Land Use**	1
10 - Bank Height greater than 10 feet 5 - Bank Height between 3 and 10 feet 1 - Bank Height less than 3 feet		10 - Agricultural or Open Space 5 - Marginal Pasture 1 - Old field/ Developed/Forested	
Describe: 3-8 foot tall banks that are mostly stable.		Describe: Site consists of high quality, mid-successional forest in Seneca Creek State Park.	
Existing Floodplain Access	5	**Opportunity for Ecological Lift**	1
10 - No evidence of out of bank flooding 5- Yes (Infrequent out of bank flow) 1 - Yes (evidence of frequent flooding)		10 - Conditions exist for several aspects of lift to be achieved and sustained 5 - Lift limited to one or few aspects 1 - Conditions are such that Lift is difficult to achieve and sustain	
Describe: Incised channel. Some out-of-bank flows is evident at top of bank.		Describe: Limited potential for improving instream habitat , reducing erosion and floodplain development. Existing instream habitat is good. Most of site has minor erosion and floodplain is restricted by steep/narrow valley.	
Opportunity for Floodplain Development	1	**Ease of Access**	1
10 - Existing space for floodplain greater than 10 times stream width 5 - Existing space for floodplain 3 to 10 times stream width 1 - Little to no space for floodplain development		10 - Yes (with existing direct vehicular access to potential site) 5- yes (open but no existing vehicular access) 1 - No (no vehicular access, clearing needed)	
Describe: Steep/narrow forested valley and adjacent roadway limit potential for floodplain development. Bedrock outcrops observed in floodplain.		Describe: Forest clearing would be required for the majority of the site.	
Drainage Area Evaluation	10	**Utilities Present**	5
10 -D.A. less than 1 sq. mi. 5- D. A. between 1 & 3 sq. mi. 1 - D. A. greater than 3 sq. mi.		10 - No utilities on site 5 - Utilities but not within restoration area 1 - Utilities within potential restoration area	
Describe: Drainage area - 0.0002 square miles.		Describe: Gas line and overhead powerlines just south of site.	
		Total Score out of 100	31

Map



Site No.	MO_00048		Scale: 1 in. = 2,000

Site Photos









Stream Mitigation Field Site Assessment Form

Project Details

Project Name: I-495/I-270 Managed Lanes Study **Mitigation Site Number:** MO_00050

Projects Estimated Stream Mitigation Needs (LF): TBD

Date of Field Assessment: 11/8/2018 **Consultant Firm/Investigator(s):** RK&K/KJH, DB

Site Location Details-taken from desktop review

County: Montgomery **Cross Roads:** River Rd. & Lake Potomac Dr.

Basin (HUC 8): Middle Potomac-Catoctin **MDE Watershed (8 digit):** 02140202

Proximity to Impacted Stream (mi.): 6.06 **Lat/Long:** 39.04313403 -77.25399448

Site Data

Parcel Size (ac): 3 Parcels - 1.14, 3.84, 6.26 **Potential Restoration Reach (LF):** 923

Site Opportunities: __X__Channel Restoration ___Livestock Exclusion ___X___Riparian Buffer Planting _X_Habitat Enhancement ___Fish Passage

Stream Order: 3rd **Stream Hydrology:** Perennial **Stream Use:** I

Drainage Area to Reach (sq. mi.) 16.6

Land Use: Forest **Mapped Soils:** Codorus silt loam & Hatboro silt loam

Property Address: Main Parcel - 0-0000 Lake Potomac Dr.

Property Owner(s): Maryland National Capital Park & Planning Commission & Montgomery County

General Field Observations

Is there evidence that the stream has been disturbed by some kind of human action, like grading, dumping, livestock, culvert, etc?	**Can the stream restoration be reasonably done within the confines of the parcel or does it require connections beyond the parcel limits? Explain**
Explain:	Explain:
Bank armoring is evident just downstream of powerlines.	Restoration is feasible within two M-NCPPC parcels and one Montgomery County parcel.

Mitigation Site Rating

Criteria	Score	Criteria	Score
Estimated Bank erosion within reach	1	**Vegetation**	1
10 - Greater than 50% 5 - 10% to 50% 1 - Less than 10%		10 - Herbaceous cover (non-wetland) 5 - Scrub-shrub cover (non-wetland) 1 - Mostly forested and/or wetland	
Describe:		Describe:	
Majority of banks are stabilized with vegetation & bedrock. Section downstream of powerlines has been stabilized with rip-rap.		Majority of site is surrounded by mid-successional forest. Large PEM wetland & recent tree plantings just west of Lake Potomac Dr.	
Degree of Channel Incision	5	**Land Use**	1
10 - Bank Height greater than 10 feet 5 - Bank Height between 3 and 10 feet 1 - Bank Height less than 3 feet		10 - Agricultural or Open Space 5 - Marginal Pasture 1 - Old field/ Developed/Forested	
Describe:		Describe:	
Banks are 6-8 ft. tall, but appear mostly stable.		Majority of site is surrounded by mid-successional forest on Park land. Open field under powerlines & PEM wetland just west of Lake Potomac Dr.	
Existing Floodplain Access	5	**Opportunity for Ecological Lift**	1
10 - No evidence of out of bank flooding 5- Yes (Infrequent out of bank flow) 1 - Yes (evidence of frequent flooding)		10 - Conditions exist for several aspects of lift to be achieved and sustained 5 - Lift limited to one or few aspects 1 - Conditions are such that Lift is difficult to achieve and sustain	
Describe:		Describe:	
Some evidence of matted down vegetation at top of banks.		Majority of banks appear stable. Large stream with existing aquatic habitat. Limited opportunity for floodplain development due to utilities and valley slope. Short segment on public property.	
Opportunity for Floodplain Development	1	**Ease of Access**	10
10 - Existing space for floodplain greater than 10 times stream width 5 - Existing space for floodplain 3 to 10 times stream width 1 - Little to no space for floodplain development		10 - Yes (with existing direct vehicular access to potential site) 5- yes (open but no existing vehicular access) 1 - No (no vehicular access, clearing needed)	
Describe:		Describe:	
Floodplain development limited due to utilities and valley slope.		Existing access off Lake Potomac Dr. from recent sewer repairs. Access passes through PEM wetland.	
Drainage Area Evaluation	1	**Utilities Present**	1
10 -D.A. less than 1 sq. mi. 5- D. A. between 1 & 3 sq. mi. 1 - D. A. greater than 3 sq. mi.		10 - No utilities on site 5 - Utilities but not within restoration area 1 - Utilities within potential restoration area	
Describe:		Describe:	
Drainage area - 16.6 square miles.		Overhead powerlines and underground gas lines at downstream end of site. Likely sewer line along stream, however no manholes were observed.	
		Total Score out of 100	27

Map



Site No.	MO_00050		Scale: 1 in. = 2,000

Site Photos









Stream Mitigation Field Site Assessment Form

Project Details

Project Name: I-495/I-270 Managed Lanes Study **Mitigation Site Number:** MO-00051

Projects Estimated Stream Mitigation Needs (LF): TBD

Date of Field Assessment: 11/16/2018 **Consultant Firm/Investigator(s):** CRI/MD, SJ

Site Location Details-taken from desktop review

County: Montgomery **Cross Roads:** Fairfax Rd. & Little Falls Pkwy.

Basin (HUC 8): Middle Potomac-Catoctin **MDE Watershed (8 digit):** 2140202

Proximity to Impacted Stream (mi.): 2.3 **Lat/Long:** 38.974004 -77.102571

Site Data

Parcel Size (ac): 8 parcels - 32.1, 39.4, 0.3, 0.3, 0.3, 0.3, 0.4, 0.5 **Potential Restoration Reach (LF):** 2,160

Site Opportunities: __X__Channel Restoration ____Livestock Exclusion __X____Riparian Buffer Planting ____Habitat Enhancement ___Fish Passage

Stream Order: 1st **Stream Hydrology:** Perennial **Stream Use:** I

Drainage Area to Reach (sq. mi.) 0.48

Land Use: Forest **Mapped Soils:** Glenelg-Urban land complex, Gaila silt loam

Property Address: Main Parcel - Little Falls Parkway, Bethesda, MD 20814

Property Owner(s): Maryland National Capital Park & Planning Commission & Mo. County RO

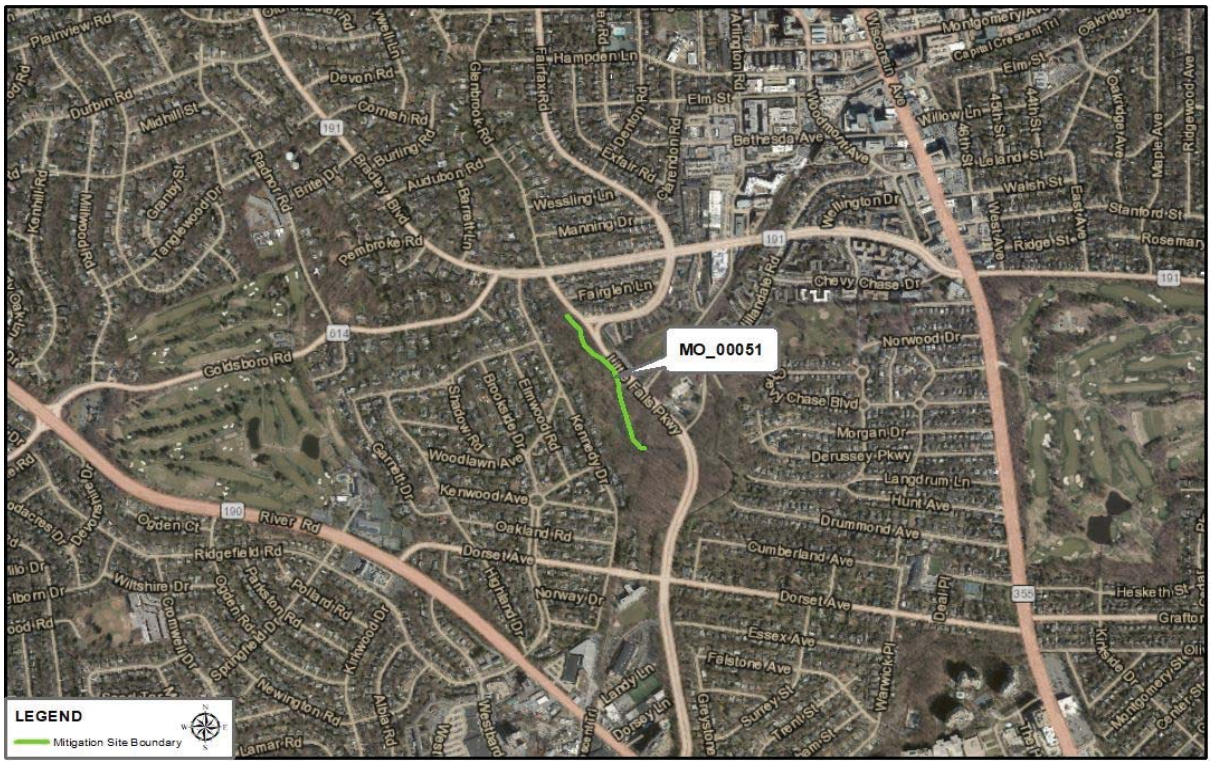
General Field Observations

Is there evidence that the stream has been disturbed by some kind of human action, like grading, dumping, livestock, culvert, etc?	Can the stream restoration be reasonably done within the confines of the parcel or does it require connections beyond the parcel limits? Explain
Explain:	Explain:
Yes, rip-rap placed downstream of culvert at the top of the study reach. Riffle grade control and other grade control structures observed near trail crossing at downstream end	Site located on M-NCPPC parkland & Mo. County ROW. Can access directly from Little Falls Parkway.

Mitigation Site Rating

Criteria	Score	Criteria	Score
Estimated Bank erosion within reach	5	**Vegetation**	1
10 - Greater than 50% 5 - 10% to 50% 1 - Less than 10%		10 - Herbaceous cover (non-wetland) 5 - Scrub-shrub cover (non-wetland) 1 - Mostly forested and/or wetland	
Describe:		Describe:	
Approximately 30% of banks are eroded.		Mowed lawn present on left bank for 2/3 of reach; inadequate buffer.	
Degree of Channel Incision	5	**Land Use**	1
10 - Bank Height greater than 10 feet 5 - Bank Height between 3 and 10 feet 1 - Bank Height less than 3 feet		10 - Agricultural or Open Space 5 - Marginal Pasture 1 - Old field/ Developed/Forested	
Describe:		Describe:	
Banks are ~3-5 ft. tall.		Forest greater than 100 ft. on right bank, left bank is developed/residential.	
Existing Floodplain Access	5	**Opportunity for Ecological Lift**	5
10 - No evidence of out of bank flooding 5- Yes (Infrequent out of bank flow) 1 - Yes (evidence of frequent flooding)		10 - Conditions exist for several aspects of lift to be achieved and sustained 5 - Lift limited to one or few aspects 1 - Conditions are such that Lift is difficult to achieve and sustain	
Describe:		Describe:	
Areas of low bank storm relief.		Upstream section is highly developed, constrained on left bank by road, channel elevation controlled upstream/downstream by culverts, possible floodplain reconnection.	
Opportunity for Floodplain Development	5	**Ease of Access**	5
10 - Existing space for floodplain greater than 10 times stream width 5 - Existing space for floodplain 3 to 10 times stream width 1 - Little to no space for floodplain development		10 - Yes (with existing direct vehicular access to potential site) 5- yes (open but no existing vehicular access) 1 - No (no vehicular access, clearing needed)	
Describe:		Describe:	
2/3 of stream can be accessed with tree impacts. Top 1/3 constrained by valley and road. Potential exists to make low benches.		Mapped out potential access from previous work from Little Falls Pkwy.	
Drainage Area Evaluation	10	**Utilities Present**	1
10 -D.A. less than 1 sq. mi. 5- D. A. between 1 & 3 sq. mi. 1 - D. A. greater than 3 sq. mi.		10 - No utilities on site 5 - Utilities but not within restoration area 1 - Utilities within potential restoration area	
Describe:		Describe:	
Drainage area - 0.48 square mile.		Runs parallel to stream. Possible crossings.	
		Total Score out of 100	43

Map



Site No.	MO-00051		Scale: 1 in. =	2,000

Site Photos









Stream Mitigation Field Site Assessment Form

Project Details

Project Name: I-495/I-270 Managed Lanes Study **Mitigation Site Number:** MO_00060

Projects Estimated Stream Mitigation Needs (LF): TBD

Date of Field Assessment: 2/25/2019 **Consultant Firm/Investigator(s):** CRI/DS, JG, LE

Site Location Details-taken from desktop review

County: Montgomery **Cross Roads:** Victory Farm Dr. & Belle Grove Rd.

Basin (HUC 8): Middle Potomac-Catoctin **MDE Watershed (8 digit):** 02140208

Proximity to Impacted Stream (mi.): 1.57 **Lat/Long:** 39.149794 -77.184313

Site Data

Parcel Size (ac): 2 parcels - 5.3, 27.9 **Potential Restoration Reach (LF):** 1,934

Site Opportunities: __X__Channel Restoration ___Livestock Exclusion ___X___Riparian Buffer Planting _X__Habitat Enhancement __X__Fish Passage

Stream Order: 1st **Stream Hydrology:** Perennial **Stream Use:** I

Drainage Area to Reach (sq. mi.) 0.78

Land Use: Medium Density Residential, Forest **Mapped Soils:** Hatboro silt loam

Property Address: Main Parcel - Victory Farms Drive, Gaithersburg MD 20877

Property Owner(s): City of Gaithersburg

General Field Observations

Is there evidence that the stream has been disturbed by some kind of human action, like grading, dumping, livestock, culvert, etc?	Can the stream restoration be reasonably done within the confines of the parcel or does it require connections beyond the parcel limits? Explain
Explain:	Explain:
Yes; Culverts, stream crossing present.	Yes; Can be done within parcel, City of Gaithersburg land/park.

Mitigation Site Rating

Criteria	Score	Criteria	Score
Estimated Bank erosion within reach	5	**Vegetation**	5
10 - Greater than 50% 5 - 10% to 50% 1 - Less than 10%		10 - Herbaceous cover (non-wetland) 5 - Scrub-shrub cover (non-wetland) 1 - Mostly forested and/or wetland	
Describe: Approximately 40-50% of banks are eroded, more frequent further downstream in reach.		Describe: Left bank consists of sparse planted trees with wetland and constructed wetland ponds. Right bank small riparian forest, one wetland with mostly shrub cover.	
Degree of Channel Incision	5	**Land Use**	1
10 - Bank Height greater than 10 feet 5 - Bank Height between 3 and 10 feet 1 - Bank Height less than 3 feet		10 - Agricultural or Open Space 5 - Marginal Pasture 1 - Old field/ Developed/Forested	
Describe: Banks are ~4-5 ft. tall on average, but range from 2-6 ft.		Describe: Small riparian forest development within site. Open trail (paved) lined with shrubs.	
Existing Floodplain Access	5	**Opportunity for Ecological Lift**	5
10 - No evidence of out of bank flooding 5- Yes (Infrequent out of bank flow) 1 - Yes (evidence of frequent flooding)		10 - Conditions exist for several aspects of lift to be achieved and sustained 5 - Lift limited to one or few aspects 1 - Conditions are such that Lift is difficult to achieve and sustain	
Describe: Infrequent out-of-bank flow in areas where channel is less incised.		Describe: Hydraulics, hydrology, geomorphic lift can be achieved and sustained.	
Opportunity for Floodplain Development	5	**Ease of Access**	10
10 - Existing space for floodplain greater than 10 times stream width 5 - Existing space for floodplain 3 to 10 times stream width 1 - Little to no space for floodplain development		10 - Yes (with existing direct vehicular access to potential site) 5- yes (open but no existing vehicular access) 1 - No (no vehicular access, clearing needed)	
Describe: Most existing space along right bank, limited by sewer utility and wetland on left bank.		Describe: Clearing needed in some areas, existing paved path parallels stream for entire reach.	
Drainage Area Evaluation	10	**Utilities Present**	1
10 -D.A. less than 1 sq. mi. 5- D. A. between 1 & 3 sq. mi. 1 - D. A. greater than 3 sq. mi.		10 - No utilities on site 5 - Utilities but not within restoration area 1 - Utilities within potential restoration area	
Describe: Drainage area - 0.78 square mile.		Describe: Sewer parallel to site, potential crossing.	
		Total Score out of 100	52

Map



Site No.	MO_00060		Scale: 1 in. = 2,000

Site Photos









Stream Mitigation Field Site Assessment Form

Project Details

Project Name: I-495/I-270 Managed Lanes Study **Mitigation Site Number:** MO_00063

Projects Estimated Stream Mitigation Needs (LF): TBD

Date of Field Assessment: 11/16/2018 **Consultant Firm/Investigator(s):** RK&K/KJH, DB

Site Location Details-taken from desktop review

County: Montgomery **Cross Roads:** Morning Light Ter. & Morning Light Ct.

Basin (HUC 8): Middle Potomac-Catoctin **MDE Watershed (8 digit):** 02140208

Proximity to Impacted Stream (mi.): 2.64 **Lat/Long:** 39.13487705 -77.26027051

Site Data

Parcel Size (ac): 1,411.30 **Potential Restoration Reach (LF):** 2,240

Site Opportunities: __X__Channel Restoration ___Livestock Exclusion _____Riparian Buffer Planting __X_Habitat Enhancement __X_Fish Passage

Stream Order: 2nd **Stream Hydrology:** Perennial **Stream Use:** I

Drainage Area to Reach (sq. mi.) 0.16

Land Use: Forest **Mapped Soils:** Brinklow blocktown channery silt loam

Property Address: 11900 Clopper Rd.

Property Owner(s): Maryland Department of Natural Resources

General Field Observations

Is there evidence that the stream has been disturbed by some kind of human action, like grading, dumping, livestock, culvert, etc?	Can the stream restoration be reasonably done within the confines of the parcel or does it require connections beyond the parcel limits? Explain
Explain:	Explain:
No direct evidence of human impacts to stream, however the site originates at a wet stormwater pond.	Restoration and access is feasible within MDNR parcel.

Mitigation Site Rating

Criteria	Score	Criteria	Score
Estimated Bank erosion within reach	10	**Vegetation**	1
10 - Greater than 50% 5 - 10% to 50% 1 - Less than 10%		10 - Herbaceous cover (non-wetland) 5 - Scrub-shrub cover (non-wetland) 1 - Mostly forested and/or wetland	
Describe:		Describe:	
Moderate to severe erosion throughout most of site. Torturous meanders & meander breakthroughs.		Entire site surrounded by mid-successional good quality forest. Potential specimen tree impacts along channel. No wetlands observed.	
Degree of Channel Incision	5	**Land Use**	1
10 - Bank Height greater than 10 feet 5 - Bank Height between 3 and 10 feet 1 - Bank Height less than 3 feet		10 - Agricultural or Open Space 5 - Marginal Pasture 1 - Old field/ Developed/Forested	
Describe:		Describe:	
Banks are 3-10 feet tall.		Entire site surrounded by mid-successional good quality forest in Seneca Creek State Park. Potential specimen tree impacts along channel.	
Existing Floodplain Access	5	**Opportunity for Ecological Lift**	10
10 - No evidence of out of bank flooding 5- Yes (Infrequent out of bank flow) 1 - Yes (evidence of frequent flooding)		10 - Conditions exist for several aspects of lift to be achieved and sustained 5 - Lift limited to one or few aspects 1 - Conditions are such that Lift is difficult to achieve and sustain	
Describe:		Describe:	
Some evidence of out-of-bank flow in localized areas.		Good potential for reducing erosion, improving instream habitat, and providing fish passage.	
Opportunity for Floodplain Development	5	**Ease of Access**	10
10 - Existing space for floodplain greater than 10 times stream width 5 - Existing space for floodplain 3 to 10 times stream width 1 - Little to no space for floodplain development		10 - Yes (with existing direct vehicular access to potential site) 5- yes (open but no existing vehicular access) 1 - No (no vehicular access, clearing needed)	
Describe:		Describe:	
Some opportunity for floodplain development, however sections of the site are limited by the narrow/steep valley and sewer line constraints.		Existing sewer line access for majority of site. Northern section may require some scrub/shrub clearing.	
Drainage Area Evaluation	10	**Utilities Present**	1
10 -D.A. less than 1 sq. mi. 5- D. A. between 1 & 3 sq. mi. 1 - D. A. greater than 3 sq. mi.		10 - No utilities on site 5 - Utilities but not within restoration area 1 - Utilities within potential restoration area	
Describe:		Describe:	
Drainage Area - 0.78 square miles		Sewer line runs parallel to stream along northern hillslope.	
		Total Score out of 100	58

Map



Site No.	MO_00063		Scale: 1 in. =	2,000

Site Photos









Stream Mitigation Field Site Assessment Form

Project Details

Project Name: I-495/I-270 Managed Lanes Study **Mitigation Site Number:** MO_00064

Projects Estimated Stream Mitigation Needs (LF): TBD

Date of Field Assessment: 11/16/2018 **Consultant Firm/Investigator(s):** RK&K/KJH, DB

Site Location Details-taken from desktop review

County: Montgomery **Cross Roads:** Bradbury Dr. & Suffolk Terrace

Basin (HUC 8): Middle Potomac-Catoctin **MDE Watershed (8 digit):** 02140208

Proximity to Impacted Stream (mi.): 2.64 **Lat/Long:** 39.13030063 -77.25646132

Site Data

Parcel Size (ac): 3 parcels - 1,411.3, 16.3 & 9.3 **Potential Restoration Reach (LF):** 6,945

Site Opportunities: __X__Channel Restoration ___Livestock Exclusion _____Riparian Buffer Planting __X_Habitat Enhancement ___Fish Passage

Stream Order: 2nd **Stream Hydrology:** Perennial **Stream Use:** I

Drainage Area to Reach (sq. mi.) 1.05

Land Use: Forest **Mapped Soils:** Codorus silt loam & Baile silt loam

Property Address: Main Parcel - 11900 Clopper Rd.

Property Owner(s): Maryland Department of Natural Resources & Maryland National Capital Park & Planning Commission

General Field Observations

Is there evidence that the stream has been disturbed by some kind of human action, like grading, dumping, livestock, culvert, etc?	Can the stream restoration be reasonably done within the confines of the parcel or does it require connections beyond the parcel limits? Explain
Explain:	Explain:
Several sewer crossings. Instream stormwater structure just upstream along trib that flows into site mainstem. Footbridge crossing at northern end of site.	Restoration is feasible within one MDNR parcel and two M-MCPC parcels.

Mitigation Site Rating

Criteria	Score	Criteria	Score
Estimated Bank erosion within reach	10	**Vegetation**	1
10 - Greater than 50% 5 - 10% to 50% 1 - Less than 10%		10 - Herbaceous cover (non-wetland) 5 - Scrub-shrub cover (non-wetland) 1 - Mostly forested and/or wetland	
Describe:		Describe:	
Moderate to severe bank erosion throughout site. Torturous meanders.		Site is dominated by mid-successional tulip poplar forest. Couple of scattered PFO wetlands in northern floodplain.	
Degree of Channel Incision	5	**Land Use**	1
10 - Bank Height greater than 10 feet 5 - Bank Height between 3 and 10 feet 1 - Bank Height less than 3 feet		10 - Agricultural or Open Space 5 - Marginal Pasture 1 - Old field/ Developed/Forested	
Describe:		Describe:	
Banks are 3-6 feet tall.		Majority of site is dominated by mid-successional tulip poplar forest located in Seneca Creek State Park & Quince Orchard Valley Park.	
Existing Floodplain Access	5	**Opportunity for Ecological Lift**	10
10 - No evidence of out of bank flooding 5- Yes (Infrequent out of bank flow) 1 - Yes (evidence of frequent flooding)		10 - Conditions exist for several aspects of lift to be achieved and sustained 5 - Lift limited to one or few aspects 1 - Conditions are such that Lift is difficult to achieve and sustain	
Describe:		Describe:	
Minor evidence of out-of-bank flows near top of bank.		Good potential for reducing erosion, instream habitat improvements, and improving downstream floodplain access.	
Opportunity for Floodplain Development	5	**Ease of Access**	10
10 - Existing space for floodplain greater than 10 times stream width 5 - Existing space for floodplain 3 to 10 times stream width 1 - Little to no space for floodplain development		10 - Yes (with existing direct vehicular access to potential site) 5- yes (open but no existing vehicular access) 1 - No (no vehicular access, clearing needed)	
Describe:		Describe:	
Upstream section limited by narrow/steep valley. Potential for floodplain access improvements in downstream section where floodplain is wider and valley is less steep.		Existing sewer line access throughout most of site. May require clearing some smaller trees and stream crossings.	
Drainage Area Evaluation	5	**Utilities Present**	1
10 -D.A. less than 1 sq. mi. 5- D. A. between 1 & 3 sq. mi. 1 - D. A. greater than 3 sq. mi.		10 - No utilities on site 5 - Utilities but not within restoration area 1 - Utilities within potential restoration area	
Describe:		Describe:	
Drainage area - 1.05 square miles.		Sewer line runs parallel to stream and crosses the stream in a couple locations. Manhole observed in center of channel.	
		Total Score out of 100	53

Map



Site No.	MO_00064		Scale: 1 in. =	2,000

Site Photos









Stream Mitigation Field Site Assessment Form

Project Details

Project Name: I-495/I-270 Managed Lanes Study **Mitigation Site Number:** MPOC0003

Projects Estimated Stream Mitigation Needs (LF): TBD

Date of Field Assessment: 4/23/2019 **Consultant Firm/Investigator(s):** RK&K/KJH, DB

Site Location Details-taken from desktop review

County: Montgomery **Cross Roads:** Game Preserve Road and Frederick Road

Basin (HUC 8): Middle Potomac-Catoctin **MDE Watershed (8 digit):** 02070008

Proximity to Impacted Stream (mi.): 2.03 **Lat/Long:** 39.163101 -77.229916

Site Data

Parcel Size (ac): 83 **Potential Restoration Reach (LF):** 207

Site Opportunities: __X__Channel Restoration ___Livestock Exclusion ___X___Riparian Buffer Planting ____Habitat Enhancement ____Fish Passage

Stream Order: 1st **Stream Hydrology:** Perennial **Stream Use:** I

Drainage Area to Reach (sq. mi.) <1

Land Use: Parkland (Forested) **Mapped Soils:** 16D, 17C, 54A

Property Address: Game Preserve Road, Gaithersburg, MD

Property Owner(s): State of MD DNR

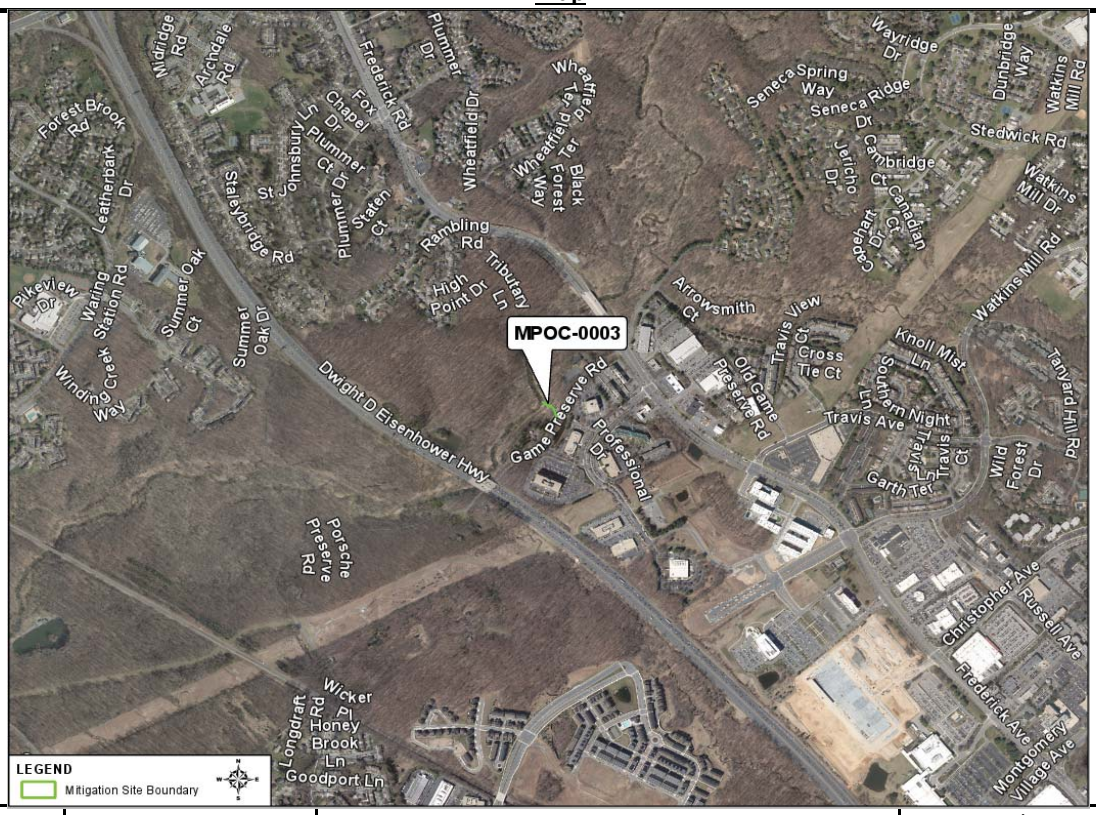
General Field Observations

Is there evidence that the stream has been disturbed by some kind of human action, like grading, dumping, livestock, culvert, etc?	Can the stream restoration be reasonably done within the confines of the parcel or does it require connections beyond the parcel limits? Explain
Explain:	Explain:
Yes, perched culvert with rip-rap revetment	Yes - all DNR parkland.

Mitigation Site Rating

Criteria	Score	Criteria	Score
Estimated Bank erosion within reach	10	**Vegetation**	1
10 - Greater than 50% 5 - 10% to 50% 1 - Less than 10%		10 - Herbaceous cover (non-wetland) 5 - Scrub-shrub cover (non-wetland) 1 - Mostly forested and/or wetland	
Describe: Entire reach degraded		Describe: Scattered trees connected to forest	
Degree of Channel Incision	5	**Land Use**	1
10 - Bank Height greater than 10 feet 5 - Bank Height between 3 and 10 feet 1 - Bank Height less than 3 feet		10 - Agricultural or Open Space 5 - Marginal Pasture 1 - Old field/ Developed/Forested	
Describe: 8-10' tall banks		Describe: Parkland - forested floodplain.	
Existing Floodplain Access	10	**Opportunity for Ecological Lift**	1
10 - No evidence of out of bank flooding 5- Yes (Infrequent out of bank flow) 1 - Yes (evidence of frequent flooding)		10 - Conditions exist for several aspects of lift to be achieved and sustained 5 - Lift limited to one or few aspects 1 - Conditions are such that Lift is difficult to achieve and sustain	
Describe: Incised short channel		Describe: Limited opportunity. Mostly mitigate for erosion. Small tributary, no habitat potential.	
Opportunity for Floodplain Development	1	**Ease of Access**	5
10 - Existing space for floodplain greater than 10 times stream width 5 - Existing space for floodplain 3 to 10 times stream width 1 - Little to no space for floodplain development		10 - Yes (with existing direct vehicular access to potential site) 5- yes (open but no existing vehicular access) 1 - No (no vehicular access, clearing needed)	
Describe: Tributary to larger system. Steep reach		Describe: Adjacent to an old cleared road. May involve some tree removal.	
Drainage Area Evaluation	10	**Utilities Present**	1
10 -D.A. less than 1 sq. mi. 5- D. A. between 1 & 3 sq. mi. 1 - D. A. greater than 3 sq. mi.		10 - No utilities on site 5 - Utilities but not within restoration area 1 - Utilities within potential restoration area	
Describe: <1 sq. mi.		Describe: Sewer in downstream section runs parallel to Seneca Creek.	
		Total Score out of 100	45

Map



Site No.	MPOC0003		Scale: 1 in. =	2,000

Site Photos









Stream Mitigation Field Site Assessment Form

Project Details

Project Name: I-495/I-270 Managed Lanes Study **Mitigation Site Number:** MPOC0004

Projects Estimated Stream Mitigation Needs (LF): TBD

Date of Field Assessment: 4/23/2019 **Consultant Firm/Investigator(s):** RK&K/KJH, DB

Site Location Details-taken from desktop review

County: Montgomery **Cross Roads:** Game Preserve Road and Frederick Road

Basin (HUC 8): Middle Potomac-Catoctin **MDE Watershed (8 digit):** 02070008

Proximity to Impacted Stream (mi.): 1.98 **Lat/Long:** 39.163436 -77.230249

Site Data

Parcel Size (ac): 83 **Potential Restoration Reach (LF):** 2,503

Site Opportunities: __X__Channel Restoration ____Livestock Exclusion ___X___Riparian Buffer Planting ____Habitat Enhancement ____Fish Passage

Stream Order: 3rd **Stream Hydrology:** Perennial **Stream Use:** IV

Drainage Area to Reach (sq. mi.) 41

Land Use: Parkland (Forested) **Mapped Soils:** 54A

Property Address: Game Preserve Road, Gaithersburg, MD

Property Owner(s): State of MD DNR

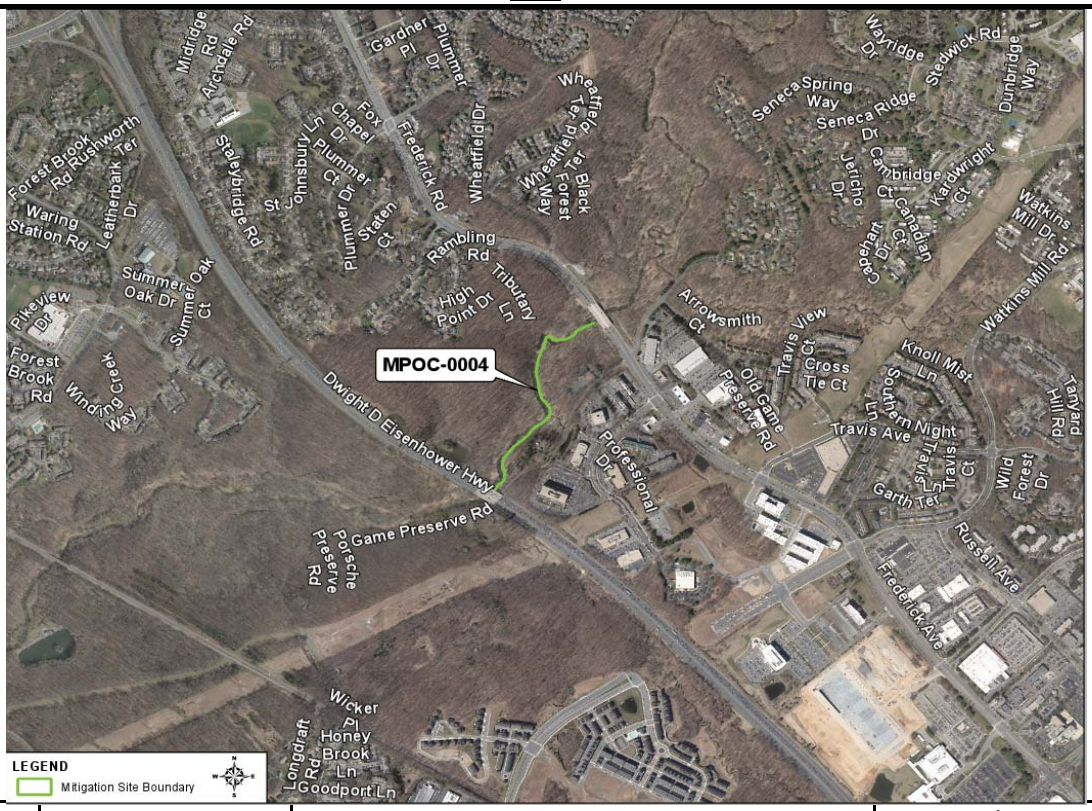
General Field Observations

Is there evidence that the stream has been disturbed by some kind of human action, like grading, dumping, livestock, culvert, etc?	Can the stream restoration be reasonably done within the confines of the parcel or does it require connections beyond the parcel limits? Explain
Explain: Yes, bridge spans upstream side	Explain: Yes - all DNR parkland.

Mitigation Site Rating

Criteria	Score	Criteria	Score
Estimated Bank erosion within reach	10	**Vegetation**	1
10 - Greater than 50% 5 - 10% to 50% 1 - Less than 10%		10 - Herbaceous cover (non-wetland) 5 - Scrub-shrub cover (non-wetland) 1 - Mostly forested and/or wetland	
Describe: Severe erosion throughout reach.		Describe: Forested riparian floodplain	
Degree of Channel Incision	5	**Land Use**	1
10 - Bank Height greater than 10 feet 5 - Bank Height between 3 and 10 feet 1 - Bank Height less than 3 feet		10 - Agricultural or Open Space 5 - Marginal Pasture 1 - Old field/ Developed/Forested	
Describe: 3-4' tall banks		Describe: Parkland - forested.	
Existing Floodplain Access	1	**Opportunity for Ecological Lift**	1
10 - No evidence of out of bank flooding 5- Yes (Infrequent out of bank flow) 1 - Yes (evidence of frequent flooding)		10 - Conditions exist for several aspects of lift to be achieved and sustained 5 - Lift limited to one or few aspects 1 - Conditions are such that Lift is difficult to achieve and sustain	
Describe: Evidence of sediment deposition in floodplain.		Describe: Potential for reducing bank erosion. Limited potential for habitat improvement and floodplain access.	
Opportunity for Floodplain Development	1	**Ease of Access**	1
10 - Existing space for floodplain greater than 10 times stream width 5 - Existing space for floodplain 3 to 10 times stream width 1 - Little to no space for floodplain development		10 - Yes (with existing direct vehicular access to potential site) 5- yes (open but no existing vehicular access) 1 - No (no vehicular access, clearing needed)	
Describe: Large stream - already connected to floodplain		Describe: Forested floodplain. No existing access.	
Drainage Area Evaluation	1	**Utilities Present**	1
10 -D.A. less than 1 sq. mi. 5- D. A. between 1 & 3 sq. mi. 1 - D. A. greater than 3 sq. mi.		10 - No utilities on site 5 - Utilities but not within restoration area 1 - Utilities within potential restoration area	
Describe: 41 square miles		Describe: Utilities present in floodplain - sanitary sewer.	
		Total Score out of 100	23

Map



Site No.	MPOC0004		Scale: 1 in. =	2,000

Site Photos









Stream Mitigation Field Site Assessment Form

Project Details

Project Name: I-495/I-270 Managed Lanes Study **Mitigation Site Number:** MPOC0005

Projects Estimated Stream Mitigation Needs (LF): TBD

Date of Field Assessment: 4/23/2019 **Consultant Firm/Investigator(s):** RK&K/KJH, DB

Site Location Details-taken from desktop review

County: Montgomery **Cross Roads:** Riffle Ford Road and Woodsboro Drive

Basin (HUC 8): Middle Potomac-Catoctin **MDE Watershed (8 digit):** 02070008

Proximity to Impacted Stream (mi.): 3.05 **Lat/Long:** 39.133133 -77.267205

Site Data

Parcel Size (ac): 229 **Potential Restoration Reach (LF):** 448

Site Opportunities: __X__Channel Restoration ___Livestock Exclusion ___X___Riparian Buffer Planting ___Habitat Enhancement ___Fish Passage

Stream Order: 2nd **Stream Hydrology:** Perennial **Stream Use:** I

Drainage Area to Reach (sq. mi.) 44

Land Use: Parkland (Forested) **Mapped Soils:** 54A

Property Address: Riffle Ford Road, Seneca Creek State Park

Property Owner(s): State of MD DNR

General Field Observations

Is there evidence that the stream has been disturbed by some kind of human action, like grading, dumping, livestock, culvert, etc?	Can the stream restoration be reasonably done within the confines of the parcel or does it require connections beyond the parcel limits? Explain
Explain: Yes, imbricated stone wall at upstream end. Bridge crossing downstream	Explain: Yes - all DNR parkland.

Mitigation Site Rating

Criteria	Score	Criteria	Score
Estimated Bank erosion within reach	10	**Vegetation**	1
10 - Greater than 50% 5 - 10% to 50% 1 - Less than 10%		10 - Herbaceous cover (non-wetland) 5 - Scrub-shrub cover (non-wetland) 1 - Mostly forested and/or wetland	
Describe: 3-4' vertical and raw banks. Severe bank erosion		Describe: Mostly forested riparian area. Some open meadow	
Degree of Channel Incision	5	**Land Use**	1
10 - Bank Height greater than 10 feet 5 - Bank Height between 3 and 10 feet 1 - Bank Height less than 3 feet		10 - Agricultural or Open Space 5 - Marginal Pasture 1 - Old field/ Developed/Forested	
Describe: Most banks 5-6' tall		Describe: Parkland - forested.	
Existing Floodplain Access	1	**Opportunity for Ecological Lift**	1
10 - No evidence of out of bank flooding 5- Yes (Infrequent out of bank flow) 1 - Yes (evidence of frequent flooding)		10 - Conditions exist for several aspects of lift to be achieved and sustained 5 - Lift limited to one or few aspects 1 - Conditions are such that Lift is difficult to achieve and sustain	
Describe: Large system. Evidence of sediment deposition in floodplain		Describe: Potential for reducing bank erosion. No potential for habitat improvement. Floodplain is already set and accessed	
Opportunity for Floodplain Development	1	**Ease of Access**	5
10 - Existing space for floodplain greater than 10 times stream width 5 - Existing space for floodplain 3 to 10 times stream width 1 - Little to no space for floodplain development		10 - Yes (with existing direct vehicular access to potential site) 5- yes (open but no existing vehicular access) 1 - No (no vehicular access, clearing needed)	
Describe: Floodplain access limited by adjacent road and trail.		Describe: Good trail adjacent to site with some forest impacts from the trail.	
Drainage Area Evaluation	1	**Utilities Present**	1
10 -D.A. less than 1 sq. mi. 5- D. A. between 1 & 3 sq. mi. 1 - D. A. greater than 3 sq. mi.		10 - No utilities on site 5 - Utilities but not within restoration area 1 - Utilities within potential restoration area	
Describe: 44 square miles		Describe: Mostly sanitary sewer and overhead powerlines.	
		Total Score out of 100	27

Map



Site No.	MPOC0005		Scale: 1 in. =	2,000

Site Photos









Stream Mitigation Field Site Assessment Form

Project Details

Project Name: i495/270 Managed Lane Study **Mitigation Site Number:** MPOC0006

Projects Estimated Stream Mitigation Needs (LF): TBD

Date of Field Assessment: 7/30/2019 **Consultant Firm/Investigator(s):** CRI - DS/SN

Site Location Details-taken from desktop review

County: Montgomery **Cross Roads:** Hillendale Drive and Little Falls Parkway

Basin (HUC 8): Middle Potomac-Catoctin **MDE Watershed (8 digit):** 2140202

Proximity to Impacted Stream (mi.): 2.2 **Lat/Long:** 38.975032 -77.099841

Site Data

Parcel Size (ac): 2 parcels (1.79, 32.1) **Potential Restoration Reach (LF):** 673

Site Opportunities: __X__Channel Restoration ____Livestock Exclusion ___X___Riparian Buffer Planting ___Habitat Enhancement _X_Fish Passage

Stream Order: 1st **Stream Hydrology:** Perennial **Stream Use:** I

Drainage Area to Reach (sq. mi.) 0.53

Land Use: Parkland **Mapped Soils:** Brinklow-Blockton channery silt loams,

Property Address: 6300 Hillandale Rd, Bethesda, MD 20815 Glenelg-Urban land Complex

Property Owner(s): MNCPPC & Mo. County ROW

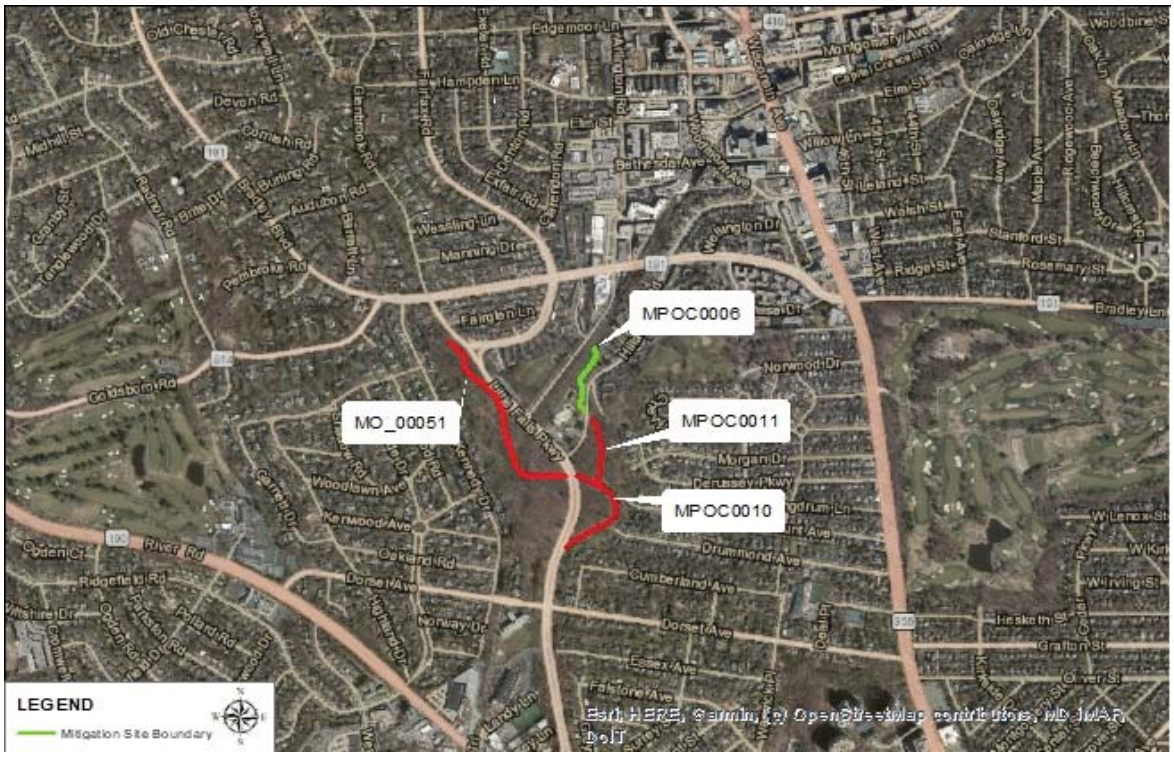
General Field Observations

Is there evidence that the stream has been disturbed by some kind of human action, like grading, dumping, livestock, culvert, etc?	Can the stream restoration be reasonably done within the confines of the parcel or does it require connections beyond the parcel limits? Explain
Explain: Yes; culverts upstream and downstream; utility crossing on bank protection.	Explain: Site located on M-NCPPC parkland and Mo. County ROW. Restoration could be combined with MPOC0010/MPOC0011

Mitigation Site Rating

Criteria	Score	Criteria	Score
Estimated Bank erosion within reach	5	**Vegetation**	1
10 - Greater than 50% 5 - 10% to 50% 1 - Less than 10%		10 - Herbaceous cover (non-wetland) 5 - Scrub-shrub cover (non-wetland) 1 - Mostly forested and/or wetland	
Describe: Approximately 30%-40%; But some had protection		Describe: Forest	
Degree of Channel Incision	5	**Land Use**	1
10 - Bank Height greater than 10 feet 5 - Bank Height between 3 and 10 feet 1 - Bank Height less than 3 feet		10 - Agricultural or Open Space 5 - Marginal Pasture 1 - Old field/ Developed/Forested	
Describe: Approximately 6-8 feet		Describe: Forested	
Existing Floodplain Access	5	**Opportunity for Ecological Lift**	5
10 - No evidence of out of bank flooding 5- Yes (Infrequent out of bank flow) 1 - Yes (evidence of frequent flooding)		10 - Conditions exist for several aspects of lift to be achieved and sustained 5 - Lift limited to one or few aspects 1 - Conditions are such that Lift is difficult to achieve and sustain	
Describe: Lower banks on inside of meanders provide floodplain access.		Describe: Bank stability; habitat; fish blockage; lateral and vertical stability	
Opportunity for Floodplain Development	5	**Ease of Access**	5
10 - Existing space for floodplain greater than 10 times stream width 5 - Existing space for floodplain 3 to 10 times stream width 1 - Little to no space for floodplain development		10 - Yes (with existing direct vehicular access to potential site) 5- yes (open but no existing vehicular access) 1 - No (no vehicular access, clearing needed)	
Describe: Limited by trail, road, and valley; lower end 3-4 times of the stream width		Describe: Road/trail on upstream end; steep slopes downstream old access from restoration	
Drainage Area Evaluation	10	**Utilities Present**	1
10 -D.A. less than 1 sq. mi. 5- D. A. between 1 & 3 sq. mi. 1 - D. A. greater than 3 sq. mi.		10 - No utilities on site 5 - Utilities but not within restoration area 1 - Utilities within potential restoration area	
Describe: Drainage area - 0.53 square miles		Describe: Utility Crossing present	
		Total Score out of 100	43

Map



Site No.	MPOC0006		Scale: 1 in. =	2,000

Site Photos









Stream Mitigation Field Site Assessment Form

Project Details

Project Name: I-495/I-270 Managed Lanes Study **Mitigation Site Number:** MPOC0008 (combined with MPOC0007)

Projects Estimated Stream Mitigation Needs (LF):

Date of Field Assessment: 7/17/2019 **Consultant Firm/Investigator(s):** RK&K; KJH, AJN

Site Location Details-taken from desktop review

County: Montgomery **Cross Roads:** Glen Road and Travilah Road

Basin (HUC 8): Middle Potomac-Catoctin **MDE Watershed (8 digit):** 02140202

Proximity to Impacted Stream (mi.): 4.67 **Lat/Long:** 39.069438 -77.258469

Site Data

Parcel Size (ac): 15.8 **Potential Restoration Reach (LF):** 2,419

Site Opportunities: __X__Channel Restoration ____Livestock Exclusion _____Riparian Buffer Planting __Habitat Enhancement _X_Fish Passage

Stream Order: 1st **Stream Hydrology:** Perennial **Stream Use:** I

Drainage Area to Reach (sq. mi.) 0.25

Land Use: Forested **Mapped Soils:** Baile silt loam

Property Address: Glen Road

Property Owner(s): M-NCPPC

General Field Observations

Is there evidence that the stream has been disturbed by some kind of human action, like grading, dumping, livestock, culvert, etc? Explain	Can the stream restoration be reasonably done within the confines of the parcel or does it require connections beyond the parcel limits? Explain
Explain: No evidence. Bedrock throughout majority of streambed. Combine with MPOC0007	Explain: Two small segments on private property. MNCPPC recommendation

Mitigation Site Rating

Criteria	Score	Criteria	Score
Estimated Bank erosion within reach	5	**Vegetation**	1
10 - Greater than 50% 5 - 10% to 50% 1 - Less than 10%		10 - Herbaceous cover (non-wetland) 5 - Scrub-shrub cover (non-wetland) 1 - Mostly forested and/or wetland	
Describe: Moderate bank erosion throughout		Describe: Forested parkland. Mid-successional; red maple, sycamore, persimmon.	
Degree of Channel Incision	5	**Land Use**	1
10 - Bank Height greater than 10 feet 5 - Bank Height between 3 and 10 feet 1 - Bank Height less than 3 feet		10 - Agricultural or Open Space 5 - Marginal Pasture 1 - Old field/ Developed/Forested	
Describe: 3-6' tall banks		Describe: Forested parkland	
Existing Floodplain Access	5	**Opportunity for Ecological Lift**	5
10 - No evidence of out of bank flooding 5- Yes (Infrequent out of bank flow) 1 - Yes (evidence of frequent flooding)		10 - Conditions exist for several aspects of lift to be achieved and sustained 5 - Lift limited to one or few aspects 1 - Conditions are such that Lift is difficult to achieve and sustain	
Describe: Matted down vegetation at top of bank		Describe: Opportunity for sediment reduction throughout. In-stream habitat limited by bedrock. Riparian invasive treatment needed.	
Opportunity for Floodplain Development	1	**Ease of Access**	1
10 - Existing space for floodplain greater than 10 times stream width 5 - Existing space for floodplain 3 to 10 times stream width 1 - Little to no space for floodplain development		10 - Yes (with existing direct vehicular access to potential site) 5- yes (open but no existing vehicular access) 1 - No (no vehicular access, clearing needed)	
Describe: Limited by steep valley slopes and adjacent private properties		Describe: Clearing of trees would need to occur.	
Drainage Area Evaluation	10	**Utilities Present**	10
10 -D.A. less than 1 sq. mi. 5- D. A. between 1 & 3 sq. mi. 1 - D. A. greater than 3 sq. mi.		10 - No utilities on site 5 - Utilities but not within restoration area 1 - Utilities within potential restoration area	
Describe: 0.25 square miles		Describe: None observed	
		Total Score out of 100	44

Map



Site No.	MPOC0008 (combined		Scale: 1 in. =	2,000

Site Photos









Stream Mitigation Field Site Assessment Form

Project Details

Project Name: I-495/I-270 Managed Lanes Study **Mitigation Site Number:** MPOC-0009

Projects Estimated Stream Mitigation Needs (LF): TBD

Date of Field Assessment: 7/25/2019 **Consultant Firm/Investigator(s):** RKK KJH&AJN

Site Location Details-taken from desktop review

County: Montgomery **Cross Roads:** Goshen Road and Rock Elm Way

Basin (HUC 8): Middle Potomac-Catoctin **MDE Watershed (8 digit):** 02140208

Proximity to Impacted Stream (mi.): 2.13 **Lat/Long:** 39.171692 -77.186706

Site Data

Parcel Size (ac): 25.8 **Potential Restoration Reach (LF):** 3,457

Site Opportunities: __X__Channel Restoration ___Livestock Exclusion ___X___Riparian Buffer Planting _X__Habitat Enhancement ___Fish Passage

Stream Order: 2nd **Stream Hydrology:** Perennial **Stream Use:** I

Drainage Area to Reach (sq. mi.) 2.91

Land Use: Park floodplain **Mapped Soils:** Hatboro silt loam

Property Address: Goshen Road

Property Owner(s): MNCPPC and Montgomery County ROW

General Field Observations

Is there evidence that the stream has been disturbed by some kind of human action, like grading, dumping, livestock, culvert, etc?	Can the stream restoration be reasonably done within the confines of the parcel or does it require connections beyond the parcel limits? Explain
Explain: Yes, rip-rap at sewer crossings and bridge at downstream end.	Explain: MNCPPC property and Montgomery Co. ROW. MNCPPC recommendation

Mitigation Site Rating

Criteria	Score	Criteria	Score
Estimated Bank erosion within reach	10	**Vegetation**	1
10 - Greater than 50% 5 - 10% to 50% 1 - Less than 10%		10 - Herbaceous cover (non-wetland) 5 - Scrub-shrub cover (non-wetland) 1 - Mostly forested and/or wetland	
Describe: Severe erosion throughout reach. Deeply incised channel.		Describe: Mid successional forest; Black Walnut, Sycamore. Downstream section is open meadow.	
Degree of Channel Incision	5	**Land Use**	1
10 - Bank Height greater than 10 feet 5 - Bank Height between 3 and 10 feet 1 - Bank Height less than 3 feet		10 - Agricultural or Open Space 5 - Marginal Pasture 1 - Old field/ Developed/Forested	
Describe: Bank Height 3-6'		Describe: Forested parkland upstream and old field downstream	
Existing Floodplain Access	10	**Opportunity for Ecological Lift**	10
10 - No evidence of out of bank flooding 5- Yes (Infrequent out of bank flow) 1 - Yes (evidence of frequent flooding)		10 - Conditions exist for several aspects of lift to be achieved and sustained 5 - Lift limited to one or few aspects 1 - Conditions are such that Lift is difficult to achieve and sustain	
Describe: No evidence of out of bank flooding		Describe: Opportunities for sediment reduction, floodplain connectivity, aquatic habitat, wetland creation, water quality, an riparian buffer planting.	
Opportunity for Floodplain Development	5	**Ease of Access**	5
10 - Existing space for floodplain greater than 10 times stream width 5 - Existing space for floodplain 3 to 10 times stream width 1 - Little to no space for floodplain development		10 - Yes (with existing direct vehicular access to potential site) 5- yes (open but no existing vehicular access) 1 - No (no vehicular access, clearing needed)	
Describe: Some restrictions due to valley slopes and residential housing		Describe: DS - open meadow and existing path. US - forested.	
Drainage Area Evaluation	5	**Utilities Present**	1
10 -D.A. less than 1 sq. mi. 5- D. A. between 1 & 3 sq. mi. 1 - D. A. greater than 3 sq. mi.		10 - No utilities on site 5 - Utilities but not within restoration area 1 - Utilities within potential restoration area	
Describe: 2.91 square miles		Describe: Sewer line runs parallel to stream.	
		Total Score out of 100	53

Map



Site No.	MPOC-0009		Scale: 1 in. =	2,000

Site Photos









Stream Mitigation Field Site Assessment Form

Project Details

Project Name: 1-495/I-270 Managed Lanes Study **Mitigation Site Number:** MPOC0010

Projects Estimated Stream Mitigation Needs (LF): TBD

Date of Field Assessment: 7/30/2019 **Consultant Firm/Investigator(s):** CRI - DS/SN

Site Location Details-taken from desktop review

County: Montgomery **Cross Roads:** Hillandale and Little Falls Parkway

Basin (HUC 8): Middle Potomac-Catoctin **MDE Watershed (8 digit):** 2140202

Proximity to Impacted Stream (mi.): 2.4 **Lat/Long:** 38.97123 -77.098712

Site Data

Parcel Size (ac): 19.5 **Potential Restoration Reach (LF):** 1,203

Site Opportunities: __X__Channel Restoration ____Livestock Exclusion _X_Riparian Buffer Planting __X_Habitat Enhancement __X_Fish Passage

Stream Order: 2nd **Stream Hydrology:** Perennial **Stream Use:** I

Drainage Area to Reach (sq. mi.)

Land Use: Park/Open Space **Mapped Soils:** Glenelg-Urban land complex

Property Address: 6300 Hillandale Dr, Bethesda, MD 20815

Property Owner(s): MNCPPC

General Field Observations

Is there evidence that the stream has been disturbed by some kind of human action, like grading, dumping, livestock, culvert, etc? Explain	Can the stream restoration be reasonably done within the confines of the parcel or does it require connections beyond the parcel limits? Explain
Explain: Concrete channel	Explain: Only feasible if it extends to natural channel at downstream end, extend upstrea

Mitigation Site Rating

Criteria	Score	Criteria	Score
Estimated Bank erosion within reach	1	**Vegetation**	5
10 - Greater than 50% 5 - 10% to 50% 1 - Less than 10%		10 - Herbaceous cover (non-wetland) 5 - Scrub-shrub cover (non-wetland) 1 - Mostly forested and/or wetland	
Describe: Concrete channel		Describe: Some forest but mostly vines	
Degree of Channel Incision	5	**Land Use**	10
10 - Bank Height greater than 10 feet 5 - Bank Height between 3 and 10 feet 1 - Bank Height less than 3 feet		10 - Agricultural or Open Space 5 - Marginal Pasture 1 - Old field/ Developed/Forested	
Describe: Concrete 2:1; Approximately 4 feet		Describe: Mostly mowed parkland	
Existing Floodplain Access	10	**Opportunity for Ecological Lift**	10
10 - No evidence of out of bank flooding 5- Yes (Infrequent out of bank flow) 1 - Yes (evidence of frequent flooding)		10 - Conditions exist for several aspects of lift to be achieved and sustained 5 - Lift limited to one or few aspects 1 - Conditions are such that Lift is difficult to achieve and sustain	
Describe: No evidence of grass		Describe: Habitat enhancement; floodplain reconnection; bedform diversity	
Opportunity for Floodplain Development	5	**Ease of Access**	5
10 - Existing space for floodplain greater than 10 times stream width 5 - Existing space for floodplain 3 to 10 times stream width 1 - Little to no space for floodplain development		10 - Yes (with existing direct vehicular access to potential site) 5- yes (open but no existing vehicular access) 1 - No (no vehicular access, clearing needed)	
Describe: Closer to 3, but concrete channel is significantly over widened		Describe: Recent utility access from upstream road crossing	
Drainage Area Evaluation	5	**Utilities Present**	1
10 -D.A. less than 1 sq. mi. 5- D. A. between 1 & 3 sq. mi. 1 - D. A. greater than 3 sq. mi.		10 - No utilities on site 5 - Utilities but not within restoration area 1 - Utilities within potential restoration area	
Describe: Drainage area - 1.259 miles		Describe: Sewer along stream bank and could cross	
		Total Score out of 100	57

Map



Site No.	MPOC0010		Scale: 1 in. =	2,000

Site Photos









Stream Mitigation Field Site Assessment Form

Project Details

Project Name: 1-495/I-270 Managed Lane Study **Mitigation Site Number:** MPOC0011

Projects Estimated Stream Mitigation Needs (LF): TBD

Date of Field Assessment: 7/30/2019 **Consultant Firm/Investigator(s):** CRI - DS/SN

Site Location Details-taken from desktop review

County: Montgomery **Cross Roads:** Hillendale Rd and Little Falls Parkway

Basin (HUC 8): Middle Potomac-Catoctin **MDE Watershed (8 digit):** 2140202

Proximity to Impacted Stream (mi.): 2.4 **Lat/Long:** 38.97293 -77.09917

Site Data

Parcel Size (ac): 19.5 **Potential Restoration Reach (LF):** 709

Site Opportunities: __X__Channel Restoration ____Livestock Exclusion ___X___Riparian Buffer Planting _X_Habitat Enhancement _X_Fish Passage

Stream Order: 1st **Stream Hydrology:** Perennial **Stream Use:** I

Drainage Area to Reach (sq. mi.) 0.56 sq mi

Land Use: Parkland **Mapped Soils:** Glenelg-Urban land complex

Property Address: 6300 Hillendale Drive, Bethesda, MD 20815

Property Owner(s): MNCPPC

General Field Observations

Is there evidence that the stream has been disturbed by some kind of human action, like grading, dumping, livestock, culvert, etc? Explain	Can the stream restoration be reasonably done within the confines of the parcel or does it require connections beyond the parcel limits? Explain
Explain: Yes; culverts, trail adjacent; Downstream channel becomes concrete channel	Explain: Combine with MPOC0010 and MPOC0006

Mitigation Site Rating

Criteria	Score	Criteria	Score
Estimated Bank erosion within reach	5	**Vegetation**	1
10 - Greater than 50% 5 - 10% to 50% 1 - Less than 10%		10 - Herbaceous cover (non-wetland) 5 - Scrub-shrub cover (non-wetland) 1 - Mostly forested and/or wetland	
Describe: 40%-50% of eroded banks; Approximately 4-6		Describe: Forest with some clearing near road	
Degree of Channel Incision	5	**Land Use**	1
10 - Bank Height greater than 10 feet 5 - Bank Height between 3 and 10 feet 1 - Bank Height less than 3 feet		10 - Agricultural or Open Space 5 - Marginal Pasture 1 - Old field/ Developed/Forested	
Describe: Approximately 4-6 feet		Describe: Forested parkland	
Existing Floodplain Access	10	**Opportunity for Ecological Lift**	5
10 - No evidence of out of bank flooding 5- Yes (Infrequent out of bank flow) 1 - Yes (evidence of frequent flooding)		10 - Conditions exist for several aspects of lift to be achieved and sustained 5 - Lift limited to one or few aspects 1 - Conditions are such that Lift is difficult to achieve and sustain	
Describe: No obvious evidence of flooding.		Describe: Bank stability; floodplain reconnection; habitat	
Opportunity for Floodplain Development	5	**Ease of Access**	5
10 - Existing space for floodplain greater than 10 times stream width 5 - Existing space for floodplain 3 to 10 times stream width 1 - Little to no space for floodplain development		10 - Yes (with existing direct vehicular access to potential site) 5- yes (open but no existing vehicular access) 1 - No (no vehicular access, clearing needed)	
Describe: More forest but plenty of space		Describe: MNCPPC trail along stream but clearing needed	
Drainage Area Evaluation	10	**Utilities Present**	1
10 -D.A. less than 1 sq. mi. 5- D. A. between 1 & 3 sq. mi. 1 - D. A. greater than 3 sq. mi.		10 - No utilities on site 5 - Utilities but not within restoration area 1 - Utilities within potential restoration area	
Describe: Drainage area - 0.56 square miles		Describe: Multiple utility crossings	
		Total Score out of 100	48

Map



Site No.	MPOC0011		Scale: 1 in. =	2,000

Site Photos









Stream Mitigation Field Site Assessment Form

Project Details

Project Name: I-495/I-270 Managed Lanes Study **Mitigation Site Number:** MPOC0012

Projects Estimated Stream Mitigation Needs (LF):

Date of Field Assessment: 7/17/2019 **Consultant Firm/Investigator(s):** RK&K; KJH, AJN

Site Location Details-taken from desktop review

County: Montgomery **Cross Roads:** Democracy Blvd. and Seven Locks Rd.

Basin (HUC 8): Middle Potomac-Catoctin **MDE Watershed (8 digit):** 02140207

Proximity to Impacted Stream (mi.): 0.77 **Lat/Long:** 39.024472 -77.158008

Site Data

Parcel Size (ac): 34 **Potential Restoration Reach (LF):** 939

Site Opportunities: ___Channel Restoration ___Livestock Exclusion _____Riparian Buffer Planting __Habitat Enhancement _X_Fish Passage

Stream Order: 1st **Stream Hydrology:** Ephemeral **Stream Use:**

Drainage Area to Reach (sq. mi.) 0.06

Land Use: Forested parkland **Mapped Soils:** Blocktown channery silt loam

Property Address: Democracy Blvd.

Property Owner(s): M-NCPPC

General Field Observations

Is there evidence that the stream has been disturbed by some kind of human action, like grading, dumping, livestock, culvert, etc?	Can the stream restoration be reasonably done within the confines of the parcel or does it require connections beyond the parcel limits? Explain
Explain: No.	Explain: Ephemeral channel draining to a wetland, that drains back into the ephemeral channel. All on MNCPPC property. MNCPPC recommendation.

Mitigation Site Rating

Criteria	Score	Criteria	Score
Estimated Bank erosion within reach	5	**Vegetation**	1
10 - Greater than 50% 5 - 10% to 50% 1 - Less than 10%		10 - Herbaceous cover (non-wetland) 5 - Scrub-shrub cover (non-wetland) 1 - Mostly forested and/or wetland	
Describe: Minor to moderate erosion throughout		Describe: Mid successional forest. Middle portion of site is an open meadow/potential wetland	
Degree of Channel Incision	1	**Land Use**	1
10 - Bank Height greater than 10 feet 5 - Bank Height between 3 and 10 feet 1 - Bank Height less than 3 feet		10 - Agricultural or Open Space 5 - Marginal Pasture 1 - Old field/ Developed/Forested	
Describe: 0.5 - 3' tall banks		Describe: Forested parkland	
Existing Floodplain Access	10	**Opportunity for Ecological Lift**	1
10 - No evidence of out of bank flooding 5- Yes (Infrequent out of bank flow) 1 - Yes (evidence of frequent flooding)		10 - Conditions exist for several aspects of lift to be achieved and sustained 5 - Lift limited to one or few aspects 1 - Conditions are such that Lift is difficult to achieve and sustain	
Describe: No evidence of flooding		Describe: No opportunites - ephemeral channel.	
Opportunity for Floodplain Development	1	**Ease of Access**	10
10 - Existing space for floodplain greater than 10 times stream width 5 - Existing space for floodplain 3 to 10 times stream width 1 - Little to no space for floodplain development		10 - Yes (with existing direct vehicular access to potential site) 5- yes (open but no existing vehicular access) 1 - No (no vehicular access, clearing needed)	
Describe: No opportunity - steep valley that drains to an open meadow		Describe: Existing 15' wide path. Would require tree clearing to get to channel	
Drainage Area Evaluation	10	**Utilities Present**	10
10 -D.A. less than 1 sq. mi. 5- D. A. between 1 & 3 sq. mi. 1 - D. A. greater than 3 sq. mi.		10 - No utilities on site 5 - Utilities but not within restoration area 1 - Utilities within potential restoration area	
Describe: 0.06 square miles		Describe: None observed within site	
		Total Score out of 100	50

Map



Site No.	MPOC0012		Scale: 1 in. =	2,000

Site Photos









Stream Mitigation Field Site Assessment Form

Project Details

Project Name: I-495/I-270 Managed Lanes Study **Mitigation Site Number:** SSS-150006

Projects Estimated Stream Mitigation Needs (LF): TBD

Date of Field Assessment: 11/20/2018 **Consultant Firm/Investigator(s):** RK&K/KJH, BDM

Site Location Details-taken from desktop review

County: Montgomery **Cross Roads:** Woodfield Rd. & Watkins Rd.

Basin (HUC 8): Middle Potomac-Catoctin **MDE Watershed (8 digit):** 02140208

Proximity to Impacted Stream (mi.): 6.4 **Lat/Long:** 39.23314874 -77.18283808

Site Data

Parcel Size (ac): 48.28 **Potential Restoration Reach (LF):** 3,529

Site Opportunities: ___Channel Restoration ___Livestock Exclusion _____Riparian Buffer Planting ___Habitat Enhancement ___Fish Passage

Stream Order: 3rd **Stream Hydrology:** Perennial **Stream Use:** I

Drainage Area to Reach (sq. mi.) 9.01

Land Use: Forest - Existing Wetland Mitigation Site **Mapped Soils:** Hatboro silt loam & Codorus silt loam

Property Address: Woodfield Rd., Gaithersburg 20882

Property Owner(s): State Highway Administration

General Field Observations

Is there evidence that the stream has been disturbed by some kind of human action, like grading, dumping, livestock, culvert, etc?	Can the stream restoration be reasonably done within the confines of the parcel or does it require connections beyond the parcel limits? Explain
Explain: The site consists of an existing ICC wetland mitigation site (SC-19). Site surrounded by wetland creation/tree planting areas. Some rock toe protection structures along channel.	Explain: NA - Existing mitigation site. SHA EPD stated in a meeting on 1/28/19 that this site should not be pursued for stream mitigation.

Mitigation Site Rating

Criteria	Score	Criteria	Score
Estimated Bank erosion within reach	5	**Vegetation**	1
10 - Greater than 50% 5 - 10% to 50% 1 - Less than 10%		10 - Herbaceous cover (non-wetland) 5 - Scrub-shrub cover (non-wetland) 1 - Mostly forested and/or wetland	
Describe: Localized sections with minor to moderate bank erosion. Sections have been stabilized with rock toe protection.		Describe: Recent tree plantings throughout site. Majority of site is wetland creation area.	
Degree of Channel Incision	1	**Land Use**	1
10 - Bank Height greater than 10 feet 5 - Bank Height between 3 and 10 feet 1 - Bank Height less than 3 feet		10 - Agricultural or Open Space 5 - Marginal Pasture 1 - Old field/ Developed/Forested	
Describe: 1-3 foot tall banks		Describe: Reforestation plantings in old field & wetland creation areas.	
Existing Floodplain Access	1	**Opportunity for Ecological Lift**	1
10 - No evidence of out of bank flooding 5- Yes (Infrequent out of bank flow) 1 - Yes (evidence of frequent flooding)		10 - Conditions exist for several aspects of lift to be achieved and sustained 5 - Lift limited to one or few aspects 1 - Conditions are such that Lift is difficult to achieve and sustain	
Describe: Evidence of out-of-bank flooding in several areas throughout site - woody debris piles, sediment deposition & matted down veg.		Describe: Existing restoration site with little potential for erosion reduction and habitat improvements.	
Opportunity for Floodplain Development	1	**Ease of Access**	5
10 - Existing space for floodplain greater than 10 times stream width 5 - Existing space for floodplain 3 to 10 times stream width 1 - Little to no space for floodplain development		10 - Yes (with existing direct vehicular access to potential site) 5- yes (open but no existing vehicular access) 1 - No (no vehicular access, clearing needed)	
Describe: Plenty of space for floodplain, however stream is already connected to the adjacent floodplain. Low banks, evidence of out-of-bank flows, and existing floodplain wetlands.		Describe: Existing access from previous restoration at northern end of site, however access to the stream would require removal of recent tree plantings.	
Drainage Area Evaluation	1	**Utilities Present**	5
10 -D.A. less than 1 sq. mi. 5- D. A. between 1 & 3 sq. mi. 1 - D. A. greater than 3 sq. mi.		10 - No utilities on site 5 - Utilities but not within restoration area 1 - Utilities within potential restoration area	
Describe: Drainage area - 9.01 square miles.		Describe: Overhead powerlines along road just outside site.	
		Total Score out of 100	22

Map



Site No.	SSS-150006		Scale: 1 in. = 2,000

Site Photos









Stream Mitigation Field Site Assessment Form

Project Details

Project Name: I-495/I-270 Managed Lanes Study **Mitigation Site Number:** SSS-150017

Projects Estimated Stream Mitigation Needs (LF): TBD

Date of Field Assessment: 11/8/2018 **Consultant Firm/Investigator(s):** RK&K/KJH, DB

Site Location Details-taken from desktop review

County: Montgomery **Cross Roads:** Carderock Springs Dr. & Fenway Rd.

Basin (HUC 8): Middle Potomac-Catoctin **MDE Watershed (8 digit):** 2140207

Proximity to Impacted Stream (mi.): 0.6 **Lat/Long:** 38.99502015 -77.17030611

Site Data

Parcel Size (ac): 3 parcels - 1.7, 5.8 & 6.5 **Potential Restoration Reach (LF):** 1,084

Site Opportunities: __X__Channel Restoration ___Livestock Exclusion ___X___Riparian Buffer Planting ___Habitat Enhancement _X__Fish Passage

Stream Order: 2nd **Stream Hydrology:** Perennial **Stream Use:** I

Drainage Area to Reach (sq. mi.) 0.78

Land Use: Medium density residential **Mapped Soils:** Blocktown channery silt loam

Property Address: Main Parcel - Steamboat Rd, Bethesda 20817

Property Owner(s): Maryland National Capital Park & Planning Commission

General Field Observations

Is there evidence that the stream has been disturbed by some kind of human action, like grading, dumping, livestock, culvert, etc?	Can the stream restoration be reasonably done within the confines of the parcel or does it require connections beyond the parcel limits? Explain
Explain: Boulder armoring is evident along the banks in the lower section of the site. Possible past floodplain fill for adjacent roadway.	Explain: Restoration is feasible within 3 M-NCPPC parcels, however may require access through a private property at the northern end of the site.

Mitigation Site Rating

Criteria	Score	Criteria	Score
Estimated Bank erosion within reach	5	**Vegetation**	1
10 - Greater than 50% 5 - 10% to 50% 1 - Less than 10%		10 - Herbaceous cover (non-wetland) 5 - Scrub-shrub cover (non-wetland) 1 - Mostly forested and/or wetland	
Describe: Moderate bank erosion throughout most of site. A few localized areas of severe bank erosion. Some bank sections are stabilized with vegetation.		Describe: Stream is surrounded by mid-successional upland forest. Small potential PFO wetland at upstream end of site.	
Degree of Channel Incision	5	**Land Use**	1
10 - Bank Height greater than 10 feet 5 - Bank Height between 3 and 10 feet 1 - Bank Height less than 3 feet		10 - Agricultural or Open Space 5 - Marginal Pasture 1 - Old field/ Developed/Forested	
Describe: Banks are ~4-8 ft. tall.		Describe: Located in Cabin John Creek Park. Stream valley park consisting of mid-successional forest.	
Existing Floodplain Access	10	**Opportunity for Ecological Lift**	5
10 - No evidence of out of bank flooding 5- Yes (Infrequent out of bank flow) 1 - Yes (evidence of frequent flooding)		10 - Conditions exist for several aspects of lift to be achieved and sustained 5 - Lift limited to one or few aspects 1 - Conditions are such that Lift is difficult to achieve and sustain	
Describe: Deeply incised channel. No evidence of out of bank flooding.		Describe: Some potential in reducing bank erosion, however fish/benthic habitat and water quality improvements are limited due to existing good habitat and constricted floodplain.	
Opportunity for Floodplain Development	1	**Ease of Access**	5
10 - Existing space for floodplain greater than 10 times stream width 5 - Existing space for floodplain 3 to 10 times stream width 1 - Little to no space for floodplain development		10 - Yes (with existing direct vehicular access to potential site) 5- yes (open but no existing vehicular access) 1 - No (no vehicular access, clearing needed)	
Describe: Floodplain is narrow and constricted by a roadway to the north and steep valley slopes to the south.		Describe: Potential access through cleared area in center of site and private property at upstream end of site that appears to have been cleared in the past for sewer repairs.	
Drainage Area Evaluation	10	**Utilities Present**	1
10 -D.A. less than 1 sq. mi. 5- D. A. between 1 & 3 sq. mi. 1 - D. A. greater than 3 sq. mi.		10 - No utilities on site 5 - Utilities but not within restoration area 1 - Utilities within potential restoration area	
Describe: Drainage area - 0.78 square miles.		Describe: Sewer line runs parallel to stream.	
		Total Score out of 100	44

Map



Site No.	SSS-150017		Scale: 1 in. = 2,000

Site Photos









Stream Mitigation Field Site Assessment Form

Project Details

Project Name: I-495/I-270 Managed Lanes Study **Mitigation Site Number:** PG_00008

Projects Estimated Stream Mitigation Needs (LF): TBD

Date of Field Assessment: 11/27/2018 **Consultant Firm/Investigator(s):** RK&K/KJH, BDM

Site Location Details-taken from desktop review

County: Prince George's **Cross Roads:** Harry S Truman Dr. N. & Shoppers Way

Basin (HUC 8): Patuxent **MDE Watershed (8 digit):** 02131103

Proximity to Impacted Stream (mi.): 0.09 **Lat/Long:** 38.90121886 -76.84465743

Site Data

Parcel Size (ac): 2 Parcels - 16.28, 49.39 **Potential Restoration Reach (LF):** 1,682

Site Opportunities: __X__Channel Restoration ____Livestock Exclusion ___X___Riparian Buffer Planting __X_Habitat Enhancement ___Fish Passage

Stream Order: 1st **Stream Hydrology:** Perennial **Stream Use:** I

Drainage Area to Reach (sq. mi.) 0.2

Land Use: Commercial **Mapped Soils:** Urban land-Collington-Wist complex

Property Address: 801 Capital Centre Blvd, Upper Marlboro 20774-0000

Property Owner(s): Washington Metro Area Transit Authority, RPAI Capital Centre II LLC

General Field Observations

Is there evidence that the stream has been disturbed by some kind of human action, like grading, dumping, livestock, culvert, etc?	Can the stream restoration be reasonably done within the confines of the parcel or does it require connections beyond the parcel limits? Explain
Explain: Active construction just north of site in commercial development. Rip-rap in portions of the stream. Turbid water.	Explain: Site restoration would require access from WMATA & commercial development.

Mitigation Site Rating

Criteria	Score	Criteria	Score
Estimated Bank erosion within reach	5	**Vegetation**	1
10 - Greater than 50% 5 - 10% to 50% 1 - Less than 10%		10 - Herbaceous cover (non-wetland) 5 - Scrub-shrub cover (non-wetland) 1 - Mostly forested and/or wetland	
Describe: Minor to moderate bank erosion throughout site.		Describe: Narrow strip of forest surrounds site.	
Degree of Channel Incision	1	**Land Use**	1
10 - Bank Height greater than 10 feet 5 - Bank Height between 3 and 10 feet 1 - Bank Height less than 3 feet		10 - Agricultural or Open Space 5 - Marginal Pasture 1 - Old field/ Developed/Forested	
Describe: 1-3 foot tall banks.		Describe: Narrow forested strip on WMATA and commercial properties.	
Existing Floodplain Access	1	**Opportunity for Ecological Lift**	5
10 - No evidence of out of bank flooding 5- Yes (Infrequent out of bank flow) 1 - Yes (evidence of frequent flooding)		10 - Conditions exist for several aspects of lift to be achieved and sustained 5 - Lift limited to one or few aspects 1 - Conditions are such that Lift is difficult to achieve and sustain	
Describe: Evidence of wrack lines, matted down veg, and trash in narrow floodplain.		Describe: Some potential for improving instream habitat and reducing erosion. No potential for floodplain development or improving water quality.	
Opportunity for Floodplain Development	1	**Ease of Access**	1
10 - Existing space for floodplain greater than 10 times stream width 5 - Existing space for floodplain 3 to 10 times stream width 1 - Little to no space for floodplain development		10 - Yes (with existing direct vehicular access to potential site) 5- yes (open but no existing vehicular access) 1 - No (no vehicular access, clearing needed)	
Describe: No potential for floodplain improvements due to the site being surrounded by development.		Describe: Site surrounded by narrow strip of forest.	
Drainage Area Evaluation	10	**Utilities Present**	5
10 -D.A. less than 1 sq. mi. 5- D. A. between 1 & 3 sq. mi. 1 - D. A. greater than 3 sq. mi.		10 - No utilities on site 5 - Utilities but not within restoration area 1 - Utilities within potential restoration area	
Describe: Drainage Area - 0.2 square miles		Describe: Storm drains located just outside site.	
		Total Score out of 100	31

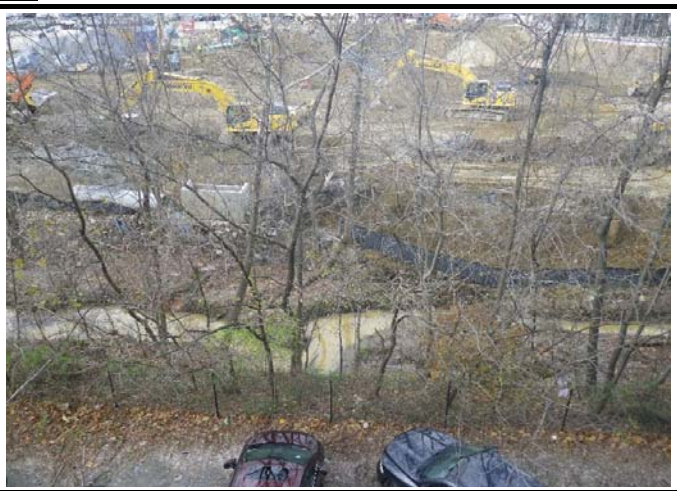
Map



Site No.	PG_00008		Scale: 1 in. = 2,000

Site Photos







Stream Mitigation Field Site Assessment Form

Project Details

Project Name: I-495/I-270 Managed Lanes Study **Mitigation Site Number:** PG00017

Projects Estimated Stream Mitigation Needs (LF): TBD

Date of Field Assessment: 6/11/2019 **Consultant Firm/Investigator(s):** RK&K/KJH, CAS

Site Location Details-taken from desktop review

County: Prince George's **Cross Roads:** Croom Road and Grandhaven Ave.

Basin (HUC 8): Middle Potomac-Anacostia-Occoquan **MDE Watershed (8 digit):** 02060006

Proximity to Impacted Stream (mi.): 6.25 miles **Lat/Long:** 38.778987 -76.774976

Site Data

Parcel Size (ac): 15.2 **Potential Restoration Reach (LF):** 2,935

Site Opportunities: __X__Channel Restoration ___Livestock Exclusion _____Riparian Buffer Planting ___Habitat Enhancement ___Fish Passage

Stream Order: 3rd **Stream Hydrology:** Perennial **Stream Use:** I

Drainage Area to Reach (sq. mi.) 13

Land Use: Forested Parkland **Mapped Soils:** Widewater and Issue soils

Property Address: Croom Road, Upper Marlboro

Property Owner(s): MNCPPC - PG County

General Field Observations

Is there evidence that the stream has been disturbed by some kind of human action, like grading, dumping, livestock, culvert, etc?	Can the stream restoration be reasonably done within the confines of the parcel or does it require connections beyond the parcel limits? Explain
Explain: Old bridge foundation near confluence.	Explain: May require access/work on private property. 1,800 LF potential on MNCPPC property.

Mitigation Site Rating

Criteria	Score	Criteria	Score
Estimated Bank erosion within reach	10	**Vegetation**	1
10 - Greater than 50% 5 - 10% to 50% 1 - Less than 10%		10 - Herbaceous cover (non-wetland) 5 - Scrub-shrub cover (non-wetland) 1 - Mostly forested and/or wetland	
Describe: Old severe erosion stabilized by vegetation. Mostly localized active severe erosion.		Describe: Mid-successional forest. Dense understory of spicebush. River birch, box elder, tulip poplar, sycamore. One PFO wetland.	
Degree of Channel Incision	5	**Land Use**	1
10 - Bank Height greater than 10 feet 5 - Bank Height between 3 and 10 feet 1 - Bank Height less than 3 feet		10 - Agricultural or Open Space 5 - Marginal Pasture 1 - Old field/ Developed/Forested	
Describe: 8-10' tall banks		Describe: Forested parkland	
Existing Floodplain Access	10	**Opportunity for Ecological Lift**	5
10 - No evidence of out of bank flooding 5- Yes (Infrequent out of bank flow) 1 - Yes (evidence of frequent flooding)		10 - Conditions exist for several aspects of lift to be achieved and sustained 5 - Lift limited to one or few aspects 1 - Conditions are such that Lift is difficult to achieve and sustain	
Describe: No evidence of flooding		Describe: Opportunities for sediment reduction, floodplain connectivity, water quality. Existing good instream woody habitat.	
Opportunity for Floodplain Development	5	**Ease of Access**	1
10 - Existing space for floodplain greater than 10 times stream width 5 - Existing space for floodplain 3 to 10 times stream width 1 - Little to no space for floodplain development		10 - Yes (with existing direct vehicular access to potential site) 5- yes (open but no existing vehicular access) 1 - No (no vehicular access, clearing needed)	
Describe: ~ 200' on both sides for floodplain development.		Describe: Mid-successional forest with dense understory - no existing access.	
Drainage Area Evaluation	1	**Utilities Present**	1
10 -D.A. less than 1 sq. mi. 5- D. A. between 1 & 3 sq. mi. 1 - D. A. greater than 3 sq. mi.		10 - No utilities on site 5 - Utilities but not within restoration area 1 - Utilities within potential restoration area	
Describe: 13 square miles		Describe: Sewerline along smaller tributary. Overhead powerline along tributary.	
		Total Score out of 100	40

Map



Site No.	PG00017		Scale: 1 in. =	2,000

Site Photos









Stream Mitigation Field Site Assessment Form

Project Details

Project Name: I-495/I-270 Managed Lanes Study **Mitigation Site Number:** PG_00049A

Projects Estimated Stream Mitigation Needs (LF): TBD

Date of Field Assessment: 12/12/2018 **Consultant Firm/Investigator(s):** RK&K/KJH, BDM

Site Location Details-taken from desktop review

County: Prince George's **Cross Roads:** Stephanie Roper Hwy & Pennsylvania Ave

Basin (HUC 8): Patuxent **MDE Watershed (8 digit):** 02131103

Proximity to Impacted Stream (mi.): 6.38 **Lat/Long:** 38.80716792 -76.74881669

Site Data

Parcel Size (ac): 147.7, 23.8, 3.3, 3.6, 11.7 **Potential Restoration Reach (LF):** 4,231

Site Opportunities: __X__Channel Restoration ____Livestock Exclusion ___X___Riparian Buffer Planting __X_Habitat Enhancement ___Fish Passage

Stream Order: 4th **Stream Hydrology:** Perennial **Stream Use:** I

Drainage Area to Reach (sq. mi.) 91.2

Land Use: Commercial & Forest **Mapped Soils:** Widewater and Issue Soils

Property Address: PG County Address - 14900 Pennsylvania Ave, Upper Marlboro 20772-0000

Property Owner(s): Prince George's County & 4 Private Property Owners

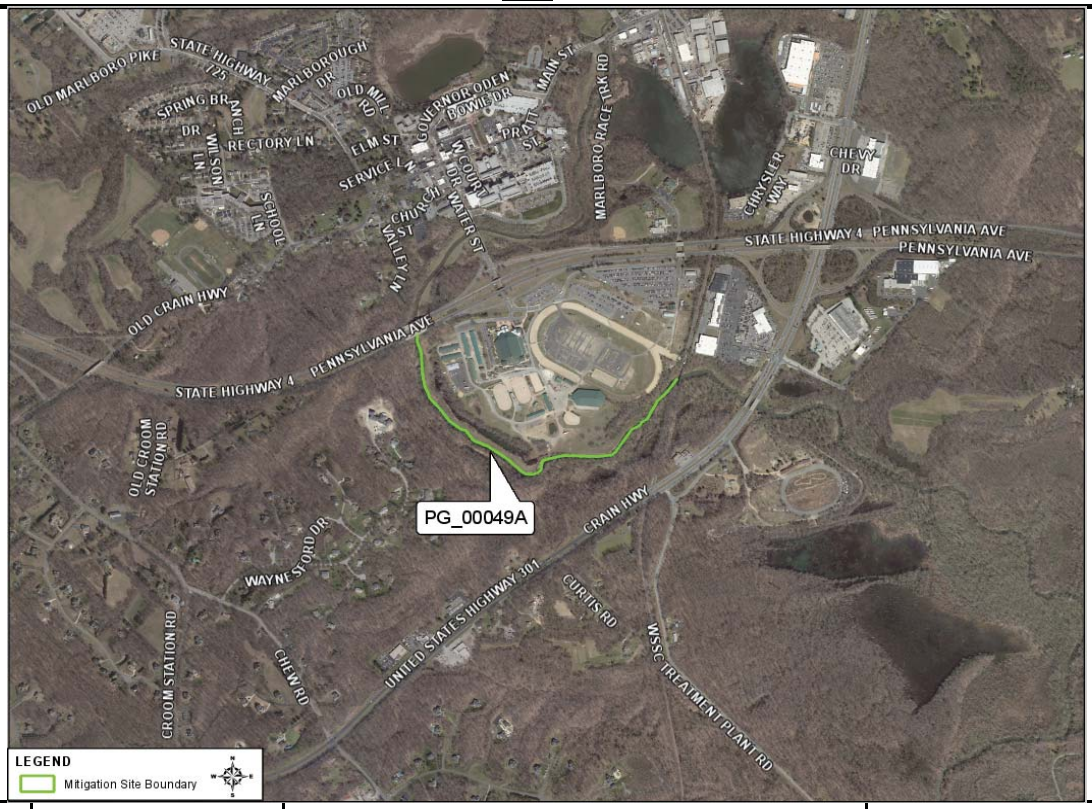
General Field Observations

Is there evidence that the stream has been disturbed by some kind of human action, like grading, dumping, livestock, culvert, etc?	Can the stream restoration be reasonably done within the confines of the parcel or does it require connections beyond the parcel limits? Explain
Explain: Bridge & rip-rap bank stabilization at upstream end of site. Large pond that runs parallel to the stream may be man-made.	Explain: Stream restoration at the site would require access to four private properties along the west and south sides of the channel.

Mitigation Site Rating

Criteria	Score	Criteria	Score
Estimated Bank erosion within reach	10	**Vegetation**	5
10 - Greater than 50% 5 - 10% to 50% 1 - Less than 10%		10 - Herbaceous cover (non-wetland) 5 - Scrub-shrub cover (non-wetland) 1 - Mostly forested and/or wetland	
Describe: Moderate to severe erosion throughout majority of site. Vertical, sandy banks.		Describe: Riparian zone north of the channel consists mostly of maintained grass areas with scattered trees. Riparian zone south of the channel consists of mid-successional forest with extensive PFO wetlands.	
Degree of Channel Incision	10	**Land Use**	5
10 - Bank Height greater than 10 feet 5 - Bank Height between 3 and 10 feet 1 - Bank Height less than 3 feet		10 - Agricultural or Open Space 5 - Marginal Pasture 1 - Old field/ Developed/Forested	
Describe: 6 - 12 foot tall banks. Banks in majority of site are 10 feet tall.		Describe: Park land used for events & equestrian services. Northern riparian zone is open grass. Southern riparian zone is mid-successional forest.	
Existing Floodplain Access	5	**Opportunity for Ecological Lift**	5
10 - No evidence of out of bank flooding 5- Yes (Infrequent out of bank flow) 1 - Yes (evidence of frequent flooding)		10 - Conditions exist for several aspects of lift to be achieved and sustained 5 - Lift limited to one or few aspects 1 - Conditions are such that Lift is difficult to achieve and sustain	
Describe: Some evidence of sand deposition at top of stream banks.		Describe: Opportunity for reducing bank erosion. Limited potential for improvements to instream habitat and floodplain development.	
Opportunity for Floodplain Development	1	**Ease of Access**	5
10 - Existing space for floodplain greater than 10 times stream width 5 - Existing space for floodplain 3 to 10 times stream width 1 - Little to no space for floodplain development		10 - Yes (with existing direct vehicular access to potential site) 5- yes (open but no existing vehicular access) 1 - No (no vehicular access, clearing needed)	
Describe: Floodplain development limited by valley wall south of site and park amenities north of site.		Describe: Open access north of site. Access and work south of site may require tree clearing.	
Drainage Area Evaluation	1	**Utilities Present**	1
10 -D.A. less than 1 sq. mi. 5- D. A. between 1 & 3 sq. mi. 1 - D. A. greater than 3 sq. mi.		10 - No utilities on site 5 - Utilities but not within restoration area 1 - Utilities within potential restoration area	
Describe: Drainage area - 91.2 square miles		Describe: Sewer and gas lines within site.	
		Total Score out of 100	48

Map



Site No.	PG_00049A		Scale: 1 in. = 2,000

Site Photos









Stream Mitigation Field Site Assessment Form

Project Details

Project Name: I-495/I-270 Managed Lanes Study **Mitigation Site Number:** PG_00049B

Projects Estimated Stream Mitigation Needs (LF): TBD

Date of Field Assessment: 12/12/2018 **Consultant Firm/Investigator(s):** RK&K/KJH, BDM

Site Location Details-taken from desktop review

County: Prince George's **Cross Roads:** Marlboro Pike & Marlboro Race Track Rd.

Basin (HUC 8): Patuxent **MDE Watershed (8 digit):** 02131103

Proximity to Impacted Stream (mi.): 6.38 **Lat/Long:** 38.81456046 -76.74699715

Site Data

Parcel Size (ac): 147.7, 5.2, 5.7, 6.3, 0.4, 2.9, 1.3, 1.6, 0.1, 7.6 **Potential Restoration Reach (LF):** 4,260

Site Opportunities: __X__Channel Restoration ___Livestock Exclusion ___X___Riparian Buffer Planting __X_Habitat Enhancement ___Fish Passage

Stream Order: 4th **Stream Hydrology:** Perennial **Stream Use:** I

Drainage Area to Reach (sq. mi.) 90.6

Land Use: Forest **Mapped Soils:** Widewater and Issue Soils

Property Address: 14900 Pennsylvania Ave, Upper Marlboro MD, 20772

Property Owner(s): Prince George's County, Town of Upper Marlboro, Marlboro Volunteer Fire Dept., and 1 Private Property

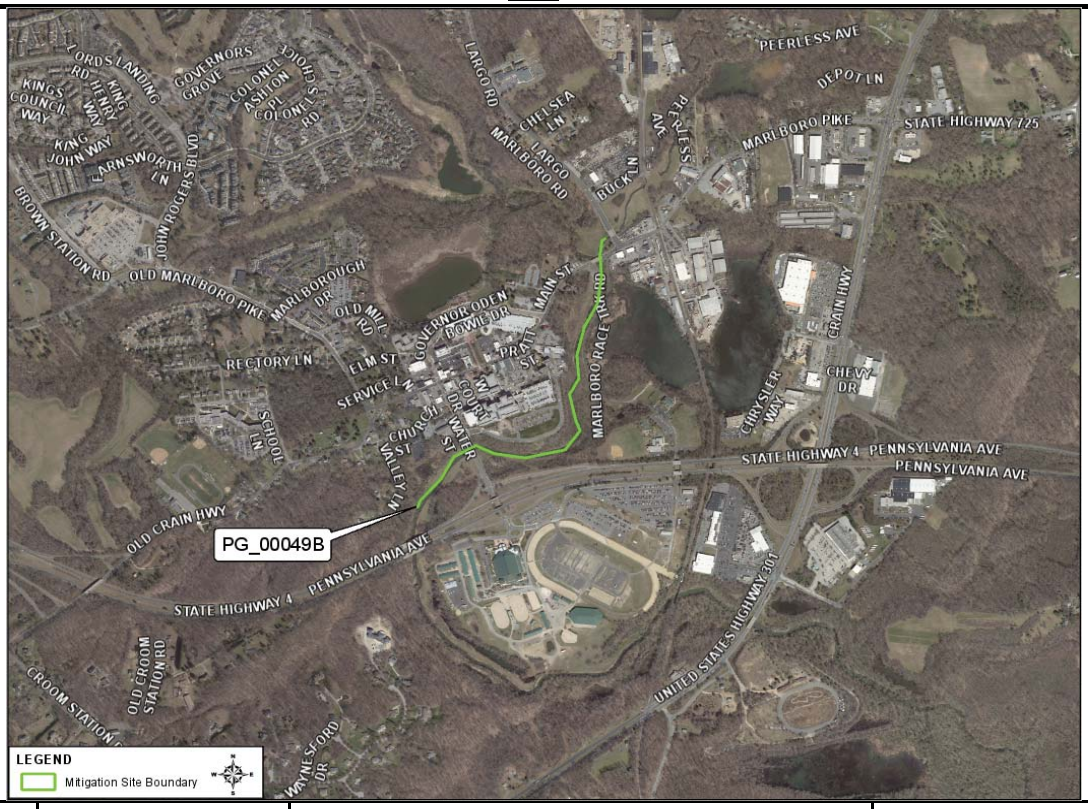
General Field Observations

Is there evidence that the stream has been disturbed by some kind of human action, like grading, dumping, livestock, culvert, etc?	Can the stream restoration be reasonably done within the confines of the parcel or does it require connections beyond the parcel limits? Explain
Explain: Rock toe bank protection at upstream end of site. Timber mats from construction washed down and scattered throughout site.	Explain: Majority of site on PG County property, however portions of site extend onto Town of Marlboro, Fire Dept, and one private property.

Mitigation Site Rating

Criteria	Score	Criteria	Score
Estimated Bank erosion within reach	10	**Vegetation**	1
10 - Greater than 50% 5 - 10% to 50% 1 - Less than 10%		10 - Herbaceous cover (non-wetland) 5 - Scrub-shrub cover (non-wetland) 1 - Mostly forested and/or wetland	
Describe: Moderate to severe erosion throughout most of site. Vertical, sand banks. Some bank sections are vertical, yet appear stable.		Describe: Majority of site is mid-successional forest. Section DS of Water St. is open grass. Several large floodplain wetlands throughout site.	
Degree of Channel Incision	10	**Land Use**	1
10 - Bank Height greater than 10 feet 5 - Bank Height between 3 and 10 feet 1 - Bank Height less than 3 feet		10 - Agricultural or Open Space 5 - Marginal Pasture 1 - Old field/ Developed/Forested	
Describe: 8 - 11 foot tall banks.		Describe: Majority of site is mid-successional forest on park land. Section DS of Water St. is open grass. Several large floodplain wetlands throughout site.	
Existing Floodplain Access	1	**Opportunity for Ecological Lift**	5
10 - No evidence of out of bank flooding 5- Yes (Infrequent out of bank flow) 1 - Yes (evidence of frequent flooding)		10 - Conditions exist for several aspects of lift to be achieved and sustained 5 - Lift limited to one or few aspects 1 - Conditions are such that Lift is difficult to achieve and sustain	
Describe: Extensive sand deposition throughout majority of floodplain. Timber mats from upstream construction scattered throughout floodplain.		Describe: Opportunity for reducing bank erosion. Limited potential for improvements to instream habitat and floodplain development.	
Opportunity for Floodplain Development	1	**Ease of Access**	1
10 - Existing space for floodplain greater than 10 times stream width 5 - Existing space for floodplain 3 to 10 times stream width 1 - Little to no space for floodplain development		10 - Yes (with existing direct vehicular access to potential site) 5- yes (open but no existing vehicular access) 1 - No (no vehicular access, clearing needed)	
Describe: Narrow floodplain confined by steep valley slopes. Stream already appears to be connected to majority of floodplain.		Describe: Majority of site is forested and surrounded by steep valley slopes. Several large floodplain wetlands throughout site. Section DS of Water St. is open grass.	
Drainage Area Evaluation	1	**Utilities Present**	1
10 -D.A. less than 1 sq. mi. 5- D. A. between 1 & 3 sq. mi. 1 - D. A. greater than 3 sq. mi.		10 - No utilities on site 5 - Utilities but not within restoration area 1 - Utilities within potential restoration area	
Describe: Drainage area - 90.6 square miles		Describe: Sewer and gas lines within site. Electric lines across Water St. bridge.	
		Total Score out of 100	32

Map



Site No.	PG_00049B		Scale: 1 in. = 2,000

Site Photos









Stream Mitigation Field Site Assessment Form

Project Details

Project Name: I-495/I-270 Managed Lanes Study **Mitigation Site Number:** PG_00149

Projects Estimated Stream Mitigation Needs (LF): TBD

Date of Field Assessment: 1/2/2019 **Consultant Firm/Investigator(s):** RK&K/KJH, BDM

Site Location Details-taken from desktop review

County: Prince George's **Cross Roads:** Central Ave & Enterprise Rd

Basin (HUC 8): Patuxent **MDE Watershed (8 digit):** 02131103

Proximity to Impacted Stream (mi.): 2.5 **Lat/Long:** 38.89810854 -76.79590878

Site Data

Parcel Size (ac): 3.1 **Potential Restoration Reach (LF):** 1,995

Site Opportunities: __X__Channel Restoration ___Livestock Exclusion _____Riparian Buffer Planting __X_Habitat Enhancement ___Fish Passage

Stream Order: 3rd **Stream Hydrology:** Perennial **Stream Use:** I

Drainage Area to Reach (sq. mi.) 8.56

Land Use: Forest **Mapped Soils:** Widewater and Issue Soils

Property Address: Central Ave, Upper Marlboro 20774-0000

Property Owner(s): Prince George's County

General Field Observations

Is there evidence that the stream has been disturbed by some kind of human action, like grading, dumping, livestock, culvert, etc?	Can the stream restoration be reasonably done within the confines of the parcel or does it require connections beyond the parcel limits? Explain
Explain: Stormwater Pond retrofit under construction drains to the site. Majority of site is within wetlands of special state concern.	Explain: Access and restoration is feasible within PG County property.

Mitigation Site Rating

Criteria	Score	Criteria	Score
Estimated Bank erosion within reach	5	**Vegetation**	1
10 - Greater than 50% 5 - 10% to 50% 1 - Less than 10%		10 - Herbaceous cover (non-wetland) 5 - Scrub-shrub cover (non-wetland) 1 - Mostly forested and/or wetland	
Describe: Moderate to severe erosion throughout most of site. Trees roots stabilizing some portions.		Describe: Mid-successional forest surrounding most of site dominated by red maple, sweet gum, sycamore and American elm. Extensive PFO wetlands throughout floodplain. High quality sphagnum moss wetland within site.	
Degree of Channel Incision	5	**Land Use**	1
10 - Bank Height greater than 10 feet 5 - Bank Height between 3 and 10 feet 1 - Bank Height less than 3 feet		10 - Agricultural or Open Space 5 - Marginal Pasture 1 - Old field/ Developed/Forested	
Describe: 6 foot tall sandy banks		Describe: Mid-successional forest and PFO wetlands located on County property. Two stormwater facilities within site.	
Existing Floodplain Access	5	**Opportunity for Ecological Lift**	5
10 - No evidence of out of bank flooding 5- Yes (Infrequent out of bank flow) 1 - Yes (evidence of frequent flooding)		10 - Conditions exist for several aspects of lift to be achieved and sustained 5 - Lift limited to one or few aspects 1 - Conditions are such that Lift is difficult to achieve and sustain	
Describe: Some evidence of sand deposition and matted down vegetation at top of banks.		Describe: Ecological lift limited to reducing erosion. Limited potential for improvements to fish habitat and floodplain development.	
Opportunity for Floodplain Development	5	**Ease of Access**	1
10 - Existing space for floodplain greater than 10 times stream width 5 - Existing space for floodplain 3 to 10 times stream width 1 - Little to no space for floodplain development		10 - Yes (with existing direct vehicular access to potential site) 5- yes (open but no existing vehicular access) 1 - No (no vehicular access, clearing needed)	
Describe: Potential for floodplain development north of channel. Floodplain development south of channel is limited by steep valley slopes, adjacent residential community, and stormwater facility.		Describe: Site surrounded by mid-successional forest, PFO wetlands and steep slopes.	
Drainage Area Evaluation	1	**Utilities Present**	1
10 -D.A. less than 1 sq. mi. 5- D. A. between 1 & 3 sq. mi. 1 - D. A. greater than 3 sq. mi.		10 - No utilities on site 5 - Utilities but not within restoration area 1 - Utilities within potential restoration area	
Describe: Drainage area - 8.56 square miles		Describe: Sewer line along north side of channel.	
		Total Score out of 100	30

Map



Site No.	PG_00149		Scale: 1 in. = 2,000

Site Photos









Stream Mitigation Field Site Assessment Form

Project Details

Project Name: I-495/I-270 Managed Lanes Study **Mitigation Site Number:** PG00160

Projects Estimated Stream Mitigation Needs (LF): TBD

Date of Field Assessment: 12/12/2018 **Consultant Firm/Investigator(s):** RK&K/KJH, BDM

Site Location Details-taken from desktop review

County: Prince George's **Cross Roads:** Brooke Ln. & Brown Station Rd.

Basin (HUC 8): Patuxent **MDE Watershed (8 digit):** 02131103

Proximity to Impacted Stream (mi.): 3.55 **Lat/Long:** 38.83722883 -76.78668749

Site Data

Parcel Size (ac): 261.7, 56.1, 15.0, 14.8, 54.6, 1.0, 10.2 **Potential Restoration Reach (LF):** 6,742

Site Opportunities: __X__Channel Restoration ____Livestock Exclusion _____Riparian Buffer Planting __X_Habitat Enhancement ___Fish Passage

Stream Order: 2nd **Stream Hydrology:** Perennial **Stream Use:** I

Drainage Area to Reach (sq. mi.) 2.67

Land Use: Forest, Landfill, Education **Mapped Soils:** Widewater and Issue soils

Property Address: 3210 Brown Station Rd, Upper Marlboro 20774-0000

Property Owner(s): Prince George's County (4 parcels), Board of Education (1 parcel) & 2 Private Properties

General Field Observations

Is there evidence that the stream has been disturbed by some kind of human action, like grading, dumping, livestock, culvert, etc?	Can the stream restoration be reasonably done within the confines of the parcel or does it require connections beyond the parcel limits? Explain
Explain: Evidence of instream dumping & old bridge foundation. Site is located in forested area between high school and landfill.	Explain: Majority of site is located on PG County and board of education property. Two small sections are located on private properties.

Mitigation Site Rating

Criteria	Score	Criteria	Score
Estimated Bank erosion within reach	5	**Vegetation**	1
10 - Greater than 50% 5 - 10% to 50% 1 - Less than 10%		10 - Herbaceous cover (non-wetland) 5 - Scrub-shrub cover (non-wetland) 1 - Mostly forested and/or wetland	
Describe: Moderate to severe erosion along outer banks. Torturous meanders.		Describe: Entire site consists of mid-successional forest dominated by American beech, tulip poplar, white oak, and northern red oak.	
Degree of Channel Incision	5	**Land Use**	1
10 - Bank Height greater than 10 feet 5 - Bank Height between 3 and 10 feet 1 - Bank Height less than 3 feet		10 - Agricultural or Open Space 5 - Marginal Pasture 1 - Old field/ Developed/Forested	
Describe: 3-5 foot tall banks.		Describe: Site consists of mid-successional forest on board of education, PG county, and two private properties.	
Existing Floodplain Access	10	**Opportunity for Ecological Lift**	10
10 - No evidence of out of bank flooding 5- Yes (Infrequent out of bank flow) 1 - Yes (evidence of frequent flooding)		10 - Conditions exist for several aspects of lift to be achieved and sustained 5 - Lift limited to one or few aspects 1 - Conditions are such that Lift is difficult to achieve and sustain	
Describe: No evidence of out-of-bank flooding.		Describe: Potential for reducing erosion and improving instream habitat, floodplain connection, and water quality.	
Opportunity for Floodplain Development	5	**Ease of Access**	1
10 - Existing space for floodplain greater than 10 times stream width 5 - Existing space for floodplain 3 to 10 times stream width 1 - Little to no space for floodplain development		10 - Yes (with existing direct vehicular access to potential site) 5- yes (open but no existing vehicular access) 1 - No (no vehicular access, clearing needed)	
Describe: Floodplain development limited in some areas by steep valley slopes.		Describe: Site surrounded by mid-successional forest that would require clearing. Potential access points from adjacent County landfill roads.	
Drainage Area Evaluation	5	**Utilities Present**	1
10 -D.A. less than 1 sq. mi. 5- D. A. between 1 & 3 sq. mi. 1 - D. A. greater than 3 sq. mi.		10 - No utilities on site 5 - Utilities but not within restoration area 1 - Utilities within potential restoration area	
Describe: Drainage area - 2.67 square miles.		Describe: Sewer line runs parallel to the stream.	
		Total Score out of 100	44

Map



Site No.	PG00160		Scale: 1 in. =	2,000

Site Photos









Stream Mitigation Field Site Assessment Form

Project Details

Project Name: I-495/I-270 Managed Lanes Study **Mitigation Site Number:** SSS-160023

Projects Estimated Stream Mitigation Needs (LF): TBD

Date of Field Assessment: 6/14/2019 **Consultant Firm/Investigator(s):** CRI - SN/DS

Site Location Details-taken from desktop review

County: Prince George's **Cross Roads:** Cleary Lane and Bald Hill Terrace

Basin (HUC 8): Patuxent **MDE Watershed (8 digit):** 2131103

Proximity to Impacted Stream (mi.): 0.05 **Lat/Long:** 38.9446 -76.8395

Site Data

Parcel Size (ac): M-NCPPC- 19.25, 6.43 Private-84.22 **Potential Restoration Reach (LF):** 1,513

Site Opportunities: __X__Channel Restoration ____Livestock Exclusion ___X___Riparian Buffer Planting __X_Habitat Enhancement _X__Fish Passage

Stream Order: 2nd **Stream Hydrology:** Perennial **Stream Use:** I

Drainage Area to Reach (sq. mi.) 4.51

Land Use: Forest, wetland, residential **Mapped Soils:** Zekiah and Issue soils

Property Address: Cleary Lane, Mitchellville, MD 20721

Property Owner(s): M-NCPPC, private owner

General Field Observations

Is there evidence that the stream has been disturbed by some kind of human action, like grading, dumping, livestock, culvert, etc?	Can the stream restoration be reasonably done within the confines of the parcel or does it require connections beyond the parcel limits? Explain
Explain: Small tributary near US sectionwith culvert and fish blocakge. Sewer crossing observed with freshly palced riprap at crossing	Explain: Yes, all within M-NCPPS property. Could extend downstream to one additional private property owner to extend approx 1000 lf

Mitigation Site Rating

Criteria	Score	Criteria	Score
Estimated Bank erosion within reach	10	**Vegetation**	5
10 - Greater than 50% 5 - 10% to 50% 1 - Less than 10%		10 - Herbaceous cover (non-wetland) 5 - Scrub-shrub cover (non-wetland) 1 - Mostly forested and/or wetland	
Describe: A lot of fresh erosion alog both banks		Describe: Sewer crossing/ROW may limit plating forest buffer, existing vegetation is scrub-shrub and invasive herbaceous	
Degree of Channel Incision	5	**Land Use**	10
10 - Bank Height greater than 10 feet 5 - Bank Height between 3 and 10 feet 1 - Bank Height less than 3 feet		10 - Agricultural or Open Space 5 - Marginal Pasture 1 - Old field/ Developed/Forested	
Describe: Bank heights ranging from 3-7', average at 5'		Describe: M-NCPPC stream parcel, open space near US 50, residential	
Existing Floodplain Access	5	**Opportunity for Ecological Lift**	5
10 - No evidence of out of bank flooding 5- Yes (Infrequent out of bank flow) 1 - Yes (evidence of frequent flooding)		10 - Conditions exist for several aspects of lift to be achieved and sustained 5 - Lift limited to one or few aspects 1 - Conditions are such that Lift is difficult to achieve and sustain	
Describe: High banks with established invasive herbaceous, evidence of flow in side channels		Describe: Vertial stability, lateral stability, floodplain access, habitat	
Opportunity for Floodplain Development	10	**Ease of Access**	10
10 - Existing space for floodplain greater than 10 times stream width 5 - Existing space for floodplain 3 to 10 times stream width 1 - Little to no space for floodplain development		10 - Yes (with existing direct vehicular access to potential site) 5- yes (open but no existing vehicular access) 1 - No (no vehicular access, clearing needed)	
Describe: Wide ope valley with room for expansive floodplain access		Describe: Recent utility work in potential restoration, M-NCPPS ROW with low gradient	
Drainage Area Evaluation	1	**Utilities Present**	1
10 -D.A. less than 1 sq. mi. 5- D. A. between 1 & 3 sq. mi. 1 - D. A. greater than 3 sq. mi.		10 - No utilities on site 5 - Utilities but not within restoration area 1 - Utilities within potential restoration area	
Describe: 4.51 ac		Describe: Sewer manhole present in Floodplain, stream croses sewer ROW, sewer appears to run parallel to stream	
		Total Score out of 100	62

Map



Site No.	SSS-160023		Scale: 1 in. = 2,000 ft

Site Photos









Stream Mitigation Field Site Assessment Form

Project Details

Project Name: I-495/I-270 Managed Lanes Study **Mitigation Site Number:** SSS-160034

Projects Estimated Stream Mitigation Needs (LF): TBD

Date of Field Assessment: 11/27/2018 **Consultant Firm/Investigator(s):** RK&K/KJH, BDM

Site Location Details-taken from desktop review

County: Prince George's **Cross Roads:** Kipling Pkwy & Mason St.

Basin (HUC 8): Patuxent **MDE Watershed (8 digit):** 02131103

Proximity to Impacted Stream (mi.): 1.3 **Lat/Long:** 38.85702841 -76.88380062

Site Data

Parcel Size (ac): NA **Potential Restoration Reach (LF):** 2,868

Site Opportunities: __X__Channel Restoration ___Livestock Exclusion ___X___Riparian Buffer Planting __X_Habitat Enhancement __X_Fish Passage

Stream Order: 1st **Stream Hydrology:** Perennial **Stream Use:** I

Drainage Area to Reach (sq. mi.) 0.52

Land Use: Medium Density Residential **Mapped Soils:** Croom-urban land complex

Property Address: Kipling Pkwy, District Heights, MD 20747

Property Owner(s): State Highway Administration - Right-of-way

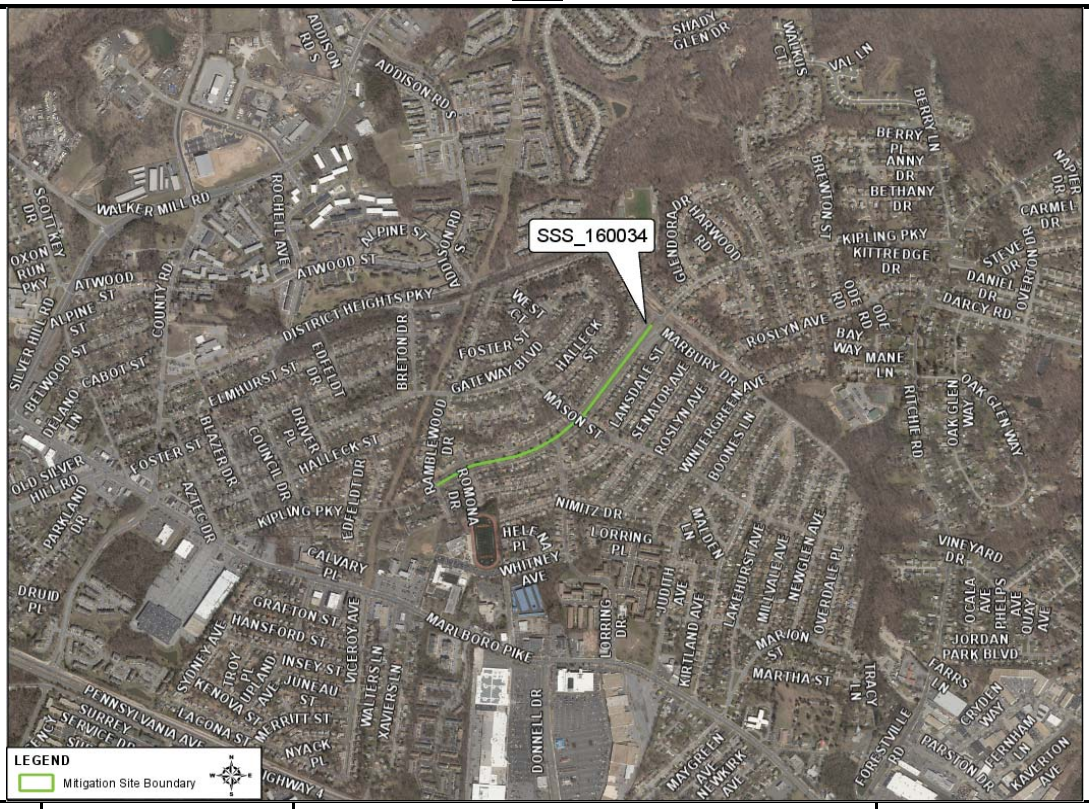
General Field Observations

Is there evidence that the stream has been disturbed by some kind of human action, like grading, dumping, livestock, culvert, etc?	Can the stream restoration be reasonably done within the confines of the parcel or does it require connections beyond the parcel limits? Explain
Explain: Entire site consists of concrete lined channel.	Explain: Restoration and access is feasible within SHA right-of-way.

Mitigation Site Rating

Criteria	Score	Criteria	Score
Estimated Bank erosion within reach	1	**Vegetation**	10
10 - Greater than 50% 5 - 10% to 50% 1 - Less than 10%		10 - Herbaceous cover (non-wetland) 5 - Scrub-shrub cover (non-wetland) 1 - Mostly forested and/or wetland	
Describe: Very minor erosion. Entire site consists of concrete lined channel.		Describe: Site is dominated by grass lawn with scattered mature trees.	
Degree of Channel Incision	1	**Land Use**	10
10 - Bank Height greater than 10 feet 5 - Bank Height between 3 and 10 feet 1 - Bank Height less than 3 feet		10 - Agricultural or Open Space 5 - Marginal Pasture 1 - Old field/ Developed/Forested	
Describe: 1-3 foot tall banks.		Describe: Site is within SHA right-of-way and dominated by grass lawn with scattered mature trees.	
Existing Floodplain Access	5	**Opportunity for Ecological Lift**	1
10 - No evidence of out of bank flooding 5- Yes (Infrequent out of bank flow) 1 - Yes (evidence of frequent flooding)		10 - Conditions exist for several aspects of lift to be achieved and sustained 5 - Lift limited to one or few aspects 1 - Conditions are such that Lift is difficult to achieve and sustain	
Describe: Some evidence of out-of-bank flows at top of concrete lined channel.		Describe: Limited potential for improving instream habitat. No potential for floodplain development, improving water quality, or reducing erosion.	
Opportunity for Floodplain Development	1	**Ease of Access**	10
10 - Existing space for floodplain greater than 10 times stream width 5 - Existing space for floodplain 3 to 10 times stream width 1 - Little to no space for floodplain development		10 - Yes (with existing direct vehicular access to potential site) 5- yes (open but no existing vehicular access) 1 - No (no vehicular access, clearing needed)	
Describe: No opportunity for floodplain development. Site is surrounded by roads and residential housing.		Describe: Majority of site is open and dominated by grass lawn with scattered trees.	
Drainage Area Evaluation	10	**Utilities Present**	1
10 -D.A. less than 1 sq. mi. 5- D. A. between 1 & 3 sq. mi. 1 - D. A. greater than 3 sq. mi.		10 - No utilities on site 5 - Utilities but not within restoration area 1 - Utilities within potential restoration area	
Describe: Drainage area - 0.52 square miles.		Describe: Overhead powerlines and possible sewer crossings.	
		Total Score out of 100	50

Map



Site No.	SSS-160034		Scale: 1 in. = 2,000

Site Photos









FISH PASSAGE RATING CRITERIA & FIELD SITE ASSESSMENT FORMS

Fish Passage Field Site Assessment Rating Criteria

Functional Upstream Network
The functional upstream network is the length of stream (mi.) between the fish blockage being investigated and the next upstream fish blockage. The functional upstream network consists of the length upstream of the blockage that would be accessible to downstream fish once the blockage has been removed. This value can be referenced from the Chesapeake Fish Passage Prioritization (CFPP) online database (http://maps.freshwaternetwork.org/chesapeake/#) or determined in the field.

Number of Downstream Fish Blockages
Determine the number of downstream fish blockages based on a GIS analysis or the Chesapeake Fish Passage Prioritization (CFPP) online database (http://maps.freshwaternetwork.org/chesapeake/#).

NAACC Diadromous Fish HUC 12 Watershed Score
Reference the North Atlantic Aquatic Connectivity Collaborative (NAACC) diadromous fish score (3-61) based on the HUC12 watershed where the site is located (http://tnc.maps.arcgis.com/apps/webappviewer/index.html?id=f64c9c61e01d4befafdb63afa638511f).

Percentage of Upstream Impervious Surface

Calculate the percentage of impervious surface in the watershed upstream of the fish blockage. This percentage can be calculated from a GIS analysis or referenced from the Chesapeake Fish Passage Prioritization (CFPP) online database (http://maps.freshwaternetwork.org/chesapeake/#).

Fish Habitat Diversity
Describe/list the different fish habitat types upstream and downstream of the blockage based on stream segments that are visible form the road right-of-way. Habitat types include large woody debris, riffles, deep pools, overhanging vegetation, boulders/cobble, undercut banks, thick root mats, submerged aquatic vegetation, isolated/backwater pools.

Fish Blockage Height - Ecological Benefits of Removal
Measure and record the height of the fish blockage (ft.) in the field. This criteria rates the ecological benefits that would be provided from removal of the blockage based on height. Take photographs of the fish blockage (facing upstream) and the culvert/dam inlet upstream of the blockage (facing downstream).

Adjacent Land Use
Describe the land use adjacent to the fish blockage site where construction/access would take place. Describe any challenges (vegetation, wetlands, development) may play in accessing the site for construction. Take a representative photo of the adjacent landuse.

Ease of Construction
Rate how difficult/easy it would be to successfully remove the fish blockage based the blockage type and height in the following table.

Ease of Construction Rating Criteria

Blockage Type	Blockage Height & Ease of Construction Score			
	No Blockage	< 1 foot	1-5 foot	> 5 foot tall
Small Pipe (12-48" diameter)	0	10	5	1
Large Pipe (>48" diameter)	0	5	1	1
Small Box Culvert (12-48" width)	0	10	5	1
Large Box Culvert (>48" width)	0	5	1	1
Small Dam/Weir (< 20' long)	0	10	1	1
Large Dam/Weir (>20' long)	0	5	1	1
Sewer Crossing	0	10	5	1
Natural Blockage	0	10	5	1

Ease of Access
Consider how easy/difficult it may be to access the site for construction and restoration of fish passage. Does considerable clearing or access road construction need to be performed? Are there steep slopes surrounding the site that will make access/construction a challenge or is the surrounding area relatively flat and easy to access?

Utilities Present
Do utilities exist within or nearby the stream and do they present an issue that may effect construction, access, or reforestation efforts. Describe what utilities are seen such as overhead wires vs. underground utilities such as sewer lines, gas lines or cables.

I-495/I-270 Managed Lanes Study - Fish Passage Field Site Assessment Form

Project Details

Project Name: I-495/I-270 Managed Lanes Study
Mitigation Site Number: MD_AN015
Projects Estimated Stream Mitigation Needs (LF): TBD
Date of Field Assessment: 2/25/2019
Consultant Firm/Investigator(s) CRI; JG, DS, LE

Site Location Details-taken from desktop review

County: Prince George's
Cross Roads: MD 193 (Greenbelt Rd.), E of Greenbelt Station Pkwy
Basin (HUC 8): Middle Potomac-Anacostia-Occoquan
MDE Watershed (8 digit): 2140205
Proximity to Impacted Stream (mi.): 0.9
Lat/Long: 38.998348 -76.917222

Site Data

Parcel Size (ac): Within SHA ROW
Drainage Area to Reach (sq. mi. 27.9
Site Opportunities: __Fish Passage ___Channel Restoration ___Habitat Enhancement ____Riparian Buffer Planting
Stream Order: 4th
Stream Hydrology: Perennial
Stream Use: I
Culvert/Dam Type: Box Culvert x4
Culvert/Dam Dimensions: 15' x 4
Blockage Type: __Complete ___ Partial _X_None
USGS Gage Station #: 01649500
USGS Gage Discharge (fs3/s): _4.2 *high, but only gage nearby with similar DA__
USGS Gage Daily Discharge Percentile: ___0-25% ___25-50% ___50-75% _X_75-100%
Property Address: SHA ROW - MD 193, Berwyn Height MD 20740
Property Owner(s): SHA

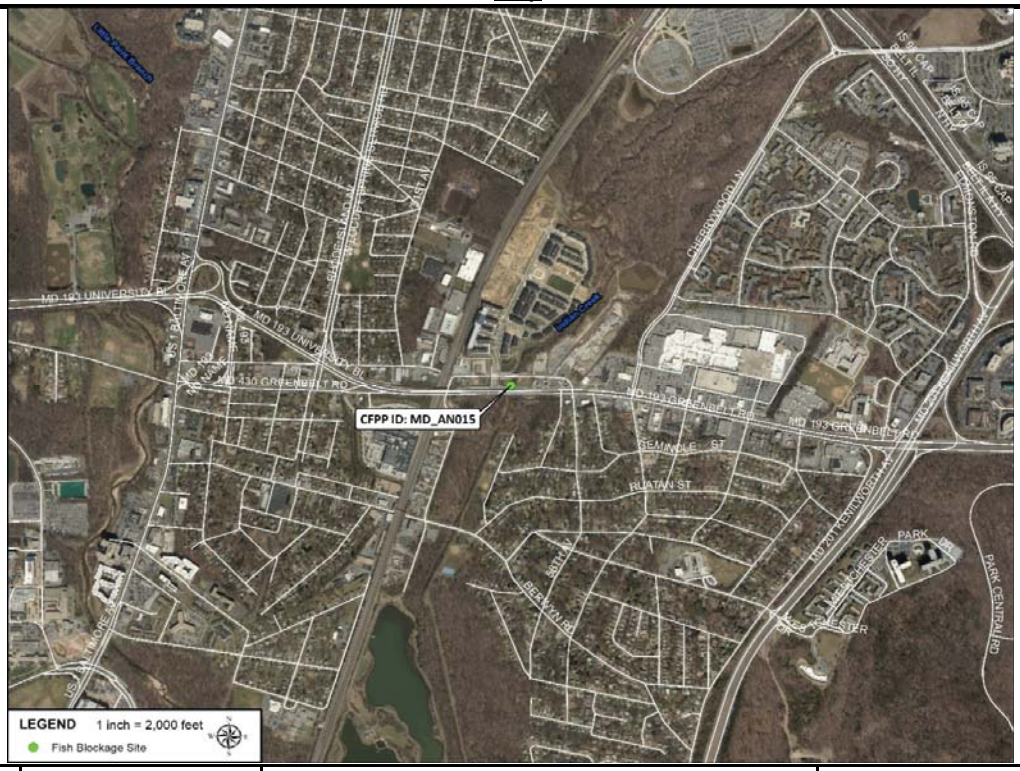
General Field Observations

Are there records for diadromous fish, mussels, RTE crayfish, or other RTE species within or in close proximity to the fish blockage site? Explain	Can the fish blockage be removed within the road right-of-way or does it require access to parcels beyond right-of-way limits? Explain
Explain: RTE coordination with agencies pending.	Explain: No blockage

Fish Passage Site Rating

Criteria	Score	Criteria	Score
Functional Upstream Network	10	**Fish Blockage Height - Ecological Benefits of Removal**	0
10 - Greater than 4 miles 5 - 1 to 4 miles 1 - Less than 1 mile		10 - Greater than 5' 5- 1' to 5' 1 - Less than 1' 0 - No Blockage	
Describe: 42		Describe: No blockage	
Number of Downstream Fish Blockages	5	**Adjacent Land Use**	5
10 - 0 Blockages 5 - 1 Blockage 1 - >1 Blockage		10 - Commercial/Agriculture/Bare Ground 5- Field/Scrub-shrub 1 - Forest	
Describe: 1 blockage		Describe: US - Forest. DS - Field	
NAACC Diadromous Fish HUC 12 Watershed Score	5	**Ease of Construction**	0
10 - 3 to 22 5 - 23 to 41 1 - 42 to 61		10 - Easy 5- Average 1 - Difficult/Complex 0 - No Blockage	
Describe: 23		Describe: No height, large box culvert >48''	
Percentage of Upstream Impervious Surface	5	**Ease of Access**	5
10 - Less than 10% 5 - 10 to 25% 1 - Greater than 25%		10 - Yes (with existing direct vehicular access to potential site) 5- Yes (open but no existing vehicular access) 1 - No (no vehicular access, clearing needed, steep slopes surrounding site)	
Describe: 15.60%		Describe: DS - forest, no direct access, clearing and grading needed. US - Field, no direct access	
Fish Habitat Diversity	1	**Utilities Present**	1
10 - Greater than 5 cover types 5 - 3-5 cover types 1 - Less than 3 cover types		10 - No utilities on site 5 - Utilities but not within site 1 - Utilities within potential site	
Describe: DS - riffle, deep pool. US - deep pool, woody debris		Describe: Powerlines present in ROW. Water pipeline	
		Total Score out of 100	37

Map



Site No.	MD_AN015		Scale: 1 in. = 2,000 ft.

Site Photos



Looking downstream at culvert from right bank



Channel overview upstream of culvert - facing upstream



Downstream of culvert - facing upstream



Channel overview downstream of culvert - facing downstream

I-495/I-270 Managed Lanes Study - Fish Passage Field Site Assessment Form

Project Details

Project Name: I-495/I-270 Managed Lanes Study
Mitigation Site Number: MPAO0033
Projects Estimated Stream Mitigation Needs (LF): TBD
Date of Field Assessment: 8/14/2019
Consultant Firm/Investigator(s): RKK; KJH & AJN

Site Location Details-taken from desktop review

County: Prince George's
Cross Roads: I-495 & I-95 Interchange
Basin (HUC 8): Middle Potomac-Anacostia-Occoquan
MDE Watershed (8 digit): 2140205
Proximity to Impacted Stream (mi.): 0
Lat/Long: 39.021035 -76.945654

Site Data

Parcel Size (ac): 366.3
Drainage Area to Reach (sq. mi.): 16.4
Site Opportunities: __X__Fish Passage __X__Channel Restoration ___X___Habitat Enhancement ____Riparian Buffer Planting
Stream Order: 3rd
Stream Hydrology: Perennial
Stream Use: III
Culvert/Dam Type: Quadruple Box Culvert
Culvert/Dam Dimensions: 10' wide. 14' tall
Blockage Type: _X__Complete ___ Partial ___None
USGS Gage Station #: 1649190
USGS Gage Discharge (fs3/s): 4.3
USGS Gage Daily Discharge Percentile: ___0-25% _X__25-50% ___50-75% ___75-100%
Property Address: Lodge Road
Property Owner(s): BARC

General Field Observations

Are there records for diadromous fish, mussels, RTE crayfish, or other RTE species within or in close proximity to the fish blockage site? Explain	Can the fish blockage be removed within the road right-of-way or does it require access to parcels beyond right-of-way limits? Explain
Explain: RTE coordination with agencies is pending. American Eel and Sea Lamprey documented by MBSS near the site.	Explain: Site recommended by SHA-EPD. Requires work on BARC South Farm Parcel.

Fish Passage Site Rating

Criteria	Score	Criteria	Score
Functional Upstream Network	10	**Fish Blockage Height - Ecological Benefits of Removal**	5
10 - Greater than 4 miles 5 - 1 to 4 miles 1 - Less than 1 mile		10 - Greater than 5' 5- 1' to 5' 1 - Less than 1'	
Describe: Full re-establishment - 0.64 miles US. Partially restore 26 miles US.		Describe: 3 blockages; 12", 10", and 14"	
Number of Downstream Fish Blockages	10	**Adjacent Land Use**	5
10 - 0 Blockages 5 - 1 Blockage 1 - >1 Blockage		10 - Commercial/Agriculture/Bare Ground 5- Field/Scrub-shrub 1 - Forest	
Describe: 0 downstream blockages		Describe: Mix of forest and scrub/shrub	
NAACC Diadromous Fish HUC 12 Watershed Score	1	**Ease of Construction**	1
10 - 3 to 22 5 - 23 to 41 1 - 42 to 61		10 - Easy 5- Average 1 - Difficult/Complex	
Describe: 52		Describe: Quadruple box culvert - each 10' wide	
Percentage of Upstream Impervious Surface	1	**Ease of Access**	1
10 - Less than 10% 5 - 10 to 25% 1 - Greater than 25%		10 - Yes (with existing direct vehicular access to potential site) 5- Yes (open but no existing vehicular access) 1 - No (no vehicular access, clearing needed, steep slopes surrounding site)	
Describe: 31%		Describe: Forest and scrub/shrub clearing required.	
Fish Habitat Diversity	5	**Utilities Present**	1
10 - Greater than 5 cover types 5 - 3-5 cover types 1 - Less than 3 cover types		10 - No utilities on site 5 - Utilities but not within site 1 - Utilities within potential site	
Describe: Riffles, deep pools, overhanging vegetation, boulders/cobble.		Describe: Sewerline parallels stream	
		Total Score out of 100	40

Map



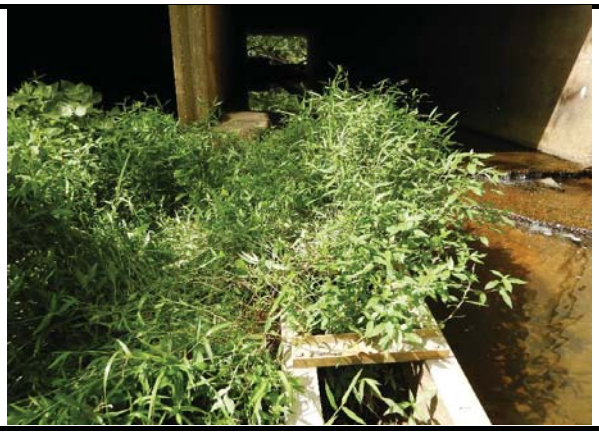
Site No.	MPAO0033		Scale: 1 in. =	2000

Site Photos









I-495/I-270 Managed Lanes Study - Fish Passage Field Site Assessment Form

Project Details

Project Name: I-495/I-270 Managed Lanes Study
Mitigation Site Number: MPAO0034
Projects Estimated Stream Mitigation Needs (LF): TBD
Date of Field Assessment: 8/14/2019
Consultant Firm/Investigator(s) RKK; KJH & AJN

Site Location Details-taken from desktop review

County: Prince George's
Cross Roads: I-495 and Forestville Road
Basin (HUC 8): Middle Potomac-Anacostia-Occoquan
MDE Watershed (8 digit): 2140201
Proximity to Impacted Stream (mi.): 0
Lat/Long: 38.825498 -76.880549

Site Data

Parcel Size (ac): 16.4
Drainage Area to Reach (sq. mi. 0.11
Site Opportunities: __X__Fish Passage __X__Channel Restoration ___X___Habitat Enhancement ____Riparian Buffer Planting
Stream Order: 1st
Stream Hydrology: Perennial
Stream Use: I
Culvert/Dam Type: CMP - Concrete Bottom
Culvert/Dam Dimensions: 9' wide. 6' tall
Blockage Type: _X__Complete ___ Partial ___None
USGS Gage Station #: 1594526
USGS Gage Discharge (fs3 21.5
USGS Gage Daily Discharge Percentile: ___0-25% _X_25-50% ___50-75% ___75-100%
Property Address: 4400 Rena Rd. Suitland, MD 20746
Property Owner(s): Forest Village United LLC

General Field Observations

Are there records for diadromous fish, mussels, RTE crayfish, or other RTE species within or in close proximity to the fish blockage site? Explain	Can the fish blockage be removed within the road right-of-way or does it require access to parcels beyond right-of-way limits? Explain
Explain: Orconectes limosus documented within close proximity.	Explain: Recommended by USACE and MDE

Fish Passage Site Rating

Criteria	Score	Criteria	Score
Functional Upstream Network	1	**Fish Blockage Height - Ecological Benefits of Removal**	10
10 - Greater than 4 miles 5 - 1 to 4 miles 1 - Less than 1 mile		10 - Greater than 5' 5- 1' to 5' 1 - Less than 1'	
Describe: 0.51 miles		Describe: 6' tall blockage	
Number of Downstream Fish Blockages	1	**Adjacent Land Use**	1
10 - 0 Blockages 5 - 1 Blockage 1 - >1 Blockage		10 - Commercial/Agriculture/Bare Ground 5- Field/Scrub-shrub 1 - Forest	
Describe: 3 downstream blockages		Describe: Forest - mid successional: Red maple, elm, tulip poplar, bush honeysuckle.	
NAACC Diadromous Fish HUC 12 Watershed Score	5	**Ease of Construction**	1
10 - 3 to 22 5 - 23 to 41 1 - 42 to 61		10 - Easy 5- Average 1 - Difficult/Complex	
Describe: 25		Describe: 9' wide CMP	
Percentage of Upstream Impervious Surface	5	**Ease of Access**	1
10 - Less than 10% 5 - 10 to 25% 1 - Greater than 25%		10 - Yes (with existing direct vehicular access to potential site) 5- Yes (open but no existing vehicular access) 1 - No (no vehicular access, clearing needed, steep slopes surrounding site)	
Describe: 25%		Describe: Forested downstream of blockage.	
Fish Habitat Diversity	5	**Utilities Present**	1
10 - Greater than 5 cover types 5 - 3-5 cover types 1 - Less than 3 cover types		10 - No utilities on site 5 - Utilities but not within site 1 - Utilities within potential site	
Describe: Riffles, deep pools, overhanging vegetation, thick root mats.		Describe: Sewerline downstream of blockage.	
		Total Score out of 100	31

Map



Site No.	MPAO0034		Scale: 1 in. =	2000

Site Photos









I-495/I-270 Managed Lanes Study - Fish Passage Field Site Assessment Form

Project Details

Project Name: I-495/I-270 Managed Lanes Study
Mitigation Site Number: MPAO0035
Projects Estimated Stream Mitigation Needs (LF): TBD
Date of Field Assessment: 6/11/2019
Consultant Firm/Investigator(s) RK&K; KJH/CAS

Site Location Details-taken from desktop review

County: Prince George's
Cross Roads: Greenbelt Metro Drive and Cherrywood Lane
Basin (HUC 8): Middle Potomac-Anacostia-Occoquan
MDE Watershed (8 digit): 02070010
Proximity to Impacted Stream (mi.): 14.9
Lat/Long: 39.011219 -76.90374

Parcel Size (ac): Within SHA ROW
Drainage Area to Reach (sq. mi. 0.65
Site Opportunities: ___Fish Passage __X__Channel Restoration ___X___Habitat Enhancement ____Riparian Buffer Planting
Stream Order: 4th
Stream Hydrology: Perennial
Stream Use: I
Culvert/Dam Type: 4 cll box culvert
Culvert/Dam Dimensions: 17' wide
Blockage Type: ___Complete ___ Partial __X_None
USGS Gage Station #: 01649500
USGS Gage Discharge (fs3 50cfs
USGS Gage Daily Discharge Percentile: ___0-25% ___25-50% _X__50-75% __75-100%
Property Address: Greenbelt Metro Drive
Property Owner(s): SHA

General Field Observations

Are there records for diadromous fish, mussels, RTE crayfish, or other RTE species within or in close proximity to the fish blockage site? Explain	Can the fish blockage be removed within the road right-of-way or does it require access to parcels beyond right-of-way limits? Explain
Explain: 3 road crossings/culverts. Recommended by USACE	Explain: Indian Creek. Recommneded by USACE

Fish Passage Site Rating

Criteria	Score	Criteria	Score
Functional Upstream Network	10	**Fish Blockage Height - Ecological Benefits of Removal**	1
10 - Greater than 4 miles 5 - 1 to 4 miles 1 - Less than 1 mile		10 - Greater than 5' 5- 1' to 5' 1 - Less than 1'	
Describe: ~42 square miles		Describe: No blockage observed. Shallow flows in culverts - 4-8" deep.	
Number of Downstream Fish Blockages	5	**Adjacent Land Use**	1
10 - 0 Blockages 5 - 1 Blockage 1 - >1 Blockage		10 - Commercial/Agriculture/Bare Ground 5- Field/Scrub-shrub 1 - Forest	
Describe: 2 downstream dams, however 1 has fish passage notch.		Describe: Mid successional. Mix of forest and scrub shrub. Mostly forest downstream. Pin oak, Ironwood, Red Maple, Blackgum	
NAACC Diadromous Fish HUC 12 Watershed Score	5	**Ease of Construction**	5
10 - 3 to 22 5 - 23 to 41 1 - 42 to 61		10 - Easy 5- Average 1 - Difficult/Complex	
Describe: HCV12 score - 23		Describe: 4 cell box culvert. 17' width for each culvert.	
Percentage of Upstream Impervious Surface	5	**Ease of Access**	1
10 - Less than 10% 5 - 10 to 25% 1 - Greater than 25%		10 - Yes (with existing direct vehicular access to potential site) 5- Yes (open but no existing vehicular access) 1 - No (no vehicular access, clearing needed, steep slopes surrounding site)	
Describe: 17.20%		Describe: Clearing of forest and scrub-shrub required. Access through wetland.	
Fish Habitat Diversity	10	**Utilities Present**	1
10 - Greater than 5 cover types 5 - 3-5 cover types 1 - Less than 3 cover types		10 - No utilities on site 5 - Utilities but not within site 1 - Utilities within potential site	
Describe: Deep pools, LWD, overhanging vegetation, root mats, SAV, duckwater pools.		Describe: Overhead power lines over downstream culvert.	
		Total Score out of 100	44

Map



Site No.	MPAO0035		Scale: 1 in. = 2,000

Site Photos









I-495/I-270 Managed Lanes Study - Fish Passage Field Site Assessment Form

Project Details

Project Name: I-495/I-270 Managed Lanes Study
Mitigation Site Number: MD_12066
Projects Estimated Stream Mitigation Needs (LF): TBD
Date of Field Assessment: 2/25/2019
Consultant Firm/Investigator(s) CRI; JG, DS, LE

Site Location Details-taken from desktop review

County: Montgomery
Cross Roads: Montgomery Village Ave., NE of Russell Ave.
Basin (HUC 8): Middle Potomac-Catoctin
MDE Watershed (8 digit): 2140208
Proximity to Impacted Stream (mi.): 1.3
Lat/Long: 39.155574 -77.20806

Site Data

Parcel Size (ac): Within SHA ROW
Drainage Area to Reach (sq. mi. 0.4
Site Opportunities: _X_Fish Passage __X_Channel Restoration __X__Habitat Enhancement __X__Riparian Buffer Planting
Stream Order: 1st
Stream Hydrology: Perennial
Stream Use: I
Culvert/Dam Type: RCP
Culvert/Dam Dimensions: 4-5' diameter
Blockage Type: _X_Complete ___ Partial ___None
USGS Gage Station #: 01644372
USGS Gage Discharge (fs3 0.78 cfs
USGS Gage Daily Discharge Percentile: ___0-25% ___25-50% ___50-75% ___75-100%
*200% of mean
Property Address: SHA ROW - Montgomery Village Ave., Gaithersburg MD 20879
Property Owner(s): SHA

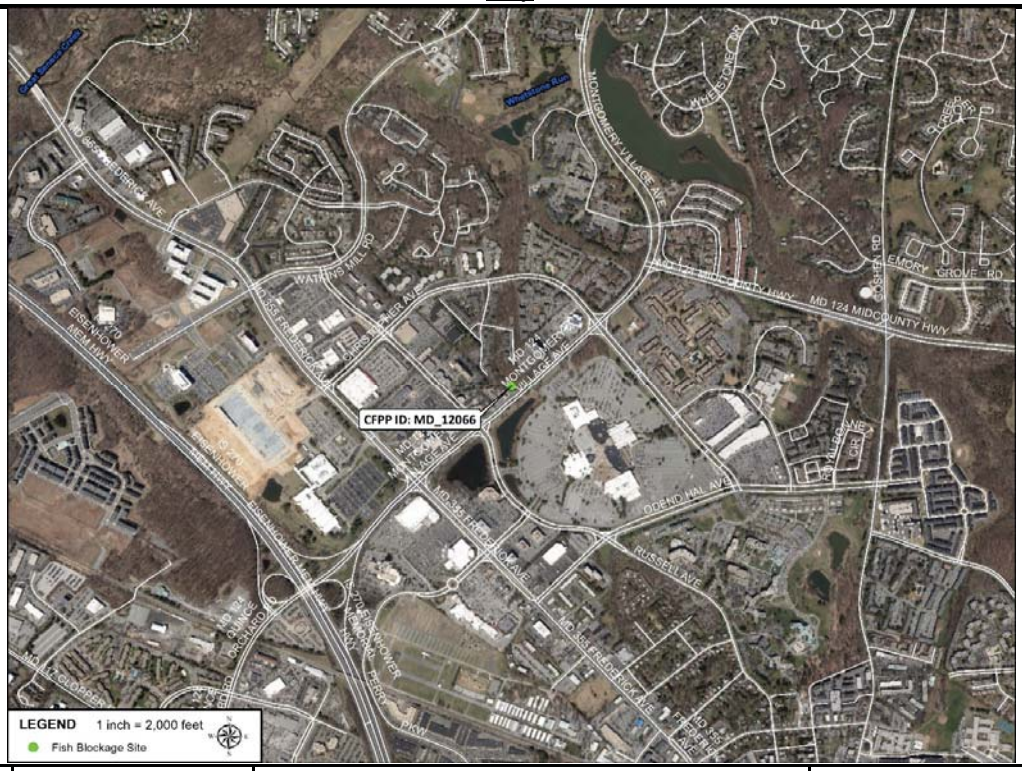
General Field Observations

Are there records for diadromous fish, mussels, RTE crayfish, or other RTE species within or in close proximity to the fish blockage site? Explain	Can the fish blockage be removed within the road right-of-way or does it require access to parcels beyond right-of-way limits? Explain
Explain: RTE coordination with agencies pending.	Explain: Outside of ROW

Fish Passage Site Rating

Criteria	Score	Criteria	Score
Functional Upstream Network	1	**Fish Blockage Height - Ecological Benefits of Removal**	5
10 - Greater than 4 miles 5 - 1 to 4 miles 1 - Less than 1 mile		10 - Greater than 5' 5- 1' to 5' 1 - Less than 1' 0 - No Blockage	
Describe: 0.03 miles of US network; Culvert drains two retention ponds US. Little/no benefit of removing blockage.		Describe: Perched RCP, 2-3 feet above water surface. Unable to access outfall due to depth.	
Number of Downstream Fish Blockages	1	**Adjacent Land Use**	5
10 - 0 Blockages 5 - 1 Blockage 1 - >1 Blockage		10 - Commercial/Agriculture/Bare Ground 5- Field/Scrub-shrub 1 - Forest	
Describe: 2 DS barriers		Describe: DS - forest on RB, commercial on LB; US - field/scrub shrub/commercial. A score of 5 was given due to direct access to blockage without tree removal.	
NAACC Diadromous Fish HUC 12 Watershed Score	1	**Ease of Construction**	1
10 - 3 to 22 5 - 23 to 41 1 - 42 to 61		10 - Easy 5- Average 1 - Difficult/Complex 0 - No Blockage	
Describe: 50		Describe: Large pipe, 1-5 feet in height	
Percentage of Upstream Impervious Surface	1	**Ease of Access**	1
10 - Less than 10% 5 - 10 to 25% 1 - Greater than 25%		10 - Yes (with existing direct vehicular access to potential site) 5- Yes (open but no existing vehicular access) 1 - No (no vehicular access, clearing needed, steep slopes surrounding site)	
Describe: 55.70%		Describe: DS - steep, clearing needed. US - no direct road, steep	
Fish Habitat Diversity	5	**Utilities Present**	5
10 - Greater than 5 cover types 5 - 3-5 cover types 1 - Less than 3 cover types		10 - No utilities on site 5 - Utilities but not within site 1 - Utilities within potential site	
Describe: DS - deep pool, riffle, roots; US - pond		Describe: Sewage manhole well downstream of culvert	
		Total Score out of 100	26

Map



Site No.	MD_12066		Scale: 1 in. = 2,000 ft.

Site Photos



Culvert outfall/blockage - facing upstream



Channel overview downstream of blockage - facing downstream



Downstream of blockage - looking at sewer manholes



Upstream of culvert looking at pond

I-495/I-270 Managed Lanes Study - Fish Passage Field Site Assessment Form

Project Details

Project Name: I-495/I-270 Managed Lanes Study
Mitigation Site Number: NAACC 38347
Projects Estimated Stream Mitigation Needs (LF): TBD
Date of Field Assessment: 2/28/2019
Consultant Firm/Investigator(s) CRI; DS, KS

Site Location Details-taken from desktop review

County: Frederick
Cross Roads: MD 17 (Burkittsville Rd); NE of Quebec School Rd.
Basin (HUC 8): Middle Potomac-Catoctin
MDE Watershed (8 digit): 2140305
Proximity to Impacted Stream (mi.): 27.6
Lat/Long: 39.418362 -77.576515

Site Data

Parcel Size (ac): Within SHA ROW
Drainage Area to Reach (sq. mi. 0.6
Site Opportunities: _X_Fish Passage _X_Channel Restoration __X__Habitat Enhancement _X__Riparian Buffer Planting
Stream Order: 2nd
Stream Hydrology: Perennial
Stream Use: III
Culvert/Dam Type: Box Culvert
Culvert/Dam Dimensions: 12.5'x 8' high, 115 feet long
Blockage Type: _X_Complete ___ Partial ___None
USGS Gage Station #: 01637500
USGS Gage Discharge (fs3 220
USGS Gage Daily Discharge Percentile: ___0-25% ___25-50% _X_50-75% ___75-100%
Property Address: SHA ROW - at MD 17 just north east of Quebec School Rd., Middletown MD 21769
Property Owner(s): SHA

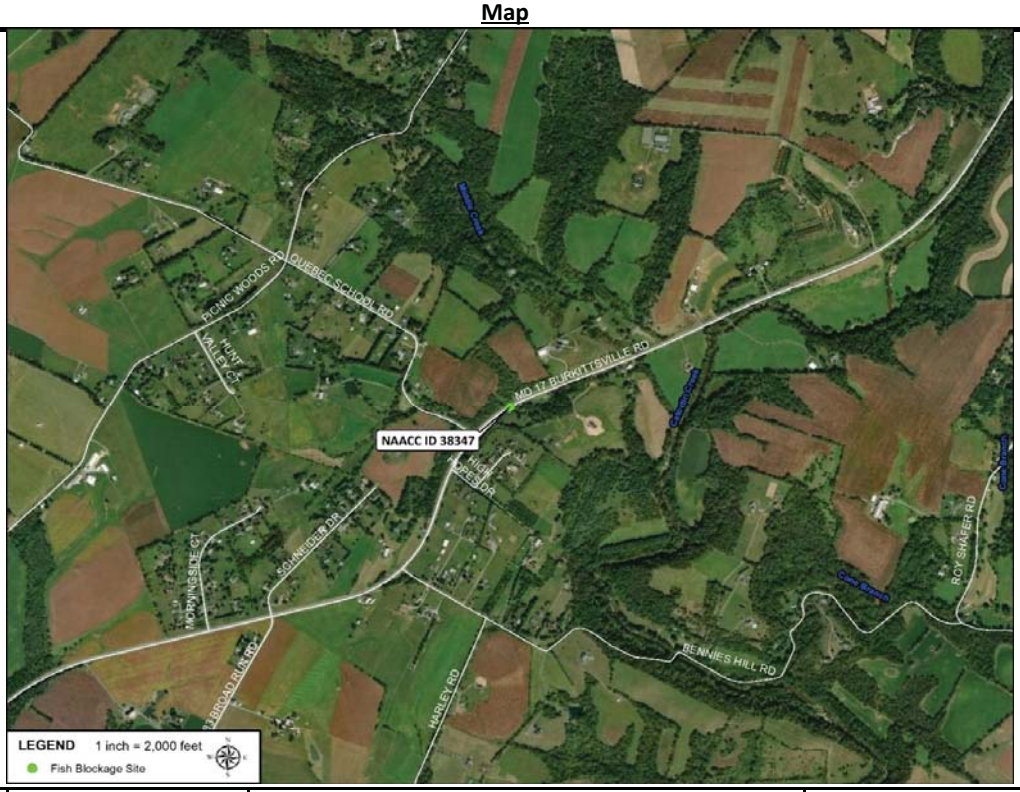
General Field Observations

Are there records for diadromous fish, mussels, RTE crayfish, or other RTE species within or in close proximity to the fish blockage site? Explain	Can the fish blockage be removed within the road right-of-way or does it require access to parcels beyond right-of-way limits? Explain
Explain: RTE coordination with agencies is pending.	Explain: Blockage is within ROW, but likely need access to parcel downstream of ROW since concrete structure is so extensive.

Fish Passage Site Rating

Criteria	Score	Criteria	Score
Functional Upstream Network	1	**Fish Blockage Height - Ecological Benefits of Removal**	5
10 - Greater than 4 miles 5 - 1 to 4 miles 1 - Less than 1 mile		10 - Greater than 5' 5- 1' to 5' 1 - Less than 1' 0 - No Blockage	
Describe: 0.8 miles of US network		Describe: 2 step concrete apron. 1st step: 0.4 feet; 2nd step at box culvert: 1.5 - 1.9 feet	
Number of Downstream Fish Blockages	5	**Adjacent Land Use**	5
10 - 0 Blockages 5 - 1 Blockage 1 - >1 Blockage		10 - Commercial/Agriculture/Bare Ground 5- Field/Scrub-shrub 1 - Forest	
Describe: 1 blockage DS		Describe: Split, forest upstream; bare on LB and forest on RB downstream. Given average rank of 5 to respresent land use at downstream blockage.	
NAACC Diadromous Fish HUC 12 Watershed Score	1	**Ease of Construction**	1
10 - 3 to 22 5 - 23 to 41 1 - 42 to 61		10 - Easy 5- Average 1 - Difficult/Complex 0 - No Blockage	
Describe: 46		Describe: Large box culvert, 1.9 foot blockage height.	
Percentage of Upstream Impervious Surface	10	**Ease of Access**	1
10 - Less than 10% 5 - 10 to 25% 1 - Greater than 25%		10 - Yes (with existing direct vehicular access to potential site) 5- Yes (open but no existing vehicular access) 1 - No (no vehicular access, clearing needed, steep slopes surrounding site)	
Describe: 1.71%		Describe: Clearing needed, steep slopes, guardrail present	
Fish Habitat Diversity	5	**Utilities Present**	5
10 - Greater than 5 cover types 5 - 3-5 cover types 1 - Less than 3 cover types		10 - No utilities on site 5 - Utilities but not within site 1 - Utilities within potential site	
Describe: Riffle, boulder/cobble, woody, roots		Describe: None directly within site; overhead utilities adjacent to site	
		Total Score out of 100	39

Map



Site No.	NAACC 38347		Scale: 1 in. = 2,000 ft.

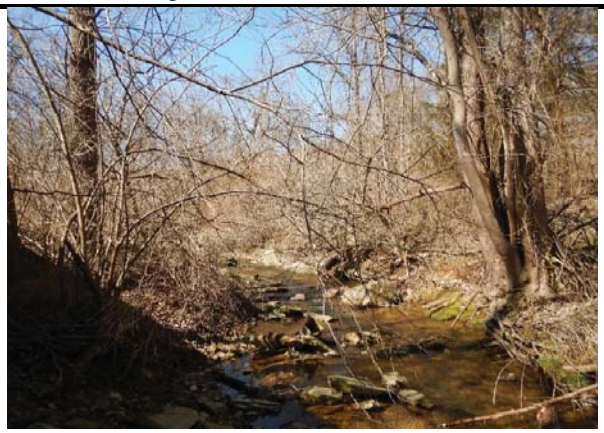
Site Photos



Culvert outfall - facing downstream



Culvert outfall/complete blockage - facing upstream



Upstream of culvert looking upstream



Left Bank at upstream end looking downstream

I-495/I-270 Managed Lanes Study - Fish Passage Field Site Assessment Form

Project Details

Project Name: I-495/I-270 Managed Lanes Study
Mitigation Site Number: NAACC 38385
Projects Estimated Stream Mitigation Needs (LF): TBD
Date of Field Assessment: 2/28/2019
Consultant Firm/Investigator(s) CRI; DS, KS

Site Location Details-taken from desktop review

County: Frederick
Cross Roads: MD 77 (Foxville Rd.); just E of Quirauk School Rd.
Basin (HUC 8): Middle Potomac-Catoctin
MDE Watershed (8 digit): 2140305
Proximity to Impacted Stream (mi.): 38.2
Lat/Long: 39.638376 -77.513944

Site Data

Parcel Size (ac): Within SHA ROW
Drainage Area to Reach (sq. mi. 0.4
Site Opportunities: _X_Fish Passage ___Channel Restoration ____Habitat Enhancement ___Riparian Buffer Planting
Stream Order: 1st
Stream Hydrology: Perennial
Stream Use: III
Culvert/Dam Type: Box Culvert
Culvert/Dam Dimensions: 12'x6.7' and 35 feet long
Blockage Type: _X_Complete ___ Partial ___None
USGS Gage Station #: 01637500
USGS Gage Discharge (fs3 220 *no gages nearby with comparable DA
USGS Gage Daily Discharge Percentile: ___0-25% ___25-50% _X_50-75% ___75-100%
Property Address: SHA ROW - on MD 77 just east of Quirauk School Rd., Sabillasville MD 21780
Property Owner(s): SHA

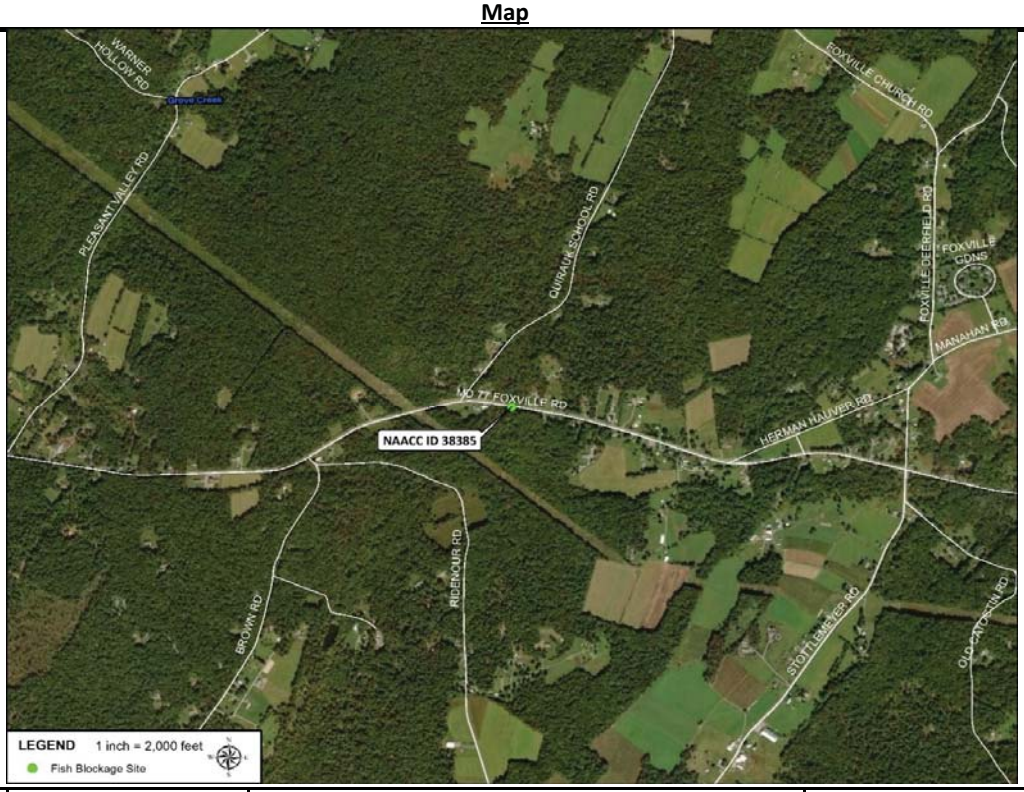
General Field Observations

Are there records for diadromous fish, mussels, RTE crayfish, or other RTE species within or in close proximity to the fish blockage site? Explain	Can the fish blockage be removed within the road right-of-way or does it require access to parcels beyond right-of-way limits? Explain
Explain: RTE coordination with agencies is pending. No diadromous species recently documented by MBSS.	Explain: Yes, structure at crossing is starting to fail and concrete is actively falling into the stream.

Fish Passage Site Rating

Criteria	Score	Criteria	Score
Functional Upstream Network	1	**Fish Blockage Height - Ecological Benefits of Removal**	1
10 - Greater than 4 miles 5 - 1 to 4 miles 1 - Less than 1 mile		10 - Greater than 5' 5- 1' to 5' 1 - Less than 1' 0 - No Blockage	
Describe: ~0.3 miles of US network		Describe: 0.65 foot drop at concrete apron	
Number of Downstream Fish Blockages	5	**Adjacent Land Use**	5
10 - 0 Blockages 5 - 1 Blockage 1 - >1 Blockage		10 - Commercial/Agriculture/Bare Ground 5- Field/Scrub-shrub 1 - Forest	
Describe: 1 blockage DS		Describe: Scrub-shrub in ROW, forest upstream and downstream	
NAACC Diadromous Fish HUC 12 Watershed Score	1	**Ease of Construction**	5
10 - 3 to 22 5 - 23 to 41 1 - 42 to 61		10 - Easy 5- Average 1 - Difficult/Complex 0 - No Blockage	
Describe: 55		Describe: 12 foot wide box culvert; 0.65 foot high blockage	
Percentage of Upstream Impervious Surface	10	**Ease of Access**	5
10 - Less than 10% 5 - 10 to 25% 1 - Greater than 25%		10 - Yes (with existing direct vehicular access to potential site) 5- Yes (open but no existing vehicular access) 1 - No (no vehicular access, clearing needed, steep slopes surrounding site)	
Describe: 0.46%		Describe: ROW is open, no clearing needed on downstream end; no existing access road other than MD-77; Guardrail present	
Fish Habitat Diversity	5	**Utilities Present**	1
10 - Greater than 5 cover types 5 - 3-5 cover types 1 - Less than 3 cover types		10 - No utilities on site 5 - Utilities but not within site 1 - Utilities within potential site	
Describe: Riffles, cobble/boulder, roots, overhanging vegetation		Describe: Low hanging power lines at both extents of the crossing	
		Total Score out of 100	39

Map



Site No.	NAACC 38385		Scale: 1 in. = 2, 000 ft.

Site Photos



At downstream end of culvert looking downstream



Culvert outfall/complete blockage - facing upstream



Left bank at downstream end looking at overhead utility



Deteriorating concrete on culvert

I-495/I-270 Managed Lanes Study - Fish Passage Field Site Assessment Form

Project Details

Project Name: I-495/I-270 Managed Lanes Study
Mitigation Site Number: NAACC 38455
Projects Estimated Stream Mitigation Needs (LF): TBD
Date of Field Assessment: 2/28/2019
Consultant Firm/Investigator(s) CRI; DS, KS

Site Location Details-taken from desktop review

County: Frederick
Cross Roads: MD 17 (Wolfsville Rd.), N of Martin Road
Basin (HUC 8): Middle Potomac-Catoctin
MDE Watershed (8 digit): 2140305
Proximity to Impacted Stream (mi.): 36.5
Lat/Long: 39.591704 -77.558824

Site Data

Parcel Size (ac): Within SHA ROW
Drainage Area to Reach (sq. mi. 2
Site Opportunities: __Fish Passage ____Channel Restoration _____Habitat Enhancement ____Riparian Buffer Planting
Stream Order: 1st
Stream Hydrology: Perennial
Stream Use: III
Culvert/Dam Type: Box Culvert
Culvert/Dam Dimensions: 11.5' x 5.5' to thalweg, 30 feet long
Blockage Type: ___Complete ____ Partial _X_None
USGS Gage Station #: 01637500
USGS Gage Discharge (fs3 220
USGS Gage Daily Discharge Percentile: ___0-25% ___25-50% ___50-75% ___75-100%
Property Address: SHA ROW - at MD 17 just north of Martin Rd., Smithsburg MD 21783
Property Owner(s): SHA

General Field Observations

Are there records for diadromous fish, mussels, RTE crayfish, or other RTE species within or in close proximity to the fish blockage site? Explain	Can the fish blockage be removed within the road right-of-way or does it require access to parcels beyond right-of-way limits? Explain
Explain: RTE coordination with agencies is pending.	Explain: No blockage

Fish Passage Site Rating

Criteria	Score	Criteria	Score
Functional Upstream Network	5	**Fish Blockage Height - Ecological Benefits of Removal**	0
10 - Greater than 4 miles 5 - 1 to 4 miles 1 - Less than 1 mile		10 - Greater than 5' 5- 1' to 5' 1 - Less than 1' 0 - No Blockage	
Describe: 3.1 miles of US network		Describe: No blockage	
Number of Downstream Fish Blockages	1	**Adjacent Land Use**	5
10 - 0 Blockages 5 - 1 Blockage 1 - >1 Blockage		10 - Commercial/Agriculture/Bare Ground 5- Field/Scrub-shrub 1 - Forest	
Describe: 2 DS barriers		Describe: Old field dowstream, forest upstream	
NAACC Diadromous Fish HUC 12 Watershed Score	1	**Ease of Construction**	0
10 - 3 to 22 5 - 23 to 41 1 - 42 to 61		10 - Easy 5- Average 1 - Difficult/Complex 0 - No Blockage	
Describe: 55		Describe: Large box culvert, no blockage	
Percentage of Upstream Impervious Surface	10	**Ease of Access**	5
10 - Less than 10% 5 - 10 to 25% 1 - Greater than 25%		10 - Yes (with existing direct vehicular access to potential site) 5- Yes (open but no existing vehicular access) 1 - No (no vehicular access, clearing needed, steep slopes surrounding site)	
Describe: 0.57%		Describe: Old field, fences or guardrail would be compromised	
Fish Habitat Diversity	10	**Utilities Present**	1
10 - Greater than 5 cover types 5 - 3-5 cover types 1 - Less than 3 cover types		10 - No utilities on site 5 - Utilities but not within site 1 - Utilities within potential site	
Describe: Riffle, cobble/boulder, root, woody, deep pool, back water pools		Describe: Powerlines in right of way at both extents of crossing	
		Total Score out of 100	38

Map



Site No.	NAACC 38455		Scale: 1 in. = 2,000 ft.

Site Photos



Culvert outfall/no blockage - facing upstream



Channel overview downstream of culvert - facing downstream



Left bank at downstream edge looking at powerlines and guardrail



Upstream looking downstream at culvert

I-495/I-270 Managed Lanes Study - Fish Passage Field Site Assessment Form

Project Details

Project Name: I-495/I-270 Managed Lanes Study
Mitigation Site Number: NAACC 38672
Projects Estimated Stream Mitigation Needs (LF): TBD
Date of Field Assessment: 2/28/2019
Consultant Firm/Investigator(s) CRI; DS, KS

Site Location Details-taken from desktop review

County: Frederick
Cross Roads: MD 17 (Wolfsville Rd.), N of Black Rock Road
Basin (HUC 8): Middle Potomac-Catoctin
MDE Watershed (8 digit): 2140305
Proximity to Impacted Stream (mi.): 35.6
Lat/Long: 39.578487 -77.556051

Site Data

Parcel Size (ac): Within SHA ROW
Drainage Area to Reach (sq. mi. 5.9
Site Opportunities: __Fish Passage ____Channel Restoration _____Habitat Enhancement ____Riparian Buffer Planting
Stream Order: 3rd
Stream Hydrology: Perennial
Stream Use: III
Culvert/Dam Type: Triple CMP w/ concrete
Culvert/Dam Dimensions: 8' diameter, 55 feet long
Blockage Type: ___Complete ____ Partial _X_None
USGS Gage Station #: 01637500
USGS Gage Discharge (fs3 220
USGS Gage Daily Discharge Percentile: ___0-25% ___25-50% _X_50-75% ___75-100%
Property Address: SHA ROW - at MD 17 just north of Black Rock Rd., Myersville MD 21773
Property Owner(s): SHA

General Field Observations

Are there records for diadromous fish, mussels, RTE crayfish, or other RTE species within or in close proximity to the fish blockage site? Explain	Can the fish blockage be removed within the road right-of-way or does it require access to parcels beyond right-of-way limits? Explain
Explain: RTE coordination with agencies is pending.	Explain: No blockage, potentially fixed prior as new concrete bottom on CMP

Fish Passage Site Rating

Criteria	Score	Criteria	Score
Functional Upstream Network	10	**Fish Blockage Height - Ecological Benefits of Removal**	0
10 - Greater than 4 miles 5 - 1 to 4 miles 1 - Less than 1 mile		10 - Greater than 5' 5- 1' to 5' 1 - Less than 1' 0 - No Blockage	
Describe: 5.1 miles of US network		Describe: No blockage	
Number of Downstream Fish Blockages	5	**Adjacent Land Use**	5
10 - 0 Blockages 5 - 1 Blockage 1 - >1 Blockage		10 - Commercial/Agriculture/Bare Ground 5- Field/Scrub-shrub 1 - Forest	
Describe: 1 DS barrier		Describe: Field clear at ROW, forest upstream and downstream	
NAACC Diadromous Fish HUC 12 Watershed Score	1	**Ease of Construction**	0
10 - 3 to 22 5 - 23 to 41 1 - 42 to 61		10 - Easy 5- Average 1 - Difficult/Complex 0 - No Blockage	
Describe: 55		Describe: Three large CMP with concrete bottom, no blockage height.	
Percentage of Upstream Impervious Surface	10	**Ease of Access**	5
10 - Less than 10% 5 - 10 to 25% 1 - Greater than 25%		10 - Yes (with existing direct vehicular access to potential site) 5- Yes (open but no existing vehicular access) 1 - No (no vehicular access, clearing needed, steep slopes surrounding site)	
Describe: 0.64%		Describe: Open ROW, no existing access	
Fish Habitat Diversity	5	**Utilities Present**	1
10 - Greater than 5 cover types 5 - 3-5 cover types 1 - Less than 3 cover types		10 - No utilities on site 5 - Utilities but not within site 1 - Utilities within potential site	
Describe: Riffle, boulder/cobble, woody, roots, deep pool		Describe: Overhead lines within potential site	
		Total Score out of 100	42

Map



Site No.	NAACC 38672		Scale: 1 in. = 2,000 ft.

Site Photos



Culvert outfall/no blockage - facing upstream



Channel overview downstream of culvert - facing downstream



Left bank at downstream end looking at powerlines and guardrail



Upstream of culvert looking upstream

I-495/I-270 Managed Lanes Study - Fish Passage Field Site Assessment Form

Project Details

Project Name: I-495/I-270 Managed Lanes Study
Mitigation Site Number: MD LPX15
Projects Estimated Stream Mitigation Needs (LF): TBD
Date of Field Assessment: 3/6/2019
Consultant Firm/Investigator(s) CRI; JG, DS

Site Location Details-taken from desktop review

County: Howard
Cross Roads: US 29, S of Little Patuxent Pkwy.
Basin (HUC 8): Patuxent
MDE Watershed (8 digit): 2131105
Proximity to Impacted Stream (mi.): 13.2
Lat/Long: 39.217813 -76.850299

Site Data

Parcel Size (ac): Within SHA ROW
Drainage Area to Reach (sq. mi. 0.4
Site Opportunities: _X_Fish Passage ___Channel Restoration __X__Habitat Enhancement ____Riparian Buffer Planting
Stream Order: 2nd
Stream Hydrology: Perennial
Stream Use: IV
Culvert/Dam Type: Double RCP
Culvert/Dam Dimensions: 6', 200 feet long
Blockage Type: ___Complete _X__ Partial ___None
USGS Gage Station #: 01593500
USGS Gage Discharge (fs3 71.5
USGS Gage Daily Discharge Percentile: ___0-25% ___25-50% ___50-75% _X_75-100% 78%
Property Address: SHA ROW - US 29, Columbia MD 21044
Property Owner(s): SHA

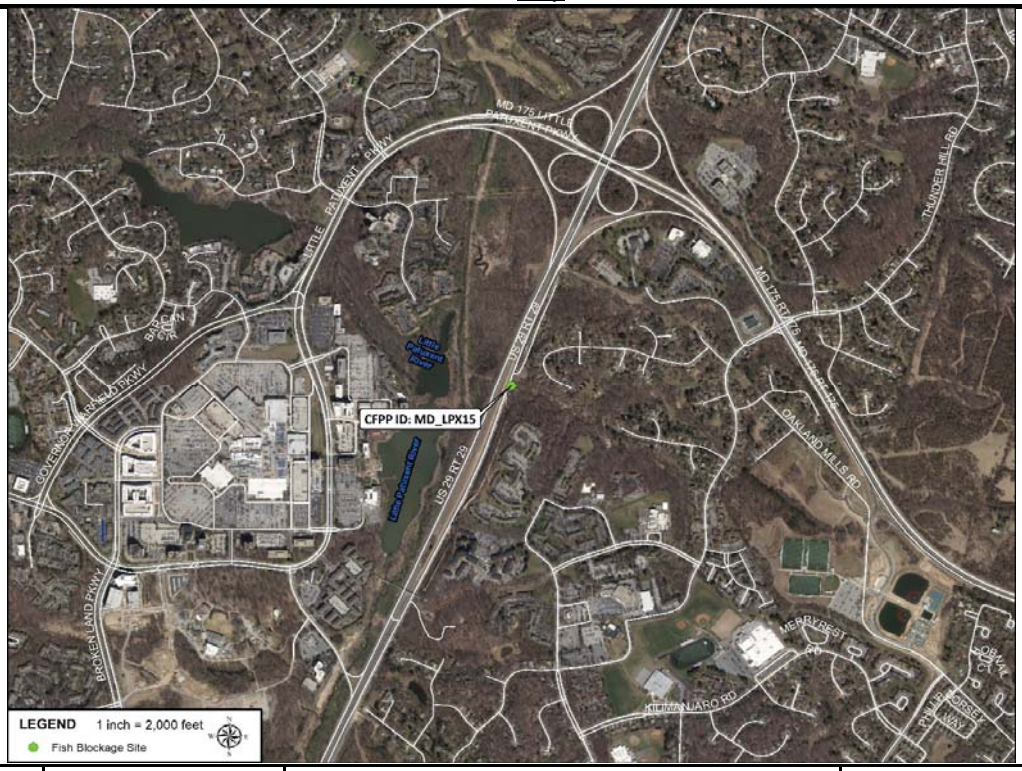
General Field Observations

Are there records for diadromous fish, mussels, RTE crayfish, or other RTE species within or in close proximity to the fish blockage site? Explain	Can the fish blockage be removed within the road right-of-way or does it require access to parcels beyond right-of-way limits? Explain
Explain: RTE coordination with agencies pending.	Explain: Yes, blockage is just minor debris jam within ROW on upstream end

Fish Passage Site Rating

Criteria	Score	Criteria	Score
Functional Upstream Network	5	**Fish Blockage Height - Ecological Benefits of Removal**	1
10 - Greater than 4 miles 5 - 1 to 4 miles 1 - Less than 1 mile		10 - Greater than 5' 5- 1' to 5' 1 - Less than 1' 0 - No Blockage	
Describe: 1.4 miles of US network		Describe: Minor debris jam at inlet - 0.8 foot drop	
Number of Downstream Fish Blockages	1	**Adjacent Land Use**	1
10 - 0 Blockages 5 - 1 Blockage 1 - >1 Blockage		10 - Commercial/Agriculture/Bare Ground 5- Field/Scrub-shrub 1 - Forest	
Describe: 3 DS barriers		Describe: Forest US and DS	
NAACC Diadromous Fish HUC 12 Watershed Score	1	**Ease of Construction**	5
10 - 3 to 22 5 - 23 to 41 1 - 42 to 61		10 - Easy 5- Average 1 - Difficult/Complex 0 - No Blockage	
Describe: 48		Describe: 6 foot double RCP, <1 foot height	
Percentage of Upstream Impervious Surface	5	**Ease of Access**	1
10 - Less than 10% 5 - 10 to 25% 1 - Greater than 25%		10 - Yes (with existing direct vehicular access to potential site) 5- Yes (open but no existing vehicular access) 1 - No (no vehicular access, clearing needed, steep slopes surrounding site)	
Describe: 10.30%		Describe: Clearing needed and soundwall at DS end	
Fish Habitat Diversity	5	**Utilities Present**	5
10 - Greater than 5 cover types 5 - 3-5 cover types 1 - Less than 3 cover types		10 - No utilities on site 5 - Utilities but not within site 1 - Utilities within potential site	
Describe: Riffle, cobble, backwater pool		Describe: Sewer/manholes US and DS but not within site	
		Total Score out of 100	30

Map



Site No.	MD LPX15		Scale: 1 in. = 2,000 ft.

Site Photos



Upstream looking downstream at culvert



At inlet looking upstream at debris jam/ partial blockage



Channel overview downstream - facing downstream



Downstream of culvert facing sewer line on right bank

I-495/I-270 Managed Lanes Study - Fish Passage Field Site Assessment Form

Project Details

Project Name: I-495/I-270 Managed Lanes Study
Mitigation Site Number: MD PXM23
Projects Estimated Stream Mitigation Needs (LF): TBD
Date of Field Assessment: 2/21/2019
Consultant Firm/Investigator(s) CRI; DS, LE

Site Location Details-taken from desktop review

County: Anne Arundel
Cross Roads: MD 197, N of Route 50 and S of MD 450
Basin (HUC 8): Patuxent
MDE Watershed (8 digit): 2131102
Proximity to Impacted Stream (mi.): 11.7
Lat/Long: 38.789336 -76.648663

Site Data

Parcel Size (ac): Within SHA ROW
Drainage Area to Reach (sq. mi. 0.62
Site Opportunities: _X_Fish Passage __X__Channel Restoration __X__Habitat Enhancement __X__Riparian Buffer Planting
Stream Order: 1st
Stream Hydrology: Perennial
Stream Use: I
Culvert/Dam Type: Box Culvert/Top Flow Spillway
Culvert/Dam Dimensions: W: 9.5' H: 5' (1st blockage)
Blockage Type: _X_Complete ___ Partial __None
USGS Gage Station #: 01649150
USGS Gage Discharge (fs3 2.39
USGS Gage Daily Discharge Percentile: ___0-25% ___25-50% ___50-75% ___75-100%
Property Address: SHA ROW - MD 197, Bowie MD 20715
Property Owner(s): SHA

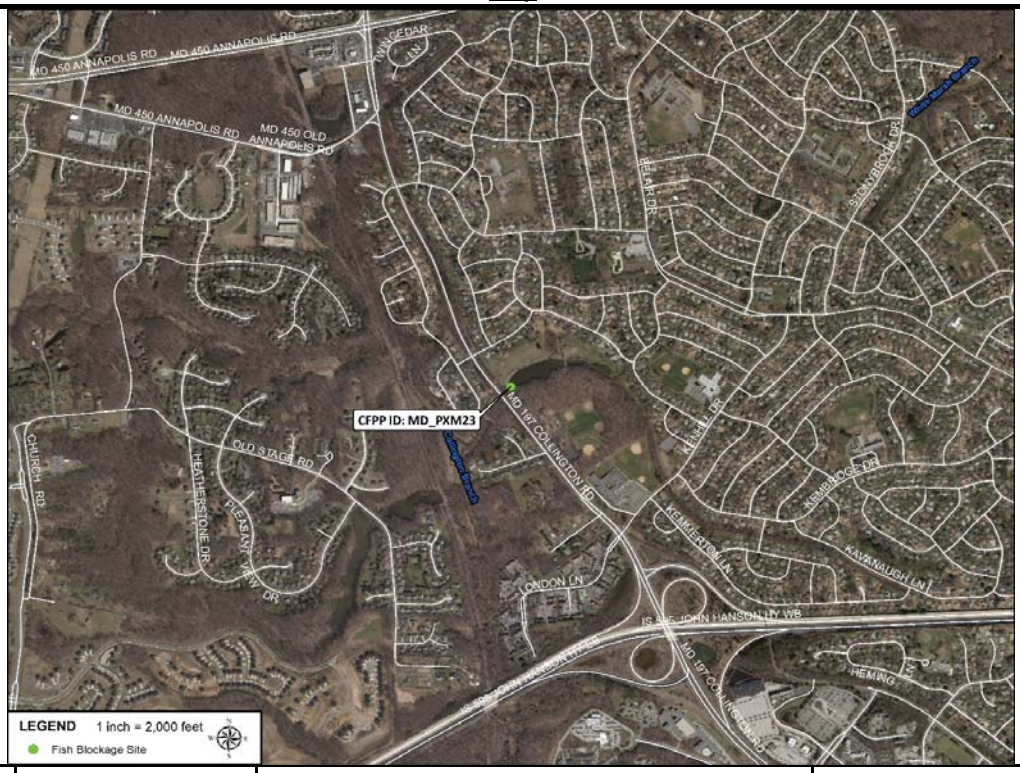
General Field Observations

Are there records for diadromous fish, mussels, RTE crayfish, or other RTE species within or in close proximity to the fish blockage site? Explain	Can the fish blockage be removed within the road right-of-way or does it require access to parcels beyond right-of-way limits? Explain
Explain: RTE coordination with agencies pending.	Explain: No, need access to additional parcels for blockages 2 and 3; 1st blockage is at box culvert

Fish Passage Site Rating

Criteria	Score	Criteria	Score
Functional Upstream Network	5	**Fish Blockage Height - Ecological Benefits of Removal**	5
10 - Greater than 4 miles 5 - 1 to 4 miles 1 - Less than 1 mile		10 - Greater than 5' 5- 1' to 5' 1 - Less than 1' 0 - No Blockage	
Describe: 1.2 miles of US network		Describe: 3 blockages. 1st: 0.6 feet; 2nd: 3.4 feet; 3rd: 0.8 feet; Total height: 4.8 feet; *2nd and 3rd blockages are not in ROW and are part of pond dam	
Number of Downstream Fish Blockages	10	**Adjacent Land Use**	5
10 - 0 Blockages 5 - 1 Blockage 1 - >1 Blockage		10 - Commercial/Agriculture/Bare Ground 5- Field/Scrub-shrub 1 - Forest	
Describe:		Describe: Field, recreational park and blockage is DS of pond	
NAACC Diadromous Fish HUC 12 Watershed Score	5	**Ease of Construction**	1
10 - 3 to 22 5 - 23 to 41 1 - 42 to 61		10 - Easy 5- Average 1 - Difficult/Complex 0 - No Blockage	
Describe: 39		Describe: Small dam less than 20 feet wide; 1-5 foot blockage height	
Percentage of Upstream Impervious Surface	5	**Ease of Access**	10
10 - Less than 10% 5 - 10 to 25% 1 - Greater than 25%		10 - Yes (with existing direct vehicular access to potential site) 5- Yes (open but no existing vehicular access) 1 - No (no vehicular access, clearing needed, steep slopes surrounding site)	
Describe: 24.30%		Describe: SHA ROW paved to 1st blockage - additional blockages just US across mowed lawn, but not within ROW	
Fish Habitat Diversity	1	**Utilities Present**	1
10 - Greater than 5 cover types 5 - 3-5 cover types 1 - Less than 3 cover types		10 - No utilities on site 5 - Utilities but not within site 1 - Utilities within potential site	
Describe: Trapazoid channel DS. Deep pool DS. Pond US - unknown cover/habitat		Describe: Low overhead powerlines at site	
		Total Score out of 100	48

Map



Site No.	MD PXM23		Scale: 1 in. = 2,000 ft.

Site Photos



Channel overview downstream of 1st blockage in ROW



Upstream at 1st blockage looking upstream at 2nd/3rd blockages



Upstream of 3rd blockage looking upstream at pond



Look upstream at 1st blockage within ROW

I-495/I-270 Managed Lanes Study - Fish Passage Field Site Assessment Form

Project Details

Project Name: I-495/I-270 Managed Lanes Study **Mitigation Site Number:** MD-PXM-29

Projects Estimated Stream Mitigation Needs (LF): TBD

Date of Field Assessment: 3/7/2019 **Consultant Firm/Investigator(s)** RK&K; KJH, DWB

Site Location Details-taken from desktop review

County: Prince George's **Cross Roads:** Median of MD 4/Ritchie Marlboro Rd

Basin (HUC 8): Patuxent **MDE Watershed (8 digit):** 02131103

Proximity to Impacted Stream (mi.): 5.4 **Lat/Long:** 38.811731 -76.784023

Parcel Size (ac): Within SHA ROW **Drainage Area to Reach (sq. mi.** 1.13

Site Opportunities: ___Fish Passage ___Channel Restoration _____Habitat Enhancement ___Riparian Buffer Planting (Upstream)

Stream Order: 1st **Stream Hydrology:** Perennial **Stream Use:** I

Culvert/Dam Type: CMP **Culvert/Dam Dimensions:** 8 ft wide, 8 ft tall **Blockage Type:** ___Complete ___ Partial _X__None

USGS Gage Station #: 01594526 **USGS Gage Discharge (fs3/s):** ___120_____

USGS Gage Daily Discharge Percentile: ___0-25% ___25-50% __X_50-75% __75-100%

Property Address: unnamed tributary of Federal Spring Branch in median of MD 4, W of Ritchie Marlboro Rd

Property Owner(s): SHA

General Field Observations

Are there records for diadromous fish, mussels, RTE crayfish, or other RTE species within or in close proximity to the fish blockage site? Explain	Can the fish blockage be removed within the road right-of-way or does it require access to parcels beyond right-of-way limits? Explain
Explain: According to Chesapeake Fish Passage Prioritization, alewife, blueback, American eel, one rare mussel species, and one or more anadromous species occur nearby.	Explain: No blockage

Fish Passage Site Rating

Criteria	Score	Criteria	Score
Functional Upstream Network	1	**Fish Blockage Height - Ecological Benefits of Removal**	0
10 - Greater than 4 miles 5 - 1 to 4 miles 1 - Less than 1 mile		10 - Greater than 5' 5- 1' to 5' 1 - Less than 1'	
Describe: 0.03		Describe: No blockage. 6 in water depth at culvert outlet.	
Number of Downstream Fish Blockages	10	**Adjacent Land Use**	1
10 - 0 Blockages 5 - 1 Blockage 1 - >1 Blockage		10 - Commercial/Agriculture/Bare Ground 5- Field/Scrub-shrub 1 - Forest	
Describe: None		Describe: Interior of divided highway	
NAACC Diadromous Fish HUC 12 Watershed Score	10	**Ease of Construction**	0
10 - 3 to 22 5 - 23 to 41 1 - 42 to 61		10 - Easy 5- Average 1 - Difficult/Complex	
Describe: 12		Describe: No blockage	
Percentage of Upstream Impervious Surface	10	**Ease of Access**	1
10 - Less than 10% 5 - 10 to 25% 1 - Greater than 25%		10 - Yes (with existing direct vehicular access to potential site) 5- Yes (open but no existing vehicular access) 1 - No (no vehicular access, clearing needed, steep slopes surrounding site)	
Describe: 0.56%		Describe: Steep slopes, forested, within highway median	
Fish Habitat Diversity	1	**Utilities Present**	10
10 - Greater than 5 cover types 5 - 3-5 cover types 1 - Less than 3 cover types		10 - No utilities on site 5 - Utilities but not within site 1 - Utilities within potential site	
Describe: Root wads, overhanging vegetation; 2 types		Describe: Highway median, none visible	
		Total Score out of 100	44

Map



Site No.	MD-PXM-29		Scale: 1 in. = 2,000

Site Photos



Culvert inlet - facing downstream



Culvert outfall - facing upstream



Slopes adjacent to culvert outfall, facing roadway

I-495/I-270 Managed Lanes Study - Fish Passage Field Site Assessment Form

Project Details

Project Name: I-495/I-270 Managed Lanes Study **Mitigation Site Number:** MD-PXM-30

Projects Estimated Stream Mitigation Needs (LF): TBD

Date of Field Assessment: 3/7/2019 **Consultant Firm/Investigator(s)** RK&K; KJH, DWB

Site Location Details-taken from desktop review

County: Prince George's **Cross Roads:** MD 4/William Beanes Rd

Basin (HUC 8): Patuxent **MDE Watershed (8 digit):** 02131103

Proximity to Impacted Stream (mi.): 5.4 **Lat/Long:** 38.811266 -76.783974

Parcel Size (ac): Within SHA ROW **Drainage Area to Reach (sq. mi.** 1.11

Site Opportunities: __X__Fish Passage __X__Channel Restoration ___X___Habitat Enhancement ____Riparian Buffer Planting (Upstream)

Stream Order: 1st **Stream Hydrology:** Perennial **Stream Use:** I

Culvert/Dam Type: CMP **Culvert/Dam Dimensions:** 36 inches **Blockage Type:** _X__Complete ___ Partial ___None

USGS Gage Station #: 01594526 **USGS Gage Discharge (fs3/s):** ___120_____

USGS Gage Daily Discharge Percentile: ___0-25% ___25-50% __X_50-75% __75-100%

Property Address: unnamed tributary of Federal Spring Branch near MD 4 under William Beanes Rd

Property Owner(s): SHA

General Field Observations

Are there records for diadromous fish, mussels, RTE crayfish, or other RTE species within or in close proximity to the fish blockage site? Explain	Can the fish blockage be removed within the road right-of-way or does it require access to parcels beyond right-of-way limits? Explain
Explain: According to Chesapeake Fish Passage Prioritization, alewife, blueback, American eel, and one or more anadromous species have historically occured nearby. One rare mussel species was identified in the same HUC12.	Explain: May be on private property

Fish Passage Site Rating

Criteria	Score	Criteria	Score
Functional Upstream Network	5	**Fish Blockage Height - Ecological Benefits of Removal**	1
10 - Greater than 4 miles 5 - 1 to 4 miles 1 - Less than 1 mile		10 - Greater than 5' 5- 1' to 5' 1 - Less than 1'	
Describe: 2.01		Describe: Depth in culvert = 0.1 ft, thlaweg to top = 1.2 ft, Groundwater? = 6 inches	
Number of Downstream Fish Blockages	10	**Adjacent Land Use**	5
10 - 0 Blockages 5 - 1 Blockage 1 - >1 Blockage		10 - Commercial/Agriculture/Bare Ground 5- Field/Scrub-shrub 1 - Forest	
Describe: None		Describe: Upstream: residential, Downstream: forested	
NAACC Diadromous Fish HUC 12 Watershed Score	10	**Ease of Construction**	10
10 - 3 to 22 5 - 23 to 41 1 - 42 to 61		10 - Easy 5- Average 1 - Difficult/Complex	
Describe: 12		Describe: 36 in CMP and CMP end section. Small blockage, approximately 6 inches	
Percentage of Upstream Impervious Surface	10	**Ease of Access**	5
10 - Less than 10% 5 - 10 to 25% 1 - Greater than 25%		10 - Yes (with existing direct vehicular access to potential site) 5- Yes (open but no existing vehicular access) 1 - No (no vehicular access, clearing needed, steep slopes surrounding site)	
Describe: 0.56%		Describe: Adjacent driveway	
Fish Habitat Diversity	1	**Utilities Present**	5
10 - Greater than 5 cover types 5 - 3-5 cover types 1 - Less than 3 cover types		10 - No utilities on site 5 - Utilities but not within site 1 - Utilities within potential site	
Describe: Root wads, overhanging vegetation; 2 types		Describe: Adjacent overhead power lines	
		Total Score out of 100	62

Map



Site No.	MD-PXM-30		Scale: 1 in. = 2,000

Site Photos



Culvert outfall - facing upstream



Channel overview - facing downstream





I-495/I-270 Managed Lanes Study - Fish Passage Field Site Assessment Form

Project Details

Project Name: I-495/I-270 Managed Lanes Study
Mitigation Site Number: NAACC 27544
Projects Estimated Stream Mitigation Needs (LF): TBD
Date of Field Assessment: 2/15/2019
Consultant Firm/Investigator(s) RK&K; KJH, BM

Site Location Details-taken from desktop review

County: Anne Arundel
Cross Roads: along W Bay Front Road, E of Fishers Station Rd, W of Crandell Rd
Basin (HUC 8): Patuxent
MDE Watershed (8 digit): 02131102
Proximity to Impacted Stream (mi.): 14.2
Lat/Long: 38.782029 -76.633024

Parcel Size (ac): Within SHA ROW
Drainage Area to Reach (sq. mi. 0.59
Site Opportunities: ___Fish Passage __X__Channel Restoration _____Habitat Enhancement __X__Riparian Buffer Planting (Upstream)
Stream Order: 1st
Stream Hydrology: Perennial
Stream Use: I
Culvert/Dam Type: Pipe arch
Culvert/Dam Dimensions: 8 ft wide, 4.5 ft tall
Blockage Type: ___Complete ___ Partial __X_None
USGS Gage Station #: 01594526
USGS Gage Discharge (fs3/s): ___120_____
USGS Gage Daily Discharge Percentile: ___0-25% ___25-50% __X_50-75% __75-100%
Property Address: Lyons Creek near Fishers Station Rd along W Bay Front Rd
Property Owner(s): SHA

General Field Observations

Are there records for diadromous fish, mussels, RTE crayfish, or other RTE species within or in close proximity to the fish blockage site? Explain	Can the fish blockage be removed within the road right-of-way or does it require access to parcels beyond right-of-way limits? Explain
Explain: One rare mussel species noted in HUC8 watershed (Freshwater Network, Chesapeake Region).	Explain: No blockage - drop site. Pipe arch with bottomless CMP. Room within ROW. Stream bed flush with culvert bottom.

Fish Passage Site Rating

Criteria	Score	Criteria	Score
Functional Upstream Network	5	**Fish Blockage Height - Ecological Benefits of Removal**	1
10 - Greater than 4 miles 5 - 1 to 4 miles 1 - Less than 1 mile		10 - Greater than 5' 5- 1' to 5' 1 - Less than 1'	
Describe: 1.49 miles		Describe: No blockage, bottomless culvert	
Number of Downstream Fish Blockages	10	**Adjacent Land Use**	10
10 - 0 Blockages 5 - 1 Blockage 1 - >1 Blockage		10 - Commercial/Agriculture/Bare Ground 5- Field/Scrub-shrub 1 - Forest	
Describe: None		Describe: Mostly agricultural fields, some trees along downstream channel	
NAACC Diadromous Fish HUC 12 Watershed Score	10	**Ease of Construction**	5
10 - 3 to 22 5 - 23 to 41 1 - 42 to 61		10 - Easy 5- Average 1 - Difficult/Complex	
Describe: 12		Describe: 8 ft wide CMP with no bottom	
Percentage of Upstream Impervious Surface	10	**Ease of Access**	5
10 - Less than 10% 5 - 10 to 25% 1 - Greater than 25%		10 - Yes (with existing direct vehicular access to potential site) 5- Yes (open but no existing vehicular access) 1 - No (no vehicular access, clearing needed, steep slopes surrounding site)	
Describe: 1.84%		Describe: Mostly agricultural fields, some trees along downstream channel. Gradual slopes	
Fish Habitat Diversity	10	**Utilities Present**	5
10 - Greater than 5 cover types 5 - 3-5 cover types 1 - Less than 3 cover types		10 - No utilities on site 5 - Utilities but not within site 1 - Utilities within potential site	
Describe: LWD, riffles, overhanging vegetation, cobble, mostly sand, root mats; 6 types		Describe: Overhead powerlines on upstream end and 30 ft upstream	
		Total Score out of 100	71

Map



Site No.	NAACC 27544		Scale: 1 in. = 2,000

Site Photos



Culvert outfall - facing upstream



Channel overview downstream of culvert - facing downstream



Access from road adjacent to culvert



Culvert inlet - facing downstream

I-495/I-270 Managed Lanes Study - Fish Passage Field Site Assessment Form

Project Details

Project Name: I-495/I-270 Managed Lanes Study
Mitigation Site Number: NAACC 27548
Projects Estimated Stream Mitigation Needs (LF): TBD
Date of Field Assessment: 2/15/2019
Consultant Firm/Investigator(s) RK&K; KJH, BM

Site Location Details-taken from desktop review

County: Anne Arundel
Cross Roads: W Bay Front Road, E of McKendree Rd, W of Dawn Dr
Basin (HUC 8): Patuxent
MDE Watershed (8 digit): 02131102
Proximity to Impacted Stream (mi.): 14.9
Lat/Long: 38.780954 -76.620245

Parcel Size (ac): Within SHA ROW
Drainage Area to Reach (sq. mi. 0.65
Site Opportunities: ___Fish Passage __X__Channel Restoration _____Habitat Enhancement ___Riparian Buffer Planting
Stream Order: 1st
Stream Hydrology: Perennial
Stream Use: I
Culvert/Dam Type: Box culvert
Culvert/Dam Dimensions: 8' wide, 6' tall, embedded bottom 6"
Blockage Type: ___Complete ___ Partial __X_None
USGS Gage Station #: 01594526
USGS Gage Discharge (fs3/s): __120_____
USGS Gage Daily Discharge Percentile: ___0-25% ___25-50% _X__50-75% __75-100%
Property Address: Lyons Creek near McKendree Rd along W Bay Front Rd
Property Owner(s): SHA

General Field Observations

Are there records for diadromous fish, mussels, RTE crayfish, or other RTE species within or in close proximity to the fish blockage site? Explain	Can the fish blockage be removed within the road right-of-way or does it require access to parcels beyond right-of-way limits? Explain
Explain: One rare mussel species noted in HUC8 watershed (Freshwater Network, Chesapeake Region).	Explain: No blockage - drop site. Culvert bottom embedded. Exntensive ROW downstream. 4 to 6 inch water depth at end of culvert. Stream bed flush with culvert.

Fish Passage Site Rating

Criteria	Score	Criteria	Score
Functional Upstream Network	5	**Fish Blockage Height - Ecological Benefits of Removal**	1
10 - Greater than 4 miles 5 - 1 to 4 miles 1 - Less than 1 mile		10 - Greater than 5' 5- 1' to 5' 1 - Less than 1'	
Describe: 3.41 miles		Describe: No blockage	
Number of Downstream Fish Blockages	10	**Adjacent Land Use**	1
10 - 0 Blockages 5 - 1 Blockage 1 - >1 Blockage		10 - Commercial/Agriculture/Bare Ground 5- Field/Scrub-shrub 1 - Forest	
Describe: None		Describe: Mostly forested in ROW	
NAACC Diadromous Fish HUC 12 Watershed Score	10	**Ease of Construction**	
10 - 3 to 22 5 - 23 to 41 1 - 42 to 61		10 - Easy 5- Average 1 - Difficult/Complex	
Describe: 12		Describe: NA - no blockage, embedded culvert	
Percentage of Upstream Impervious Surface	10	**Ease of Access**	1
10 - Less than 10% 5 - 10 to 25% 1 - Greater than 25%		10 - Yes (with existing direct vehicular access to potential site) 5- Yes (open but no existing vehicular access) 1 - No (no vehicular access, clearing needed, steep slopes surrounding site)	
Describe: 6.87%		Describe: Surrounded by forest with steep slopes	
Fish Habitat Diversity	5	**Utilities Present**	5
10 - Greater than 5 cover types 5 - 3-5 cover types 1 - Less than 3 cover types		10 - No utilities on site 5 - Utilities but not within site 1 - Utilities within potential site	
Describe: LWD, riffles, overhanging vegetation, undercut banks, root mats; 5 types		Describe: Overhead power lines outside site	
		Total Score out of 100	48

Map



Site No.	NAACC 27548		Scale: 1 in. = 2,000

Site Photos



Channel overview upstream of culvert - facing upstream



Channel overview downstream of sulvert - facing downstream



Culvert outfall - facing upstream



Access from road adjacent to culvert

I-495/I-270 Managed Lanes Study - Fish Passage Field Site Assessment Form

Project Details

Project Name: I-495/I-270 Managed Lanes Study
Mitigation Site Number: NAACC 32437
Projects Estimated Stream Mitigation Needs (LF): TBD
Date of Field Assessment: 2/21/2019
Consultant Firm/Investigator(s) CRI; DS, LE

Site Location Details-taken from desktop review

County: Prince George's
Cross Roads: MD 197 (Laurel Bowie Rd), W of Old Laurel Bowie Road
Basin (HUC 8): Patuxent
MDE Watershed (8 digit): 2131104
Proximity to Impacted Stream (mi.): 5.9
Lat/Long: 39.032974 -76.787302

Site Data

Parcel Size (ac): Within SHA ROW
Drainage Area to Reach (sq. mi. 2.5
Site Opportunities: _X_Fish Passage ____Channel Restoration __X__Habitat Enhancement __X__Riparian Buffer Planting
Stream Order: 2nd
Stream Hydrology: Perennial
Stream Use: I
Culvert/Dam Type: Double RCP
Culvert/Dam Dimensions: 5'x5' (both), ~40 feet long
Blockage Type: ___Complete _X_ Partial ___None
USGS Gage Station #: 01593450
USGS Gage Discharge (fs3 4.2
USGS Gage Daily Discharge Percentile: ___0-25% ___25-50% ___50-75% ___75-100%
*high, but only gage nearby with similar DA
Property Address: SHA ROW - just northwest of Old Laurel Bowie Rd., Bowie MD 20720
Property Owner(s): SHA

General Field Observations

Are there records for diadromous fish, mussels, RTE crayfish, or other RTE species within or in close proximity to the fish blockage site? Explain	Can the fish blockage be removed within the road right-of-way or does it require access to parcels beyond right-of-way limits? Explain
Explain: RTE coordination with agencies is pending. American Eel collected just DS by MBSS.	Explain: Yes, but wetland located just US between blockage and Cash Lake dam

Fish Passage Site Rating

Criteria	Score	Criteria	Score
Functional Upstream Network	1	**Fish Blockage Height - Ecological Benefits of Removal**	5
10 - Greater than 4 miles 5 - 1 to 4 miles 1 - Less than 1 mile		10 - Greater than 5' 5- 1' to 5' 1 - Less than 1' 0 - No Blockage	
Describe: less than 500 feet - Cash Lake dam is just US and upstream habitat consists mainly of wetland area		Describe: Blockage is at rip-rap/boulder - 1 foot drop. Blockage at low flows. Water depth in culvert is 0.6 feet.	
Number of Downstream Fish Blockages	10	**Adjacent Land Use**	5
10 - 0 Blockages 5 - 1 Blockage 1 - >1 Blockage		10 - Commercial/Agriculture/Bare Ground 5- Field/Scrub-shrub 1 - Forest	
Describe: None		Describe: Brush/field land use	
NAACC Diadromous Fish HUC 12 Watershed Score	10	**Ease of Construction**	5
10 - 3 to 22 5 - 23 to 41 1 - 42 to 61		10 - Easy 5- Average 1 - Difficult/Complex 0 - No Blockage	
Describe: 17		Describe: Large pipe with about 1 foot drop over riprap downstream	
Percentage of Upstream Impervious Surface	10	**Ease of Access**	5
10 - Less than 10% 5 - 10 to 25% 1 - Greater than 25%		10 - Yes (with existing direct vehicular access to potential site) 5- Yes (open but no existing vehicular access) 1 - No (no vehicular access, clearing needed, steep slopes surrounding site)	
Describe: 0.60%		Describe: Within ROW with clearing of scrub-shrub area only; overhead utilities and guardrails along both sides of road; would either need to remove guardrail or could access through Cash Lake gravel entrance	
Fish Habitat Diversity	5	**Utilities Present**	5
10 - Greater than 5 cover types 5 - 3-5 cover types 1 - Less than 3 cover types		10 - No utilities on site 5 - Utilities but not within site 1 - Utilities within potential site	
Describe: Riffle, overhanging vegetation, undercut banks, woody debris		Describe: High and low overhead powerlines	
		Total Score out of 100	61

Map



Site No.	NAACC 32437		Scale: 1 in. = 2,000 ft.

Site Photos



Culvert inlet - facing downstream



Channel overview downstream of culvert - facing downstream



Culvert outfall/partial blockage - facing upstream



Right bank looking upstream at overhead utilities

I-495/I-270 Managed Lanes Study - Fish Passage Field Site Assessment Form

Project Details

Project Name: I-495/I-270 Managed Lanes Study
Mitigation Site Number: NAACC 33809
Projects Estimated Stream Mitigation Needs (LF): TBD
Date of Field Assessment: 2/21/2019
Consultant Firm/Investigator(s) CRI; DS, LE

Site Location Details-taken from desktop review

County: Anne Arundel
Cross Roads: MD 32; W of MD 175 (Annapolis Rd.) and E of MD 198 (Laurel Fort Meade Rd)
Basin (HUC 8): Patuxent
MDE Watershed (8 digit): 2131105
Proximity to Impacted Stream (mi.):
Lat/Long: 39.08787 -76.738265

Site Data

Parcel Size (ac): No Site Access
Drainage Area to Reach (sq. mi. 4.97
Site Opportunities: ___Fish Passage ____Channel Restoration _____Habitat Enhancement _____Riparian Buffer Planting
Stream Order:
Stream Hydrology: Perennial
Stream Use: I
Culvert/Dam Type: Double RCP
Culvert/Dam Dimensions:
Blockage Type: ___Complete ___ Partial ___None
USGS Gage Station #:
USGS Gage Discharge (fs3/s): _____
USGS Gage Daily Discharge Percentile: ___0-25% ___25-50% ___50-75% ___75-100%
Property Address: SHA ROW - W of MD 175 (Annapolis Rd.) and E of MD 198 (Laurel Fort Meade Rd); Fort Meade MD 20755
Property Owner(s): SHA

General Field Observations

Are there records for diadromous fish, mussels, RTE crayfish, or other RTE species within or in close proximity to the fish blockage site? Explain	Can the fish blockage be removed within the road right-of-way or does it require access to parcels beyond right-of-way limits? Explain
Explain: No site Access	Explain: No site access. Site is located on NSA property and could not access due to fence.

Fish Passage Site Rating

Criteria	Score	Criteria	Score
Functional Upstream Network		**Fish Blockage Height - Ecological Benefits of Removal**	
10 - Greater than 4 miles 5 - 1 to 4 miles 1 - Less than 1 mile		10 - Greater than 5' 5- 1' to 5' 1 - Less than 1' 0 - No Blockage	
Describe: No site Access		Describe: No site Access	
Number of Downstream Fish Blockages		**Adjacent Land Use**	
10 - 0 Blockages 5 - 1 Blockage 1 - >1 Blockage		10 - Commercial/Agriculture/Bare Ground 5- Field/Scrub-shrub 1 - Forest	
Describe: None		Describe: Bush, field land use	
NAACC Diadromous Fish HUC 12 Watershed Score		**Ease of Construction**	
10 - 3 to 22 5 - 23 to 41 1 - 42 to 61		10 - Easy 5- Average 1 - Difficult/Complex 0 - No Blockage	
Describe:		Describe:	
Percentage of Upstream Impervious Surface		**Ease of Access**	
10 - Less than 10% 5 - 10 to 25% 1 - Greater than 25%		10 - Yes (with existing direct vehicular access to potential site) 5- Yes (open but no existing vehicular access) 1 - No (no vehicular access, clearing needed, steep slopes surrounding site)	
Describe:		Describe:	
Fish Habitat Diversity		**Utilities Present**	
10 - Greater than 5 cover types 5 - 3-5 cover types 1 - Less than 3 cover types		10 - No utilities on site 5 - Utilities but not within site 1 - Utilities within potential site	
Describe:		Describe:	
		Total Score out of 100	0

Map



Site No.	NAACC 33809		Scale: 1 in. = 2,000 ft.

Site Photos



NSA fence prohibiting site access



Stream conditions US of road crossing

I-495/I-270 Managed Lanes Study - Fish Passage Field Site Assessment Form

Project Details

Project Name: I-495/I-270 Managed Lanes Study
Mitigation Site Number: NAACC 44542
Projects Estimated Stream Mitigation Needs (LF): TBD
Date of Field Assessment: 2/21/2019
Consultant Firm/Investigator(s) CRI; JG, DS, SS, LE

Site Location Details-taken from desktop review

County: Anne Arundel
Cross Roads: MD 3 (Crain Hwy), S of Evergreen Rd.
Basin (HUC 8): Patuxent
MDE Watershed (8 digit): 2131105
Proximity to Impacted Stream (mi.): 10
Lat/Long: 39.028803 -76.687628

Site Data

Parcel Size (ac): Within SHA ROW
Drainage Area to Reach (sq. mi. 0.8
Site Opportunities: _X_Fish Passage __X__Channel Restoration __X__Habitat Enhancement __X__Riparian Buffer Planting
Stream Order: 1st
Stream Hydrology: Perennial
Stream Use: I
Culvert/Dam Type: CMP w/ concrete bottom
Culvert/Dam Dimensions: 8'x8' CMP; 155 feet long
Blockage Type: _X_Complete ___ Partial __None
USGS Gage Station #: 01649150
USGS Gage Discharge (fs3 1.79
USGS Gage Daily Discharge Percentile: ___0-25% ___25-50% ___50-75% ___75-100%
*136% of mean
Property Address: SHA ROW - at MD 3 just south of Evergreen Rd., Gambrills MD 21054
Property Owner(s): SHA

General Field Observations

Are there records for diadromous fish, mussels, RTE crayfish, or other RTE species within or in close proximity to the fish blockage site? Explain	Can the fish blockage be removed within the road right-of-way or does it require access to parcels beyond right-of-way limits? Explain
Explain: RTE coordination with agencies is pending.	Explain: No, access to parcel downstream will be needed. Downstream area not in ROW, but in need of restoration.

Fish Passage Site Rating

Criteria	Score	Criteria	Score
Functional Upstream Network	5	**Fish Blockage Height - Ecological Benefits of Removal**	5
10 - Greater than 4 miles 5 - 1 to 4 miles 1 - Less than 1 mile		10 - Greater than 5' 5- 1' to 5' 1 - Less than 1' 0 - No Blockage	
Describe: 1.5 miles of US network		Describe: Downstream step blockage, drops: 0.45 feet, 1.20 feet, 0.8 feet, 1.50 feet. Upstream drop 0.35 feet; 4.3 feet total. Water depth in culvert is 0.5 feet.	
Number of Downstream Fish Blockages	5	**Adjacent Land Use**	1
10 - 0 Blockages 5 - 1 Blockage 1 - >1 Blockage		10 - Commercial/Agriculture/Bare Ground 5- Field/Scrub-shrub 1 - Forest	
Describe: 1		Describe: Commercial with forest downstream of blockage. Upstream end of culvert also forest. Immediate area at blockage clear with current construction.	
NAACC Diadromous Fish HUC 12 Watershed Score	10	**Ease of Construction**	1
10 - 3 to 22 5 - 23 to 41 1 - 42 to 61		10 - Easy 5- Average 1 - Difficult/Complex 0 - No Blockage	
Describe: 14		Describe: Large pipe with 1-5 foot blockage	
Percentage of Upstream Impervious Surface	1	**Ease of Access**	5
10 - Less than 10% 5 - 10 to 25% 1 - Greater than 25%		10 - Yes (with existing direct vehicular access to potential site) 5- Yes (open but no existing vehicular access) 1 - No (no vehicular access, clearing needed, steep slopes surrounding site)	
Describe: 36.00%		Describe: Roadway drainage rip-rap/gabion wall constructed near site. Clear access, but no existing road	
Fish Habitat Diversity	5	**Utilities Present**	5
10 - Greater than 5 cover types 5 - 3-5 cover types 1 - Less than 3 cover types		10 - No utilities on site 5 - Utilities but not within site 1 - Utilities within potential site	
Describe: Downstream 3-5 cover types: riffle, deep pool, woody debris, undercut, cobble/boulder. Upstream 3-5 cover types: riffle, root, cobble.		Describe: Overhead lines cross within site, may not directly inhibit access to restoration	
		Total Score out of 100	43

Map



Site No.	NAACC 44542		Scale: 1 in. = 2,000 ft.

Site Photos



Righ Bank Riprap channel, overhead lines, and existing construction



Channel overview downstream of culvert - facing downstream



Downstream looking upstream at Culvert/complete blockage



Left bank downstream of culvert showing stormwater conveyance

I-495/I-270 Managed Lanes Study - Fish Passage Field Site Assessment Form

Project Details

Project Name: I-495/I-270 Managed Lanes Study
Mitigation Site Number: NAACC 44544
Projects Estimated Stream Mitigation Needs (LF): TBD
Date of Field Assessment: 2/21/2019
Consultant Firm/Investigator(s) CRI; JG, DS, SS, LE

Site Location Details-taken from desktop review

County: Anne Arundel
Cross Roads: MD 3 (Crain Hwy), S of Johns Hopkins Rd.
Basin (HUC 8): Patuxent
MDE Watershed (8 digit): 2131105
Proximity to Impacted Stream (mi.): 10
Lat/Long: 39.028441 -76.686597

Site Data

Parcel Size (ac): Within SHA ROW
Drainage Area to Reach (sq. mi. 0.8
Site Opportunities: ___Fish Passage ____Channel Restoration _____Habitat Enhancement _____Riparian Buffer Planting
Stream Order: 2nd
Stream Hydrology: Perennial
Stream Use: I
Culvert/Dam Type: CMP w/ concrete
Culvert/Dam Dimensions: 5' diameter CMP, 90 feet long
Blockage Type: __Complete ____ Partial _X_None
USGS Gage Station #: 01649150
USGS Gage Discharge (fs3 1.79
USGS Gage Daily Discharge Percentile: ___0-25% ___25-50% ___50-75% ___75-100%
Property Address: SHA ROW - at MD 3 just south of Johns Hopkins., Gambrills MD 21054
Property Owner(s): SHA

General Field Observations

Are there records for diadromous fish, mussels, RTE crayfish, or other RTE species within or in close proximity to the fish blockage site? Explain	Can the fish blockage be removed within the road right-of-way or does it require access to parcels beyond right-of-way limits? Explain
Explain: RTE coordination with agencies is pending.	Explain: No blockage at crossing. There are two changes in gradient within the culvert, but no blockage. There is a pond just US of the culvert.

Fish Passage Site Rating

Criteria	Score	Criteria	Score
Functional Upstream Network	5	**Fish Blockage Height - Ecological Benefits of Removal**	0
10 - Greater than 4 miles 5 - 1 to 4 miles 1 - Less than 1 mile		10 - Greater than 5' 5- 1' to 5' 1 - Less than 1' 0 - No Blockage	
Describe: 1.4 miles of US network		Describe: No blockage at time of visit	
Number of Downstream Fish Blockages	1	**Adjacent Land Use**	10
10 - 0 Blockages 5 - 1 Blockage 1 - >1 Blockage		10 - Commercial/Agriculture/Bare Ground 5- Field/Scrub-shrub 1 - Forest	
Describe: 2 DS barriers		Describe: US - Commercial, mowed lawn; DS - Forested scrub-shrub corridor with bordering commercial.	
NAACC Diadromous Fish HUC 12 Watershed Score	10	**Ease of Construction**	0
10 - 3 to 22 5 - 23 to 41 1 - 42 to 61		10 - Easy 5- Average 1 - Difficult/Complex 0 - No Blockage	
Describe: 14		Describe: No blockage	
Percentage of Upstream Impervious Surface	1	**Ease of Access**	10
10 - Less than 10% 5 - 10 to 25% 1 - Greater than 25%		10 - Yes (with existing direct vehicular access to potential site) 5- Yes (open but no existing vehicular access) 1 - No (no vehicular access, clearing needed, steep slopes surrounding site)	
Describe: 36.10%		Describe: County pull off area located at sewer facility - direct access to sites through mowed lawn. Would need to coordinate with County for access.	
Fish Habitat Diversity	1	**Utilities Present**	1
10 - Greater than 5 cover types 5 - 3-5 cover types 1 - Less than 3 cover types		10 - No utilities on site 5 - Utilities but not within site 1 - Utilities within potential site	
Describe: US - SAV; DS - riffle, root, cobble		Describe: County sewer adjacent to site, overhead utilities and water main	
		Total Score out of 100	39

Map



Site No.	NAACC 44544		Scale: 1 in. = 2,000 ft.

Site Photos



Right bank and County facility upstream of culvert



Just Upstream of culvert, impoundment and possible blockage



Downstream looking upstream at culvert/no blockage



Downstream of culvert looking downstream

I-495/I-270 Managed Lanes Study - Fish Passage Field Site Assessment Form

Project Details

Project Name: I-495/I-270 Managed Lanes Study
Mitigation Site Number: NAACC 50349
Projects Estimated Stream Mitigation Needs (LF): TBD
Date of Field Assessment: 3/5/2019
Consultant Firm/Investigator(s) CRI; JG, DS

Site Location Details-taken from desktop review

County: Prince George's
Cross Roads: MD 564 (Lanham Severn Rd.), E of Springfield Rd.
Basin (HUC 8): Patuxent
MDE Watershed (8 digit): 2131104
Proximity to Impacted Stream (mi.): 4.1
Lat/Long: 39.001275 -76.79367

Site Data

Parcel Size (ac): Within SHA ROW
Drainage Area to Reach (sq. mi. 0.6
Site Opportunities: ___Fish Passage ____Channel Restoration _____Habitat Enhancement _____Riparian Buffer Planting
Stream Order: 2nd
Stream Hydrology: Perennial
Stream Use: I
Culvert/Dam Type: Box culvert
Culvert/Dam Dimensions: 40 feet long
Blockage Type: __Complete ___ Partial _X_None
USGS Gage Station #: 01594440
USGS Gage Discharge (fs3/s): _____10.20_____
USGS Gage Daily Discharge Percentile: ___0-25% ___25-50% ___50-75% _X_75-100%
Property Address: SHA ROW - at MD 564 east of Springfield Rd., Bowie MD 20720
Property Owner(s): SHA

General Field Observations

Are there records for diadromous fish, mussels, RTE crayfish, or other RTE species within or in close proximity to the fish blockage site? Explain	Can the fish blockage be removed within the road right-of-way or does it require access to parcels beyond right-of-way limits? Explain
Explain: RTE coordination with agencies is pending.	Explain: No blockage, but site access was outside of ROW. Assessment was conducted from roadway due to no access US or DS.

Fish Passage Site Rating

Criteria	Score	Criteria	Score
Functional Upstream Network	5	**Fish Blockage Height - Ecological Benefits of Removal**	0
10 - Greater than 4 miles 5 - 1 to 4 miles 1 - Less than 1 mile		10 - Greater than 5' 5- 1' to 5' 1 - Less than 1' 0 - No Blockage	
Describe: 1.1 miles of US network		Describe: No blockage	
Number of Downstream Fish Blockages	10	**Adjacent Land Use**	1
10 - 0 Blockages 5 - 1 Blockage 1 - >1 Blockage		10 - Commercial/Agriculture/Bare Ground 5- Field/Scrub-shrub 1 - Forest	
Describe:		Describe: Small riparian forested area	
NAACC Diadromous Fish HUC 12 Watershed Score	10	**Ease of Construction**	0
10 - 3 to 22 5 - 23 to 41 1 - 42 to 61		10 - Easy 5- Average 1 - Difficult/Complex 0 - No Blockage	
Describe: 17		Describe: No blockage, riffle grade control present	
Percentage of Upstream Impervious Surface	5	**Ease of Access**	1
10 - Less than 10% 5 - 10 to 25% 1 - Greater than 25%		10 - Yes (with existing direct vehicular access to potential site) 5- Yes (open but no existing vehicular access) 1 - No (no vehicular access, clearing needed, steep slopes surrounding site)	
Describe: 12.51%		Describe: Outside right of way, clearing needed, steep slopes downstream, no vehicular access.	
Fish Habitat Diversity	5	**Utilities Present**	5
10 - Greater than 5 cover types 5 - 3-5 cover types 1 - Less than 3 cover types		10 - No utilities on site 5 - Utilities but not within site 1 - Utilities within potential site	
Describe: Roots, deep pool, riffle, cobble/boulder		Describe: Sewer and overhead powerlines upstream	
		Total Score out of 100	42

Map



Site No.	NAACC 50349		Scale: 1 in. = 2,000 ft.

Site Photos



From roadway looking at downstream end of culvert



Downstream of culvert looking downstream



Right bank looking at riparian forest downstream



Left bank looking at sewer and powerlines upstream

I-495/I-270 Managed Lanes Study - Fish Passage Field Site Assessment Form

Project Details

Project Name: I-495/I-270 Managed Lanes Study
Mitigation Site Number: NAACC 57440
Projects Estimated Stream Mitigation Needs (LF) TBD
Date of Field Assessment: 2/18/2019
Consultant Firm/Investigator(s) RK&K; KJH, BM

Site Location Details-taken from desktop review

County: Anne Arundel
Cross Roads: Southern MD Blvd, SE of Plummer Ln, N of MD 4
Basin (HUC 8): Patuxent
MDE Watershed (8 digit): 02131102
Proximity to Impacted Stream (mi.): 11.3
Lat/Long: 38.79878 -76.680172

Parcel Size (ac): Within SHA ROW
Drainage Area to Reach (sq. mi. 0.57
Site Opportunities: ___Fish Passage ___Channel Restoration _____Habitat Enhancement ___Riparian Buffer Planting
Stream Order: 1st
Stream Hydrology: Perennial
Stream Use: I
Culvert/Dam Type: RCP - circular
Culvert/Dam Dimensions: 4.5 ft wide, 2.5 ft tall, sand depoisition
Blockage Type: ___Complete ___ Partial _X__None
USGS Gage Station #: 01594526
USGS Gage Discharge (fs3/s) 360
USGS Gage Daily Discharge Percentile: ___0-25% ___25-50% ___50-75% _X_75-100%
Property Address: Galloway Creek near Southern MD Blvd
Property Owner(s): SHA

General Field Observations

Are there records for diadromous fish, mussels, RTE crayfish, or other RTE species within or in close proximity to the fish blockage site? Explain	Can the fish blockage be removed within the road right-of-way or does it require access to parcels beyond right-of-way limits? Explain
Explain: RTE coordination with agencies is pending	Explain: No blockage, sand deposition throughout culvert. Drop site. Two 4.5 ft RCP culverts, left culvert clogged

Fish Passage Site Rating

Criteria	Score	Criteria	Score
Functional Upstream Network	5	**Fish Blockage Height - Ecological Benefits of Removal**	1
10 - Greater than 4 miles 5 - 1 to 4 miles 1 - Less than 1 mile		10 - Greater than 5' 5- 1' to 5' 1 - Less than 1'	
Describe: 3.32 miles		Describe: 3 inches of water in culvert. No blockage, deposition throughout	
Number of Downstream Fish Blockages	5	**Adjacent Land Use**	1
10 - 0 Blockages 5 - 1 Blockage 1 - >1 Blockage		10 - Commercial/Agriculture/Bare Ground 5- Field/Scrub-shrub 1 - Forest	
Describe: 1 minor barrier		Describe: Scrub/shrub and forest downstream, forest upstream	
NAACC Diadromous Fish HUC 12 Watershed Scor	10	**Ease of Construction**	5
10 - 3 to 22 5 - 23 to 41 1 - 42 to 61		10 - Easy 5- Average 1 - Difficult/Complex	
Describe: 9		Describe: 4.5 ft wide RCP, no drop	
Percentage of Upstream Impervious Surface	10	**Ease of Access**	1
10 - Less than 10% 5 - 10 to 25% 1 - Greater than 25%		10 - Yes (with existing direct vehicular access to potential site) 5- Yes (open but no existing vehicular access) 1 - No (no vehicular access, clearing needed, steep slopes surrounding site)	
Describe: 3.11%		Describe: Scrub/shrub and forest clearing	
Fish Habitat Diversity	5	**Utilities Present**	1
10 - Greater than 5 cover types 5 - 3-5 cover types 1 - Less than 3 cover types		10 - No utilities on site 5 - Utilities but not within site 1 - Utilities within potential site	
Describe: LWD, riffles, overhanging vegetation, root mats; 4 types		Describe: Overhead power lines above downstream culvert outfall	
		Total Score out of 100	44

Map



Site No.	NAACC 57440		Scale: 1 in. = 2,000

Site Photos



Channel overview downstream of culvert - facing downstream



Culvert outfall - facing upstream



Culvert inlet - facing downstream



Channel overview upstream of culvert - facing upstream

I-495/I-270 Managed Lanes Study - Fish Passage Field Site Assessment Form

Project Details

Project Name: I-495/I-270 Managed Lanes Study
Mitigation Site Number: NAACC 57441
Projects Estimated Stream Mitigation Needs (LF): TBD
Date of Field Assessment: 2/18/2019
Consultant Firm/Investigator(s) RK&K; KJH, BM

Site Location Details-taken from desktop review

County: Anne Arundel
Cross Roads: MD Service Rd, Plummer Ln, MD 4
Basin (HUC 8): Patuxent
MDE Watershed (8 digit): 02131102
Proximity to Impacted Stream (mi.): 10.5
Lat/Long: 38.80448 -76.692119

Parcel Size (ac): Within SHA ROW
Drainage Area to Reach (sq. mi. 1.29
Site Opportunities: ____Fish Passage ____Channel Restoration _____Habitat Enhancement ____Riparian Buffer Planting
Stream Order: 2nd
Stream Hydrology: Perennial
Stream Use: I
Culvert/Dam Type: Elliptical
Culvert/Dam Dimensions: 12 ft wide, 5 ft deep, deposition
Blockage Type: ___Complete ___ Partial _X_None
USGS Gage Station #: 01594526
USGS Gage Discharge (fs3/s): _360_____
USGS Gage Daily Discharge Percentile: ___0-25% ___25-50% ___50-75% _X_75-100%
Property Address: Galloway Creek near Southern MD Blvd/Chesapeake Beach Rail Trail
Property Owner(s): SHA

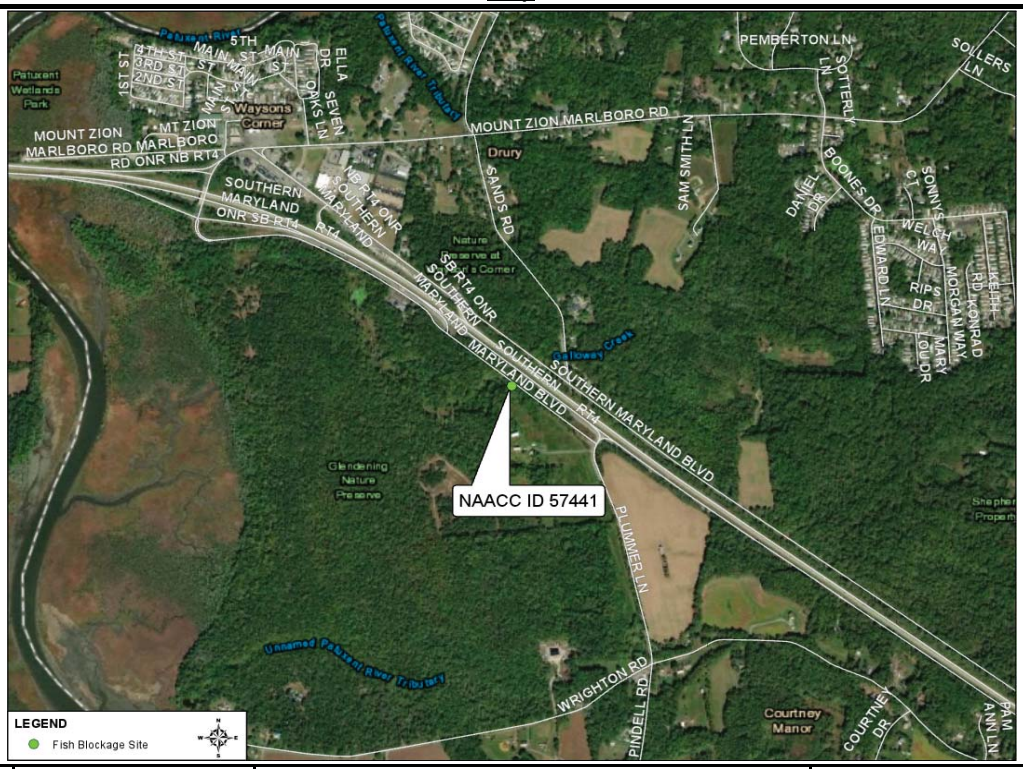
General Field Observations

Are there records for diadromous fish, mussels, RTE crayfish, or other RTE species within or in close proximity to the fish blockage site? Explain	Can the fish blockage be removed within the road right-of-way or does it require access to parcels beyond right-of-way limits? Explain
Explain: RTE coordination with agencies is pending	Explain: No blockage, backwatered through culvert - 2 ft of standing water. Drop site. Beaver dam - 150 ft downstream of culvert

Fish Passage Site Rating

Criteria	Score	Criteria	Score
Functional Upstream Network	5	**Fish Blockage Height - Ecological Benefits of Removal**	1
10 - Greater than 4 miles 5 - 1 to 4 miles 1 - Less than 1 mile		10 - Greater than 5' 5- 1' to 5' 1 - Less than 1'	
Describe: 2.90 miles		Describe: No blockage, backwatered through culvert - 2 ft of standing water	
Number of Downstream Fish Blockages	10	**Adjacent Land Use**	1
10 - 0 Blockages 5 - 1 Blockage 1 - >1 Blockage		10 - Commercial/Agriculture/Bare Ground 5- Field/Scrub-shrub 1 - Forest	
Describe: None		Describe: Mid-successional forest, tulip poplar, red maple, white oak, northern red oak	
NAACC Diadromous Fish HUC 12 Watershed Score	10	**Ease of Construction**	5
10 - 3 to 22 5 - 23 to 41 1 - 42 to 61		10 - Easy 5- Average 1 - Difficult/Complex	
Describe: 9		Describe: 12 ft wide, no blockage	
Percentage of Upstream Impervious Surface	5	**Ease of Access**	1
10 - Less than 10% 5 - 10 to 25% 1 - Greater than 25%		10 - Yes (with existing direct vehicular access to potential site) 5- Yes (open but no existing vehicular access) 1 - No (no vehicular access, clearing needed, steep slopes surrounding site)	
Describe: 12%		Describe: Mid successional forest - steep slopes	
Fish Habitat Diversity	5	**Utilities Present**	1
10 - Greater than 5 cover types 5 - 3-5 cover types 1 - Less than 3 cover types		10 - No utilities on site 5 - Utilities but not within site 1 - Utilities within potential site	
Describe: Deep pool, overhanging vegetation. LWD, undercut banks, root mats. 5 cover types		Describe: Fiber optics on upstream end of culvert	
		Total Score out of 100	44

Map



Site No.	NAACC 57441		Scale: 1 in. = 2,000

Site Photos



Culvert outfall - facing upstream



Culvert inlet - facing downstream



Culvert outfall - view of adjacent cover



Channel overview downstream of culvert - facing downstream

I-495/I-270 Managed Lanes Study - Fish Passage Field Site Assessment Form

Project Details

Project Name: I-495/I-270 Managed Lanes Study
Mitigation Site Number: NAACC 57443
Projects Estimated Stream Mitigation Needs (LF): TBD
Date of Field Assessment: 2/18/2019
Consultant Firm/Investigator(s) RK&K; KJH, BM

Site Location Details-taken from desktop review

County: Anne Arundel
Cross Roads: along MD Service Rd, W of Plummer Ln, S of MD 4
Basin (HUC 8): Patuxent
MDE Watershed (8 digit): 02131102
Proximity to Impacted Stream (mi.): 10.5
Lat/Long: 38.804762, -76.691302

Parcel Size (ac): Within SHA ROW
Drainage Area to Reach (sq. mi. 1.27
Site Opportunities: ___Fish Passage ___Channel Restoration _____Habitat Enhancement ___Riparian Buffer Planting
Stream Order: 2nd
Stream Hydrology: Perennial
Stream Use: I
Culvert/Dam Type: Box culvert
Culvert/Dam Dimensions: 14 ft wide, 4.5 ft tall, deposition
Blockage Type: ___Complete ___ Partial _X_None
USGS Gage Station #: 01594526
USGS Gage Discharge (fs3/s): ___360_____
USGS Gage Daily Discharge Percentile: ___0-25% ___25-50% ___50-75% _X_75-100%
Property Address: Galloway Creek near Southern MD Blvd/Chesapeake Beach Rail Trail
Property Owner(s): SHA

General Field Observations

Are there records for diadromous fish, mussels, RTE crayfish, or other RTE species within or in close proximity to the fish blockage site? Explain	Can the fish blockage be removed within the road right-of-way or does it require access to parcels beyond right-of-way limits? Explain
Explain: RTE coordination with agencies is pending	Explain: No blockage - 2 ft deep water through culvert. All in ROW. Drop site.

Fish Passage Site Rating

Criteria	Score	Criteria	Score
Functional Upstream Network	5	**Fish Blockage Height - Ecological Benefits of Removal**	1
10 - Greater than 4 miles 5 - 1 to 4 miles 1 - Less than 1 mile		10 - Greater than 5' 5- 1' to 5' 1 - Less than 1'	
Describe: 2.90 miles		Describe: No blockage, backwatered through culvert - 2 ft deep through culvert	
Number of Downstream Fish Blockages	5	**Adjacent Land Use**	1
10 - 0 Blockages 5 - 1 Blockage 1 - >1 Blockage		10 - Commercial/Agriculture/Bare Ground 5- Field/Scrub-shrub 1 - Forest	
Describe: 1		Describe: Mid-successional forest, tulip poplar, red maple, sweet gum	
NAACC Diadromous Fish HUC 12 Watershed Score	10	**Ease of Construction**	5
10 - 3 to 22 5 - 23 to 41 1 - 42 to 61		10 - Easy 5- Average 1 - Difficult/Complex	
Describe: 9		Describe: 14 ft wide box culvert - no blockage	
Percentage of Upstream Impervious Surface	5	**Ease of Access**	1
10 - Less than 10% 5 - 10 to 25% 1 - Greater than 25%		10 - Yes (with existing direct vehicular access to potential site) 5- Yes (open but no existing vehicular access) 1 - No (no vehicular access, clearing needed, steep slopes surrounding site)	
Describe: 11.90%		Describe: Mid successional forest - steep slopes	
Fish Habitat Diversity	5	**Utilities Present**	1
10 - Greater than 5 cover types 5 - 3-5 cover types 1 - Less than 3 cover types		10 - No utilities on site 5 - Utilities but not within site 1 - Utilities within potential site	
Describe: Deep pool, overhanging vegetation, LWD, undercut banks, root mats; 5 cover types		Describe: Fiber optics along roadway	
		Total Score out of 100	39

Map



Site No.	NAACC 57443		Scale: 1 in. = 2,000

Site Photos



Culvert inlet - facing downstream



Channle overview downstream of culvert - facing downstream



Culvert outfall - facing upstream



Channel overview downstream of culvert - facing downstream

I-495/I-270 Managed Lanes Study - Fish Passage Field Site Assessment Form

Project Details

Project Name: I-495/I-270 Managed Lanes Study
Mitigation Site Number: NAACC 57445
Projects Estimated Stream Mitigation Needs (LF): TBD
Date of Field Assessment: 3/5/2019
Consultant Firm/Investigator(s) RK&K; KJH, BM

Site Location Details-taken from desktop review

County: Prince George's
Cross Roads: along US 301, E of Old Crain Hwy, W of Croom Station Rd
Basin (HUC 8): Patuxent
MDE Watershed (8 digit): 02131103
Proximity to Impacted Stream (mi.): 8.3
Lat/Long: 38.793005 -76.769992

Parcel Size (ac): Within SHA ROW
Drainage Area to Reach (sq. mi. 0.25
Site Opportunities: __X__Fish Passage __X__Channel Restoration ___X___Habitat Enhancement ____Riparian Buffer Planting
Stream Order: 1st
Stream Hydrology: Perennial
Stream Use: I
Culvert/Dam Type: RCP
Culvert/Dam Dimensions: US 6' W, 5.5' tall DS 5' W, 4.5' tall
Blockage Type: __X_Complete ___ Partial ___None
USGS Gage Station #: 01594526
USGS Gage Discharge (fs3/s): ____191_____
US: Complete, DS: Partial
USGS Gage Daily Discharge Percentile: ___0-25% ___25-50% ___50-75% _X_75-100%
Property Address: unnamed tributary of Charles Branch along US 301 in between Old Crain Hwy and Croom Station Rd
Property Owner(s): SHA

General Field Observations

Are there records for diadromous fish, mussels, RTE crayfish, or other RTE species within or in close proximity to the fish blockage site? Explain	Can the fish blockage be removed within the road right-of-way or does it require access to parcels beyond right-of-way limits? Explain
Explain: RTE coordination with agencies is pending	Explain: Need access onto private property downstream. May be park property? Upstream blockage: log jam in culvert, 2 ft drop in culvert. Downstream blockage: culvert drop over grout bags

Fish Passage Site Rating

Criteria	Score	Criteria	Score
Functional Upstream Network	5	**Fish Blockage Height - Ecological Benefits of Removal**	5
10 - Greater than 4 miles 5 - 1 to 4 miles 1 - Less than 1 mile		10 - Greater than 5' 5- 1' to 5' 1 - Less than 1'	
Describe: 1.45 miles		Describe: Rated based on taller blockage. Upstream blockage: 2 ft tall vertical. Downstream blockage: 4 inch DSW - invert, 5 inch DSW - USW (?)	
Number of Downstream Fish Blockages	10	**Adjacent Land Use**	1
10 - 0 Blockages 5 - 1 Blockage 1 - >1 Blockage		10 - Commercial/Agriculture/Bare Ground 5- Field/Scrub-shrub 1 - Forest	
Describe: None		Describe: Mid-successional forest: tulip poplar, beech, hickory, white oak	
NAACC Diadromous Fish HUC 12 Watershed Score	10	**Ease of Construction**	1
10 - 3 to 22 5 - 23 to 41 1 - 42 to 61		10 - Easy 5- Average 1 - Difficult/Complex	
Describe: 12		Describe: Downstream: 5 ft wide RCP, 4 inch tall blockage; Upstream: 6 ft wide RCP, 2 ft tall blockage	
Percentage of Upstream Impervious Surface	10	**Ease of Access**	1
10 - Less than 10% 5 - 10 to 25% 1 - Greater than 25%		10 - Yes (with existing direct vehicular access to potential site) 5- Yes (open but no existing vehicular access) 1 - No (no vehicular access, clearing needed, steep slopes surrounding site)	
Describe: 7.28%		Describe: Mid-successional forest, steep slopes along roadway embankment	
Fish Habitat Diversity	5	**Utilities Present**	1
10 - Greater than 5 cover types 5 - 3-5 cover types 1 - Less than 3 cover types		10 - No utilities on site 5 - Utilities but not within site 1 - Utilities within potential site	
Describe: LWD, root mats, overhanging vegetation; 3 types		Describe: Overhead powerlines on upstream side of culvert	
		Total Score out of 100	49

Map



Site No.	NAACC 57445		Scale: 1 in. = 2,000

Site Photos



Channel overview upstream of culvert - facing upstream



Within culvert - facing upstream, log blockage



Culvert outfall - facing upstream



Channel overview downstream of culvert - facing downstream

I-495/I-270 Managed Lanes Study - Fish Passage Field Site Assessment Form

Project Details

Project Name: I-495/I-270 Managed Lanes Study
Mitigation Site Number: NAACC 57470
Projects Estimated Stream Mitigation Needs (LF): TBD
Date of Field Assessment: 2/18/2019
Consultant Firm/Investigator(s) RK&K; KJH, BM

Site Location Details-taken from desktop review

County: Anne Arundel
Cross Roads: Southern MD Blvd, SE of Plummer Ln, S of MD 4
Basin (HUC 8): Patuxent
MDE Watershed (8 digit): 02131102
Proximity to Impacted Stream (mi.): 11.3
Lat/Long: 38.798645 -76.681186

Parcel Size (ac): Within SHA ROW
Drainage Area to Reach (sq. mi. 0.055
Site Opportunities: __X__Fish Passage __X__Channel Restoration ___X___Habitat Enhancement ____Riparian Buffer Planting
Stream Order: 1st
Stream Hydrology: Perennial
Stream Use: I
Culvert/Dam Type: Grout-lined elliptical pipe
Culvert/Dam Dimensions: 9 ft wide, 6.5 ft tall, 6 inches of grout
Blockage Type: ___Complete __X_ Partial ___None
USGS Gage Station #: 01594526
USGS Gage Discharge (fs3/s): ___360_____
USGS Gage Daily Discharge Percentile: ___0-25% ___25-50% ___50-75% _X_75-100%
Property Address: Galloway Creek along Southern MD Blvd
Property Owner(s): SHA

General Field Observations

Are there records for diadromous fish, mussels, RTE crayfish, or other RTE species within or in close proximity to the fish blockage site? Explain	Can the fish blockage be removed within the road right-of-way or does it require access to parcels beyond right-of-way limits? Explain
Explain: RTE coordination with agencies is pending	Explain: Yes, downstream parallels road ROW. Opportunities for stream restoration in ROW.

Fish Passage Site Rating

Criteria	Score	Criteria	Score
Functional Upstream Network	1	**Fish Blockage Height - Ecological Benefits of Removal**	5
10 - Greater than 4 miles 5 - 1 to 4 miles 1 - Less than 1 mile		10 - Greater than 5' 5- 1' to 5' 1 - Less than 1'	
Describe: 0.55 miles		Describe: 3 to 4 inches of water in culvert. 2 to 2.5 ft frop over grout bags - cascade.	
Number of Downstream Fish Blockages	5	**Adjacent Land Use**	1
10 - 0 Blockages 5 - 1 Blockage 1 - >1 Blockage		10 - Commercial/Agriculture/Bare Ground 5- Field/Scrub-shrub 1 - Forest	
Describe: 1 minor barrier		Describe: Mid-successional forest: sycamore, tulip poplar, red maple	
NAACC Diadromous Fish HUC 12 Watershed Score	1	**Ease of Construction**	1
10 - 3 to 22 5 - 23 to 41 1 - 42 to 61		10 - Easy 5- Average 1 - Difficult/Complex	
Describe: 9		Describe: 9 ft wide elliptical pipe, 2 ft drop	
Percentage of Upstream Impervious Surface	5	**Ease of Access**	1
10 - Less than 10% 5 - 10 to 25% 1 - Greater than 25%		10 - Yes (with existing direct vehicular access to potential site) 5- Yes (open but no existing vehicular access) 1 - No (no vehicular access, clearing needed, steep slopes surrounding site)	
Describe: 18.20%		Describe: Requires forest clearing; steep slopes along roadway	
Fish Habitat Diversity	10	**Utilities Present**	1
10 - Greater than 5 cover types 5 - 3-5 cover types 1 - Less than 3 cover types		10 - No utilities on site 5 - Utilities but not within site 1 - Utilities within potential site	
Describe: LWD, riffles, deep pools, overhanging vegetation, unercut banks, root mats, backwater pools; 7 types		Describe: Overhead utilities on upstream side of site	
		Total Score out of 100	31

Map



Site No.	NAACC 57470		Scale: 1 in. = 2,000

Site Photos



Channel overview upstream of culvert - facing upstream



Channel overview downstream of culvert - facing downstream



Culvert inlet - facing downstream



Culvert outfall - facing upstream

I-495/I-270 Managed Lanes Study - Fish Passage Field Site Assessment Form

Project Details

Project Name: I-495/I-270 Managed Lanes Study
Mitigation Site Number: NAACC 57482
Projects Estimated Stream Mitigation Needs (LF): TBD
Date of Field Assessment: 2/15/2019
Consultant Firm/Investigator(s) RK&K; KJH, BM

Site Location Details-taken from desktop review

County: Anne Arundel
Cross Roads: Solomons Island Rd/ MD 258
Basin (HUC 8): Patuxent
MDE Watershed (8 digit): 02131102
Proximity to Impacted Stream (mi.): 16.08
Lat/Long: 38.785015 -76.599821

Parcel Size (ac): Within SHA ROW
Drainage Area to Reach (sq. mi. 4.06
Site Opportunities: __X__Fish Passage __X__Channel Restoration ___X___Habitat Enhancement ____Riparian Buffer Planting
Stream Order: 1st
Stream Hydrology: Perennial
Stream Use: I
Culvert/Dam Type: Double box culvert (9' each)
Culvert/Dam Dimensions: 18 ft wide, 8 ft tall
Blockage Type: ___Complete _X__ Partial ___None
USGS Gage Station #: 01594526
USGS Gage Discharge (fs3/s): _120_____
USGS Gage Daily Discharge Percentile: ___0-25% ___25-50% _X__50-75% __75-100%
Property Address: Lyons Creek near Solomons Island Rd along W Bay Front Rd
Property Owner(s): SHA

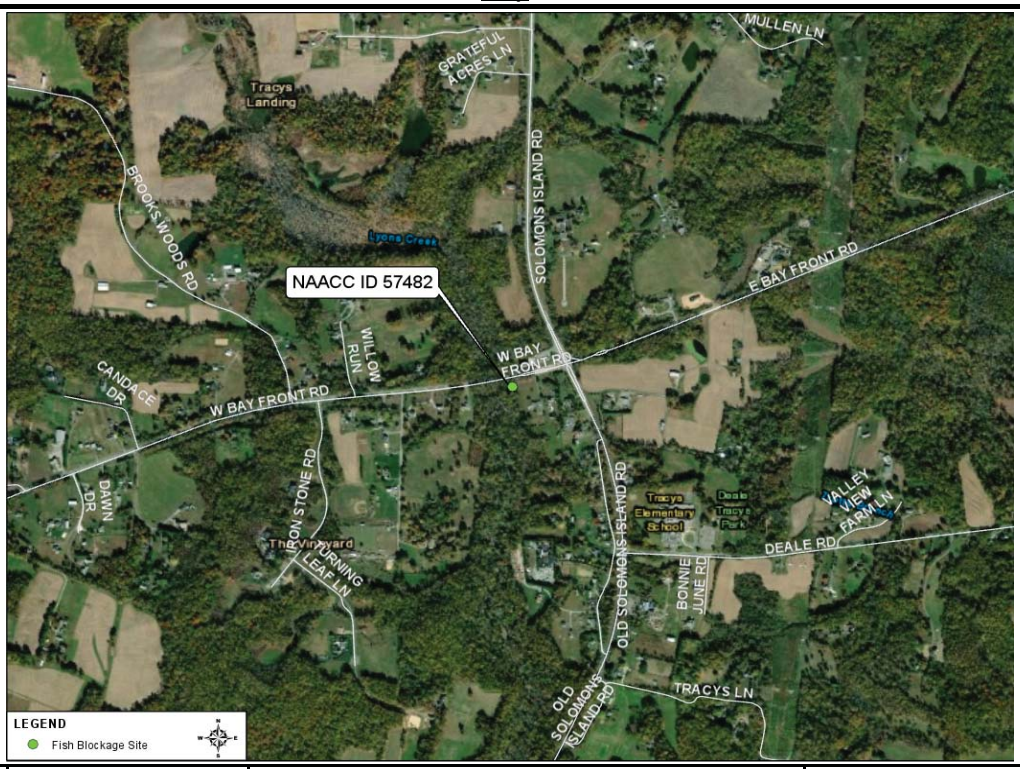
General Field Observations

Are there records for diadromous fish, mussels, RTE crayfish, or other RTE species within or in close proximity to the fish blockage site? Explain	Can the fish blockage be removed within the road right-of-way or does it require access to parcels beyond right-of-way limits? Explain
Explain: RTE coordination with agencies is pending	Explain: Potential to build site within ROW - depends on design. Wide ROW about 175 ft from outfall

Fish Passage Site Rating

Criteria	Score	Criteria	Score
Functional Upstream Network	10	**Fish Blockage Height - Ecological Benefits of Removal**	1
10 - Greater than 4 miles 5 - 1 to 4 miles 1 - Less than 1 mile		10 - Greater than 5' 5- 1' to 5' 1 - Less than 1'	
Describe: 26 miles		Describe: 8 inches tall - BW, 10 inches TW	
Number of Downstream Fish Blockages	10	**Adjacent Land Use**	1
10 - 0 Blockages 5 - 1 Blockage 1 - >1 Blockage		10 - Commercial/Agriculture/Bare Ground 5- Field/Scrub-shrub 1 - Forest	
Describe: None		Describe: Mostly mid-successional forest, open lawn downstream of site	
NAACC Diadromous Fish HUC 12 Watershed Score	10	**Ease of Construction**	5
10 - 3 to 22 5 - 23 to 41 1 - 42 to 61		10 - Easy 5- Average 1 - Difficult/Complex	
Describe: 12		Describe: 18 ft box culvert, 8 inch blockage	
Percentage of Upstream Impervious Surface	10	**Ease of Access**	5
10 - Less than 10% 5 - 10 to 25% 1 - Greater than 25%		10 - Yes (with existing direct vehicular access to potential site) 5- Yes (open but no existing vehicular access) 1 - No (no vehicular access, clearing needed, steep slopes surrounding site)	
Describe: 4.00%		Describe: Access through grass lawn downstream of culvert within ROW. Upstream surrounded by forest. Steep slopes	
Fish Habitat Diversity	10	**Utilities Present**	5
10 - Greater than 5 cover types 5 - 3-5 cover types 1 - Less than 3 cover types		10 - No utilities on site 5 - Utilities but not within site 1 - Utilities within potential site	
Describe: LWD, deep pools (2 to 3 ft), overhanging vegetation, undercut banks, riffles downstream; 6 types. Riffles downstream		Describe: Overhead utilities just downstream	
		Total Score out of 100	67

Map



Site No.	NAACC 57482		Scale: 1 in. = 2,000

Site Photos









I-495/I-270 Managed Lanes Study - Fish Passage Field Site Assessment Form

Project Details

Project Name: I-495/I-270 Managed Lanes Study
Mitigation Site Number: NAACC 57494
Projects Estimated Stream Mitigation Needs (LF): TBD
Date of Field Assessment: 3/5/2019
Consultant Firm/Investigator(s) RK&K; KJH, BM

Site Location Details-taken from desktop review

County: Anne Arundel
Cross Roads: Sollers Ln/MD 408 (Mt Zion Marlboro Rd)
Basin (HUC 8): Patuxent
MDE Watershed (8 digit): 02131102
Proximity to Impacted Stream (mi.): 11.6
Lat/Long: 38.814191 -76.674711

Parcel Size (ac): Within SHA ROW
Drainage Area to Reach (sq. mi. 1.68
Site Opportunities: ___Fish Passage __X__Channel Restoration _____Habitat Enhancement ___Riparian Buffer Planting
Stream Order: 1st
Stream Hydrology: Perennial
Stream Use: I
Culvert/Dam Type: Bridge
Culvert/Dam Dimensions: 15 ft wide, 5 ft, 7 in tall
Blockage Type: ___Complete ___ Partial _X__None
USGS Gage Station #: 01594526
USGS Gage Discharge (fs3/s): _____191_____
USGS Gage Daily Discharge Percentile: ___0-25% ___25-50% ___50-75% _X_75-100%
Property Address: Wilson Owens Branch near Sollers Ln
Property Owner(s): SHA

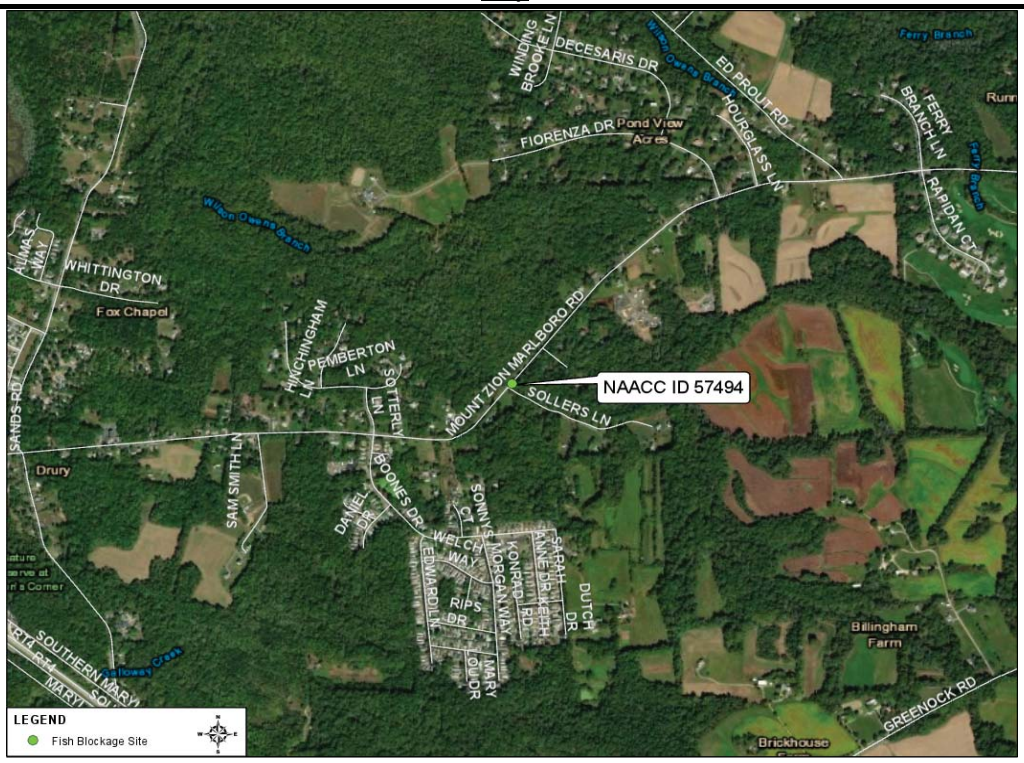
General Field Observations

Are there records for diadromous fish, mussels, RTE crayfish, or other RTE species within or in close proximity to the fish blockage site? Explain	Can the fish blockage be removed within the road right-of-way or does it require access to parcels beyond right-of-way limits? Explain
Explain: RTE coordination with agencies is pending	Explain: No blockage - drop site. No - narrow ROW, would need access to private property.

Fish Passage Site Rating

Criteria	Score	Criteria	Score
Functional Upstream Network	10	**Fish Blockage Height - Ecological Benefits of Removal**	1
10 - Greater than 4 miles 5 - 1 to 4 miles 1 - Less than 1 mile		10 - Greater than 5' 5- 1' to 5' 1 - Less than 1'	
Describe: 8.32 miles		Describe: No blockage, bridge, substrate under bridge - deposition throughout	
Number of Downstream Fish Blockages	10	**Adjacent Land Use**	1
10 - 0 Blockages 5 - 1 Blockage 1 - >1 Blockage		10 - Commercial/Agriculture/Bare Ground 5- Field/Scrub-shrub 1 - Forest	
Describe: None		Describe: Mid-successional forest: white oak, tulip poplar, beech, sycamore	
NAACC Diadromous Fish HUC 12 Watershed Score	10	**Ease of Construction**	5
10 - 3 to 22 5 - 23 to 41 1 - 42 to 61		10 - Easy 5- Average 1 - Difficult/Complex	
Describe: 9		Describe: Large bridge, 15 ft	
Percentage of Upstream Impervious Surface	10	**Ease of Access**	10
10 - Less than 10% 5 - 10 to 25% 1 - Greater than 25%		10 - Yes (with existing direct vehicular access to potential site) 5- Yes (open but no existing vehicular access) 1 - No (no vehicular access, clearing needed, steep slopes surrounding site)	
Describe: 4.13%		Describe: Opening in guard rail. Existing clear path adjacent to bridge - 15 ft wide, minimal tree impacts along banks.	
Fish Habitat Diversity	10	**Utilities Present**	5
10 - Greater than 5 cover types 5 - 3-5 cover types 1 - Less than 3 cover types		10 - No utilities on site 5 - Utilities but not within site 1 - Utilities within potential site	
Describe: Deep pools, root mats, woody debris, overhanging vegetation, riffles, undercut banks; 6 types		Describe: Overhead powerlines on upstream end of bridge	
		Total Score out of 100	72

Map



Site No.	NAACC 57494		Scale: 1 in. = 2,000

Site Photos









I-495/I-270 Managed Lanes Study - Fish Passage Field Site Assessment Form

Project Details

Project Name: I-495/I-270 Managed Lanes Study
Mitigation Site Number: NAACC 57496
Projects Estimated Stream Mitigation Needs (LF): TBD
Date of Field Assessment: 2/18/2019
Consultant Firm/Investigator(s) RK&K; KJH, BM

Site Location Details-taken from desktop review

County: Anne Arundel
Cross Roads: Southern MD Blvd, N of MD 4, SE of Plummer Ln
Basin (HUC 8): Patuxent
MDE Watershed (8 digit): 02131102
Proximity to Impacted Stream (mi.): 11
Lat/Long: 38.800916 -76.68399

Parcel Size (ac): Within SHA ROW
Drainage Area to Reach (sq. mi. 0.77
Site Opportunities: ___Fish Passage ___Channel Restoration _____Habitat Enhancement ___Riparian Buffer Planting
Stream Order: 2nd
Stream Hydrology: Intermittent
Stream Use: I
Culvert/Dam Type: CMP
Culvert/Dam Dimensions: 24 inches
Blockage Type: ___Complete ___ Partial _X_None
USGS Gage Station #: 01594526
USGS Gage Discharge (fs3/s): ___360_____
USGS Gage Daily Discharge Percentile: ___0-25% ___25-50% ___50-75% _X_75-100%
Property Address: Galloway Creek near Southern MD Blvd
Property Owner(s): SHA

General Field Observations

Are there records for diadromous fish, mussels, RTE crayfish, or other RTE species within or in close proximity to the fish blockage site? Explain	Can the fish blockage be removed within the road right-of-way or does it require access to parcels beyond right-of-way limits? Explain
Explain: RTE coordination with agencies is pending	Explain: Clogged pipe that drains upstream roadway - intermittent channel. No fish habitat upstream or downstream. Drop site.

Fish Passage Site Rating

Criteria	Score	Criteria	Score
Functional Upstream Network	1	**Fish Blockage Height - Ecological Benefits of Removal**	1
10 - Greater than 4 miles 5 - 1 to 4 miles 1 - Less than 1 mile		10 - Greater than 5' 5- 1' to 5' 1 - Less than 1'	
Describe: 0.02 miles		Describe: No upstream fish habitat; downstream channel of culvert is mostly dry	
Number of Downstream Fish Blockages	1	**Adjacent Land Use**	1
10 - 0 Blockages 5 - 1 Blockage 1 - >1 Blockage		10 - Commercial/Agriculture/Bare Ground 5- Field/Scrub-shrub 1 - Forest	
Describe: 2 in database		Describe: Mid-successional upland forest: white oak, tulip poplar, American beech	
NAACC Diadromous Fish HUC 12 Watershed Score	10	**Ease of Construction**	10
10 - 3 to 22 5 - 23 to 41 1 - 42 to 61		10 - Easy 5- Average 1 - Difficult/Complex	
Describe: 9		Describe: 24 inch CMP, clogged, no blockage, no fish habitat	
Percentage of Upstream Impervious Surface	10	**Ease of Access**	1
10 - Less than 10% 5 - 10 to 25% 1 - Greater than 25%		10 - Yes (with existing direct vehicular access to potential site) 5- Yes (open but no existing vehicular access) 1 - No (no vehicular access, clearing needed, steep slopes surrounding site)	
Describe: 5.04%		Describe: Mid-successional forest	
Fish Habitat Diversity	1	**Utilities Present**	1
10 - Greater than 5 cover types 5 - 3-5 cover types 1 - Less than 3 cover types		10 - No utilities on site 5 - Utilities but not within site 1 - Utilities within potential site	
Describe: Intermittent channel; majority of channel is dry		Describe: Overhead utilities on upstream side	
		Total Score out of 100	37

Map



Site No.	NAACC 57496		Scale: 1 in. = 2,000

Site Photos









I-495/I-270 Managed Lanes Study - Fish Passage Field Site Assessment Form

Project Details

Project Name: I-495/I-270 Managed Lanes Study
Mitigation Site Number: NAACC 57498
Projects Estimated Stream Mitigation Needs (LF): TBD
Date of Field Assessment: 3/5/2019
Consultant Firm/Investigator(s) RK&K; KJH, BM

Site Location Details-taken from desktop review

County: Prince George's
Cross Roads: US 301/MD 382 (Croom Rd)
Basin (HUC 8): Patuxent
MDE Watershed (8 digit): 02131103
Proximity to Impacted Stream (mi.): 9.7
Lat/Long: 38.785678 -76.792231

Parcel Size (ac): Within SHA ROW
Drainage Area to Reach (sq. mi. 0.95
Site Opportunities: ___Fish Passage __X__Channel Restoration _____Habitat Enhancement ___Riparian Buffer Planting
Stream Order: 1st
Stream Hydrology: Perennial
Stream Use: I
Culvert/Dam Type: CMP
Culvert/Dam Dimensions: 12' wide, 12' tall, 3" grout on bottom
Blockage Type: ___Complete ___ Partial __X_None
USGS Gage Station #: 01594526
USGS Gage Discharge (fs3/s): ___191_____
USGS Gage Daily Discharge Percentile: ___0-25% ___25-50% ___50-75% _X_75-100%
Property Address: unnamed tributary of Charles Branch along US 301 near MD 382 (Croom Rd)
Property Owner(s): SHA

General Field Observations

Are there records for diadromous fish, mussels, RTE crayfish, or other RTE species within or in close proximity to the fish blockage site? Explain	Can the fish blockage be removed within the road right-of-way or does it require access to parcels beyond right-of-way limits? Explain
Explain: RTE coordination with agencies is pending	Explain: Drop site - no blockage

Fish Passage Site Rating

Criteria	Score	Criteria	Score
Functional Upstream Network	10	**Fish Blockage Height - Ecological Benefits of Removal**	1
10 - Greater than 4 miles 5 - 1 to 4 miles 1 - Less than 1 mile		10 - Greater than 5' 5- 1' to 5' 1 - Less than 1'	
Describe: 5.62 miles		Describe: No blockage - deposition and backwatering in culvert. Water depth in culvert is 8 inches	
Number of Downstream Fish Blockages	10	**Adjacent Land Use**	1
10 - 0 Blockages 5 - 1 Blockage 1 - >1 Blockage		10 - Commercial/Agriculture/Bare Ground 5- Field/Scrub-shrub 1 - Forest	
Describe: None		Describe: Mid-successional forest: tulip poplar, beech, sycamore	
NAACC Diadromous Fish HUC 12 Watershed Score	10	**Ease of Construction**	5
10 - 3 to 22 5 - 23 to 41 1 - 42 to 61		10 - Easy 5- Average 1 - Difficult/Complex	
Describe: 12		Describe: 12 ft CMP, no blockage	
Percentage of Upstream Impervious Surface	5	**Ease of Access**	1
10 - Less than 10% 5 - 10 to 25% 1 - Greater than 25%		10 - Yes (with existing direct vehicular access to potential site) 5- Yes (open but no existing vehicular access) 1 - No (no vehicular access, clearing needed, steep slopes surrounding site)	
Describe: 13.60%		Describe: Mid-successional forest, steep slopes surrounding culvert	
Fish Habitat Diversity	10	**Utilities Present**	1
10 - Greater than 5 cover types 5 - 3-5 cover types 1 - Less than 3 cover types		10 - No utilities on site 5 - Utilities but not within site 1 - Utilities within potential site	
Describe: LWD, riffles, deep pools, overhanging vegetation, undercut banks, root mats; 6 types		Describe: Sewer line upstream and downstream of culvert. Overhead power lines upstream	
		Total Score out of 100	54

Map



Site No.	NAACC 57498		Scale: 1 in. = 2,000

Site Photos









I-495/I-270 Managed Lanes Study - Fish Passage Field Site Assessment Form

Project Details

Project Name: I-495/I-270 Managed Lanes Study
Mitigation Site Number: NAACC 57501
Projects Estimated Stream Mitigation Needs (LF): TBD
Date of Field Assessment: 3/5/2019
Consultant Firm/Investigator(s) RK&K; KJH, BM

Site Location Details-taken from desktop review

County: Prince George's
Cross Roads: MD 382/Trumps Hill Rd
Basin (HUC 8): Patuxent
MDE Watershed (8 digit): 02131103
Proximity to Impacted Stream (mi.): 10
Lat/Long: 38.783646 -76.790279

Parcel Size (ac): Within SHA ROW
Drainage Area to Reach (sq. mi. 1.03
Site Opportunities: ___Fish Passage __X__Channel Restoration _____Habitat Enhancement ___Riparian Buffer Planting
Stream Order: 1st
Stream Hydrology: Perennial
Stream Use: I
Culvert/Dam Type: Bridge
Culvert/Dam Dimensions: 16 ft wide, 6 ft tall
Blockage Type: ___Complete ___ Partial __X_None
USGS Gage Station #: 01594526
USGS Gage Discharge (fs3/s): ___191_____
USGS Gage Daily Discharge Percentile: ___0-25% ___25-50% ___50-75% _X_75-100%
Property Address: Unnamed tributary of Charles Branch along MD 382 near Trumps Hill Rd
Property Owner(s): SHA

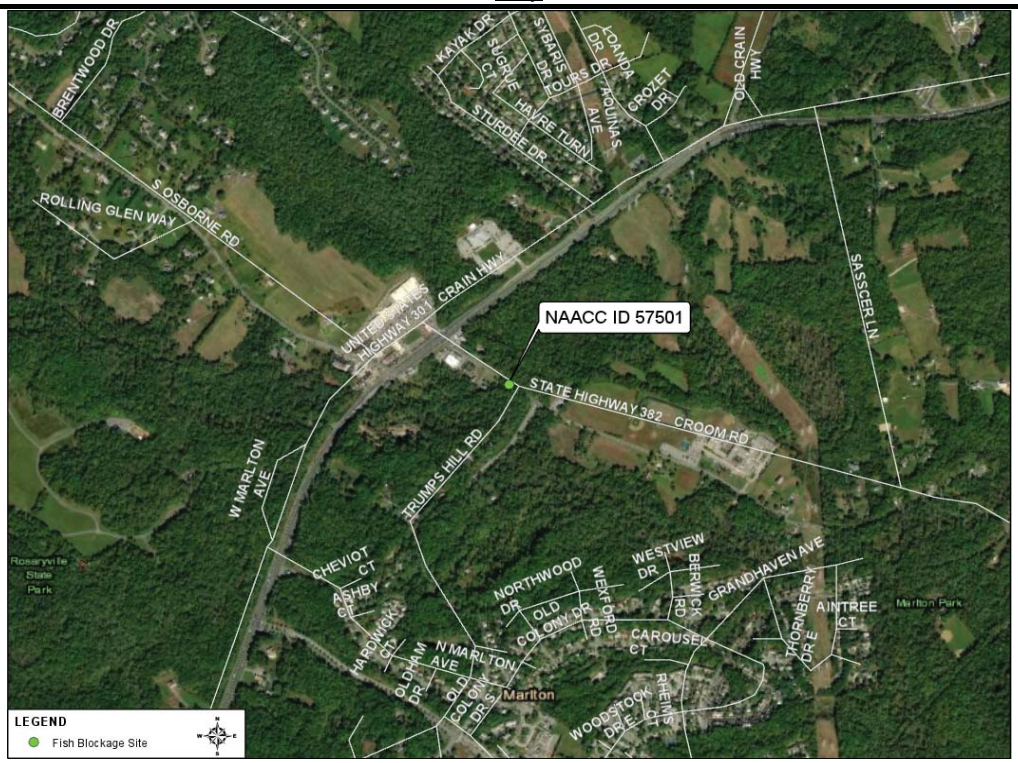
General Field Observations

Are there records for diadromous fish, mussels, RTE crayfish, or other RTE species within or in close proximity to the fish blockage site? Explain	Can the fish blockage be removed within the road right-of-way or does it require access to parcels beyond right-of-way limits? Explain
Explain: RTE coordination with agencies is pending	Explain: Drop site - no blockage. Bridge. Upstream is a forest conservation area designated by signs.

Fish Passage Site Rating

Criteria	Score	Criteria	Score
Functional Upstream Network	1	**Fish Blockage Height - Ecological Benefits of Removal**	1
10 - Greater than 4 miles 5 - 1 to 4 miles 1 - Less than 1 mile		10 - Greater than 5' 5- 1' to 5' 1 - Less than 1'	
Describe: 0.36 miles		Describe: No blockage - bridge. Water depth under bridge approximately 8 inches.	
Number of Downstream Fish Blockages	10	**Adjacent Land Use**	1
10 - 0 Blockages 5 - 1 Blockage 1 - >1 Blockage		10 - Commercial/Agriculture/Bare Ground 5- Field/Scrub-shrub 1 - Forest	
Describe: None		Describe: Mid-successional forest: tulip poplar, sycamore, sweet gum	
NAACC Diadromous Fish HUC 12 Watershed Score	10	**Ease of Construction**	5
10 - 3 to 22 5 - 23 to 41 1 - 42 to 61		10 - Easy 5- Average 1 - Difficult/Complex	
Describe: 12		Describe: 16 ft wide bridge - no blockage	
Percentage of Upstream Impervious Surface	5	**Ease of Access**	1
10 - Less than 10% 5 - 10 to 25% 1 - Greater than 25%		10 - Yes (with existing direct vehicular access to potential site) 5- Yes (open but no existing vehicular access) 1 - No (no vehicular access, clearing needed, steep slopes surrounding site)	
Describe: 13.70%		Describe: Surrounded by forest. Recent clearing on south side	
Fish Habitat Diversity	10	**Utilities Present**	1
10 - Greater than 5 cover types 5 - 3-5 cover types 1 - Less than 3 cover types		10 - No utilities on site 5 - Utilities but not within site 1 - Utilities within potential site	
Describe: LWD, riffles, deep pools, overhanging vegetation, undercut banks, root mats; 6 types		Describe: Sewer and overhead utilities within site	
		Total Score out of 100	45

Map



Site No.	NAACC 57501		Scale: 1 in. = 2,000

Site Photos









I-495/I-270 Managed Lanes Study - Fish Passage Field Site Assessment Form

Project Details

Project Name: I-495/I-270 Managed Lanes Study
Mitigation Site Number: NAACC 57502
Projects Estimated Stream Mitigation Needs (LF): TBD
Date of Field Assessment: 2/18/2019
Consultant Firm/Investigator(s) RK&K; KJH, BM

Site Location Details-taken from desktop review

County: Anne Arundel
Cross Roads: Southern MD Blvd, SE of Plummer Ln, N of MD 4
Basin (HUC 8): Patuxent
MDE Watershed (8 digit): 02131102
Proximity to Impacted Stream (mi.): 11
Lat/Long: 38.800275 -76.683598

Parcel Size (ac): Within SHA ROW
Drainage Area to Reach (sq. mi. 0.72
Site Opportunities: _X_ Fish Passage __X__ Channel Restoration __X__ Habitat Enhancement ___ Riparian Buffer Planting
Stream Order: 1st
Stream Hydrology: Perennial
Stream Use: I
Culvert/Dam Type: Grouted elliptical pipe
Culvert/Dam Dimensions: 9 ft wide, 4.5 ft tall
Blockage Type: ___Complete _X__ Partial ___None
USGS Gage Station #: 01594526
USGS Gage Discharge (fs3/s): __360_____
USGS Gage Daily Discharge Percentile: ___0-25% ___25-50% ___50-75% _X_75-100%
Property Address: Galloway Creek near Southern MD Blvd
Property Owner(s): SHA

General Field Observations

Are there records for diadromous fish, mussels, RTE crayfish, or other RTE species within or in close proximity to the fish blockage site? Explain	Can the fish blockage be removed within the road right-of-way or does it require access to parcels beyond right-of-way limits? Explain
Explain: RTE coordination with agencies is pending	Explain: No, need access downstream of ROW. Natural blockage just downstream of culvert. Debris jam against standing trees, beaver activity

Fish Passage Site Rating

Criteria	Score	Criteria	Score
Functional Upstream Network	5	**Fish Blockage Height - Ecological Benefits of Removal**	5
10 - Greater than 4 miles 5 - 1 to 4 miles 1 - Less than 1 mile		10 - Greater than 5' 5- 1' to 5' 1 - Less than 1'	
Describe: 3.68 miles		Describe: 3-4 inches of water in culvert, 2.5 ft to water surface, 3 ft to top of debris	
Number of Downstream Fish Blockages	10	**Adjacent Land Use**	1
10 - 0 Blockages 5 - 1 Blockage 1 - >1 Blockage		10 - Commercial/Agriculture/Bare Ground 5- Field/Scrub-shrub 1 - Forest	
Describe: No significant barriers		Describe: Narrow forested strip: early successional w/ scattered larger trees- sweet gum, American beech, tulip poplar, red maple	
NAACC Diadromous Fish HUC 12 Watershed Score	10	**Ease of Construction**	1
10 - 3 to 22 5 - 23 to 41 1 - 42 to 61		10 - Easy 5- Average 1 - Difficult/Complex	
Describe: 9		Describe: 9 ft wide pipe, 2.5 ft blockage. Debris jam and recent beaver activity	
Percentage of Upstream Impervious Surface	10	**Ease of Access**	1
10 - Less than 10% 5 - 10 to 25% 1 - Greater than 25%		10 - Yes (with existing direct vehicular access to potential site) 5- Yes (open but no existing vehicular access) 1 - No (no vehicular access, clearing needed, steep slopes surrounding site)	
Describe: 5.06%		Describe: Surrounded by young forest with scattered larger trees	
Fish Habitat Diversity	10	**Utilities Present**	1
10 - Greater than 5 cover types 5 - 3-5 cover types 1 - Less than 3 cover types		10 - No utilities on site 5 - Utilities but not within site 1 - Utilities within potential site	
Describe: LWD, riffles, deep pools, overhanging vegetation, uncercut banks, root mats, backwater pools: 7 types		Describe: Overhead power lines just downstream of blockage	
		Total Score out of 100	54

Map



Site No.	NAACC 57502		Scale: 1 in. = 2,000

Site Photos









I-495/I-270 Managed Lanes Study - Fish Passage Field Site Assessment Form

Project Details

Project Name: I-495/I-270 Managed Lanes Study
Mitigation Site Number: NAACC 57504
Projects Estimated Stream Mitigation Needs (LF): TBD
Date of Field Assessment: 2/18/2019
Consultant Firm/Investigator(s) RK&K; KJH, BM

Site Location Details-taken from desktop review

County: Anne Arundel
Cross Roads: MD 258 (W Bay Front Rd)/MD 4
Basin (HUC 8): Patuxent
MDE Watershed (8 digit): 02131102
Proximity to Impacted Stream (mi.): 12.6
Lat/Long: 38.791381 -76.660114

Parcel Size (ac): Within SHA ROW
Drainage Area to Reach (sq. mi. 0.45
Site Opportunities: __X__Fish Passage __X__Channel Restoration _____Habitat Enhancement ____Riparian Buffer Planting
Stream Order: 1st
Stream Hydrology: Perennial
Stream Use: I
Culvert/Dam Type: Box culvert
Culvert/Dam Dimensions: 7 ft wide, 7 ft tall
Blockage Type: ___Complete __X_ Partial ___None
USGS Gage Station #: 01594526
USGS Gage Discharge (fs3/s): __360_____
USGS Gage Daily Discharge Percentile: ___0-25% ___25-50% ___50-75% _X_75-100%
Property Address: Cabin Branch along MD 258, just E of MD 4
Property Owner(s): SHA

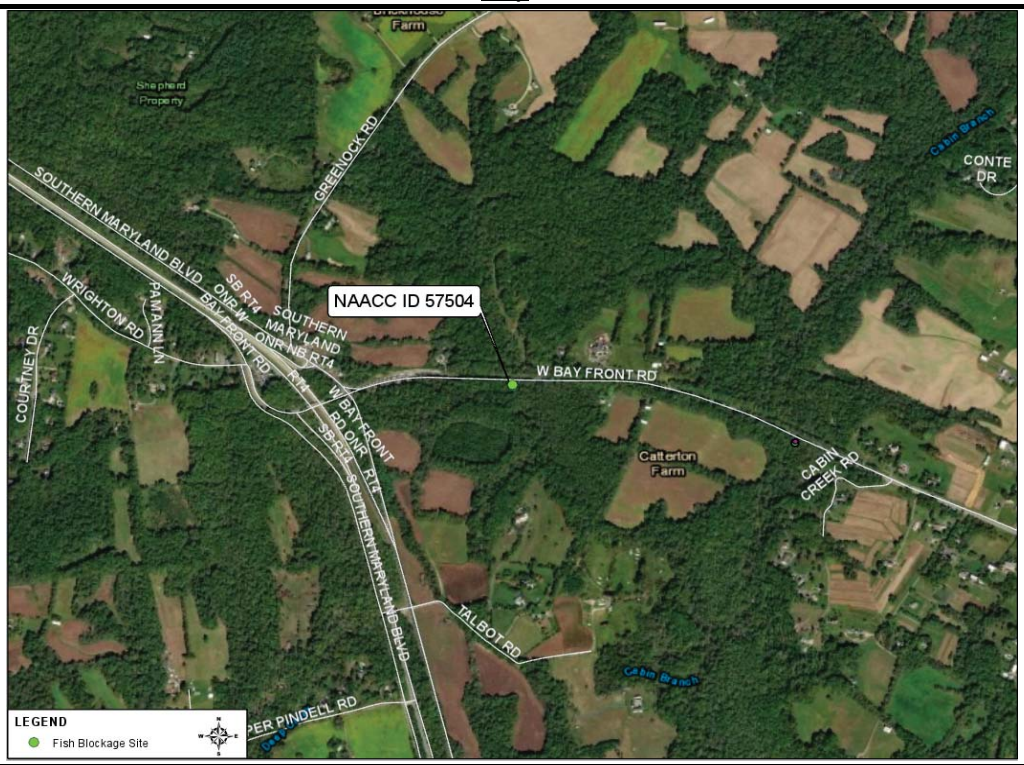
General Field Observations

Are there records for diadromous fish, mussels, RTE crayfish, or other RTE species within or in close proximity to the fish blockage site? Explain	Can the fish blockage be removed within the road right-of-way or does it require access to parcels beyond right-of-way limits? Explain
Explain: RTE coordination with agencies is pending	Explain: Likely would need access to downstream property for instream structure. Possible upstream access under power lines.

Fish Passage Site Rating

Criteria	Score	Criteria	Score
Functional Upstream Network	5	**Fish Blockage Height - Ecological Benefits of Removal**	1
10 - Greater than 4 miles 5 - 1 to 4 miles 1 - Less than 1 mile		10 - Greater than 5' 5- 1' to 5' 1 - Less than 1'	
Describe: 2.26 miles		Describe: 2 inches water in culvert. 6.5 inches to invert. 7 inches to water. Note 0.5 inches night before site visit, stream water level up by about 1 to 2 inches.	
Number of Downstream Fish Blockages	10	**Adjacent Land Use**	1
10 - 0 Blockages 5 - 1 Blockage 1 - >1 Blockage		10 - Commercial/Agriculture/Bare Ground 5- Field/Scrub-shrub 1 - Forest	
Describe: None		Describe: Surrounded by mid successional upland forest: American beech, tulip poplar, white oak	
NAACC Diadromous Fish HUC 12 Watershed Score	10	**Ease of Construction**	5
10 - 3 to 22 5 - 23 to 41 1 - 42 to 61		10 - Easy 5- Average 1 - Difficult/Complex	
Describe: 12		Describe: 7 ft wide box culvert, 6.5 inch drop	
Percentage of Upstream Impervious Surface	10	**Ease of Access**	1
10 - Less than 10% 5 - 10 to 25% 1 - Greater than 25%		10 - Yes (with existing direct vehicular access to potential site) 5- Yes (open but no existing vehicular access) 1 - No (no vehicular access, clearing needed, steep slopes surrounding site)	
Describe: 2.80%		Describe: Surrounded by forest, some steep slopes near road	
Fish Habitat Diversity	10	**Utilities Present**	5
10 - Greater than 5 cover types 5 - 3-5 cover types 1 - Less than 3 cover types		10 - No utilities on site 5 - Utilities but not within site 1 - Utilities within potential site	
Describe: LWD, riffles, deep pools, overhanging vegetation, unercut banks, root mats; 6 types		Describe: Overhead power line on upstream side just outside of site	
		Total Score out of 100	58

Map



Site No.	NAACC 57504		Scale: 1 in. = 2,000

Site Photos









I-495/I-270 Managed Lanes Study - Fish Passage Field Site Assessment Form

Project Details

Project Name: I-495/I-270 Managed Lanes Study
Mitigation Site Number: NAACC 57507 or MD_PXM05
Projects Estimated Stream Mitigation Needs (LF): TBD
Date of Field Assessment: 2/15/2019
Consultant Firm/Investigator(s) RK&K; KJH, BM

Site Location Details-taken from desktop review

County: Anne Arundel
Cross Roads: MD 258 (W Bay Front Rd), E of MD 4, W of Cabin Creek Rd
Basin (HUC 8): Patuxent
MDE Watershed (8 digit): 02131102
Proximity to Impacted Stream (mi.): 13.2
Lat/Long: 38.789509 -76.648672

Parcel Size (ac): Within SHA ROW
Drainage Area to Reach (sq. mi. 2
Site Opportunities: __X__Fish Passage __X__Channel Restoration __X__Habitat Enhancement ___Riparian Buffer Planting
Stream Order: 1st
Stream Hydrology: Perennial
Stream Use: I
Culvert/Dam Type: Box culvert
Culvert/Dam Dimensions: 14 ft wide, 7 ft tall
Blockage Type: ___Complete __X_ Partial ___None
USGS Gage Station #: 01594526
USGS Gage Discharge (fs3/s): ___120_____
USGS Gage Daily Discharge Percentile: ___0-25% ___25-50% _X__50-75% __75-100%
Property Address: SHA ROW - just north of 6000 Cabin Creek Rd., Lothian MD 20711
Property Owner(s): SHA

General Field Observations

Are there records for diadromous fish, mussels, RTE crayfish, or other RTE species within or in close proximity to the fish blockage site? Explain	Can the fish blockage be removed within the road right-of-way or does it require access to parcels beyond right-of-way limits? Explain
Explain: One rare mussel species noted in HUC8 watershed (Freshwater Network, Chesapeake Region). American eel records two miles south (MBSS).	Explain: Partial blockage removal may require access onto downstream private property due to narrow ROW.

Fish Passage Site Rating

Criteria	Score	Criteria	Score
Functional Upstream Network	5	**Fish Blockage Height - Ecological Benefits of Removal**	1
10 - Greater than 4 miles 5 - 1 to 4 miles 1 - Less than 1 mile		10 - Greater than 5' 5- 1' to 5' 1 - Less than 1' 0 - No blockage	
Describe: 1.63 miles		Describe: DS culvert invert to DS water surface - 1 inch. Water depth in culvert - 2 inches.	
Number of Downstream Fish Blockages	10	**Adjacent Land Use**	1
10 - 0 Blockages 5 - 1 Blockage 1 - >1 Blockage		10 - Commercial/Agriculture/Bare Ground 5- Field/Scrub-shrub 1 - Forest	
Describe: None		Describe: Mid successional tulip poplar forest in ROW and private properties.	
NAACC Diadromous Fish HUC 12 Watershed Score	10	**Ease of Construction**	5
10 - 3 to 22 5 - 23 to 41 1 - 42 to 61		10 - Easy 5- Average 1 - Difficult/Complex 0 - No blockage	
Describe: 13		Describe: 14 ft wide box culvert, 1 inch partial blockage	
Percentage of Upstream Impervious Surface	10	**Ease of Access**	1
10 - Less than 10% 5 - 10 to 25% 1 - Greater than 25%		10 - Yes (with existing direct vehicular access to potential site) 5- Yes (open but no existing vehicular access) 1 - No (no vehicular access, clearing needed, steep slopes surrounding site)	
Describe: 0.40%		Describe: Site surrounded by mid successional forest and steep slopes along roadway embankment.	
Fish Habitat Diversity	5	**Utilities Present**	1
10 - Greater than 5 cover types 5 - 3-5 cover types 1 - Less than 3 cover types		10 - No utilities on site 5 - Utilities but not within site 1 - Utilities within potential site	
Describe: Large woody debris, deep pools, overhanging vegetation, root mats - 4 types		Describe: Overhead power lines run parallel to roadway just upstream of culvert.	
		Total Score out of 100	49

Map



Site No.	NAACC 57507 or MD_PXM05	Scale: 1 in. = 2,000

Site Photos



Culvert outfall/partial blockage - facing upstream



Channel overview downstream of culvert - facing downstream



Potential access downstream of culvert - facing upstream



Culvert inlet - facing downstream

I-495/I-270 Managed Lanes Study - Fish Passage Field Site Assessment Form

Project Details

Project Name: I-495/I-270 Managed Lanes Study
Mitigation Site Number: NAACC 57511A
Projects Estimated Stream Mitigation Needs (LF): TBD
Date of Field Assessment: 3/7/2019
Consultant Firm/Investigator(s) RK&K; KJH, DWB

Site Location Details-taken from desktop review

County: Prince George's
Cross Roads: MD 4/William Beanes Rd
Basin (HUC 8): Patuxent
MDE Watershed (8 digit): 02131103
Proximity to Impacted Stream (mi.): 4.8
Lat/Long: 38.813056 -76.794188

Parcel Size (ac): Within SHA ROW
Drainage Area to Reach (sq. mi. 0.82
Site Opportunities: __X__Fish Passage __X__Channel Restoration ___X___Habitat Enhancement __X__Riparian Buffer Planting (Upstream)
Stream Order: 1st
Stream Hydrology: Perennial
Stream Use: I
Culvert/Dam Type: CMP
Culvert/Dam Dimensions: US 15 ft, DS 12 ft
Blockage Type: __X_Complete ___ Partial ___None
USGS Gage Station #: 01594526
USGS Gage Discharge (fs3/s): ___120_____
USGS Gage Daily Discharge Percentile: ___0-25% ___25-50% __X_50-75% __75-100%
Property Address: Federal Spring Branch along MD 4 near William Beanes Rd
Property Owner(s): SHA

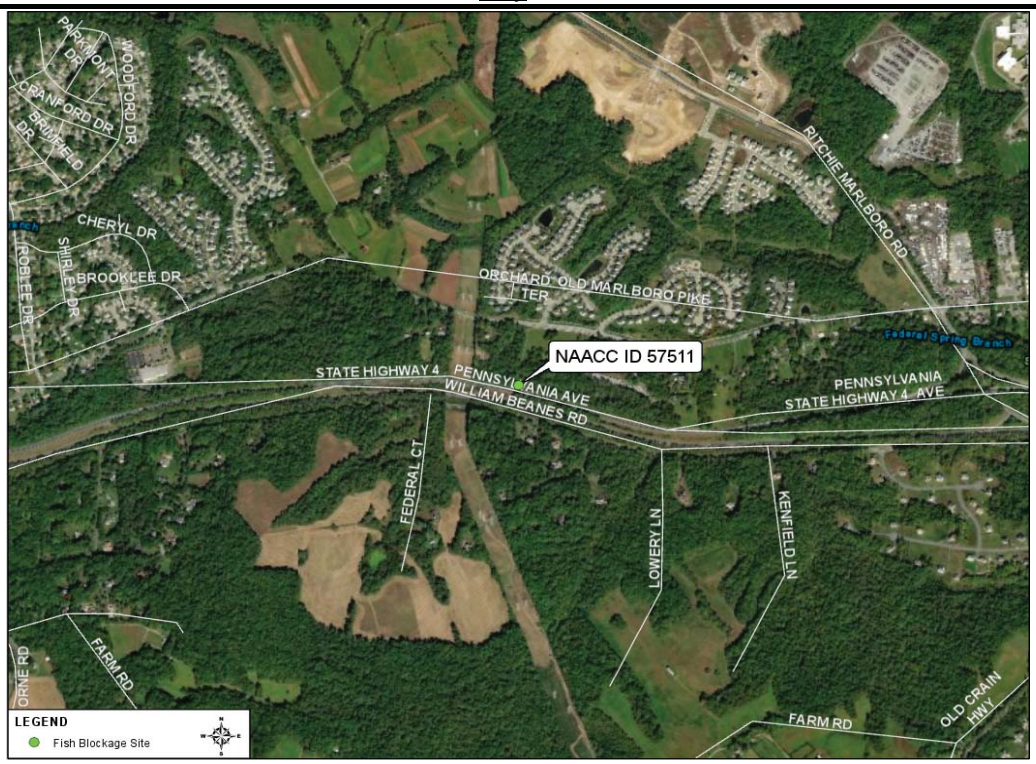
General Field Observations

Are there records for diadromous fish, mussels, RTE crayfish, or other RTE species within or in close proximity to the fish blockage site? Explain	Can the fish blockage be removed within the road right-of-way or does it require access to parcels beyond right-of-way limits? Explain
Explain: RTE coordination with agencies is pending	Explain: Possibly could be completed inside ROW

Fish Passage Site Rating

Criteria	Score	Criteria	Score
Functional Upstream Network	1	**Fish Blockage Height - Ecological Benefits of Removal**	5
10 - Greater than 4 miles 5 - 1 to 4 miles 1 - Less than 1 mile		10 - Greater than 5' 5- 1' to 5' 1 - Less than 1'	
Describe: 0.3 miles		Describe: 1.9 ft downstream water surface to culvert invert. 0.4 ft water depth within culvert	
Number of Downstream Fish Blockages	10	**Adjacent Land Use**	1
10 - 0 Blockages 5 - 1 Blockage 1 - >1 Blockage		10 - Commercial/Agriculture/Bare Ground 5- Field/Scrub-shrub 1 - Forest	
Describe: None		Describe: Roadside culvert, but adjacent property is forested	
NAACC Diadromous Fish HUC 12 Watershed Score	10	**Ease of Construction**	5
10 - 3 to 22 5 - 23 to 41 1 - 42 to 61		10 - Easy 5- Average 1 - Difficult/Complex	
Describe: 12		Describe: Upstream: 15 ft circular; Downstream: 12 ft arch; 1.9 ft blockage	
Percentage of Upstream Impervious Surface	5	**Ease of Access**	1
10 - Less than 10% 5 - 10 to 25% 1 - Greater than 25%		10 - Yes (with existing direct vehicular access to potential site) 5- Yes (open but no existing vehicular access) 1 - No (no vehicular access, clearing needed, steep slopes surrounding site)	
Describe: 12.80%		Describe: Forest, steep slopes	
Fish Habitat Diversity	5	**Utilities Present**	10
10 - Greater than 5 cover types 5 - 3-5 cover types 1 - Less than 3 cover types		10 - No utilities on site 5 - Utilities but not within site 1 - Utilities within potential site	
Describe: Deep pools, overhanging vegetation, LWD, undercut banks, root wads; 5 types. Exposed clay bottom just downstream of blockage		Describe: None visible	
		Total Score out of 100	53

Map



Site No.	NAACC 57511A		Scale: 1 in. = 2,000

Site Photos



Culvert inlet - facing downstream



Channel overview upstream of culvert - facing upstream



Culvert outfall - facing upstream



Channel overview downstream of culvert - facing downstream

I-495/I-270 Managed Lanes Study - Fish Passage Field Site Assessment Form

Project Details

Project Name: I-495/I-270 Managed Lanes Study
Mitigation Site Number: NAACC 57518
Projects Estimated Stream Mitigation Needs (LF): TBD
Date of Field Assessment: 3/5/2019
Consultant Firm/Investigator(s) RK&K; KJH, BM

Site Location Details-taken from desktop review

County: Prince George's
Cross Roads: MD 223 (Woodyard Rd)/Johensu Dr
Basin (HUC 8): Patuxent
MDE Watershed (8 digit): 02131103
Proximity to Impacted Stream (mi.): 4
Lat/Long: 38.801108 -76.825585

Parcel Size (ac): Within SHA ROW
Drainage Area to Reach (sq. mi. 1.41
Site Opportunities: ___Fish Passage __X__Channel Restoration ___X___Habitat Enhancement __X__Riparian Buffer Planting
Stream Order: 2nd
Stream Hydrology: Perennial
Stream Use: I
Culvert/Dam Type: Arched culvert
Culvert/Dam Dimensions: 12 ft wide, 6.5 ft tall
Blockage Type: ___Complete ___ Partial __X_None
USGS Gage Station #: 01594526
USGS Gage Discharge (fs3/s): _____191_____
USGS Gage Daily Discharge Percentile: ___0-25% ___25-50% ___50-75% _X_75-100%
Property Address: along MD 223 (Woodyard Rd), N of Pond Dr and Johensu Dr
Property Owner(s): SHA

General Field Observations

Are there records for diadromous fish, mussels, RTE crayfish, or other RTE species within or in close proximity to the fish blockage site? Explain	Can the fish blockage be removed within the road right-of-way or does it require access to parcels beyond right-of-way limits? Explain
Explain: RTE coordination with agencies is pending	Explain: No blockage - remove site

Fish Passage Site Rating

Criteria	Score	Criteria	Score
Functional Upstream Network	5	**Fish Blockage Height - Ecological Benefits of Removal**	1
10 - Greater than 4 miles 5 - 1 to 4 miles 1 - Less than 1 mile		10 - Greater than 5' 5- 1' to 5' 1 - Less than 1'	
Describe: 3.81 miles		Describe: No blockage, deposition in culvert. Water depth in culvert approximately 5 inches. Arched culvert - base flow across	
Number of Downstream Fish Blockages	10	**Adjacent Land Use**	5
10 - 0 Blockages 5 - 1 Blockage 1 - >1 Blockage		10 - Commercial/Agriculture/Bare Ground 5- Field/Scrub-shrub 1 - Forest	
Describe: None		Describe: Downstream: Scrub/shrub on park land; Upstream: forest	
NAACC Diadromous Fish HUC 12 Watershed Score	10	**Ease of Construction**	5
10 - 3 to 22 5 - 23 to 41 1 - 42 to 61		10 - Easy 5- Average 1 - Difficult/Complex	
Describe: 12		Describe: 12 ft wide culvert - no blockage. Water 5 inches deep in culvert	
Percentage of Upstream Impervious Surface	1	**Ease of Access**	5
10 - Less than 10% 5 - 10 to 25% 1 - Greater than 25%		10 - Yes (with existing direct vehicular access to potential site) 5- Yes (open but no existing vehicular access) 1 - No (no vehicular access, clearing needed, steep slopes surrounding site)	
Describe: 36.90%		Describe: Upstream: would require forest clearing; Downstream: cleared recently under power lines	
Fish Habitat Diversity	10	**Utilities Present**	1
10 - Greater than 5 cover types 5 - 3-5 cover types 1 - Less than 3 cover types		10 - No utilities on site 5 - Utilities but not within site 1 - Utilities within potential site	
Describe: LWD, riffles, deep pools, overhanging vegetation, undercut banks, root mats, backwater pools; 7 types		Describe: Upstream: water line; Downstream: overhead power lines	
		Total Score out of 100	53

Map



Site No.	NAACC 57518		Scale: 1 in. = 2,000

Site Photos









I-495/I-270 Managed Lanes Study - Fish Passage Field Site Assessment Form

Project Details

Project Name: I-495/I-270 Managed Lanes Study
Mitigation Site Number: NAACC 57526
Projects Estimated Stream Mitigation Needs (LF): TBD
Date of Field Assessment: 3/7/2019
Consultant Firm/Investigator(s) RK&K; KJH, DWB

Site Location Details-taken from desktop review

County: Prince George's
Cross Roads: Ritchie Marlboro Rd/Old Marlboro Pike
Basin (HUC 8): Patuxent
MDE Watershed (8 digit): 02131103
Proximity to Impacted Stream (mi.): 6
Lat/Long: 38.814583 -76.777547

Parcel Size (ac): Within SHA ROW
Drainage Area to Reach (sq. mi. 2.87
Site Opportunities: ___Fish Passage __X__Channel Restoration ___X___Habitat Enhancement ____Riparian Buffer Planting (Upstream)
Stream Order: 1st
Stream Hydrology: Perennial
Stream Use: I
Culvert/Dam Type: Twin concrete box
Culvert/Dam Dimensions: 8 ft wide, 8 ft tall
Blockage Type: ___Complete ___ Partial _X__None
USGS Gage Station #: 01594526
USGS Gage Discharge (fs3/s): ___120_____
USGS Gage Daily Discharge Percentile: ___0-25% ___25-50% __X_50-75% __75-100%
Property Address: Federal Spring Branch along Ritchie Marlboro Rd near Old Marlboro Pike
Property Owner(s): SHA

General Field Observations

Are there records for diadromous fish, mussels, RTE crayfish, or other RTE species within or in close proximity to the fish blockage site? Explain	Can the fish blockage be removed within the road right-of-way or does it require access to parcels beyond right-of-way limits? Explain
Explain: RTE coordination with agencies is pending	Explain: No blockage. Would require access onto private property

Fish Passage Site Rating

Criteria	Score	Criteria	Score
Functional Upstream Network	5	**Fish Blockage Height - Ecological Benefits of Removal**	0
10 - Greater than 4 miles 5 - 1 to 4 miles 1 - Less than 1 mile		10 - Greater than 5' 5- 1' to 5' 1 - Less than 1'	
Describe: 3.33 miles		Describe: No blockage; debris jam on upstream	
Number of Downstream Fish Blockages	10	**Adjacent Land Use**	1
10 - 0 Blockages 5 - 1 Blockage 1 - >1 Blockage		10 - Commercial/Agriculture/Bare Ground 5- Field/Scrub-shrub 1 - Forest	
Describe: None		Describe: Mid-successional forest	
NAACC Diadromous Fish HUC 12 Watershed Score	10	**Ease of Construction**	0
10 - 3 to 22 5 - 23 to 41 1 - 42 to 61		10 - Easy 5- Average 1 - Difficult/Complex	
Describe: 12		Describe: No blockage	
Percentage of Upstream Impervious Surface	10	**Ease of Access**	5
10 - Less than 10% 5 - 10 to 25% 1 - Greater than 25%		10 - Yes (with existing direct vehicular access to potential site) 5- Yes (open but no existing vehicular access) 1 - No (no vehicular access, clearing needed, steep slopes surrounding site)	
Describe: 9.67%		Describe:	
Fish Habitat Diversity	10	**Utilities Present**	10
10 - Greater than 5 cover types 5 - 3-5 cover types 1 - Less than 3 cover types		10 - No utilities on site 5 - Utilities but not within site 1 - Utilities within potential site	
Describe: LWD, root wad, overhanging vegetation, undercut banks, deep pools, riffles; 6 types		Describe: None visible	
		Total Score out of 100	61

Map



Site No.	NAACC 57526		Scale: 1 in. = 2,000

Site Photos



Culvert inlet - facing downstream



Channel overview upstream of culvert - facing upstream



Culvert outfall - facing upstream



Channel overview downstream of culvert - facing downstream

I-495/I-270 Managed Lanes Study - Fish Passage Field Site Assessment Form

Project Details

Project Name: I-495/I-270 Managed Lanes Study
Mitigation Site Number: NAACC 57533
Projects Estimated Stream Mitigation Needs (LF): TBD
Date of Field Assessment: 3/7/2019
Consultant Firm/Investigator(s) RK&K; KJH, DWB

Site Location Details-taken from desktop review

County: Prince George's
Cross Roads: MD 4 N/Ritchie Marlboro Rd
Basin (HUC 8): Patuxent
MDE Watershed (8 digit): 02131103
Proximity to Impacted Stream (mi.): 5.4
Lat/Long: 38.812102 -76.784063

Parcel Size (ac): Within SHA ROW
Drainage Area to Reach (sq. mi. 2.05
Site Opportunities: __X__Fish Passage __X__Channel Restoration ___X___Habitat Enhancement ____Riparian Buffer Planting (Upstream)
Stream Order: 1st
Stream Hydrology: Perennial
Stream Use: I
Culvert/Dam Type: CMP
Culvert/Dam Dimensions: 8 ft wide, 8 ft tall
Blockage Type: _X__Complete ___ Partial ___None
USGS Gage Station #: 01594526
USGS Gage Discharge (fs3/s): ___120_____
USGS Gage Daily Discharge Percentile: ___0-25% ___25-50% __X_50-75% __75-100%
Property Address: Federal Spring Branch along MD 4 near Ritchie Marlboro Rd
Property Owner(s): SHA

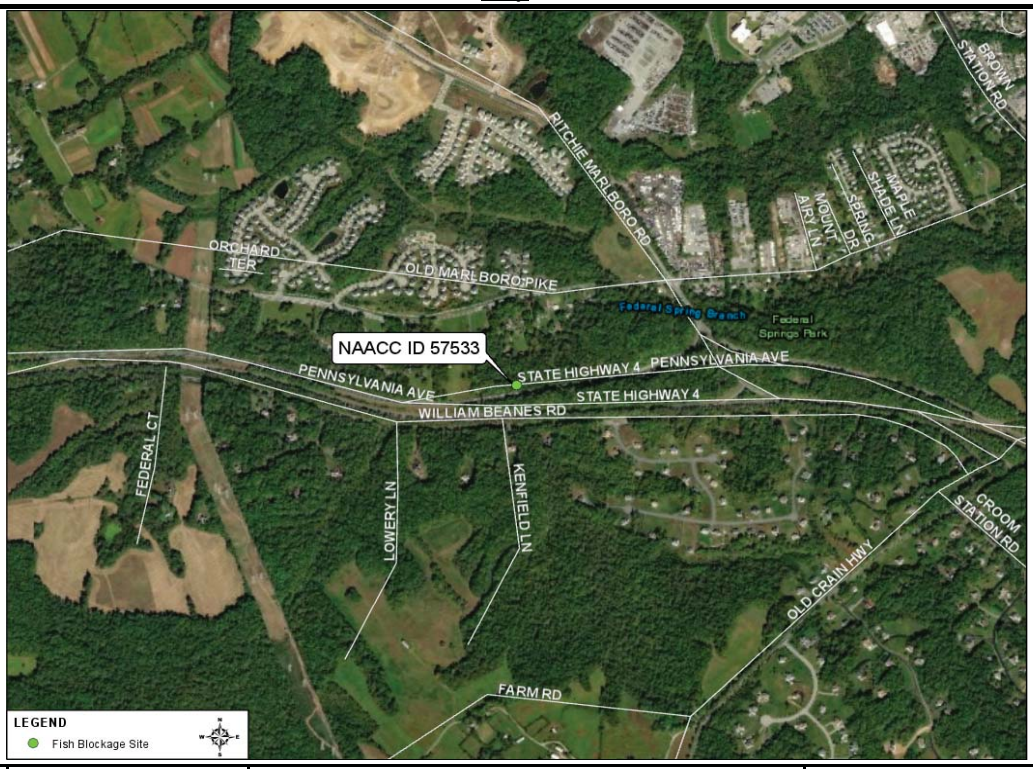
General Field Observations

Are there records for diadromous fish, mussels, RTE crayfish, or other RTE species within or in close proximity to the fish blockage site? Explain	Can the fish blockage be removed within the road right-of-way or does it require access to parcels beyond right-of-way limits? Explain
Explain: According to Chesapeake Fish Passage Prioritization, a nearby upstream dam lists alewife, blueback, American eel, and one or more anadromous species as occurring downstream.	Explain: Upstream and downstream extend beyond SHA ROW

Fish Passage Site Rating

Criteria	Score	Criteria	Score
Functional Upstream Network	5	**Fish Blockage Height - Ecological Benefits of Removal**	5
10 - Greater than 4 miles 5 - 1 to 4 miles 1 - Less than 1 mile		10 - Greater than 5' 5- 1' to 5' 1 - Less than 1'	
Describe: 3.92 miles		Describe: 2.3 ft natural debris blockage downstream from culvert. 1 ft deposition in pipe.	
Number of Downstream Fish Blockages	10	**Adjacent Land Use**	1
10 - 0 Blockages 5 - 1 Blockage 1 - >1 Blockage		10 - Commercial/Agriculture/Bare Ground 5- Field/Scrub-shrub 1 - Forest	
Describe: None		Describe: Roadside culvert with adjacent forest	
NAACC Diadromous Fish HUC 12 Watershed Score	10	**Ease of Construction**	5
10 - 3 to 22 5 - 23 to 41 1 - 42 to 61		10 - Easy 5- Average 1 - Difficult/Complex	
Describe: 12		Describe: 2.3 ft natural blockage debris jam downstream of culvert	
Percentage of Upstream Impervious Surface	10	**Ease of Access**	1
10 - Less than 10% 5 - 10 to 25% 1 - Greater than 25%		10 - Yes (with existing direct vehicular access to potential site) 5- Yes (open but no existing vehicular access) 1 - No (no vehicular access, clearing needed, steep slopes surrounding site)	
Describe: 7.52%		Describe: Steep slopes, forested, some clearing needed.	
Fish Habitat Diversity	5	**Utilities Present**	10
10 - Greater than 5 cover types 5 - 3-5 cover types 1 - Less than 3 cover types		10 - No utilities on site 5 - Utilities but not within site 1 - Utilities within potential site	
Describe: LWD, root wad, overhanging vegetation, undercut banks, deep pools; 5 types		Describe: None visible	
		Total Score out of 100	62

Map



Site No.	NAACC 57533		Scale: 1 in. = 2,000

Site Photos



Culvert inlet - facing downstream



Channel overview downstream of culvert - facing downstream



Culvert outfall - facing upstream



Slopes adjacent to culvert outfall, facing roadway

I-495/I-270 Managed Lanes Study - Fish Passage Field Site Assessment Form

Project Details

Project Name: I-495/I-270 Managed Lanes Study
Mitigation Site Number: NAACC 57561
Projects Estimated Stream Mitigation Needs (LF): TBD
Date of Field Assessment: 2/25/2019
Consultant Firm/Investigator(s) CRI; JG, DS, LE

Site Location Details-taken from desktop review

County: Prince George's
Cross Roads: MD 214 (Central Ave.), W of Queen Anne Bridge Rd.
Basin (HUC 8): Patuxent
MDE Watershed (8 digit): 2131104
Proximity to Impacted Stream (mi.): 8.4
Lat/Long: 38.904759 -76.682769

Site Data

Parcel Size (ac): Within SHA ROW
Drainage Area to Reach (sq. mi. 1.3
Site Opportunities: _X_Fish Passage _X__Channel Restoration __X__Habitat Enhancement ____Riparian Buffer Planting
Stream Order: 2nd
Stream Hydrology: Perennial
Stream Use: I
Culvert/Dam Type: Double Box
Culvert/Dam Dimensions: H: 5.35' to TW, W: 11.2'; 50 feet long
Blockage Type: __Complete ___ Partial _X_None
USGS Gage Station #: 01049150
USGS Gage Discharge (fs3 2.2
USGS Gage Daily Discharge Percentile: ___0-25% ___25-50% ___50-75% _X_75-100% 169% of mean
Property Address: SHA ROW - at MD 214 west of Queen Anne Bridge Rd., Bowie MD 20716
Property Owner(s): SHA

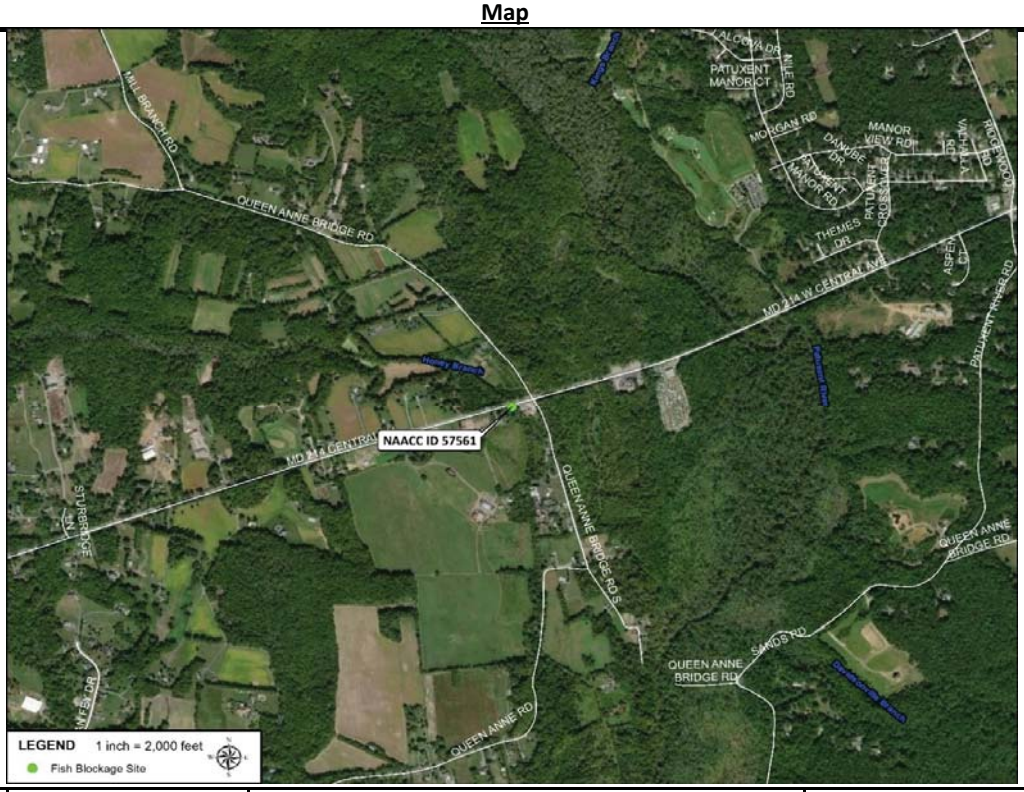
General Field Observations

Are there records for diadromous fish, mussels, RTE crayfish, or other RTE species within or in close proximity to the fish blockage site? Explain	Can the fish blockage be removed within the road right-of-way or does it require access to parcels beyond right-of-way limits? Explain
Explain: RTE coordination with agencies is pending.	Explain: No blockage

Fish Passage Site Rating

Criteria	Score	Criteria	Score
Functional Upstream Network	5	**Fish Blockage Height - Ecological Benefits of Removal**	0
10 - Greater than 4 miles 5 - 1 to 4 miles 1 - Less than 1 mile		10 - Greater than 5' 5- 1' to 5' 1 - Less than 1' 0 - No Blockage	
Describe: 2.3 miles of US network		Describe: No blockage	
Number of Downstream Fish Blockages	5	**Adjacent Land Use**	1
10 - 0 Blockages 5 - 1 Blockage 1 - >1 Blockage		10 - Commercial/Agriculture/Bare Ground 5- Field/Scrub-shrub 1 - Forest	
Describe: 1 DS barrier		Describe: Forested	
NAACC Diadromous Fish HUC 12 Watershed Score	10	**Ease of Construction**	0
10 - 3 to 22 5 - 23 to 41 1 - 42 to 61		10 - Easy 5- Average 1 - Difficult/Complex 0 - No Blockage	
Describe: 11		Describe: No blockage	
Percentage of Upstream Impervious Surface	10	**Ease of Access**	1
10 - Less than 10% 5 - 10 to 25% 1 - Greater than 25%		10 - Yes (with existing direct vehicular access to potential site) 5- Yes (open but no existing vehicular access) 1 - No (no vehicular access, clearing needed, steep slopes surrounding site)	
Describe: 1.95%		Describe: Steep slopes, clearing needed, guardrail	
Fish Habitat Diversity	5	**Utilities Present**	5
10 - Greater than 5 cover types 5 - 3-5 cover types 1 - Less than 3 cover types		10 - No utilities on site 5 - Utilities but not within site 1 - Utilities within potential site	
Describe: DS: woody, deep pool, riffle, undercut banks, roots. US: deep pool, undercut banks, roots		Describe: Low powerlines downstream of culvert	
		Total Score out of 100	42

Map



Site No.	NAACC 57561		Scale: 1 in. = 2,000 ft.

Site Photos



Downstream looking upstream at culvert/no blockage



Downstream of culvert looking downstream



Upstream of culvert looking upstream



Upstream looking downstream at culvert

I-495/I-270 Managed Lanes Study - Fish Passage Field Site Assessment Form

Project Details

Project Name: I-495/I-270 Managed Lanes Study
Mitigation Site Number: NAACC 57565
Projects Estimated Stream Mitigation Needs (LF): TBD
Date of Field Assessment: 3/5/2019
Consultant Firm/Investigator(s) RK&K; KJH, BM

Site Location Details-taken from desktop review

County: Prince George's
Cross Roads: Croom Station Rd/US 301 (Crain Highway)
Basin (HUC 8): Patuxent
MDE Watershed (8 digit): 02131103
Proximity to Impacted Stream (mi.): 7.6
Lat/Long: 38.79775 -76.759915

Parcel Size (ac): Within SHA ROW
Drainage Area to Reach (sq. mi. 0.48
Site Opportunities: __X__Fish Passage __X__Channel Restoration ___X___Habitat Enhancement ____Riparian Buffer Planting
Stream Order: 1st
Stream Hydrology: Perennial
Stream Use: I
Culvert/Dam Type: DS: CIPP lined culvert US: RCP
Culvert/Dam Dimensions: 5 ft wide, 5 ft tall, twin; flow in left
Blockage Type: ___Complete _X__ Partial ___None
USGS Gage Station #: 01594526
USGS Gage Discharge (fs3/s): ___191_____
USGS Gage Daily Discharge Percentile: ___0-25% ___25-50% ___50-75% _X_75-100%
Property Address: Horse Tavern Branch near Croom Station Rd and Crain Hwy
Property Owner(s): SHA

General Field Observations

Are there records for diadromous fish, mussels, RTE crayfish, or other RTE species within or in close proximity to the fish blockage site? Explain	Can the fish blockage be removed within the road right-of-way or does it require access to parcels beyond right-of-way limits? Explain
Explain: RTE coordination with agencies is pending	Explain: Would require access onto private property due to narrow ROW

Fish Passage Site Rating

Criteria	Score	Criteria	Score
Functional Upstream Network	1	**Fish Blockage Height - Ecological Benefits of Removal**	1
10 - Greater than 4 miles 5 - 1 to 4 miles 1 - Less than 1 mile		10 - Greater than 5' 5- 1' to 5' 1 - Less than 1'	
Describe: 0.85 miles		Describe: Upstream: 3 inches drop water to invert; Downstream: 2 inches drop water to invert	
Number of Downstream Fish Blockages	10	**Adjacent Land Use**	1
10 - 0 Blockages 5 - 1 Blockage 1 - >1 Blockage		10 - Commercial/Agriculture/Bare Ground 5- Field/Scrub-shrub 1 - Forest	
Describe: None		Describe: Mostly mid-successional forest: sycamore, tulip poplar	
NAACC Diadromous Fish HUC 12 Watershed Score	10	**Ease of Construction**	5
10 - 3 to 22 5 - 23 to 41 1 - 42 to 61		10 - Easy 5- Average 1 - Difficult/Complex	
Describe: 12		Describe: Large pipe, less than 1 ft tall	
Percentage of Upstream Impervious Surface	5	**Ease of Access**	1
10 - Less than 10% 5 - 10 to 25% 1 - Greater than 25%		10 - Yes (with existing direct vehicular access to potential site) 5- Yes (open but no existing vehicular access) 1 - No (no vehicular access, clearing needed, steep slopes surrounding site)	
Describe: 18.80%		Describe: Mostly forested, site surrounded by steep slopes. Private driveway on downstream end could be used for access.	
Fish Habitat Diversity	5	**Utilities Present**	5
10 - Greater than 5 cover types 5 - 3-5 cover types 1 - Less than 3 cover types		10 - No utilities on site 5 - Utilities but not within site 1 - Utilities within potential site	
Describe: LWD, riffles, overhanging vegetation, undercut banks, root mats; 5 types		Describe: Overhead utilities on upstream side	
		Total Score out of 100	44

Map



Site No.	NAACC 57565		Scale: 1 in. = 2,000

Site Photos









I-495/I-270 Managed Lanes Study - Fish Passage Field Site Assessment Form

Project Details

Project Name: I-495/I-270 Managed Lanes Study
Mitigation Site Number: NAACC 57566
Projects Estimated Stream Mitigation Needs (LF): TBD
Date of Field Assessment: 3/5/2019
Consultant Firm/Investigator(s) RK&K; KJH, BM

Site Location Details-taken from desktop review

County: Prince George's
Cross Roads: US 301/Trumps Hill Rd
Basin (HUC 8): Patuxent
MDE Watershed (8 digit): 02131103
Proximity to Impacted Stream (mi.): 10
Lat/Long: 38.782963 -76.796289

Parcel Size (ac): Within SHA ROW
Drainage Area to Reach (sq. mi. 6.44
Site Opportunities: ___Fish Passage __X__Channel Restoration _____Habitat Enhancement ___Riparian Buffer Planting
Stream Order: 2nd
Stream Hydrology: Perennial
Stream Use: I
Culvert/Dam Type: Triple CMP - grouted 4 inches
Culvert/Dam Dimensions: 14 ft wide, 14 ft tall
Blockage Type: ___Complete ___ Partial __X_None
USGS Gage Station #: 01594526
USGS Gage Discharge (fs3/s): _____191_____
USGS Gage Daily Discharge Percentile: ___0-25% ___25-50% ___50-75% _X_75-100%
Property Address: Charles Branch along US 301 near Trumps Hill Rd
Property Owner(s): SHA

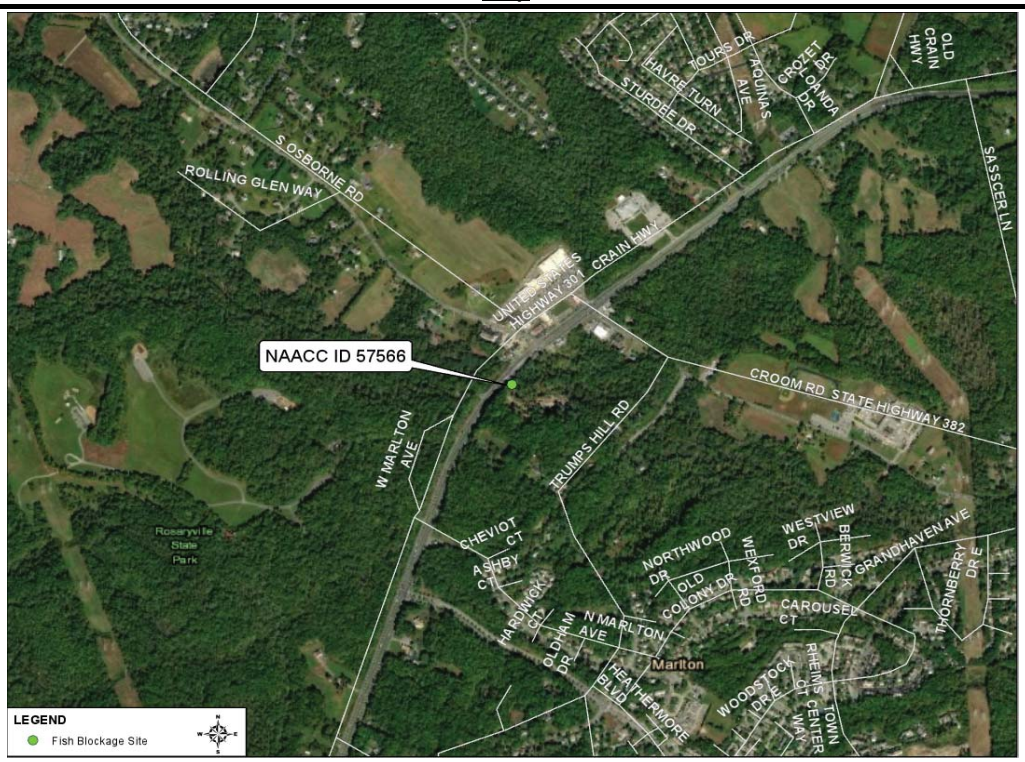
General Field Observations

Are there records for diadromous fish, mussels, RTE crayfish, or other RTE species within or in close proximity to the fish blockage site? Explain	Can the fish blockage be removed within the road right-of-way or does it require access to parcels beyond right-of-way limits? Explain
Explain: RTE coordination with agencies is pending	Explain: No blockage - triple CMP culvert. Baseflow moving through center culvert, approximately 2 ft deep

Fish Passage Site Rating

Criteria	Score	Criteria	Score
Functional Upstream Network	10	**Fish Blockage Height - Ecological Benefits of Removal**	1
10 - Greater than 4 miles 5 - 1 to 4 miles 1 - Less than 1 mile		10 - Greater than 5' 5- 1' to 5' 1 - Less than 1'	
Describe: 19.60 miles		Describe: No blockage - 2 ft deep water in culvert	
Number of Downstream Fish Blockages	10	**Adjacent Land Use**	1
10 - 0 Blockages 5 - 1 Blockage 1 - >1 Blockage		10 - Commercial/Agriculture/Bare Ground 5- Field/Scrub-shrub 1 - Forest	
Describe: None		Describe: Mid-successional forest: tulip poplar, beech, sweet gum	
NAACC Diadromous Fish HUC 12 Watershed Score	10	**Ease of Construction**	5
10 - 3 to 22 5 - 23 to 41 1 - 42 to 61		10 - Easy 5- Average 1 - Difficult/Complex	
Describe: 12		Describe: 14 ft CMP - no blockage	
Percentage of Upstream Impervious Surface	5	**Ease of Access**	1
10 - Less than 10% 5 - 10 to 25% 1 - Greater than 25%		10 - Yes (with existing direct vehicular access to potential site) 5- Yes (open but no existing vehicular access) 1 - No (no vehicular access, clearing needed, steep slopes surrounding site)	
Describe: 16.20%		Describe: Surrounded by forest, steep slopes along roadway embankment	
Fish Habitat Diversity	10	**Utilities Present**	1
10 - Greater than 5 cover types 5 - 3-5 cover types 1 - Less than 3 cover types		10 - No utilities on site 5 - Utilities but not within site 1 - Utilities within potential site	
Describe: LWD, riffles, deep pools, overhanging vegetation, undercut banks, root mats; 6 types		Describe: Sewer line and overhead utilities within site	
		Total Score out of 100	54

Map



Site No.	NAACC 57566		Scale: 1 in. = 2,000

Site Photos









I-495/I-270 Managed Lanes Study - Fish Passage Field Site Assessment Form

Project Details

Project Name: I-495/I-270 Managed Lanes Study
Mitigation Site Number: NAACC 57652
Projects Estimated Stream Mitigation Needs (LF): TBD
Date of Field Assessment: 2/15/2019
Consultant Firm/Investigator(s) RK&K; KJH, BM

Site Location Details-taken from desktop review

County: Prince George's
Cross Roads: Croom Rd (MD 382)/S of Whites Landing Rd
Basin (HUC 8): Patuxent
MDE Watershed (8 digit): 02131101
Proximity to Impacted Stream (mi.): 27.5 (straight line)
Lat/Long: 38.664127 -76.714366

Parcel Size (ac): Within SHA ROW
Drainage Area to Reach (sq. mi. 1.77
Site Opportunities: __X__Fish Passage __X__Channel Restoration _____Habitat Enhancement ____Riparian Buffer Planting
Stream Order: 1st
Stream Hydrology: Perennial
Stream Use: I
Culvert/Dam Type: Box culvert
Culvert/Dam Dimensions: 5 ft tall, 8 ft wide
Blockage Type: ___Complete _X__ Partial ___None
USGS Gage Station #: 01594526
USGS Gage Discharge (fs3/s): ____120_____
USGS Gage Daily Discharge Percentile: ___0-25% ___25-50% _X__50-75% __75-100%
Property Address: Full Mill Branch under MD 382
Property Owner(s): SHA

General Field Observations

Are there records for diadromous fish, mussels, RTE crayfish, or other RTE species within or in close proximity to the fish blockage site? Explain	Can the fish blockage be removed within the road right-of-way or does it require access to parcels beyond right-of-way limits? Explain
Explain: RTE coordination with agencies is pending	Explain: Removal would require access onto private property - narrow ROW

Fish Passage Site Rating

Criteria	Score	Criteria	Score
Functional Upstream Network	10	**Fish Blockage Height - Ecological Benefits of Removal**	1
10 - Greater than 4 miles 5 - 1 to 4 miles 1 - Less than 1 mile		10 - Greater than 5' 5- 1' to 5' 1 - Less than 1'	
Describe: 6.28 miles		Describe: 6 inches from downstream water surface to bottom of water at drop; 8 inches to top of water	
Number of Downstream Fish Blockages	10	**Adjacent Land Use**	1
10 - 0 Blockages 5 - 1 Blockage 1 - >1 Blockage		10 - Commercial/Agriculture/Bare Ground 5- Field/Scrub-shrub 1 - Forest	
Describe: None		Describe: Downstream: forested on private properties; Upstream: forested meadow and scrub-shrub	
NAACC Diadromous Fish HUC 12 Watershed Score	10	**Ease of Construction**	5
10 - 3 to 22 5 - 23 to 41 1 - 42 to 61		10 - Easy 5- Average 1 - Difficult/Complex	
Describe: 7		Describe: 8 ft wide box culvert	
Percentage of Upstream Impervious Surface	10	**Ease of Access**	1
10 - Less than 10% 5 - 10 to 25% 1 - Greater than 25%		10 - Yes (with existing direct vehicular access to potential site) 5- Yes (open but no existing vehicular access) 1 - No (no vehicular access, clearing needed, steep slopes surrounding site)	
Describe: 4.20%		Describe: Downstream: surrounded by forest, narrow ROW guard rail; Upstream: clear on eastern side	
Fish Habitat Diversity	5	**Utilities Present**	1
10 - Greater than 5 cover types 5 - 3-5 cover types 1 - Less than 3 cover types		10 - No utilities on site 5 - Utilities but not within site 1 - Utilities within potential site	
Describe: Deep pool downstream of culvert (1 to 2 ft), overhanging vegetation, undercut banks; 3 types. Extensive sand deposition		Describe: Overhead powerlines on upstream side; None observed on downstream side	
		Total Score out of 100	54

Map



Site No.	NAACC 57652		Scale: 1 in. = 2,000

Site Photos









I-495/I-270 Managed Lanes Study - Fish Passage Field Site Assessment Form

Project Details

Project Name: I-495/I-270 Managed Lanes Study
Mitigation Site Number: NAACC 63410
Projects Estimated Stream Mitigation Needs (LF): TBD
Date of Field Assessment: 2/21/2019
Consultant Firm/Investigator(s) CRI; DS, LE

Site Location Details-taken from desktop review

County: Prince George's
Cross Roads: MD 3 (N. Craine Hwy), S of Annapolis Rd.
Basin (HUC 8): Patuxent
MDE Watershed (8 digit): 2131104
Proximity to Impacted Stream (mi.): 7.4
Lat/Long: 38.982583 -76.711365

Site Data

Parcel Size (ac): Within SHA ROW
Drainage Area to Reach (sq. mi. 1.3
Site Opportunities: __Fish Passage __Channel Restoration ____Habitat Enhancement ____Riparian Buffer Planting
Stream Order: 1st
Stream Hydrology: Perennial
Stream Use: I
Culvert/Dam Type: Box Culvert
Culvert/Dam Dimensions: 18' W x 3.34' to thalweg; 55 feet long
Blockage Type: __Complete ___ Partial _X_None
USGS Gage Station #: 01049150
USGS Gage Discharge (fs3 2.39
USGS Gage Daily Discharge Percentile: ___0-25% ___25-50% ___50-75% ___75-100%
Property Address: SHA ROW - at MD 3 south of Annapolis Rd., Bowie MD 20715
Property Owner(s): SHA

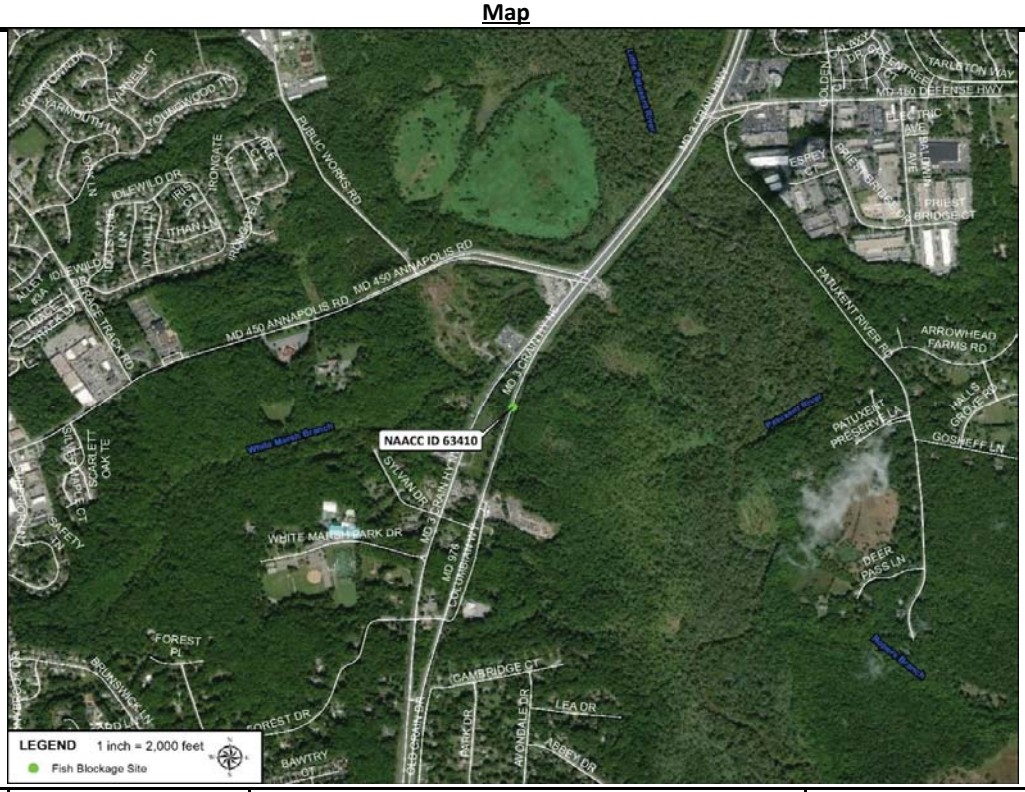
General Field Observations

Are there records for diadromous fish, mussels, RTE crayfish, or other RTE species within or in close proximity to the fish blockage site? Explain	Can the fish blockage be removed within the road right-of-way or does it require access to parcels beyond right-of-way limits? Explain
Explain: RTE coordination with agencies is pending.	Explain: No blockage

Fish Passage Site Rating

Criteria	Score	Criteria	Score
Functional Upstream Network	1	**Fish Blockage Height - Ecological Benefits of Removal**	0
10 - Greater than 4 miles 5 - 1 to 4 miles 1 - Less than 1 mile		10 - Greater than 5' 5- 1' to 5' 1 - Less than 1' 0 - No Blockage	
Describe: 0.3 miles of US network		Describe: No blockage	
Number of Downstream Fish Blockages	10	**Adjacent Land Use**	1
10 - 0 Blockages 5 - 1 Blockage 1 - >1 Blockage		10 - Commercial/Agriculture/Bare Ground 5- Field/Scrub-shrub 1 - Forest	
Describe:		Describe: All forest	
NAACC Diadromous Fish HUC 12 Watershed Score	10	**Ease of Construction**	0
10 - 3 to 22 5 - 23 to 41 1 - 42 to 61		10 - Easy 5- Average 1 - Difficult/Complex 0 - No Blockage	
Describe: 11		Describe: No blockage	
Percentage of Upstream Impervious Surface	5	**Ease of Access**	1
10 - Less than 10% 5 - 10 to 25% 1 - Greater than 25%		10 - Yes (with existing direct vehicular access to potential site) 5- Yes (open but no existing vehicular access) 1 - No (no vehicular access, clearing needed, steep slopes surrounding site)	
Describe: 17.70%		Describe: Clearing needed, not open	
Fish Habitat Diversity	1	**Utilities Present**	5
10 - Greater than 5 cover types 5 - 3-5 cover types 1 - Less than 3 cover types		10 - No utilities on site 5 - Utilities but not within site 1 - Utilities within potential site	
Describe: US: deep pool; DS: roots		Describe: Overhead lines within ROW	
		Total Score out of 100	34

Map



Site No.	NAACC 63410		Scale: 1 in. = 2,000 ft.

Site Photos



Right bank from upstream end of culvert



Downstream of culvert looking downstream



Downstream looking upstream at culvert/no blockage



Left bank from downstream end of culvert, powerlines

I-495/I-270 Managed Lanes Study - Fish Passage Field Site Assessment Form

Project Details

Project Name: I-495/I-270 Managed Lanes Study
Mitigation Site Number: NAACC 63413
Projects Estimated Stream Mitigation Needs (LF): TBD
Date of Field Assessment: 2/21/2019
Consultant Firm/Investigator(s) CRI; DS, LE

Site Location Details-taken from desktop review

County: Prince George's
Cross Roads: MD 3 (N. Craine Hwy), S of Annapolis Rd.
Basin (HUC 8): Patuxent
MDE Watershed (8 digit): 2131104
Proximity to Impacted Stream (mi.): 7.3
Lat/Long: 38.982234 -76.712577

Site Data

Parcel Size (ac): Within SHA ROW
Drainage Area to Reach (sq. mi. 1.3
Site Opportunities: __Fish Passage __Channel Restoration ____Habitat Enhancement ____Riparian Buffer Planting
Stream Order: 1st
Stream Hydrology: Perennial
Stream Use: I
Culvert/Dam Type: Box culvert
Culvert/Dam Dimensions: 18' W x 3.5' H to thalweg
Blockage Type: __Complete ___ Partial _X_None
USGS Gage Station #: 01049150
USGS Gage Discharge (fs3 2.39
USGS Gage Daily Discharge Percentile: ___0-25% ___25-50% ___50-75% ___75-100%
Property Address: SHA ROW - at MD 3 south of Annapolis Rd., Bowie MD 20715
Property Owner(s): SHA

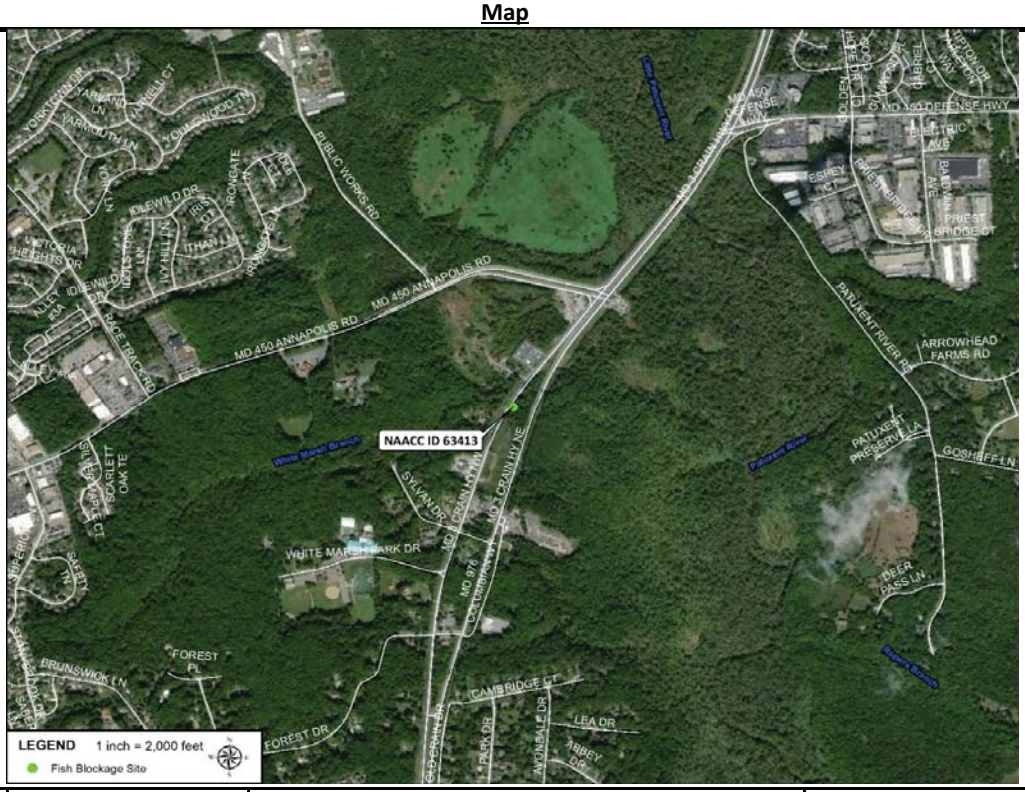
General Field Observations

Are there records for diadromous fish, mussels, RTE crayfish, or other RTE species within or in close proximity to the fish blockage site? Explain	Can the fish blockage be removed within the road right-of-way or does it require access to parcels beyond right-of-way limits? Explain
Explain: RTE coordination with agencies is pending.	Explain: No blockage

Fish Passage Site Rating

Criteria	Score	Criteria	Score
Functional Upstream Network	1	**Fish Blockage Height - Ecological Benefits of Removal**	0
10 - Greater than 4 miles 5 - 1 to 4 miles 1 - Less than 1 mile		10 - Greater than 5' 5- 1' to 5' 1 - Less than 1' 0 - No Blockage	
Describe: 0.3 miles of US network		Describe: No blockage	
Number of Downstream Fish Blockages	5	**Adjacent Land Use**	1
10 - 0 Blockages 5 - 1 Blockage 1 - >1 Blockage		10 - Commercial/Agriculture/Bare Ground 5- Field/Scrub-shrub 1 - Forest	
Describe: 1 DS barrier		Describe: All forest	
NAACC Diadromous Fish HUC 12 Watershed Score	10	**Ease of Construction**	0
10 - 3 to 22 5 - 23 to 41 1 - 42 to 61		10 - Easy 5- Average 1 - Difficult/Complex 0 - No Blockage	
Describe: 11		Describe: No blockage	
Percentage of Upstream Impervious Surface	5	**Ease of Access**	1
10 - Less than 10% 5 - 10 to 25% 1 - Greater than 25%		10 - Yes (with existing direct vehicular access to potential site) 5- Yes (open but no existing vehicular access) 1 - No (no vehicular access, clearing needed, steep slopes surrounding site)	
Describe: 17.60%		Describe: Clearing needed, not open	
Fish Habitat Diversity	1	**Utilities Present**	5
10 - Greater than 5 cover types 5 - 3-5 cover types 1 - Less than 3 cover types		10 - No utilities on site 5 - Utilities but not within site 1 - Utilities within potential site	
Describe: DS: roots, riffle; US: deep pool, riffle		Describe: Overhead lines within ROW	
		Total Score out of 100	29

Map



Site No.	NAACC 63413		Scale: 1 in. = 2,000 ft.

Site Photos



Downstream looking upstream at culvert/no blockage



Left bank at downstream end



Upstream of culvert looking upstream



Left bank at upstream end looking at powerlines

I-495/I-270 Managed Lanes Study - Fish Passage Field Site Assessment Form

Project Details

Project Name: I-495/I-270 Managed Lanes Study
Mitigation Site Number: NAACC 63777
Projects Estimated Stream Mitigation Needs (LF): TBD
Date of Field Assessment: 2/25/2019
Consultant Firm/Investigator(s) CRI; JG, DS, LE

Site Location Details-taken from desktop review

County: Anne Arundel
Cross Roads: MD 3 (Craine Hwy), N of Defense Hwy
Basin (HUC 8): Patuxent
MDE Watershed (8 digit): 2131105
Proximity to Impacted Stream (mi.): 9.1
Lat/Long: 39.000079 -76.700608

Site Data

Parcel Size (ac): Within SHA ROW
Drainage Area to Reach (sq. mi. 2.3
Site Opportunities: _X_Fish Passage _X_Channel Restoration __X__Habitat Enhancement _X__Riparian Buffer Planting
Stream Order: 2nd
Stream Hydrology: Perennial
Stream Use: I
Culvert/Dam Type: Pipe arch w/ concrete bottom
Culvert/Dam Dimensions: Depth: 3/10' W:15'
Blockage Type: __Complete ___ Partial _X_None
USGS Gage Station #: 01049150
USGS Gage Discharge (fs3 2.2
USGS Gage Daily Discharge Percentile: ___0-25% ___25-50% ___50-75% __75-100%
Property Address: SHA ROW - at MD 3 north of Defence Hwy., Crofton MD 21114
Property Owner(s): SHA

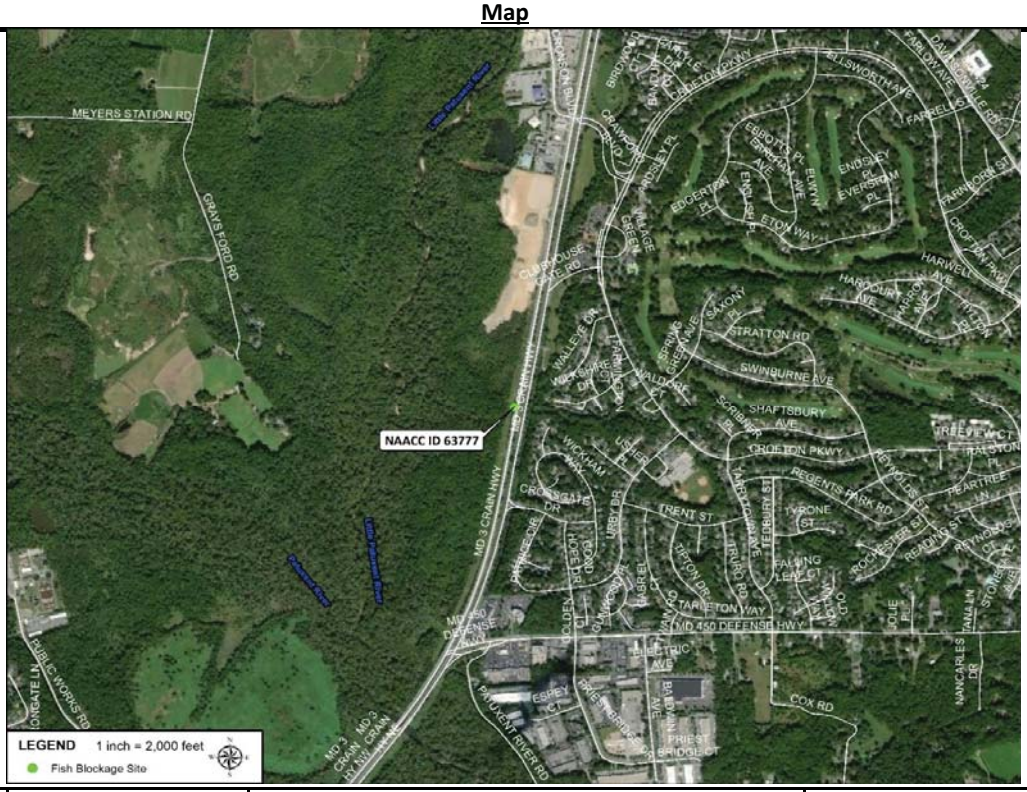
General Field Observations

Are there records for diadromous fish, mussels, RTE crayfish, or other RTE species within or in close proximity to the fish blockage site? Explain	Can the fish blockage be removed within the road right-of-way or does it require access to parcels beyond right-of-way limits? Explain
Explain: RTE coordination with agencies is pending.	Explain: No blockage

Fish Passage Site Rating

Criteria	Score	Criteria	Score
Functional Upstream Network	1	**Fish Blockage Height - Ecological Benefits of Removal**	0
10 - Greater than 4 miles 5 - 1 to 4 miles 1 - Less than 1 mile		10 - Greater than 5' 5- 1' to 5' 1 - Less than 1' 0 - No Blockage	
Describe: 0.4 miles of US network		Describe: No blockage	
Number of Downstream Fish Blockages	10	**Adjacent Land Use**	5
10 - 0 Blockages 5 - 1 Blockage 1 - >1 Blockage		10 - Commercial/Agriculture/Bare Ground 5- Field/Scrub-shrub 1 - Forest	
Describe: No blockages		Describe: DS: field; US: forest	
NAACC Diadromous Fish HUC 12 Watershed Score	10	**Ease of Construction**	0
10 - 3 to 22 5 - 23 to 41 1 - 42 to 61		10 - Easy 5- Average 1 - Difficult/Complex 0 - No Blockage	
Describe: 14		Describe: No blockage	
Percentage of Upstream Impervious Surface	5	**Ease of Access**	5
10 - Less than 10% 5 - 10 to 25% 1 - Greater than 25%		10 - Yes (with existing direct vehicular access to potential site) 5- Yes (open but no existing vehicular access) 1 - No (no vehicular access, clearing needed, steep slopes surrounding site)	
Describe: 21.50%		Describe: DS - no clearing needed, but no direct road. US - sewage line parallel to stream, no immediate access	
Fish Habitat Diversity	5	**Utilities Present**	5
10 - Greater than 5 cover types 5 - 3-5 cover types 1 - Less than 3 cover types		10 - No utilities on site 5 - Utilities but not within site 1 - Utilities within potential site	
Describe: DS: riffle, deep pool, overhanging vegetation; US: riffle		Describe: DS - powerlines overhead, but high at edge of ROW; US - lower powerlines and sewer line	
		Total Score out of 100	46

Map



Site No.	NAACC 63777		Scale: 1 in. = 2,000 ft.

Site Photos



Downstream looking upstream at culvert/no blockage



Downstream of culvert looking downstream



Left bank looking at ROW access and overhead lines



Upstream of culvert looking upstream

I-495/I-270 Managed Lanes Study - Fish Passage Field Site Assessment Form

Project Details

Project Name: I-495/I-270 Managed Lanes Study
Mitigation Site Number: NAACC 63785
Projects Estimated Stream Mitigation Needs (LF): TBD
Date of Field Assessment: 2/28/2019
Consultant Firm/Investigator(s) CRI; DS, KS

Site Location Details-taken from desktop review

County: Anne Arundel
Cross Roads: MD 32, NW of MD 295
Basin (HUC 8): Patuxent
MDE Watershed (8 digit): 2131105
Proximity to Impacted Stream (mi.): 9.9
Lat/Long: 39.119754 -76.782597

Site Data

Parcel Size (ac): Within SHA ROW
Drainage Area to Reach (sq. mi. 11.9
Site Opportunities: _X_Fish Passage _X_Channel Restoration __X__Habitat Enhancement _X__Riparian Buffer Planting
Stream Order: 3rd
Stream Hydrology: Perennial
Stream Use: I
Culvert/Dam Type: Boulder/rip-rap
Culvert/Dam Dimensions: 23' wide
Blockage Type: ___Complete _X__ Partial ___None
USGS Gage Station #: 01594440
USGS Gage Discharge (fs3 590 cfs
USGS Gage Daily Discharge Percentile: ___0-25% ___25-50% _X_50-75% ___75-100%
Property Address: SHA ROW - at MD 32 northwest of MD 295, Annapolis Junction MD 20701
Property Owner(s): SHA

General Field Observations

Are there records for diadromous fish, mussels, RTE crayfish, or other RTE species within or in close proximity to the fish blockage site? Explain	Can the fish blockage be removed within the road right-of-way or does it require access to parcels beyond right-of-way limits? Explain
Explain: RTE coordination with agencies is pending.	Explain: No blockage DS of MD 32. Scored riprap blockage US of MD 32, DS of National Business Hwy - located in ROW between roadways

Fish Passage Site Rating

Criteria	Score	Criteria	Score
Functional Upstream Network	10	**Fish Blockage Height - Ecological Benefits of Removal**	5
10 - Greater than 4 miles 5 - 1 to 4 miles 1 - Less than 1 mile		10 - Greater than 5' 5- 1' to 5' 1 - Less than 1' 0 - No Blockage	
Describe: >10 miles of US network		Describe: 1.2 foot drop in water surface boulder/riprap blockage - likely a partial/complete blockage during low flows.	
Number of Downstream Fish Blockages	5	**Adjacent Land Use**	5
10 - 0 Blockages 5 - 1 Blockage 1 - >1 Blockage		10 - Commercial/Agriculture/Bare Ground 5- Field/Scrub-shrub 1 - Forest	
Describe: 1 blockage		Describe: LB - scrub-shrub/small tree forest in ROW. RB scrub-shrub/forest	
NAACC Diadromous Fish HUC 12 Watershed Score	1	**Ease of Construction**	5
10 - 3 to 22 5 - 23 to 41 1 - 42 to 61		10 - Easy 5- Average 1 - Difficult/Complex 0 - No Blockage	
Describe: 48		Describe: "Natural blockage" although not natural. No evidence that it is sewer crossing, but not ruled out.	
Percentage of Upstream Impervious Surface	1	**Ease of Access**	5
10 - Less than 10% 5 - 10 to 25% 1 - Greater than 25%		10 - Yes (with existing direct vehicular access to potential site) 5- Yes (open but no existing vehicular access) 1 - No (no vehicular access, clearing needed, steep slopes surrounding site)	
Describe: 32.10%		Describe: Clearing may be needed on LB, but RB is open and in ROW	
Fish Habitat Diversity	5	**Utilities Present**	10
10 - Greater than 5 cover types 5 - 3-5 cover types 1 - Less than 3 cover types		10 - No utilities on site 5 - Utilities but not within site 1 - Utilities within potential site	
Describe: Riffle, deep pool, cobble/boulder, roots		Describe: No evidence of utilities on site.	
		Total Score out of 100	52

Map



Site No.	NAACC 63785		Scale: 1 in. =

Site Photos



Upstream of blockage looking upstream



Upstream of blockage looking downstream



Left bank upstream of blockage



Downstream looking upstream at partial blockage

I-495/I-270 Managed Lanes Study - Fish Passage Field Site Assessment Form

Project Details

Project Name: I-495/I-270 Managed Lanes Study
Mitigation Site Number: NAACC 64432
Projects Estimated Stream Mitigation Needs (LF): TBD
Date of Field Assessment: 3/6/2019
Consultant Firm/Investigator(s) CRI; JG, DS

Site Location Details-taken from desktop review

County: Prince George's
Cross Roads: MD 197 (Laurel Bowie Rd.), N of Lemons Bridge Rd./S of Old Laurel Bowie Rd.
Basin (HUC 8): Patuxent
MDE Watershed (8 digit): 2060006
Proximity to Impacted Stream (mi.): 5.6
Lat/Long: 39.025808 -76.77116

Site Data

Parcel Size (ac): Within SHA ROW
Drainage Area to Reach (sq. mi. 0.6
Site Opportunities: _X_Fish Passage __Channel Restoration ____Habitat Enhancement ____Riparian Buffer Planting
Stream Order: 1st
Stream Hydrology: Perennial
Stream Use: I
Culvert/Dam Type: Double culvert RCP
Culvert/Dam Dimensions: 8'
Blockage Type: _X_Complete ___ Partial ___None
USGS Gage Station #: 01594440
USGS Gage Discharge (fs3 1020 cfs
USGS Gage Daily Discharge Percentile: ___0-25% ___25-50% ___50-75% _X_75-100%
Property Address: SHA ROW - at MD 197 north of Lemons Bridge Rd., south of Laurel Bowie Rd., Bowie MD 20720
Property Owner(s): SHA

General Field Observations

Are there records for diadromous fish, mussels, RTE crayfish, or other RTE species within or in close proximity to the fish blockage site? Explain	Can the fish blockage be removed within the road right-of-way or does it require access to parcels beyond right-of-way limits? Explain
Explain: RTE coordination with agencies is pending.	Explain: Yes, well within ROW with additional ROW upstream

Fish Passage Site Rating

Criteria	Score	Criteria	Score
Functional Upstream Network	5	**Fish Blockage Height - Ecological Benefits of Removal**	5
10 - Greater than 4 miles 5 - 1 to 4 miles 1 - Less than 1 mile		10 - Greater than 5' 5- 1' to 5' 1 - Less than 1' 0 - No Blockage	
Describe: 1.3 miles of US network		Describe: Riprap/boulder just US of culvert causing 1.3 foot drop	
Number of Downstream Fish Blockages	10	**Adjacent Land Use**	1
10 - 0 Blockages 5 - 1 Blockage 1 - >1 Blockage		10 - Commercial/Agriculture/Bare Ground 5- Field/Scrub-shrub 1 - Forest	
Describe: 0 blockages DS; however partial blockage at site NAACC 64432B		Describe: Forested upstream but ROW extends well upstream	
NAACC Diadromous Fish HUC 12 Watershed Score	10	**Ease of Construction**	5
10 - 3 to 22 5 - 23 to 41 1 - 42 to 61		10 - Easy 5- Average 1 - Difficult/Complex 0 - No Blockage	
Describe: 17		Describe: "Natural Blockage" riprap. 1-5ft (1.3')	
Percentage of Upstream Impervious Surface	10	**Ease of Access**	1
10 - Less than 10% 5 - 10 to 25% 1 - Greater than 25%		10 - Yes (with existing direct vehicular access to potential site) 5- Yes (open but no existing vehicular access) 1 - No (no vehicular access, clearing needed, steep slopes surrounding site)	
Describe: 4.57%		Describe: Moderate slope from road, clearing needed. Mature/young/regen deciduous	
Fish Habitat Diversity	10	**Utilities Present**	10
10 - Greater than 5 cover types 5 - 3-5 cover types 1 - Less than 3 cover types		10 - No utilities on site 5 - Utilities but not within site 1 - Utilities within potential site	
Describe: Roots, woody, riffle, cobble/boulder, deep pool, backwater pools		Describe: None observed	
		Total Score out of 100	67

Map



Site No.	NAACC 64432		Scale: 1 in. = 2,000 ft.

Site Photos



Upstream of blockage looking upstream



Left bank looking at riparian area



Rip-rap placed at blockage



Looking upstream at blockage

I-495/I-270 Managed Lanes Study - Fish Passage Field Site Assessment Form

Project Details

Project Name: I-495/I-270 Managed Lanes Study
Mitigation Site Number: NAACC 64434
Projects Estimated Stream Mitigation Needs (LF): TBD
Date of Field Assessment: 2/28/2019
Consultant Firm/Investigator(s) CRI; DS, KS

Site Location Details-taken from desktop review

County: Prince George's
Cross Roads: MD 197 (Laurel Bowie Rd.), S of Race Track Rd.
Basin (HUC 8): Patuxent
MDE Watershed (8 digit): 2131104
Proximity to Impacted Stream (mi.): 5.8
Lat/Long: 39.003508 -76.761299

Site Data

Parcel Size (ac): Within SHA ROW
Drainage Area to Reach (sq. mi. 5.94
Site Opportunities: __Fish Passage __Channel Restoration ___Habitat Enhancement ____Riparian Buffer Planting
Stream Order: 3rd
Stream Hydrology: Perennial
Stream Use: I
Culvert/Dam Type: Double Box Culvert
Culvert/Dam Dimensions: 12 ft wide, 200 feet long
Blockage Type: __Complete ___ Partial _X_None
USGS Gage Station #: 01594440
USGS Gage Discharge (fs3 590 cfs
USGS Gage Daily Discharge Percentile: ___0-25% ___25-50% _X_50-75% ___75-100%
Property Address: SHA ROW - at MD 197, south of Race Track Rd., Bowie MD 20715
Property Owner(s): SHA

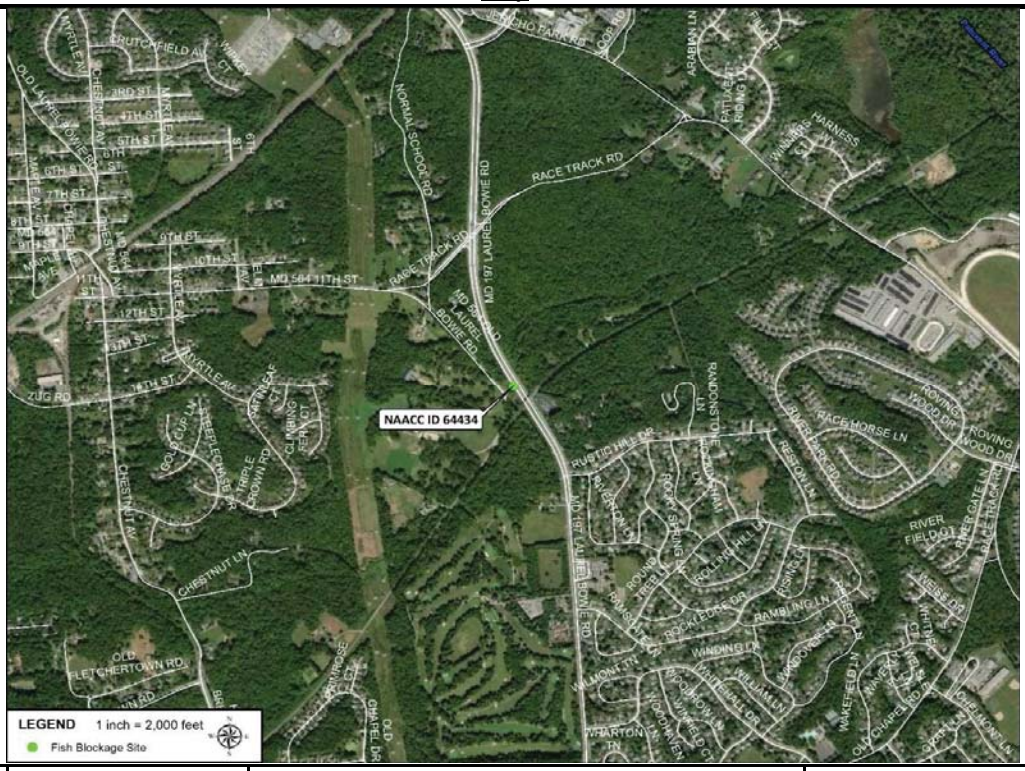
General Field Observations

Are there records for diadromous fish, mussels, RTE crayfish, or other RTE species within or in close proximity to the fish blockage site? Explain	Can the fish blockage be removed within the road right-of-way or does it require access to parcels beyond right-of-way limits? Explain
Explain: RTE coordination with agencies pending.	Explain: No blockage, steep grade control riffles at both ends of culvert. Within ROW

Fish Passage Site Rating

Criteria	Score	Criteria	Score
Functional Upstream Network	10	**Fish Blockage Height - Ecological Benefits of Removal**	0
10 - Greater than 4 miles 5 - 1 to 4 miles 1 - Less than 1 mile		10 - Greater than 5' 5- 1' to 5' 1 - Less than 1' 0 - No Blockage	
Describe: >10 miles of US network		Describe: No blockage, just riffle grade control DS of crossing	
Number of Downstream Fish Blockages	10	**Adjacent Land Use**	1
10 - 0 Blockages 5 - 1 Blockage 1 - >1 Blockage		10 - Commercial/Agriculture/Bare Ground 5- Field/Scrub-shrub 1 - Forest	
Describe:		Describe: Forest on both banks	
NAACC Diadromous Fish HUC 12 Watershed Score	10	**Ease of Construction**	0
10 - 3 to 22 5 - 23 to 41 1 - 42 to 61		10 - Easy 5- Average 1 - Difficult/Complex 0 - No Blockage	
Describe: 17		Describe: Not a true blockage	
Percentage of Upstream Impervious Surface	5	**Ease of Access**	1
10 - Less than 10% 5 - 10 to 25% 1 - Greater than 25%		10 - Yes (with existing direct vehicular access to potential site) 5- Yes (open but no existing vehicular access) 1 - No (no vehicular access, clearing needed, steep slopes surrounding site)	
Describe: 11.70%		Describe: Tree clearing needed, no vehicular access exising	
Fish Habitat Diversity	10	**Utilities Present**	10
10 - Greater than 5 cover types 5 - 3-5 cover types 1 - Less than 3 cover types		10 - No utilities on site 5 - Utilities but not within site 1 - Utilities within potential site	
Describe: Riffle, cobble/boulder, roots, deep pool, woody, backwater pool		Describe: No utilities located DS	
		Total Score out of 100	57

Map



Site No.	NAACC 64434		Scale: 1 in. = 2,000 ft.

Site Photos



Downstream of culvert looking downstream



Downstream looking upstream at culvert/no blockage



Right bank downstream of culvert



Upstream of culvert looking upstream

I-495/I-270 Managed Lanes Study - Fish Passage Field Site Assessment Form

Project Details

Project Name: I-495/I-270 Managed Lanes Study
Mitigation Site Number: NAACC 64498
Projects Estimated Stream Mitigation Needs (LF): TBD
Date of Field Assessment: 2/25/2019
Consultant Firm/Investigator(s) CRI; JG, DS, LE

Site Location Details-taken from desktop review

County: Anne Arundel
Cross Roads: MD 3 (Crain Hwy), S of MD 424/N of Defense Hwy
Basin (HUC 8): Patuxent
MDE Watershed (8 digit): 2131105
Proximity to Impacted Stream (mi.): 9.1
Lat/Long: 38.999801 -76.700676

Site Data

Parcel Size (ac): Within SHA ROW
Drainage Area to Reach (sq. mi. 0.5
Site Opportunities: _X_Fish Passage _X_Channel Restoration __X__Habitat Enhancement __X__Riparian Buffer Planting
Stream Order: 1st
Stream Hydrology: Perennial
Stream Use: I
Culvert/Dam Type: CMP
Culvert/Dam Dimensions: W: 11.5' H: 8'
Blockage Type: ___Complete _X__ Partial ___None
USGS Gage Station #: 01649150
USGS Gage Discharge (fs3 2.2
USGS Gage Daily Discharge Percentile: ___0-25% ___25-50% ___50-75% ___75-100%
Property Address: SHA ROW - at MD 3, south of MD 424 and north of Defense Hwy., Crofton MD 21114
Property Owner(s): SHA

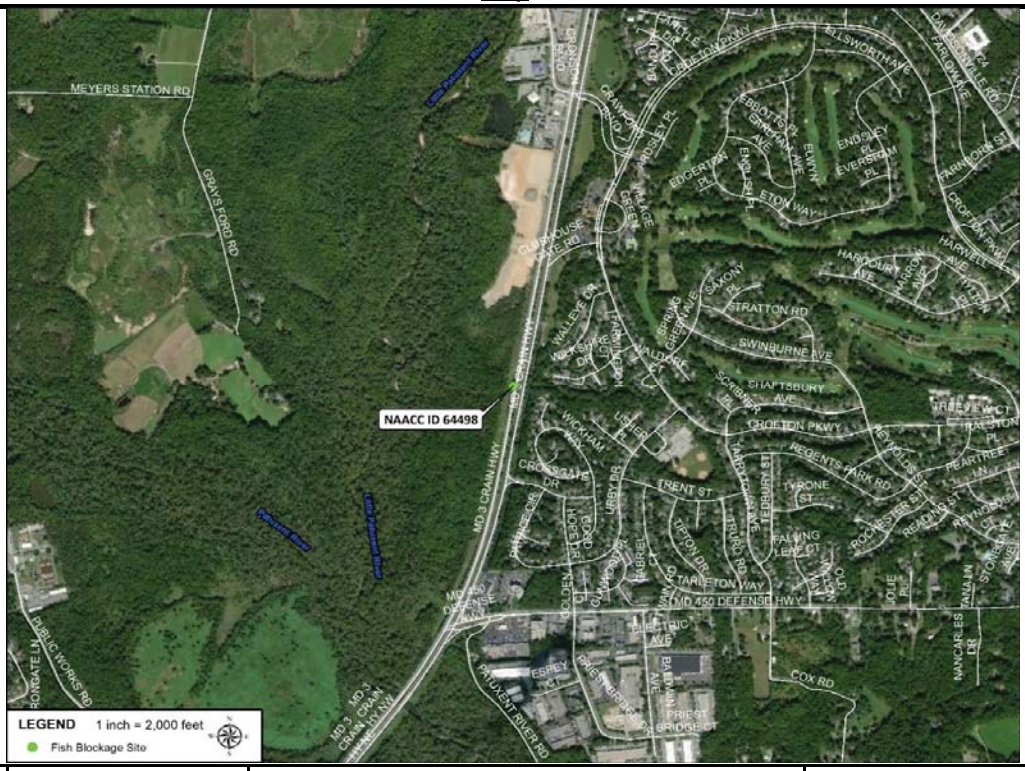
General Field Observations

Are there records for diadromous fish, mussels, RTE crayfish, or other RTE species within or in close proximity to the fish blockage site? Explain	Can the fish blockage be removed within the road right-of-way or does it require access to parcels beyond right-of-way limits? Explain
Explain: RTE coordination with agencies is pending.	Explain: Within ROW

Fish Passage Site Rating

Criteria	Score	Criteria	Score
Functional Upstream Network	1	**Fish Blockage Height - Ecological Benefits of Removal**	1
10 - Greater than 4 miles 5 - 1 to 4 miles 1 - Less than 1 mile		10 - Greater than 5' 5- 1' to 5' 1 - Less than 1' 0 - No Blockage	
Describe: 0.6 miles of US network		Describe: 0.7 feet from bottom of CMP to bottom of stream. Water depth is 0.2 feet inside culvert.	
Number of Downstream Fish Blockages	10	**Adjacent Land Use**	5
10 - 0 Blockages 5 - 1 Blockage 1 - >1 Blockage		10 - Commercial/Agriculture/Bare Ground 5- Field/Scrub-shrub 1 - Forest	
Describe: 0		Describe: US: forested; DS: field	
NAACC Diadromous Fish HUC 12 Watershed Score	10	**Ease of Construction**	5
10 - 3 to 22 5 - 23 to 41 1 - 42 to 61		10 - Easy 5- Average 1 - Difficult/Complex 0 - No Blockage	
Describe: 14		Describe: Less than 1 foot drop with diameter > 48 inches	
Percentage of Upstream Impervious Surface	5	**Ease of Access**	5
10 - Less than 10% 5 - 10 to 25% 1 - Greater than 25%		10 - Yes (with existing direct vehicular access to potential site) 5- Yes (open but no existing vehicular access) 1 - No (no vehicular access, clearing needed, steep slopes surrounding site)	
Describe: 21.70%		Describe: LB no clearing needed, grading necessary	
Fish Habitat Diversity	1	**Utilities Present**	5
10 - Greater than 5 cover types 5 - 3-5 cover types 1 - Less than 3 cover types		10 - No utilities on site 5 - Utilities but not within site 1 - Utilities within potential site	
Describe: US: riffle; DS: pool, overhanging vegetation		Describe: Low powerlines US. High powerlines at edge of ROW	
		Total Score out of 100	48

Map



Site No.	NAACC 64498		Scale: 1 in. = 2,000 ft.

Site Photos



Upstream looking downstream at culvert/partial blockage



Upstream looking upstream at old cement structure outside of ROW



Right bank looking at powerlines and plantings



Downstream looking upstream at culverts/partial blockages

I-495/I-270 Managed Lanes Study - Fish Passage Field Site Assessment Form

Project Details

Project Name: I-495/I-270 Managed Lanes Study
Mitigation Site Number: NAACC 64596
Projects Estimated Stream Mitigation Needs (LF): TBD
Date of Field Assessment: 2/25/2019
Consultant Firm/Investigator(s) CRI; JG, DS

Site Location Details-taken from desktop review

County: Montgomery
Cross Roads: MD 108 (Ashton Rd.), E of New Hampshire Ave.
Basin (HUC 8): Patuxent
MDE Watershed (8 digit): 2131107
Proximity to Impacted Stream (mi.): 9.8
Lat/Long: 39.151371 -77.00691

Site Data

Parcel Size (ac): Within SHA ROW
Drainage Area to Reach (sq. mi. 0.5
Site Opportunities: ___Fish Passage _X_Channel Restoration __X__Habitat Enhancement ____Riparian Buffer Planting
Stream Order: 1st
Stream Hydrology: Perennial
Stream Use: IV
Culvert/Dam Type: Double RCP
Culvert/Dam Dimensions: 48'' RCP, 25 feet long
Blockage Type: __Complete ___ Partial _X_None
USGS Gage Station #: 01591700
USGS Gage Discharge (fs3 59.7
USGS Gage Daily Discharge Percentile: ___0-25% ___25-50% ___50-75% ___75-100%
Property Address: SHA ROW - at MD 108, east of New Hampshire Ave, Ashton MD 20861
Property Owner(s): SHA

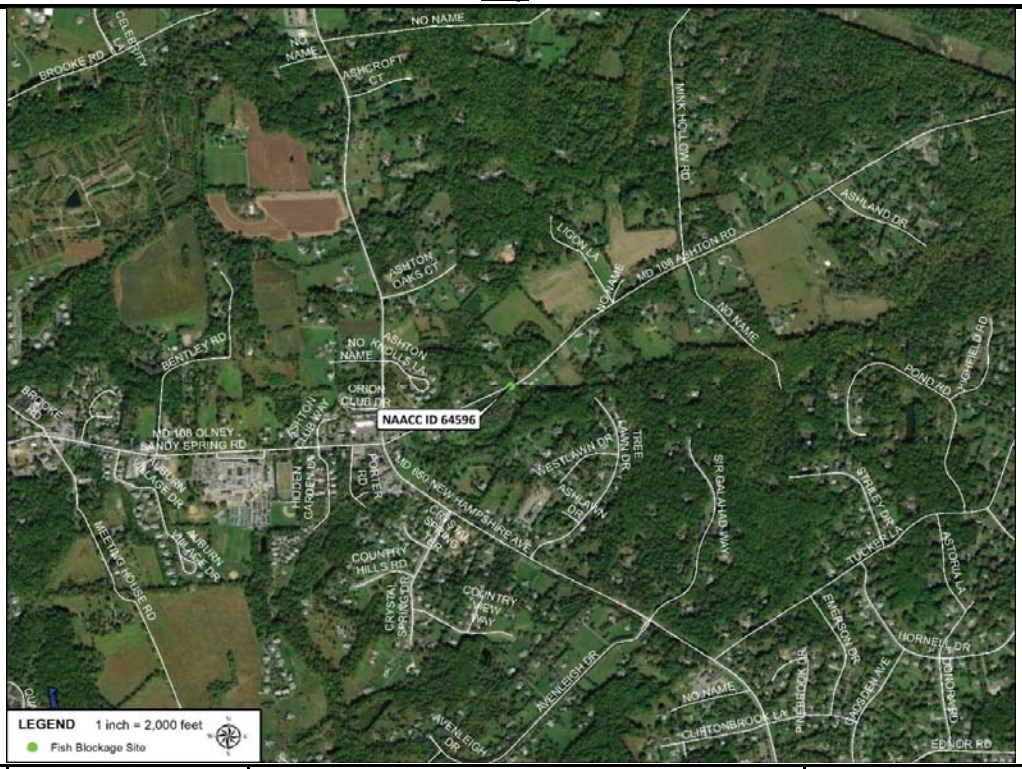
General Field Observations

Are there records for diadromous fish, mussels, RTE crayfish, or other RTE species within or in close proximity to the fish blockage site? Explain	Can the fish blockage be removed within the road right-of-way or does it require access to parcels beyond right-of-way limits? Explain
Explain: RTE coordination with agencies pending.	Explain: No blockage

Fish Passage Site Rating

Criteria	Score	Criteria	Score
Functional Upstream Network	1	**Fish Blockage Height - Ecological Benefits of Removal**	1
10 - Greater than 4 miles 5 - 1 to 4 miles 1 - Less than 1 mile		10 - Greater than 5' 5- 1' to 5' 1 - Less than 1' 0 - No Blockage	
Describe: 0.2 miles of US network		Describe: None. 0.2' water depth in RCP at US end.	
Number of Downstream Fish Blockages	5	**Adjacent Land Use**	5
10 - 0 Blockages 5 - 1 Blockage 1 - >1 Blockage		10 - Commercial/Agriculture/Bare Ground 5- Field/Scrub-shrub 1 - Forest	
Describe: 1 DS barrier		Describe: US: Forested. DS: residential lawn (field)	
NAACC Diadromous Fish HUC 12 Watershed Score	1	**Ease of Construction**	0
10 - 3 to 22 5 - 23 to 41 1 - 42 to 61		10 - Easy 5- Average 1 - Difficult/Complex 0 - No Blockage	
Describe: 43		Describe: No blockage	
Percentage of Upstream Impervious Surface	10	**Ease of Access**	5
10 - Less than 10% 5 - 10 to 25% 1 - Greater than 25%		10 - Yes (with existing direct vehicular access to potential site) 5- Yes (open but no existing vehicular access) 1 - No (no vehicular access, clearing needed, steep slopes surrounding site)	
Describe: 3.59%		Describe: Open downstream (some clearing), clearing needed upstream	
Fish Habitat Diversity	10	**Utilities Present**	1
10 - Greater than 5 cover types 5 - 3-5 cover types 1 - Less than 3 cover types		10 - No utilities on site 5 - Utilities but not within site 1 - Utilities within potential site	
Describe: Riffle, cobble/boulder, undercut bank, backwater, deep pool, roots		Describe: Water line DS; powerlines US and DS	
		Total Score out of 100	39

Map



Site No.	NAACC 64596		Scale: 1 in. = 2,000 ft.

Site Photos



Downstream looking upstream at culvert/no blockage



Downstream of culvert looking downstream



Upstream of culvert looking upstream



Left bank at upstream end of culvert looking at utilities

I-495/I-270 Managed Lanes Study - Fish Passage Field Site Assessment Form

Project Details

Project Name: I-495/I-270 Managed Lanes Study
Mitigation Site Number: NAACC 64628
Projects Estimated Stream Mitigation Needs (LF): TBD
Date of Field Assessment: 3/6/2019
Consultant Firm/Investigator(s) CRI; JG, DS

Site Location Details-taken from desktop review

County: Prince George's
Cross Roads: MD 197 (Laurel Bowie Rd.), N of Race Track Rd.
Basin (HUC 8): Patuxent
MDE Watershed (8 digit): 2131104
Proximity to Impacted Stream (mi.): 6.1
Lat/Long: 39.012859 -76.762718

Site Data

Parcel Size (ac): Within SHA ROW
Drainage Area to Reach (sq. mi. 0.45
Site Opportunities: _X_Fish Passage _X_Channel Restoration __X__Habitat Enhancement ____Riparian Buffer Planting
Stream Order: 1st
Stream Hydrology: Perennial
Stream Use: I
Culvert/Dam Type: Pipe arch
Culvert/Dam Dimensions: 9.5' x 6.8', 130 feet long
Blockage Type: ___Complete _X__ Partial ___None
USGS Gage Station #: 01594440
USGS Gage Discharge (fs3 1020 cfs
USGS Gage Daily Discharge Percentile: ___0-25% ___25-50% ___50-75% _X_75-100%
Property Address: SHA ROW - at MD 197, north of Race Track Rd, Bowie MD 20720
Property Owner(s): SHA

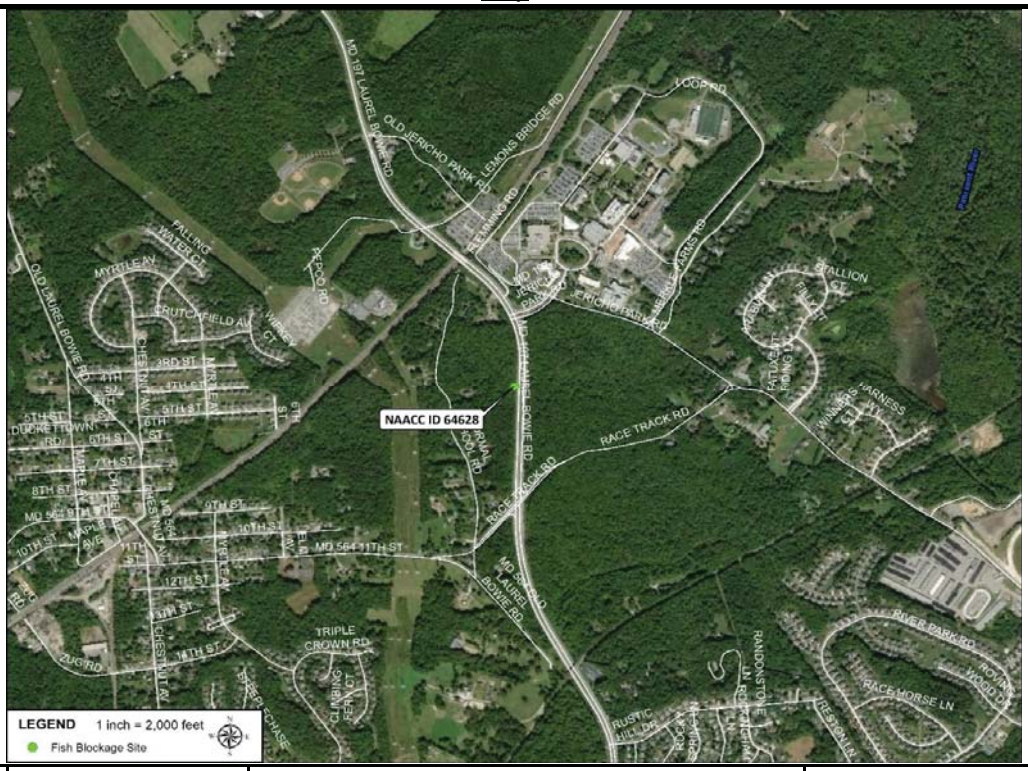
General Field Observations

Are there records for diadromous fish, mussels, RTE crayfish, or other RTE species within or in close proximity to the fish blockage site? Explain	Can the fish blockage be removed within the road right-of-way or does it require access to parcels beyond right-of-way limits? Explain
Explain: RTE coordination with agencies is pending.	Explain: Yes, blockage is partial, low flow in upstream end of crossing at gradient change within CMP.

Fish Passage Site Rating

Criteria	Score	Criteria	Score
Functional Upstream Network	1	**Fish Blockage Height - Ecological Benefits of Removal**	1
10 - Greater than 4 miles 5 - 1 to 4 miles 1 - Less than 1 mile		10 - Greater than 5' 5- 1' to 5' 1 - Less than 1' 0 - No Blockage	
Describe: 0.7 miles of US network		Describe: Water depth at top of gradient: 0.15 feet; Water depth at bottom of gradient in CMP: 0.20 feet. Potential partial blockage during low flows DS of culvert at rip rap.	
Number of Downstream Fish Blockages	10	**Adjacent Land Use**	1
10 - 0 Blockages 5 - 1 Blockage 1 - >1 Blockage		10 - Commercial/Agriculture/Bare Ground 5- Field/Scrub-shrub 1 - Forest	
Describe: 0 blockages		Describe: Forest upstream and downstream	
NAACC Diadromous Fish HUC 12 Watershed Score	10	**Ease of Construction**	5
10 - 3 to 22 5 - 23 to 41 1 - 42 to 61		10 - Easy 5- Average 1 - Difficult/Complex 0 - No Blockage	
Describe: 17		Describe: Large pipe, less than 1 foot	
Percentage of Upstream Impervious Surface	5	**Ease of Access**	1
10 - Less than 10% 5 - 10 to 25% 1 - Greater than 25%		10 - Yes (with existing direct vehicular access to potential site) 5- Yes (open but no existing vehicular access) 1 - No (no vehicular access, clearing needed, steep slopes surrounding site)	
Describe: 10.20%		Describe: Clearing of young regen trees required. Some mature deciduous.	
Fish Habitat Diversity	5	**Utilities Present**	5
10 - Greater than 5 cover types 5 - 3-5 cover types 1 - Less than 3 cover types		10 - No utilities on site 5 - Utilities but not within site 1 - Utilities within potential site	
Describe: Deep pool, riffle, boulder/cobble, backwater pool, roots		Describe: Sewer downstream. Transformer above inlet of culvert (traffic light)	
		Total Score out of 100	44

Map



Site No.	NAACC 64628		Scale: 1 in. =

Site Photos



Closeup of inlet, upper end of gradient change



Downstream looking upstream at culvert



Right bank at downstream end



Looking at potential partial blockage downstream of culvert