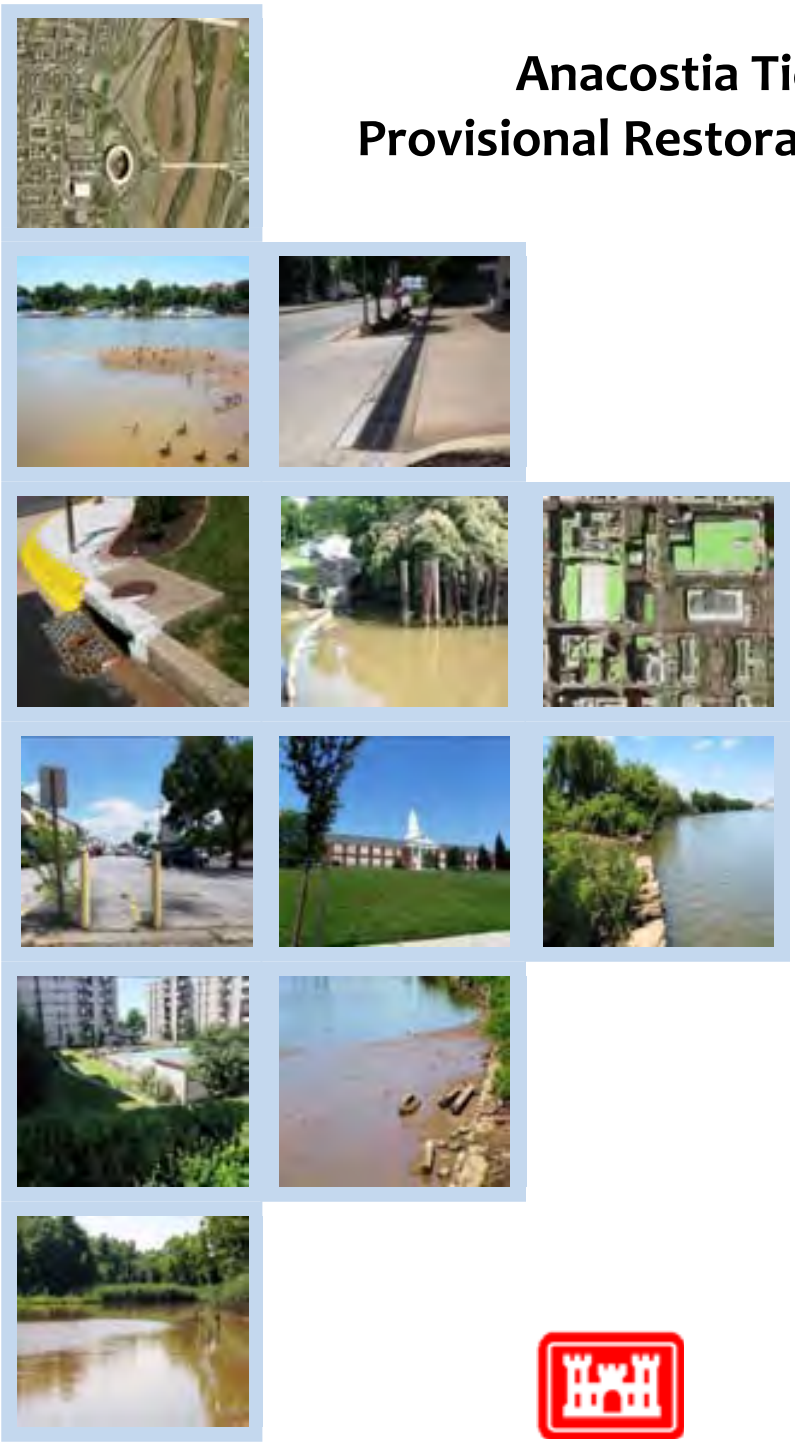
Anacostia River Watershed Restoration Plan



Anacostia Tidal River Reach
Provisional Restoration Project Inventory

August 2009

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I. Background

The Anacostia Tidal River Reach is a freshwater tidal embayment of the Potomac River estuary. The highly developed subwatershed is the subject of intense restoration interest and the banks of much of the lower mainstem has been set aside as public park and wetland fringe. The mainstem extends approximately 8.4 miles from the confluence of Northwest and Northeast Branches near Bladensburg, Maryland, to the confluence with the Potomac River. Including the minor tributaries, the tidal reach drains about 10,880 acres.

Recognizing both the severity and extent of environmental and ecological problems affecting the Anacostia River watershed and the need to better coordinate restoration efforts and resources, the three jurisdictions and the Metropolitan Washington Council of Governments entered into a Federal cost-sharing agreement with the U.S. Army Corps of Engineers to prepare a 10-year watershed restoration plan. The Anacostia River Watershed Restoration Plan will identify opportunities and approaches for restoring and protecting the 14 major subwatersheds and the tidal river reach within the Anacostia River basin.

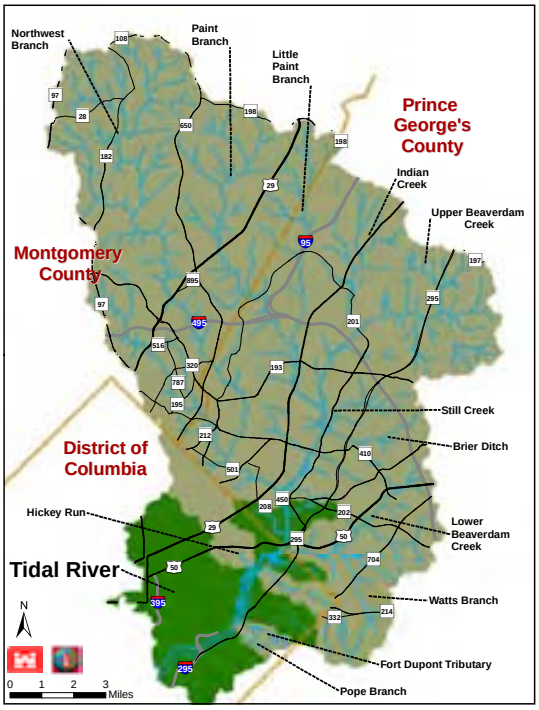

Figure 1- Anacostia Tidal River Reach Subwatershed

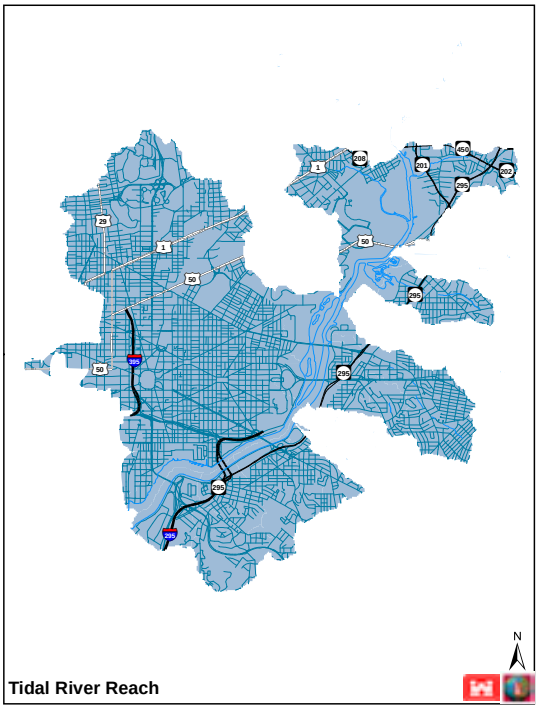

Figure 2- Anacostia Tidal River Reach Subwatershed Unit

II. Restoration Inventory

The following sections include stormwater retrofit, stream restoration, wetland restoration, riparian restoration, and other-related projects and actions for further evaluation by others. As previously noted, the restoration projects presented herein are conceptual or planning level only. It is recognized that more detailed drainage and site analyses are required, and that facility size and costs shown represent approximations.

To facilitate reader understanding of the Anacostia River Reach Subwatershed: Provisional Restoration Project Inventory, information has been organized into the following four sections:

- Section A - Impervious Features Summary
- Section B - Existing Stormwater Management Facilities Summary
- Section C - Candidate Restoration Project Summary
- Section D - Anacostia River Reach Candidate Restoration Projects
- Section E – Anacostia River Reach Toxic Hotspots
- Section F – Combined Sewer Overflow Area - Greenroofs

A. Impervious Features Summary

Figure 3 - Summary: Anacostia River Reach Impervious Features

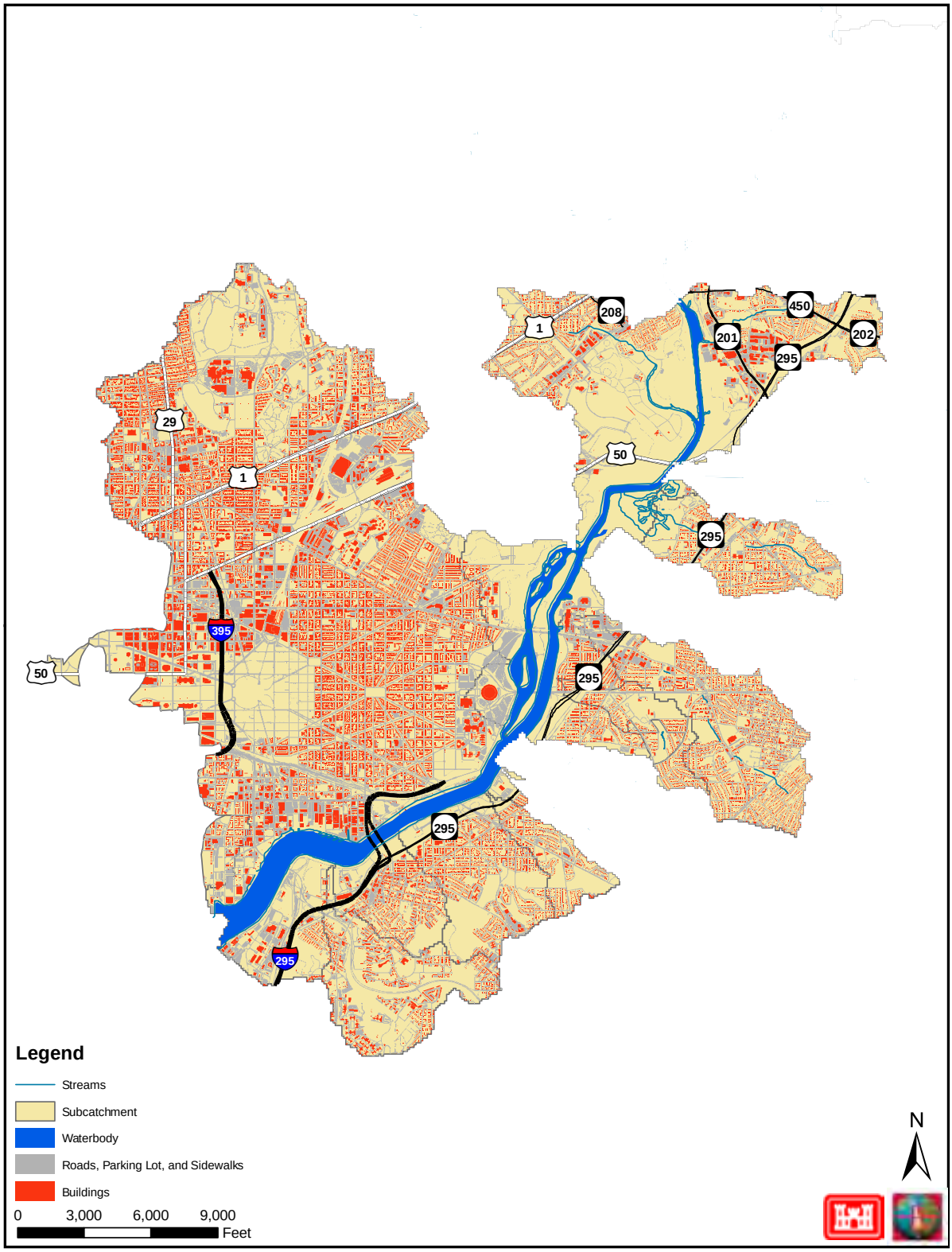

Table 1. Anacostia River Reach: Summary - Impervious Surfaces

Category	Acres	Miles
1. Roads	**2,241.26**	**403.45**
a. State/Federal	512.35	54.63
b. Local	1,728.91	348.82
2. Parking Lots	**1,402.95**	
a. Public/Institutional	607.07	
b. Private	795.88	
3.Roofs	**2,249.86**	
a. Public/Institutional	221.11	
b .Private	1,760.48	
c. Single Family	268.27	
3. Other		
a. Sidewalks *	195.61	
b. Single Family Driveways ^	166.96	
Total	**6,256.6**	
Avg. % Imperviousness	40%	
# of Single Family Homes	11,926	
Total Drainage area	**15,552.0**	
^ Driveways assumptions	Average Driveway=0.014 acres	
*** Sidewalks assumptions**	Width equal to 4 feet with a sidewalk running the length of one side of the road.	
Note: Drainage area and tributary area calculated using the USGS 30-meter digital elevation model (DEM)		

B. Existing Stormwater Management Facilities Summary

Figure 4 - Summary: Anacostia River Reach Existing Stormwater Management BMP Sites

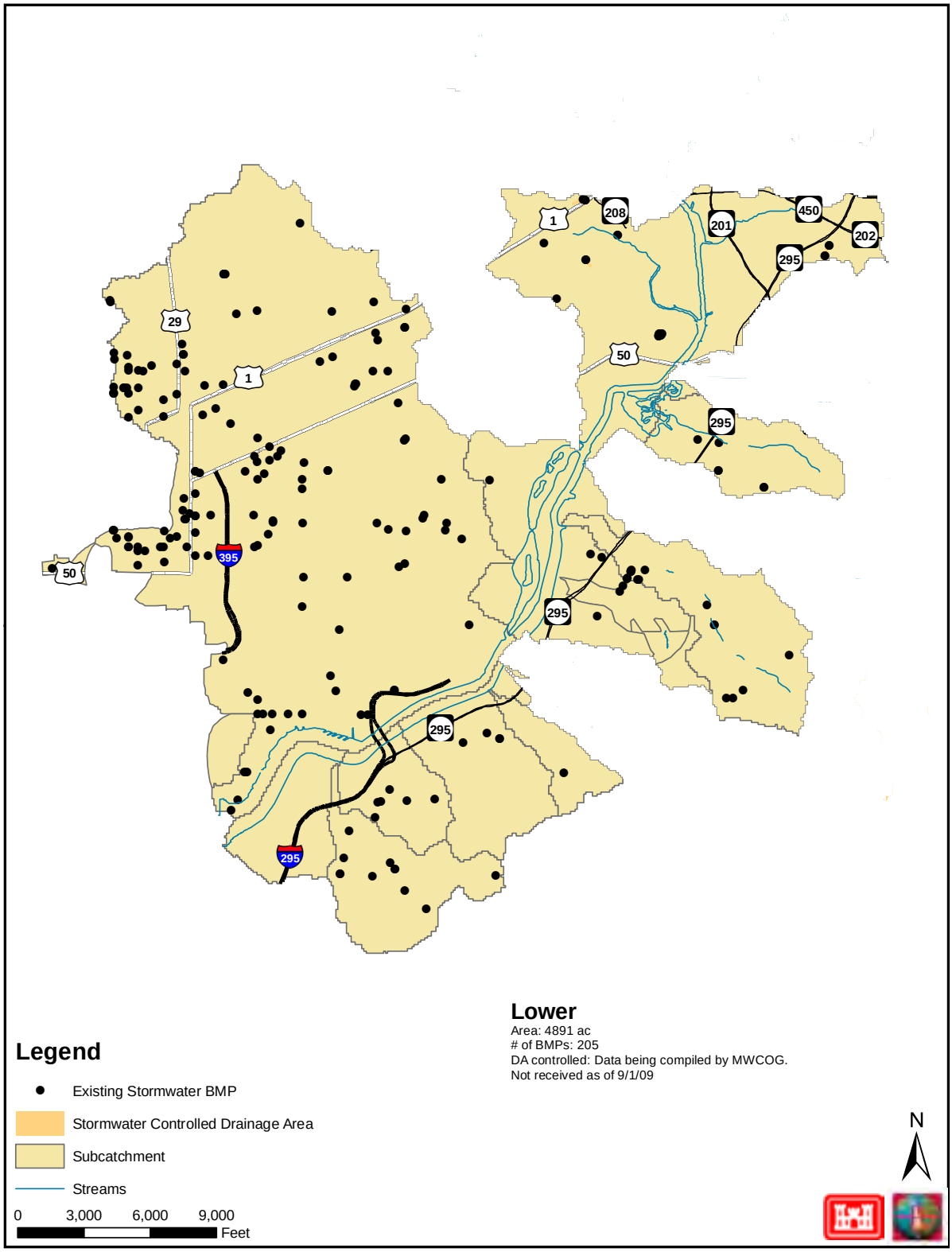

Table 2. Tidal River: Summary – Tidal River Existing Stormwater Management BMPs

	Type	No. of Facilities	Percent of Total BMP's	D.A. Controlled (ac.)
1.	**Dry Pond**	1	<1%	<1
2.	**ED Dry Pond**	-	-	-
3.	**Wet Pond**	-	-	-
4.	**ED Wet Pond**	-	-	-
5.	**Wetland (non-ED and ED)**	-	-	-
6.	**Infiltration (Trench or Basin)**	24	7%	8.7
7.	**Oil/Grit Separator**	13	5%	6.3
8.	**Water Quality Inlet (e.g. Stormceptor, Bay Saver, etc)**	28	23%	30.2
9.	**Bioretention /Rain Garden**	-	-	-
10.	**'Green Street'***	-	-	-
11.	**Biofiltration Swale**	2	<1%	0.3
12.	**Grass Swale w/ Check Dams**	-	-	-
13.	**Porous Pavement**	-	-	-
14.	**Sand Filter**	117	59%	78.2
15.	**Underground Pipe Storage**	2	<1%	0.6
16.	**Cistern**	-	-	-
17.	**Green Roof**	-	-	-
18.	**Other**	17	6%	8.6
	Total	**205**	**100%**	**132.9**

*** May include a mix of LID techniques including, but not limited to: bioretention, rain garden, biofiltration swale, soil amendment, etc.**

C. Candidate Restoration Project Summary

Table 3. Summary: Restoration Candidate Projects

	Candidate Project Type	Number of Projects	Estimated Cost ($)	Impervious Acreage Controlled (ac)	Length (mi)	Acreage (ac)
1	Stormwater Retrofit	53	29,455,140	274.7	-	410.2
2	Stream Restoration	2	600,000	-	0.4	-
3	Wetland Creation/Restoration	6	1,445,000	-	-	28.9
4	Fish Blockage Removal/Modification	1	10,000	-	0.3	-
5	Riparian Reforestation, Meadow Creation, Street Tree and Invasive Management	2	120,500	-	-	14.1
6	Trash Reduction	4	119,800	-	10	-
7	Toxic Remediation	-	-	-	-	-
8	Parkland Acquisition	8	16,250,000	-	-	162.5
	Total	**65**	**48,000,440**	**274.7**	**10.7**	**615.7**

Table 4. Anacostia River Reach Subwatershed: Provisional Restoration Project Inventory 'Unit Costs'*

N	Practice	Approx. Unit Cost ($)
Stormwater Retrofit		
1	Existing Stormwater Management Pond/Wetland Retrofitting	~ $1,000-3,000/acre of drainage
2	New Stormwater Management Pond/Wetland Construction	~$3,000-5,000/acre of drainage
3	LID-Bioretention (w/Underdrain System)	~ $100,000/ impervious acre
4	LID-Curbside/Street Planter	~ $100,000/ impervious acre
5	LID-Tree Box Filter	~ $54,450 - $65,340/impervious acre
6	LID-Green Roof	~ $42/square foot
7	LID-Single Family Home Rain Garden	~ $5,000 per individual garden
8	LID-Single Family Home Rain Barrel	~ $200/barrel (Typically, two per house)
9	Sand Filter	~ $20,000 to $25,000 per impervious acre**
10	Underground Pipe Storage	~ $15,000 per impervious acre***
11	Permeable Pavement	~ $4.00 per square foot
12	LID Bioswale	~ $100,000/impervious acre
13	Storm Filter	~ $80,000/acre
Stream Restoration/Fish Passage/Wetland Creation		
14	Stream Restoration	~ $300/LF
15	Concrete Stream Channel Removal	~ $1,000/LF
16	Stream 'Day Lighting'	~ $2,000/LF
17	Regenerative Stormwater Conveyance System	~ $370/ft
18	Fish Passage/Riffle Grade Control Structure	~ $150,000 per one foot barrier height
19	Wetland Creation	~50,000/Acre
Riparian Reforestation/Meadow Creation/ Invasive Plant Management		
20	Riparian Reforestation	~ $9,000/acre
21	Wildflower Meadow Creation	~ $5,000/acre
22	Invasive Plant Management	~ $5,000/acre
Trash Reduction/Water Quality		
23	Manual Trash Pickup	~ $300/100 LF
24	Fresh Creek Trash Netting System	~ $1,000/acre of drainage
25	Signage	~ $1600
26	End–of-Pipe Trash Catching System	~ $4,000/ acre of drainage
27	Street Sweeping****	~ $50/curb mile/year
28	Storm Drain Trash Grate	~ $500/inlet
Land Acquisition		
29	Land Acquisition	~ $100,000/acre

Includes (where appropriate) design and construction/installation costs.

** escalated to 2009 dollars from "*Schueler, T.R. 1994. Developments in Sand Filter Technology to Improve Stormwater Runoff Quality, Watershed Protection Techniques 1(2):47-54"*

*** *USEPA 20001 Storm Water Technology Fact Sheet On-Site Underground Retention/Detention EPA 832-F-01-005*

**** EPA-certified as water quality BMP

D. Tidal River Reach Candidate Restoration Projects

Figure 5 – Tidal River Reach Candidate Stormwater Retrofit Sites

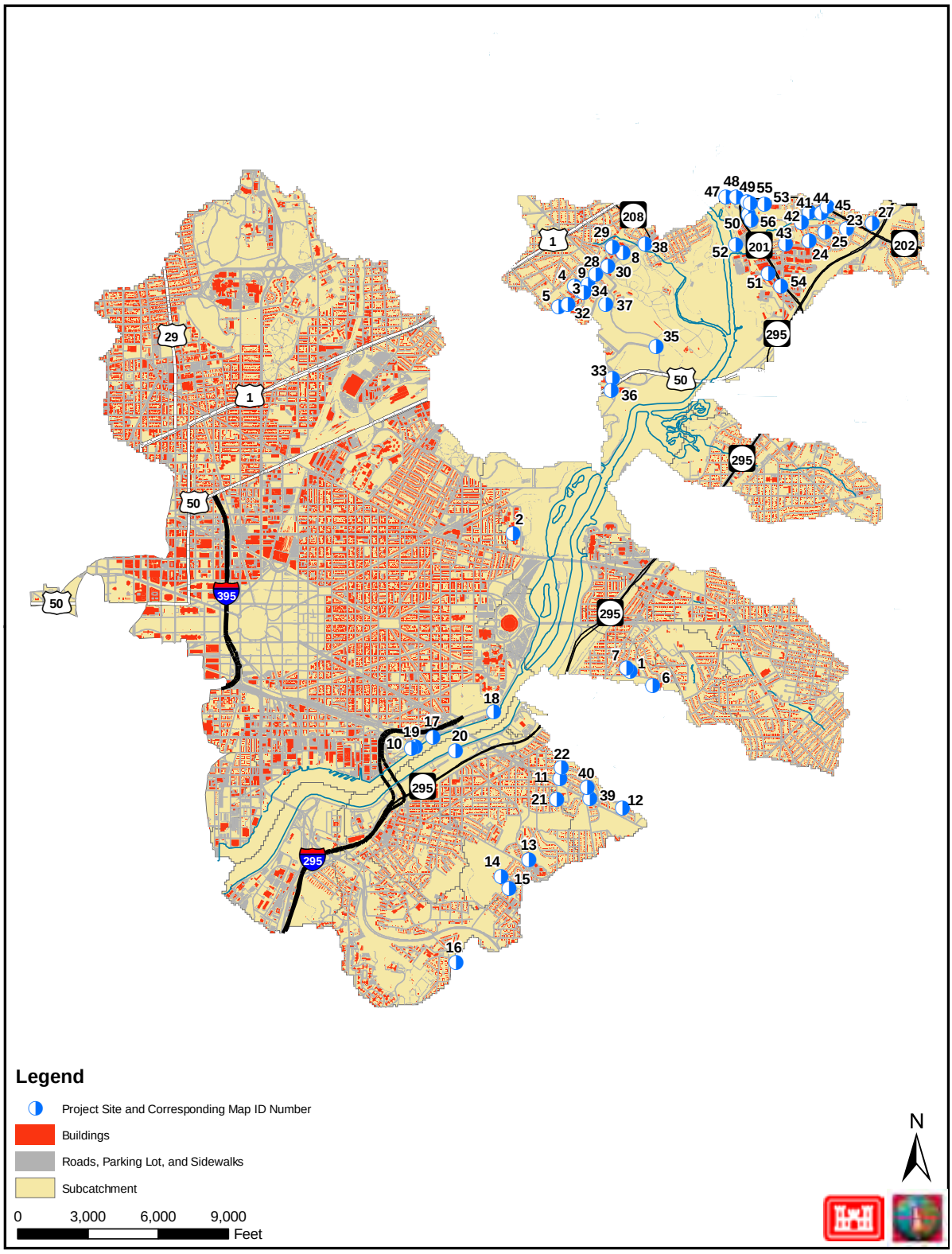

Figure 6 – Tidal River Reach Candidate Stormwater Retrofit Drainage Areas

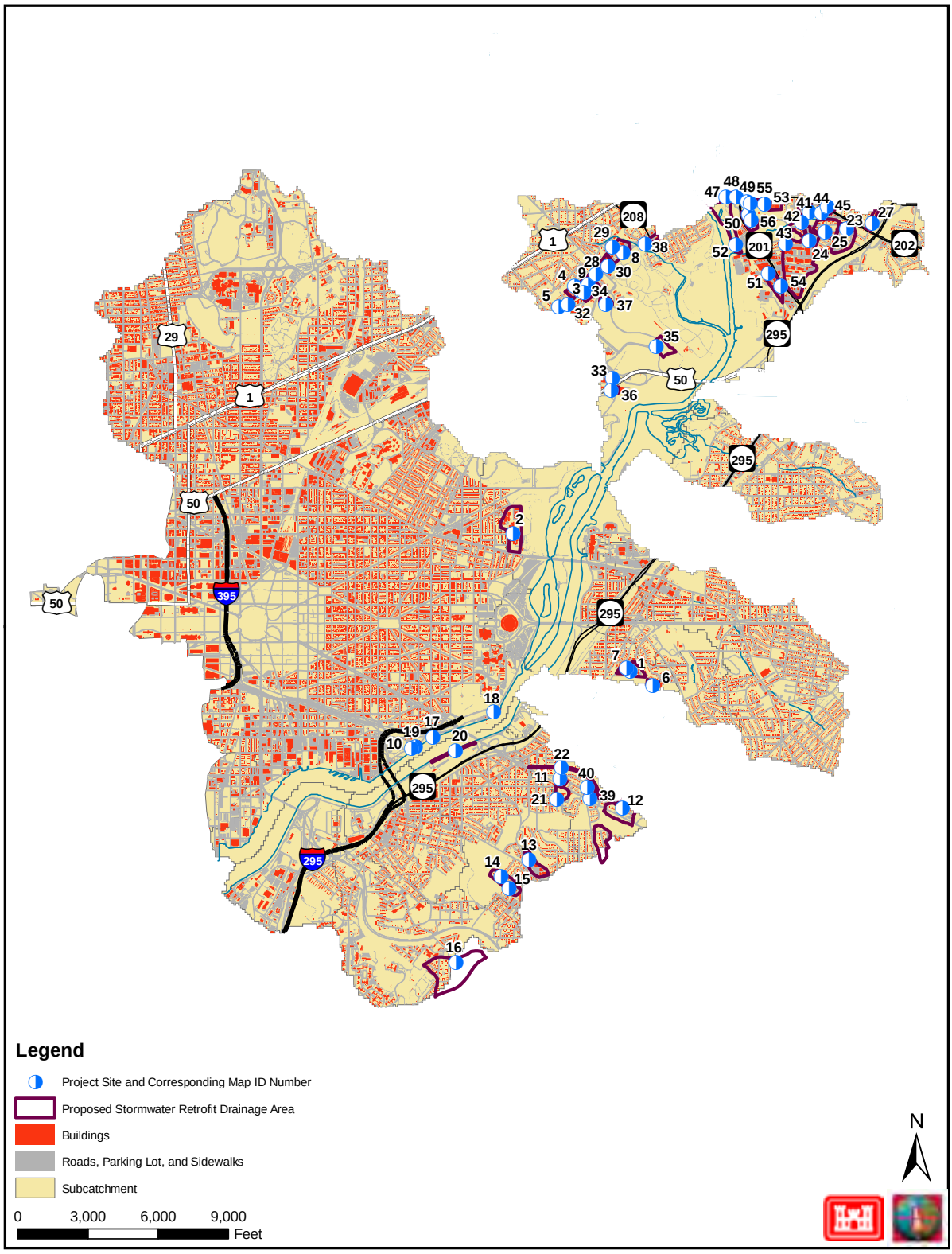

Figure 7 – Tidal River Reach Candidate Stormwater Retrofit and Existing Stormwater Retrofit Drainage Areas

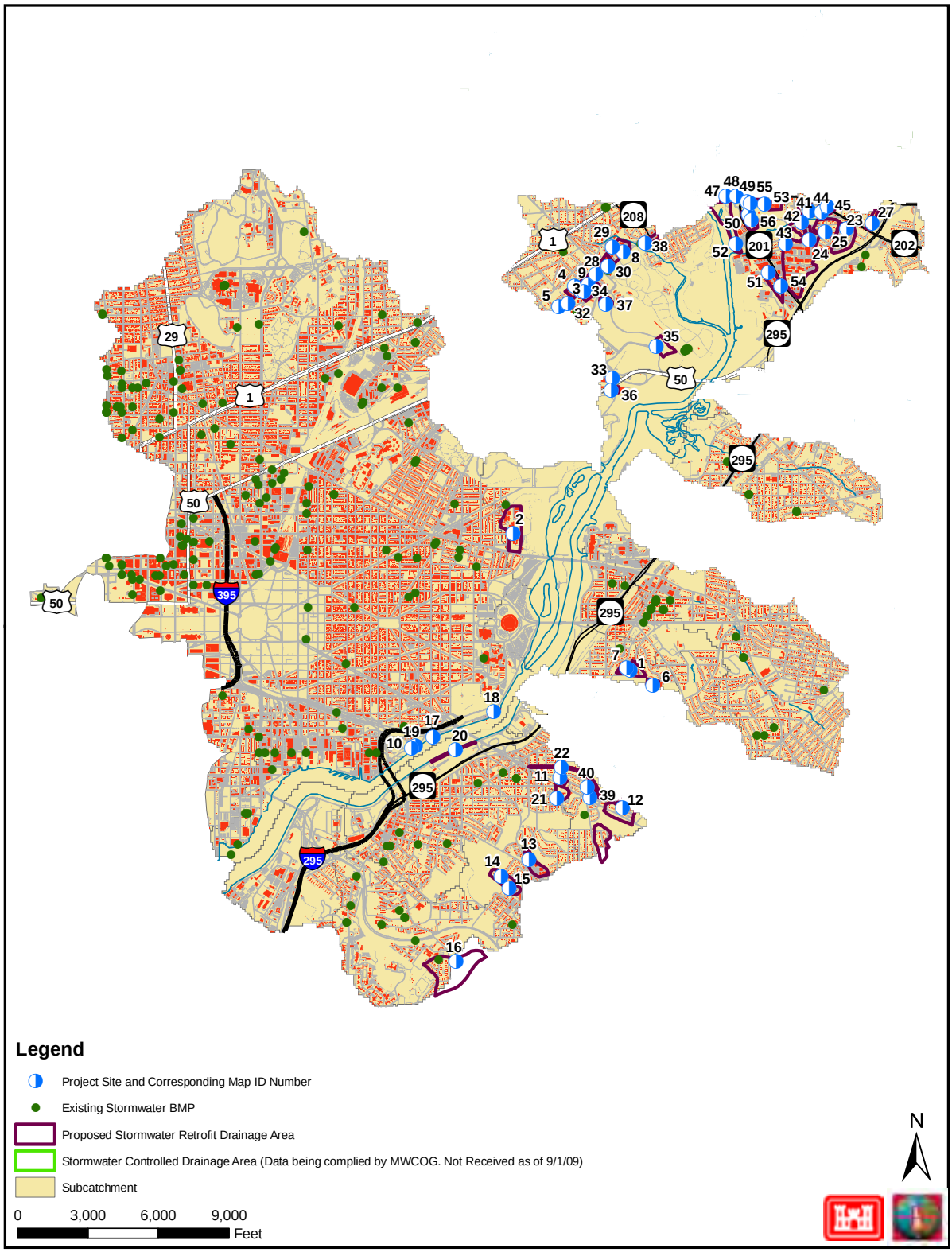

Table 5. Tidal River Reach – Candidate Stormwater Retrofit Projects

Project ID	MAP ID	Jurisdiction	Site Location Name	ADC Map Book Location	Project Type[1]	Ownership	Approx D.A. (acres)	Approx. Impervious		General Description of Proposed Actions	Estimated Cost ($)	Project Score (pts)	Project Ranking
								%	(acres)				
TRR-L-01-S-1	1	DC	John Philip Sousa Junior High School and administration building, 3650 Ely Place SE, Washington, DC	18 B 4	1b	Public	6.5	70	4.6	LID Green Roof, LID Bioretention	1,250,000		
TRR-L-01-S-2	2	DC	Joel Elias Springarn School, Young Elementary School, Browne Junior High School, and Phelps Vocational School, 26th Street NE and Benning Road NE, Washington, DC	17 J 1	1b	Private	27.7	60	16.6	LID Green Roof, LID Bioretention, LID Downspout Disconnect	4,430,000		
TRR-L-01-S-3	3	DC	Goodyear Auto Center, 3152 Bladensburg Road NE, Washington, DC	12 A 8	1a	Private	1.3	95	1.2	Underground Pipe Storage	18,000		
TRR-L-01-S-4	4	DC	Mount Horeb Church and the Ethiopian Orthodox Church, 2914 and 3010 Bladensburg Road NE, Washington, DC	12 A 8	1b	Private	4.0	95	3.8	Underground Pipe Storage, Sand Filter	133,000		
TRR-L-01-S-5	5	DC	New Canaan Baptist Church, 2826 Bladensburg Road NE, Washington, DC	11 K 9	1b	Private	1.0	90	0.9	LID Bioretention, Storm Filter	180,000		
TRR-L-01-S-6	6	DC	Fort Dupont Ice Skating Rink, 3779 Ely Place SE, Washington, DC	18 B 4	1b	Public	2.4	90	2.2	LID Bioretention, Permeable Pavement, Storm Filter	744,000		
TRR-L-01-S-7	7	DC	Anacostia Gardens apartments, 3600 Ely Place SE, Washington, DC	18 B 4	1b	Private	2.4	90	2.2	Storm Filter, Underground Pipe Storage	40,000		
TRR-L-01-S-8	8	PG	3500 block of Bladensburg Road, Brentwood, MD	12 B 8	1b	Private	6.8	95	6.5	Storm Filter, Underground Pipe Storage	129,390		
TRR-L-01-S-9	9	DC	Commercial strip on the west side of the 3000 block Bladensburg Road NE, Washington, DC	12 A 8	1b	Private	4.2	95	4.0	Storm Filter, Underground Pipe Storage	80,000		
TRR-L-01-S-10	10	DC	District Yacht Club, 1409 Water Street SE, Washington, DC	17 G 5	1b	Private	1.1	70	0.8	Sand Filter, LID Bioretention, LID Rain Garden	100,000		
TRR-L-01-S-11	11	DC	Pennsylvania Avenue Baptist Church at the intersection of Pennsylvania Avenue SE and 30th Street SE, Washington, DC	17 K 6	1b	Private	2.0	80	1.6	LID Bioretention	160,000		

Project ID	MAP ID	Jurisdiction	Site Location Name	ADC Map Book Location	Project Type[1]	Ownership	Approx D.A. (acres)	Approx. Impervious		General Description of Proposed Actions	Estimated Cost ($)	Project Score (pts)	Project Ranking
								%	(acres)				
TRR-L-01-S-12	12	DC	Neighborhood bounded by Branch Avenue SE to the west, Alabama Avenue SE to the south, 36th Street SE to the east, and U Street SE to the north and neighborhood bounded by Highwood Drive SE to the north, Pennsylvania Avenue SE to the south, 33rd Place SE to the west, and 38th Street SE to the east, Washington, DC	18 B 7	1b	Public	37.9	35	13.3	LID Green Street, Rainscape	1,398,000		
TRR-L-01-S-13	13	DC	2626 Naylor Road SE, Washington, DC	17 K 8	1b	Private	11.3	95	10.7	LID Bioretention, Storm Filter	1,070,000		
TRR-L-01-S-14	14	DC	Residential neighborhood bounded by Skyland Place SE, Skyland Terrace SE, and Wagner Street SE, Washington, DC	17 J 8	1c	Public	9.2	45	4.1	LID Green Street	633,000		
TRR-L-01-S-15	15	DC	Washington Nursing Facility, 2425 25th Street SE, Washington, DC	17 J 8	1b	Private	4.8	95	4.6	LID Downspout Disconnect, LID Bioretention, LID Bioswale	460,000		
TRR-L-01-S-16	16	DC	Residential neighborhood bounded by Bruce Place SE to the north, Alabama Avenue SE to the south, Stanton Terrace SE to the east, and Robinson Street SE and 15th Place SE to the west, Washington, DC	17 H 10	1b	Private	55.7	40	22.3	LID Green Street, LID Bioretention, Sand Filters	1,784,000		
TRR-L-01-S-17	17	DC	Washington Yacht Club, 1500 M Street SE, Washington, DC	17 G 5	1b	Private	0.6	60	0.4	Sand Filter, LID Bioretention, LID Rain Garden	47,000		
TRR-L-01-S-18	18	DC	Sea Farers Yacht Club, 1950 M Street SE, Washington, DC	17 J 4	1c	Private	1.4	40	0.6	LID Rain Gardens	10,000		
TRR-L-01-S-19	19	DC	Eastern Power Boat Club, 1301 Water Street SE, Washington, DC	17 G 5	1c	Private	1.1	40	0.4	Sand Filter, LID Rain Garden	19,000		
TRR-L-01-S-20	20	DC	Anacostia Drive SE between Nicholson Street SE and the Anacostia Pool and Recreation Center, Washington, DC	17 H 5	1c	Public	2.4	98	2.4	LID Green Street	240,000		
TRR-L-01-S-21	21	DC	Randle Highlands School, 1650 30th Street SE, Washington, DC	17 K 6	1c	Public	6.6	90	5.9	LID Green Roof	1,449,000		
TRR-L-01-S-22	22	DC	O Street SE from 27th Street SE to Carpenter Street SE, Washington, DC	17 K 6	1b	Private	4.6	98	4.5	LID Green Street	450,000		

Project ID	MAP ID	Jurisdiction	Site Location Name	ADC Map Book Location	Project Type[1]	Ownership	Approx D.A. (acres)	Approx. Impervious		General Description of Proposed Actions	Estimated Cost ($)	Project Score (pts)	Project Ranking
								%	(acres)				
TRR-L-01-S-23	23	PG	Residential neighborhood bordered by 56th Street and 57th Avenue, and by Newton Street and Monroe Street, Hyattsville, MD	12 G 7	1c	Private	19.1	35	6.7	LID Green Street,	602,000		
TRR-L-01-S-24	24	PG	54th Avenue and the western portion of Macbeth Street and Monroe Street, Hyattsville, MD	12 F 7	1b	Private	6.4	45	2.9	LID Green Street	240,000		
TRR-L-01-S-25	25	PG	Residential neighborhood including the 5400 and 5500 blocks of Newton Street, the 3500 and 3600 blocks of 55th Avenue, and Madison Way, Hyattsville, MD	12 F 7	1b	Private	15.0	35	5.3	LID Green Street	501,000		
TRR-L-01-S-26	27	PG	Howard Johnson Inn, 5811 Annapolis Road, Hyattsville, MD	12 G 7	1b	Private	4.3	95	4.1	LID Bioretention, Sand Filter	633,000		
TRR-L-01-S-27	28	DC	Commercial area including Shell gasoline station and Popeye's restaurant, 3200 Bladensburg Road NE, Washington, DC	12 A 8	1b	Private	1.9	95	1.8	LID Bioretention, Sand Filter, Underground Pipe Storage	243,000		
TRR-L-01-S-28	29	PG	3400 block of Bladensburg Road, Brentwood, MD	12 A 8	1b	Private	5.3	95	5.0	Underground Pipe Storage, Sand Filter, LID Downspout Disconnect	175,000		
TRR-L-01-S-29	30	PG	Aramark and Extra Space Storage, 3320 Bladensburg Road, Brentwood, MD	12 A 8	1b	Private	5.2	98	5.1	Storm Filter, Underground Pipe Storage	485,000		
TRR-L-01-S-30	32	DC	7-11 Convenience Store and R&M Auto Sales, 2850 Bladensburg Road NE, Washington, DC	11 K 9	1c	Private	1.0	98	1.0	Storm Filter	80,000		
TRR-L-01-S-31	33	DC	Parking area for the Metro Police Department, 3535 V Street NE, Washington, DC	12 A 10	1b	Public	1.4	97	1.4	Storm Filter, Underground Pipe Storage	30,000		
TRR-L-01-S-32	34	DC	Fort Lincoln Senior Village, 3001 and 3005 Bladensburg Road NE, Washington, DC	12 A 8	1b	Private	7.0	90	6.3	LID Downspout Disconnect, LID Bioretention, Storm Filter	650,000		
TRR-L-01-S-33	35	DC	Premium Inc, at the corner of Commodore Joshua Barney Jr. Drive NE and York Terrace NE, Washington, DC	12 B 10	1b	Private	9.0	85	7.7	Existing Stormwater Management Facility Retrofit, LID Bioretention	797,000		
TRR-L-01-S-34	36	DC	Washington Times west parking area, 3600 New York Avenue NE, Washington, DC	12 A 11	1b	Private	2.1	95	2.0	LID Bioretention, Storm Filter	280,000		

Project ID	MAP ID	Jurisdiction	Site Location Name	ADC Map Book Location	Project Type[1]	Ownership	Approx D.A. (acres)	Approx. Impervious		General Description of Proposed Actions	Estimated Cost ($)	Project Score (pts)	Project Ranking
								%	(acres)				
TRR-L-01-S-35	37	DC	Thurgood Marshall Extended Elementary School, 3100 Fort Lincoln Drive NE, Washington, DC	12 A 9	1b	Public	4.1	75	3.1	LID Green Roof, LID Bioretention, LID Downspout Disconnect	900,000		
TRR-L-01-S-36	38	PG	Port Towns Shopping Center, not including International House of Pancakes and the northern parking area, 3611-3831 Bladensburg Road, Brentwood, MD	12 B 7	1b	Private	4.1	98	3.9	LID Downspout Disconnect, Underground Pipe Storage, Sand Filters	779,000		
TRR-L-01-S-37	39	DC	Penn Branch Shopping Center, 3232 Pennsylvania Avenue SE, Washington, DC	18 A 6	1b	Private	1.5	95	1.4	LID Downspout Disconnect, LID Bioretention, Sand Filter	168,000		
TRR-L-01-S-38	40	DC	Municipal Services Center, 3220 Pennsylvania Avenue SE, Washington, DC	18 A 6	1b	Public	2.2	95	2.1	LID Green Roof, Underground Pipe Storage, Sand Filter	519,750		
TRR-L-01-S-39	41	PG	J&K Auto Service, 5315 Annapolis Road and Edmonton Station Apartments, 5350 Quincy Place, Bladensburg, MD	12 F 7	1c	Private	6.9	85	5.9	LID Bioretention, Sand Filter	708,000		
TRR-L-01-S-40	42	PG	Bladenwoods Condominiums, 5200 and 5300 blocks of Newton Street, Bladensburg, MD	12 F 7	1c	Private	6.9	80	5.5	Underground Pipe Storage, Sand Filter, LID Tree Box Filter, LID Bioswale	448,000		
TRR-L-01-S-41	43	PG	Industrial area north of the intersection of 52nd Avenue and Baltimore Washington Parkway, Bladensburg, MD	12 E 7	1b	Private	60.4	98	59.2	LID Bioretention, Sand Filter, Storm Filter	3,696,000		
TRR-L-01-S-42	44	PG	Publick Playhouse, 5445 Landover Road, Cheverly, MD	12 F 7	1b	Private	1.9	98	1.9	LID Bioretention, Sand Filter	235,000		
TRR-L-01-S-43	45	PG	M Market Grocery & Carryout, 5439 Annapolis Road, Bladensburg, MD	12 F 7	1b	Private	1.7	98	1.7	Underground Pipe Storage, Sand Filter,	68,000		
TRR-L-01-S-44	47	PG	4109 46th Street, Bladensburg, MD	12 D 6	1b	Private	1.2	98	1.2	Underground Pipe Storage, Storm Filter, LID Downspout Disconnect	114,000		
TRR-L-01-S-45	48	PG	ServiStar Hardware, 4700 Annapolis Road, Bladensburg, MD	12 D 6	1b	Private	1.6	95	1.5	Underground Pipe Storage, LID Downspout Disconnect	23,000		

Project ID	MAP ID	Jurisdiction	Site Location Name	ADC Map Book Location	Project Type[1]	Ownership	Approx D.A. (acres)	Approx. Impervious		General Description of Proposed Actions	Estimated Cost ($)	Project Score (pts)	Project Ranking
								%	(acres)				
TRR-L-01-S-46	49	PG	Mango Cafe & Restaurant, 4719 Annapolis Road, Bladensburg, MD	12 E 7	1c	Private	0.7	98	0.7	Sand Filter	18,000		
TRR-L-01-S-47	50	PG	3900 48th Street, Bladensburg, MD	12 E 7	1b	Private	1.5	88	1.3	LID Bioretention	130,000		
TRR-L-01-S-48	51	PG	Salvation Army, 3304 Kenilworth Avenue, Bladensburg, MD	12 E 8	1b	Private	6.9	92	6.3	LID Bioretention LID Tree Box Filters	521,000		
TRR-L-01-S-49	52	PG	Bladensburg Waterfront Park, 4601 Annapolis Road, Bladensburg, MD	12 D 7	1b	Private	23.7	20	4.7	Sand Filters	106,000		
TRR-L-01-S-50	53	PG	Bladensburg Shopping Center, 4905 Annapolis Road, Bladensburg, MD	12 E 7	1b	Private	2.8	95	2.7	LID Bioretention, LID Downspout Disconnect, Storm Filter	486,000		
TRR-L-01-S-51	54	PG	Peoples Supply, 3200 Kenilworth Avenue, Bladensburg, MD	12 E 8	1b	Private	3.8	95	3.6	LID Bioretention, Underground Pipe Storage, Sand Filter	485,000		
TRR-L-01-S-52	55	PG	Suntrust Bank, corner of 48th Street and Quincy Place, Bladensburg, MD	12 E 7	1b	Private	0.4	98	0.4	LID Bioretention	40,000		
TRR-L-01-S-53	56	PG	Kenilworth Towers, 3801 Kenilworth Avenue, Bladensburg, MD	12 E 7	1b	Private	5.2	90	4.7	LID Downspout Disconnect, LID Bioretention	470,000		

DC = District of Columbia
PG = Prince George's County
[1] 1a= Water quantity, 1b= Water quantity and quality, 1c= Water quality

Figure 8a – Candidate Stormwater Retrofit Project		
Site Location:	John Philip Sousa Junior High School and administration building, 3650 Ely Place SE, Washington, DC	
Project No.:	TRR-L-01-S-1	
ADC Map Book Location:	18 B 4	Map ID: 1
Approximate Associated Drainage Area (acres):	6.5	
Approximate Imperviousness:	70%	4.6 acres
Description of Existing Conditions:	The site consists of two brick structures with a small parking area and basketball court. Stormwater runoff from the parking areas and north lawn / basketball area is drained by drop inlet drains.	
Project Description:	**LID Green Roof, LID Bioretention** – Install a green roof. Cut curbs and construct a bioretention system in the green space adjacent to the parking area.	

Figure 8b – Candidate Stormwater Retrofit Project		
Site Location:	Joel Elias Springarn School, Young Elementary School, Browne Junior High School, and Phelps Vocational School, 26th Street NE and Benning Road NE, Washington, DC	
Project No.:	TRR-L-01-S-2	
ADC Map Book Location:	17 J 1	Map ID: 2
Approximate Associated Drainage Area (acres):	27.7	
Approximate Imperviousness:	60%	16.6 acres
Description of Existing Conditions:	The site consists of multi-story brick school buildings, parking lots, and ball fields. The downspouts are internal, and stormwater runoff from the parking areas is drained by drop inlet drains and curb inlet drains. Many of the buildings have architectually styled sloped roofs although a few of the buildings have flat roofs. Small areas of green space are interspersed within the campus.	
Project Description:	**LID Green Roof, LID Bioretention, LID Downspout Disconnect** – Install a green roof on the flat-roofed buildings at the next maintenance cycle. Disconnect the downspouts from the stormwater system. Construct bioretention systems in the green areas.	

Figure 8c – Candidate Stormwater Retrofit Project		
Site Location:	Goodyear Auto Center, 3152 Bladensburg Road NE, Washington, DC	
Project No.:	TRR-L-01-S-3	
ADC Map Book Location:	12 A 8	Map ID: 3
Approximate Associated Drainage Area (acres):	1.3	
Approximate Imperviousness:	95%	1.2 acres
Description of Existing Conditions:	The site consists of an auto repair garage and parking area. Stormwater runoff drains to the west. There are no inlet drains or other means of stormwater management control. The downspouts are connected to the stormwater system.	
Project Description:	**Underground Pipe Storage** – Install underground pipe storage in the parking area.	

Figure 8d – Candidate Stormwater Retrofit Project		
Site Location:	Mount Horeb Church and the Ethiopian Orthodox Church, 2914 and 3010 Bladensburg Road NE, Washington, DC	
Project No.:	TRR-L-01-S-4	
ADC Map Book Location:	12 A 8	Map ID: 4
Approximate Associated Drainage Area (acres):	4.0	
Approximate Imperviousness:	95%	3.8 acres
Description of Existing Conditions:	The site consists of two churches and parking lots. Mount Horeb Church has angled roofs, the annex has a flat roof, and the Ethiopian Orthodox Church has a flat roof. Downspouts drain onto the pavement. Stormwater runoff from the Ethiopian Orthodox Church and parking area drain north into a curb inlet drain that is blocked by sedimentation. Stormwater runoff from Mount Horeb Church and Earl Place NE drains to the west.	
Project Description:	**Underground Pipe Storage, Sand Filter** – Install underground pipe storage in the parking area. Install sand filters at the curb inlet drains.	

Figure 8e – Candidate Stormwater Retrofit Project		
Site Location:	New Canaan Baptist Church, 2826 Bladensburg Road NE, Washington, DC	
Project No.:	TRR-L-01-S-5	
ADC Map Book Location:	11 K 9	Map ID: 5
Approximate Associated Drainage Area (acres):	1.0	
Approximate Imperviousness:	90%	0.9 acres
Description of Existing Conditions:	The site consists of a two-story structure with a parking area facing 30th Street NE. The parking area has two small tree islands and there is a small amount of green space between the parking area and 30th Street NE. Stormwater runoff from the parking area is drained by a curb inlet drain near the entrance to the northwest. Downspouts are internal.	
Project Description:	**LID Bioretention, Storm Filter** – Construct a bioretention system in the green space between the parking area and 30th Street NE. Install a storm filter at the curb inlet drain.	

Figure 8f – Candidate Stormwater Retrofit Project		
Site Location:	Fort Dupont Ice Skating Rink, 3779 Ely Place SE, Washington, DC	
Project No.:	TRR-L-01-S-6	
ADC Map Book Location:	18 B 4	Map ID: 6
Approximate Associated Drainage Area (acres):	2.4	
Approximate Imperviousness:	90%	2.2 acres
Description of Existing Conditions:	The site consists of a commercial building and a moderate-sized parking area sloping to the west. Stormwater runoff drains to a curb inlet drain at the northwest corner. There are two parking islands.	
Project Description:	**LID Bioretention, Pemeable Pavement, Storm Filter** – Construct bioretention areas in the parking islands, protect the existing mature trees, and cut the curbs to the islands. At the next maintenance cycle replace the parking areas with permeable pavement. Install a storm filter at the inlet drain.	

Figure 8g – Candidate Stormwater Retrofit Project		
Site Location:	Anacostia Gardens apartments, 3600 Ely Place SE, Washington, DC	
Project No.:	TRR-L-01-S-7	
ADC Map Book Location:	18 B 4	Map ID: 7
Approximate Associated Drainage Area (acres):	2.4	
Approximate Imperviousness:	90%	2.2 acres
Description of Existing Conditions:	The site consists of a four-story brick apartment complex and parking areas. The downspouts drain into the parking areas and to drop inlet drains. Stormwater runoff drains to the north and west. There is very little green space or unused parking area.	
Project Description:	**Storm Filter, Underground Pipe Storage** - Install storm filters at the inlet drains. Install underground pipe storage in the parking area.	

Figure 8i – Candidate Stormwater Retrofit Project		
Site Location:	Commercial strip on the west side of the 3000 block Bladensburg Road NE, Washington, DC	
Project No.:	TRR-L-01-S-9	
ADC Map Book Location:	12 A 8	Map ID: 9
Approximate Associated Drainage Area (acres):	4.2	
Approximate Imperviousness:	95%	4.0 acres
Description of Existing Conditions:	The site consists of commercial properties with attached parking along Bladensburg Road NE. Stormwater runoff from the east face of the buildings and east parking area drains by means of curb and drop inlet drains. Stormwater runoff from the west face of the buildings and rear parking areas drains west into a forested area. Downspouts are internal.	
Project Description:	**Storm Filter, Underground Pipe Storage** – Install storm filters at the inlet drains. Install underground pipe storage in the parking area.	

Figure 8j – Candidate Stormwater Retrofit Project		
Site Location:	District Yacht Club, 1409 Water Street SE, Washington, DC	
Project No.:	TRR-L-01-S-10	
ADC Map Book Location:	17 G 5	Map ID: 10
Approximate Associated Drainage Area (acres):	1.1	
Approximate Imperviousness:	70%	0.8 acres
Description of Existing Conditions:	The yacht club has a small central office and an unpaved parking lot. There is green space around the building and between the parking lot and the river. There are mature trees in the green space. A sidewalk separates the parking lot from the green space.	
Project Description:	**Sand Filter, LID Bioretention, LID Rain Garden –** Install a sand filter between the parking lot and the sidewalk. Construct a bioretention system in the green space on the southeast corner of the property. Install rain gardens at the downspouts.	

Figure 8k – Candidate Stormwater Retrofit Project		
Site Location:	Pennsylvania Avenue Baptist Church at the intersection of Pennsylvania Avenue SE and 30th Street SE, Washington, DC	
Project No.:	TRR-L-01-S-11	
ADC Map Book Location:	17 K 6	Map ID: 11
Approximate Associated Drainage Area (acres):	2.0	
Approximate Imperviousness:	80%	1.6 acres
Description of Existing Conditions:	The site consists of a church and parking lot to the north and west. Stormwater runoff drains north to trench drains and curb inlet drains with oil/grit separators. There are restricted parking areas within the parking lot that are not used for parking.	
Project Description:	**LID Bioretention** – Remove paving in restricted parking areas and construct bioretention systems.	

Figure 8l – Candidate Stormwater Retrofit Project		
Site Location:	Neighborhood bounded by Branch Avenue SE to the west, Alabama Avenue SE to the south, 36th Street SE to the east, and U Street SE to the north and neighborhood bounded by Highwood Drive SE to the north, Pennsylvania Avenue SE to the south, 33rd Place SE to the west, and 38th Street SE to the east, Washington, DC	
Project No.:	TRR-L-01-S-12	
ADC Map Book Location:	18 B 7	Map ID: 12
Approximate Associated Drainage Area (acres):	37.9	
Approximate Imperviousness:	35%	13.3 acres
Description of Existing Conditions:	The site consists of a residential neighborhood with several residences along two-lane streets and parking on either side or in the alleys. The terrain is steep and vegetation is mature. Stormwater runoff drains to curb inlet drains in the streets. Downspouts are disconnected from the stormwater system.	
Project Description:	**LID Green Street, Rainscape –** Install rain gardens and rain barrels at downspout locations. Construct bioretention systems in road rights-of-way at curb inlet drains.	

Figure 8m – Candidate Stormwater Retrofit Project		
Site Location:	2626 Naylor Road SE, Washington, DC	
Project No.:	TRR-L-01-S-13	
ADC Map Book Location:	17 K 8	Map ID: 13
Approximate Associated Drainage Area (acres):	11.3	
Approximate Imperviousness:	95%	10.7 acres
Description of Existing Conditions:	The site consists of commercial property with several businesses and a large parking lot. Stormwater runoff drains northwest into drop inlet drains.	
Project Description:	**LID Bioretention, Storm Filter** – Remove parking and construct bioretention systems. Install storm filters at the inlet drains.	

Figure 8n – Candidate Stormwater Retrofit Project		
Site Location:	Residential neighborhood bounded by Skyland Place SE, Skyland Terrace SE, and Wagner Street SE, Washington, DC	
Project No.:	TRR-L-01-S-14	
ADC Map Book Location:	17 J 8	Map ID: 14
Approximate Associated Drainage Area (acres):	9.2	
Approximate Imperviousness:	45%	4.1 acres
Description of Existing Conditions:	The site consists of a residential neighborhood lined with properties on either side of a two-lane street with parking on either side. Stormwater runoff drains into curb inlet drains. There is a small green area between the sidewalk and the road. In some areas, the right-of-way has mature trees.	
Project Description:	**LID Green Street** – Install curbside planters in the rights-of-way. Install tree box filters at the inlet drains.	

Figure 8o – Candidate Stormwater Retrofit Project		
Site Location:	Washington Nursing Facility, 2425 25th Street SE, Washington, DC	
Project No.:	TRR-L-01-S-15	
ADC Map Book Location:	17 J 8	Map ID: 15
Approximate Associated Drainage Area (acres):	4.8	
Approximate Imperviousness:	95%	4.6 acres
Description of Existing Conditions:	The site consists of a multi-story building with a flat roof and surrounding parking areas. Downspouts are connected to the stormwater system. Stormwater runoff drains into curb inlet drains that have accumulated trash. There is a green area around the perimeter of the facility. A rock-lined swale is located in the grassy area to the west.	
Project Description:	**LID Downspout Disconnect, LID Bioretention, LID Bioswale –** Disconnect downspouts from the stormwater system. Construct a bioretention system in the grassy area in the northwest corner and replace the rock-lined swale with a bioswale.	

Figure 8p – Candidate Stormwater Retrofit Project		
Site Location:	Residential neighborhood bounded by Bruce Place SE to the north, Alabama Avenue SE to the south, Stanton Terrace SE to the east, and Robinson Street SE and 15th Place SE to the west, Washington, DC	
Project No.:	TRR-L-01-S-16	
ADC Map Book Location:	17 H 10	Map ID: 16
Approximate Associated Drainage Area (acres):	55.7	
Approximate Imperviousness:	40%	22.3 acres
Description of Existing Conditions:	The site consists of a recently developed neighborhood with residences lined along a two-lane street with parking on either side and in the alleys. The roads have been recently landscaped with immature vegetation. Stormwater runoff drains into curb inlet drains. There is a large grassy area between Tobias Drive SE and Tubman Road SE.	
Project Description:	**LID Green Street, LID Bioretention, Sand Filters –** Construct bioretention systems in the rights-of-way. Construct a bioretention system in part of the large grassy area between Tobias Drive SE and Tubman Road SE. Install sand filters in alley drop inlet drains.	

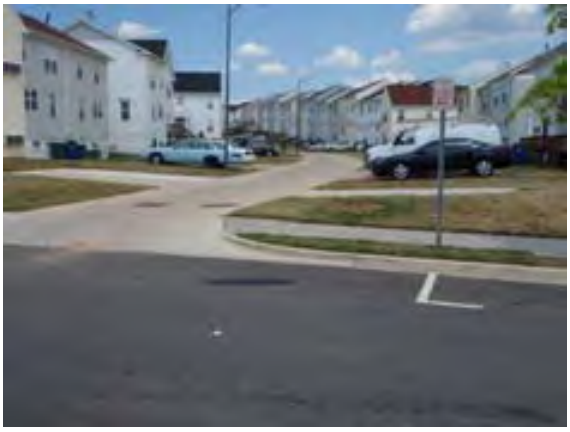

Figure 8q – Candidate Stormwater Retrofit Project		
Site Location:	Washington Yacht Club, 1500 M Street SE, Washington, DC	
Project No.:	TRR-L-01-S-17	
ADC Map Book Location:	17 G 5	Map ID: 17
Approximate Associated Drainage Area (acres):	0.6	
Approximate Imperviousness:	60%	0.4 acres
Description of Existing Conditions:	The site consists of a commercial property with a small central office and an unpaved parking lot. There is green space on the northeast portion of the property and between the parking lot and the river. There are mature trees in the green space. A sidewalk separates the parking lot from the green space.	
Project Description:	**Sand Filter, LID Bioretention, LID Rain Garden –** Install a sand filter between the parking lot and the sidewalk. Construct a bioretention system in the green space at the southeast corner of the property. Install rain gardens at the downspouts.	

Figure 8r – Candidate Stormwater Retrofit Project		
Site Location:	Sea Farers Yacht Club, 1950 M Street SE, Washington, DC	
Project No.:	TRR-L-01-S-18	
ADC Map Book Location:	17 J 4	Map ID: 18
Approximate Associated Drainage Area (acres):	1.4	
Approximate Imperviousness:	40%	0.6 acres
Description of Existing Conditions:	The site consists of a marina with several small buildings and several short, one-lane paved access roads. There is limited green space surrounding the buildings.	
Project Description:	**LID Rain Gardens** – Install rain gardens at the downspouts.	

Figure 8s – Candidate Stormwater Retrofit Project		
Site Location:	Eastern Power Boat Club, 1301 Water Street SE, Washington, DC	
Project No.:	TRR-L-01-S-19	
ADC Map Book Location:	17 G 5	Map ID: 19
Approximate Associated Drainage Area (acres):	1.1	
Approximate Imperviousness:	40%	0.4 acres
Description of Existing Conditions:	The site consists of commercial property with a small central office and an unpaved parking lot. There is green space around the building and between the parking lot and the river. There are mature trees in the green space. A sidewalk separates the parking lot from the green space.	
Project Description:	**Sand Filter, LID Rain Garden –** Install a sand filter between the parking lot and the sidewalk. Install rain gardens at the downspouts.	

Figure 8t – Candidate Stormwater Retrofit Project		
Site Location:	Anacostia Drive SE between Nicholson Street SE and the Anacostia Pool and Recreation Center, Washington, DC	
Project No.:	TRR-L-01-S-20	
ADC Map Book Location:	17 H 5	Map ID: 20
Approximate Associated Drainage Area (acres):	2.4	
Approximate Imperviousness:	98%	2.4 acres
Description of Existing Conditions:	Anacostia Drive SE is a two-lane street with parking areas on either side. There is approximately 50 feet of green space between the road and the river. Stormwater runoff drains to drop inlet drains along the road. Street lights are on the north side of the road along the river.	
Project Description:	**LID Green Street** – Install curbside planters along the rights-of-way.	

Figure 8u – Candidate Stormwater Retrofit Project		
Site Location:	Randle Highlands School, 1650 30th Street SE, Washington, DC	
Project No.:	TRR-L-01-S-21	
ADC Map Book Location:	17 K 6	Map ID: 21
Approximate Associated Drainage Area (acres):	6.6	
Approximate Imperviousness:	90%	5.9 acres
Description of Existing Conditions:	The site consists of a multi-story school that is built on steep terrain along with athletic fields and a small parking area. The school building has a flat roof. Stormwater runoff drains north into the intersection of Pennsylvania Avenue SE and Branch Avenue SE. The school is fenced and had limited access.	
Project Description:	**LID Green Roof** - Retrofit the flat roof into a green roof at the next scheduled renovation.	

Figure 8v – Candidate Stormwater Retrofit Project		
Site Location:	O Street SE from 27th Street SE to Carpenter Street SE, Washington, DC	
Project No.:	TRR-L-01-S-22	
ADC Map Book Location:	17 K 6	Map ID: 22
Approximate Associated Drainage Area (acres):	4.6	
Approximate Imperviousness:	98%	4.5 acres
Description of Existing Conditions:	The site consists of a residential street with parking on either side. The terrain is very steep. There are utility lines along one side of the street and mature trees in the grassy areas between the sidewalk and the road. Stormwater runoff drains into curb inlet drains.	
Project Description:	**LID Green Street –** Install curbside planters in the grassy rights-of-way and at traffic calming devices.	

Figure 8aa – Candidate Stormwater Retrofit Project		
Site Location:	Commercial area including Shell gasoline station and Popeye's restaurant, 3200 Bladensburg Road NE, Washington, DC	
Project No.:	TRR-L-01-S-27	
ADC Map Book Location:	12 A 8	Map ID: 28
Approximate Associated Drainage Area (acres):	1.9	
Approximate Imperviousness:	95%	1.8 acres
Description of Existing Conditions:	The site consists of commercial properties and parking lots. Stormwater runoff from Shell and Popeye's drains toward Bladensburg Road NE and collects in trench drains. Downspouts are connected to the stormwater system.	
Project Description:	**LID Bioretention, Sand Filter, Underground Pipe Storage** - Construct a bioretention system in the green space to the northeast of the commercial structures. Install sand filters in inlet drains. Install underground pipe storage in the parking area.	

Figure 8ad – Candidate Stormwater Retrofit Project		
Site Location:	7-11 Convenience Store and R&M Auto Sales, 2850 Bladensburg Road NE, Washington, DC	
Project No.:	TRR-L-01-S-30	
ADC Map Book Location:	11 K 9	Map ID: 32
Approximate Associated Drainage Area (acres):	1.0	
Approximate Imperviousness:	98%	1.0 acre
Description of Existing Conditions:	The site consists of a convenience store, auto garage, and attached asphalt lots. No stormwater management controls were observed. Stormwater runoff drains to the east into Bladensburg Road NE.	
Project Description:	**Storm Filter** – Install a storm filter at the curb inlet drain.	

Figure 8ae – Candidate Stormwater Retrofit Project		
Site Location:	Parking area for the Metro Police Department, 3535 V Street NE, Washington, DC	
Project No.:	TRR-L-01-S-31	
ADC Map Book Location:	12 A 10	Map ID: 33
Approximate Associated Drainage Area (acres):	1.4	
Approximate Imperviousness:	97%	1.4 acres
Description of Existing Conditions:	The site consists of a fenced parking area and lacks tree islands or other green space. Stormwater runoff drains to curb inlet drains and into the stormwater system.	
Project Description:	**Storm Filter, Underground Pipe Storage** – Install storm filters at curb inlet drains. Install underground pipe storage in the parking area.	

Figure 8af – Candidate Stormwater Retrofit Project		
Site Location:	Fort Lincoln Senior Village, 3001 and 3005 Bladensburg Road NE, Washington, DC	
Project No.:	TRR-L-01-S-32	
ADC Map Book Location:	12 A 8	Map ID: 34
Approximate Associated Drainage Area (acres):	7.0	
Approximate Imperviousness:	90%	6.3 acres
Description of Existing Conditions:	The site consists of two high-rise apartment buildings with parking areas facing Bladensburg Road NE. Stormwater runoff drains to the west towards Bladensburg Road NE. Stormwater runoff from the parking lots drains into drop inlet drains and curb inlet drains. Downspouts are internal.	
Project Description:	**LID Downspout Disconnect, LID Bioretention, Storm Filter** – Disconnect downspouts from the stormwater system. Construct bioretention systems in the landscaped areas around the parking areas. Install storm filters at the inlet drains.	

Figure 8ag – Candidate Stormwater Retrofit Project		
Site Location:	Premium Inc, at the corner of Commodore Joshua Barney Jr. Drive NE and York Terrace NE, Washington, DC	
Project No.:	TRR-L-01-S-33	
ADC Map Book Location:	12 B 10	Map ID: 35
Approximate Associated Drainage Area (acres):	9.0	
Approximate Imperviousness:	85%	7.7 acres
Description of Existing Conditions:	The site consists of commercial property with a large building and a large truck depot. Stormwater runoff from the parking area is drained by curb inlet drains. There is an approximately 30-foot wide area of green space between the parking area, fence, and building. An existing dry pond is present at the northwest corner of the site.	
Project Description:	**Existing Stormwater Management Facility Retrofit, LID Bioretention** – Retrofit the existing dry pond with a wetland forebay and sand filter. Construct bioretention areas in the green space between the fence and the parking area.	

Figure 8ah – Candidate Stormwater Retrofit Project		
Site Location:	Washington Times west parking area, 3600 New York Avenue NE, Washington, DC	
Project No.:	TRR-L-01-S-34	
ADC Map Book Location:	12 A 11	Map ID: 36
Approximate Associated Drainage Area (acres):	2.1	
	95%	2.0 acres
Description of Existing Conditions:	The site consists of an asphalt parking area without tree islands. A small area of green space does exist along the perimeter. Stormwater runoff drains to one drop inlet drain on the east side.	
Project Description:	**LID Bioretention, Storm Filter** - Cut curbs and construct bioretention systems in the green space around the perimeter of the parking area. Install a storm filter at the inlet drain.	

Figure 8ai – Candidate Stormwater Retrofit Project		
Site Location:	Thurgood Marshall Extended Elementary School, 3100 Fort Lincoln Drive NE, Washington, DC	
Project No.:	TRR-L-01-S-35	
ADC Map Book Location:	12 A 9	Map ID: 37
Approximate Associated Drainage Area (acres):	4.1	
Approximate Imperviousness:	75%	3.1 acres
Description of Existing Conditions:	The site consists of a three-story, flat-roofed school structure with parking to the west and south. Downspouts are internal. Stormwater runoff from the parking areas drains to drop inlet drains. There is green space bordering the parking area.	
Project Description:	**LID Green Roof, LID Bioretention, LID Downspout Disconnect** – Install a green roof at the next scheduled renovation. Construct bioretention systems in the green space around the parking area. Disconnect downspouts from the stormwater system.	

Figure 8ak – Candidate Stormwater Retrofit Project		
Site Location:	Penn Branch Shopping Center, 3232 Pennsylvania Avenue SE, Washington, DC	
Project No.:	TRR-L-01-S-37	
ADC Map Book Location:	18 A 6	Map ID: 39
Approximate Associated Drainage Area (acres):	1.5	
Approximate Imperviousness:	95%	1.4 acres
Description of Existing Conditions:	The property has several commercial businesses and a parking lot to the south. Stormwater runoff drains south into trench drains and drop inlet drains. Downspouts are connected to the stormwater system. There is a sidewalk along the south side of the parking lot with grassy areas.	
Project Description:	**LID Downspout Disconnect, LID Bioretention, Sand Filters –** Disconnect downspouts from the stormwater system. Construct a bioretention system at the southeast corner of the property. Install sand filters at the trench drain and drop inlet drains.	

Figure 8al – Candidate Stormwater Retrofit Project		
Site Location:	Municipal Services Center, 3220 Pennsylvania Avenue SE, Washington, DC	
Project No.:	TRR-L-01-S-38	
ADC Map Book Location:	18 A 6	Map ID: 40
Approximate Associated Drainage Area (acres):	2.2	
Approximate Imperviousness:	95%	2.1 acres
Description of Existing Conditions:	The site consists of a multi-story, flat-roof municipal building with a parking lot to the north. Stormwater runoff drains northwest to Branch Avenue SE and also into inlet drains with oil/grit separators in the parking lot. The parking lot is in good condition. Downspouts are connected to the stormwater system.	
Project Description:	**LID Downspout Disconnect, LID Green Roof, Underground Pipe Storage, Sand Filter –** Disconnect the downspouts from the stormwater system. Retrofit the existing flat roof into a green roof. Install undergound pipe storage in the parking lot. Replace oil/grit separators with sand filters.	

Figure 11 – Tidal River Reach Candidate Wetland Restoration Sites

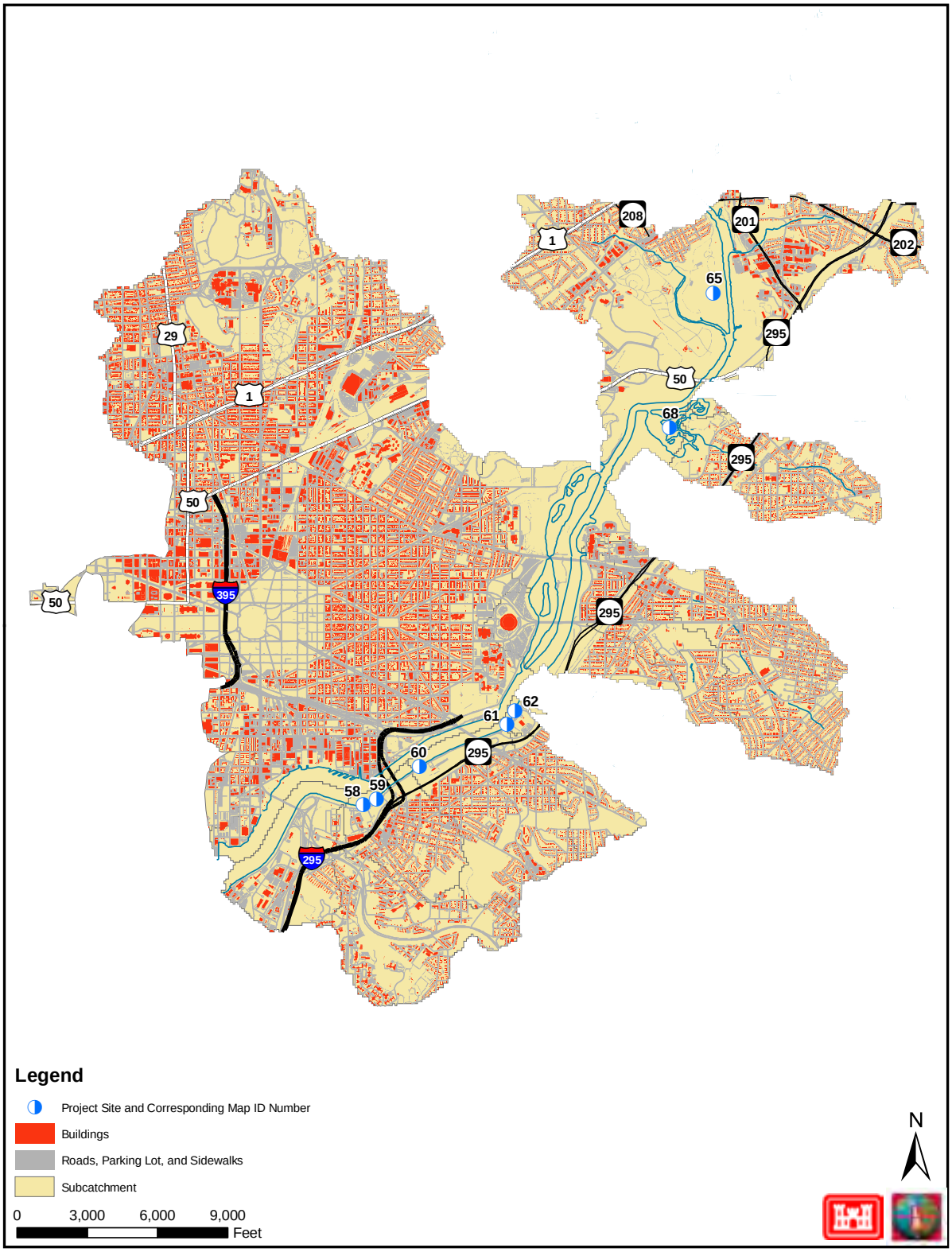

Table 7. Tidal River Reach – Wetland Restoration Projects

Project ID	Map ID	Jurisdiction	Site Location Name	ADC Map Book Location	Project Type[1]	Ownership	Approx Acreage	General Description of Proposed Actions	Estimated Cost ($)	Project Score (pts)	Project Ranking
TRR-L-03-W-1	68	DC	Approximately 1,900 feet west-northwest of the intersection of Anacostia Avenue NE and Douglas Street NE, Washington, DC	12 B 11, 12 C 11, 12 C 12	1e	Mixed	5.5	Wetland Restoration	275,000		
TRR-L-03-W-2	58	DC	Approximately 1,350 feet southwest (downstream) from the I-295 bridge crossing the Anacostia River, Washington, DC	17 F 6	1e	Private	19.1	Wetland Creation	955,000		
TRR-L-03-W-3	59	DC	Approximately 750 feet southwest (downstream) from the I-295 bridge crossing the Anacostia River, Washington, DC	17 F 6	1e	Private	0.1	Wetland Restoration	5,000		
TRR-L-03-W-4	61	DC	Approximately 1,355 feet northeast (upstream) from the Pennsylvania Avenue SE bridge crossing the Anacostia River, on the south bank, Washington, DC	17 G 5, 17 G 6	1e	Public	1.2	Wetland Creation	60,000		
TRR-L-03-W-5	62	DC	Approximately 2,000 feet northeast (upstream) from the Pennsylvania Avenue SE bridge crossing the Anacostia River, on the south bank, Washington, DC	17 J 5	1e	Private	0.8	Wetland Restoration	40,000		
TRR-L-03-W-6	65	PG	Approximately 1,860 feet southeast from the intersection of Lawrence Street and 40th Place, Brentwood, MD	12 D 9	1e	Private	2.2	Wetland Restoration	110,000		

DC = District of Columbia

PG = Prince George's County

[1] 1a= Channel Morphology, 1b= In-Stream Habitat/Bank Stabilization, 1c= Fish Blockage, 1d= Vernal pool Creation Enhancement, 1e= Wetland Creation/Restoration, 1f = Invasive Species Control

Figure 12a – Candidate Wetland Restoration Project		
Site Location:	Approximately 1,900 feet west-northwest of the intersection of Anacostia Avenue NE and Douglas Street NE, Washington, DC	
Project No.:	TRR-L-03-W-1	
ADC Map Book Location:	12 B 11, 12 C 11, 12 C 12	Map ID: 68
Approximate Acreage (acres):	5.5	
Description of Existing Conditions:	This site consists of the open water area between the Anacostia River and several backwater islands. Several areas of high spots are visible in aerial photography. Team did not have access to area.	
Project Description:	**Wetland Restoration –** Plant wild rice (*Zizania aquatic*) on high spots throughout the wetland.	

Figure 12b – Candidate Wetland Restoration Project		
Site Location:	Approximately 1,350 feet southwest (downstream) from the I-295 bridge crossing the Anacostia River, Washington, DC	
Project No.:	TRR-L-03-W-2	
ADC Map Book Location:	17 F 6	Map ID: 58
Approximate Acreage (acres):	19.1	
Description of Existing Conditions:	This site consists of the tidal Anacostia River seawall within Anacostia River Park. This reach has been disconnected from historic wetlands due to the construction of the seawall.	
Project Description:	**Wetland Creation** – Create an emergent/scrub-shrub wetland along the fringe area in front of the seawall using dredge spoil accumulated from channel dredging. Remove trash from behind the seawall in conjunction with wetland creation.	

Figure 12c – Candidate Wetland Restoration Project		
Site Location:	Approximately 750 feet southwest (downstream) from the I-295 bridge crossing the Anacostia River, Washington, DC	
Project No.:	TRR-L-03-W-3	
ADC Map Book Location:	17 F 6	Map ID: 59
Approximate Acreage (acres):	0.1	
Description of Existing Conditions:	The site consists of a point where the seawall is deteriorating and is approximately four feet lower than the rest of the wall. The area behind the seawall is accumulating trash and debris. This area is part of the Anacostia River Park.	
Project Description:	**Wetland Restoration –** Compact existing soil and add dredge spoil to increase theheight of the area. Plant tidal emergent and scrub-shrub hydrophytic vegetation. Remove trash and debris and install a trash net or trash boom along deteriorated portion of the sea wall.	

Figure 12d – Candidate Wetland Restoration Project		
Site Location:	Approximately 1,355 feet northeast (upstream) from the Pennsylvania Avenue SE bridge crossing the Anacostia River, on the south bank, Washington, DC	
Project No.:	TRR-L-03-W-4	
ADC Map Book Location:	17 G 5, 17 G 6	Map ID: 61
Approximate Acreage (acres):	1.2	
Description of Existing Conditions:	This site consists of a large area of mudflats which are exposed at low tide and offer foraging habitat to water fowl. A mud flat is present at the sea wall, which allows sediment from street stormwater runoff to enter the Anacostia River. This area is part of Anacostia River Park.	
Project Description:	**Wetland Creation –** Create a fringe wetland with dredge spoil in front of the seawall. Install a sediment basin at the base of the mud flat opening and periodically clear the basin of sediment and trash.	

Figure 12e – Candidate Wetland Restoration Project		
Site Location:	Approximately 2,000 feet northeast (upstream) from the Pennsylvania Avenue SE bridge crossing the Anacostia River, on the south bank, Washington, DC	
Project No.:	TRR-L-03-W-5	
ADC Map Book Location:	17 J 5	Map ID: 62
Approximate Acreage (acres):	0.8	
Description of Existing Conditions:	A large area of mudflats is exposed at low tide and offers foraging habitat to water fowl. A mud flat is present at the sea wall, which allows sediment from street stormwater runoff to enter the Anacostia River. This area is part of Anacostia River Park.	
Project Description:	**Wetland Restoration –** Create a fringe wetland with dredge spoil in front of the seawall. Install a sediment basin at the base of the mud flat opening and periodically clear the basin of sediment and trash.	

Figure 15 – Tidal River Reach Candidate Riparian Restoration Sites

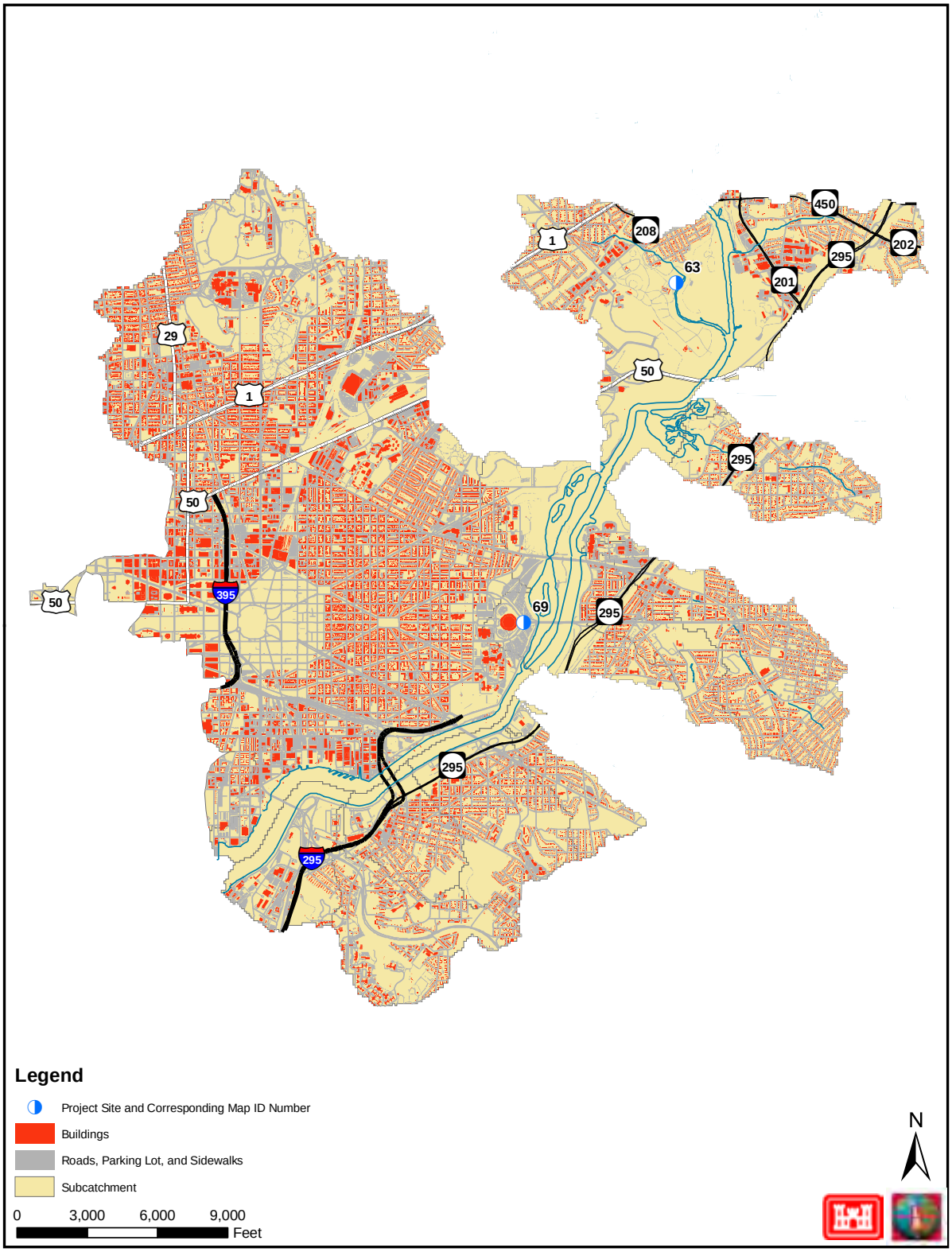

Table 9. Tidal River Reach – Riparian Restoration Projects

Project ID	MAP ID	Jurisdiction	Site Location Name	ADC Map Book Location	Project Type[1]	Ownership	Approx Acreage	General Description of Proposed Actions	Estimated Cost ($)	Project Score (pts)	Project Ranking
TRR-L-05-R-1	63	PG	Approximately 1,325 feet southeast from the intersection of Lawrence Street and 37th Avenue, Brentwood, MD	12 C 8	1b, 1d	Public	1.6	Invasive Species Removal, Riparian Reforestation	8,000		
TRR-L-05-R-2	69	DC	RFK Stadium, north and south of Capitol Street NE, Washington, DC	17 J 2	1b	Mixed	12.5	Riparian Reforestation	112,500		

DC = District of Columbia
PG = Prince George's County
[1] 1a= Upland Reforestation, 1b= Riparian Reforestation, 1c= Meadow Creation, 1d= Invasive Plant Management

Figure 16b – Candidate Riparian Restoration Project		
Site Location:	RFK Stadium, north and south of Capitol Street NE, Washington, DC	
Project No.:	TRR-L-05-R-2	
ADC Map Book Location:	17 J 2	Map ID: 69
Approximate Acreage (acres):	12.5	
Description of Existing Conditions:	The site consists of the grassy area adjacent to the eastern parking lots of RFK Stadium. There is also a small forested buffer between the grassy area and the Anacostia River. Access to the site was denied.	
Project Description:	**Riparian Reforestation –** Plant the grassy area with shrubs and saplings to increase ground water uptake by plants and decrease stormwater runoff to the Anacostia River.	

Figure 17 – Tidal River Reach Candidate Trash Reduction Sites

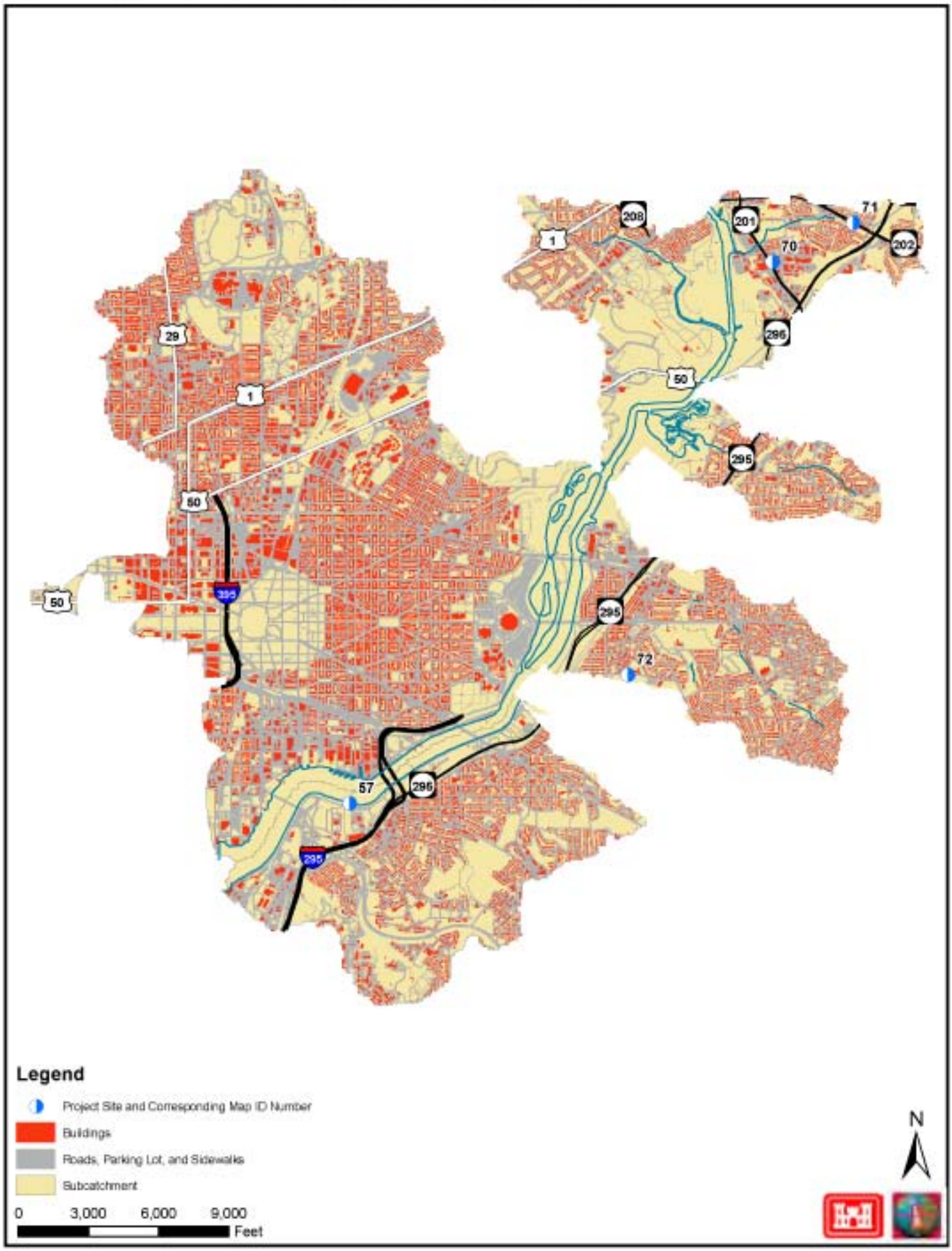

Table 10. Tidal River Reach – Trash Reduction Projects

Project ID	MAP ID	Jurisdiction	Site Location Name	ADC Map Book Location	Project Type[1]	Ownership	Approx Length (feet)	General Description of Proposed Actions	Estimated Cost ($)	Project Score (pts)	Project Ranking
TRR-L-06-T-1	57	DC	Tidal Anacostia River from the confluence of Northeast and Northwest Branches to the confluence with Potomac River, Washington, DC and MD	17 E 6	1b, 1c	Public	39,600	Trash Removal, Trash Nets	118,800		
TRR-L-06-T-2	71	PG	Landover Road between Neighbor Lane and Annapolis Road, Bladensburg, MD	12 G 7	1a	Public	4,752	Street Sweeping	360		
TRR-L-06-T-3	70	PG	Kenilworth Avenue between Annapolis Road and I-295, Bladensburg, MD	12 E 8	1a	Public	5,280	Street Sweeping	400		
TRR-L-06-T-4	72	DC	Ely Place SE between Ridge Road SE and Minnesota Avenue SE, Washington, DC	18 B 4	1a	Public	3,168	Street Sweeping	240		

DC = District of Columbia

[1] 1a = Street Sweeping, 1b = Manual/Mechanical Removal, 1c= Structural, 1d=Outreach/Education

Figure 18a – Candidate Trash Reduction Project		
Site Location:	Tidal Anacostia River from the confluence of Northeast and Northwest Branches to the confluence with Potomac River, Washington, DC and MD	
Project No.:	TRR-L-06-T-1	
ADC Map Book Location:	17 E 6	Map ID: 57
Approximate Length (feet):	39,600	
Description of Existing Conditions:	This site consists of trash and debris accumulation behind the seawall. Bottles and other debris wash up at high tide. DC WASA has two skimmer boats operating five days a week from the city boundary to the confluence with the Potomac River.	
Project Description:	**Trash Removal, Trash Nets –** Extend operation of skimmer boats upstream to the confluence of Northeast and Northwest Branches. Install trash booms or trash nets at outfall locations.	

Figure 18d – Candidate Trash Reduction Project		
Site Location:	Ely Place SE between Ridge Road SE and Minnesota Avenue SE, Washington, DC	
Project No.:	TRR-L-06-T-4	
ADC Map Book Location:	18 B 4	Map ID: 72
Approximate Length (feet):	3,168	
Description of Existing Conditions:	Two lane residential road with light sedimentation and moderate trash buildup in the street gutters.	
Project Description:	**Street Sweeping** – Conduct street sweeping on a quarterly basis.	

Figure 19 – Tidal River Reach Candidate Land Acquisition Sites

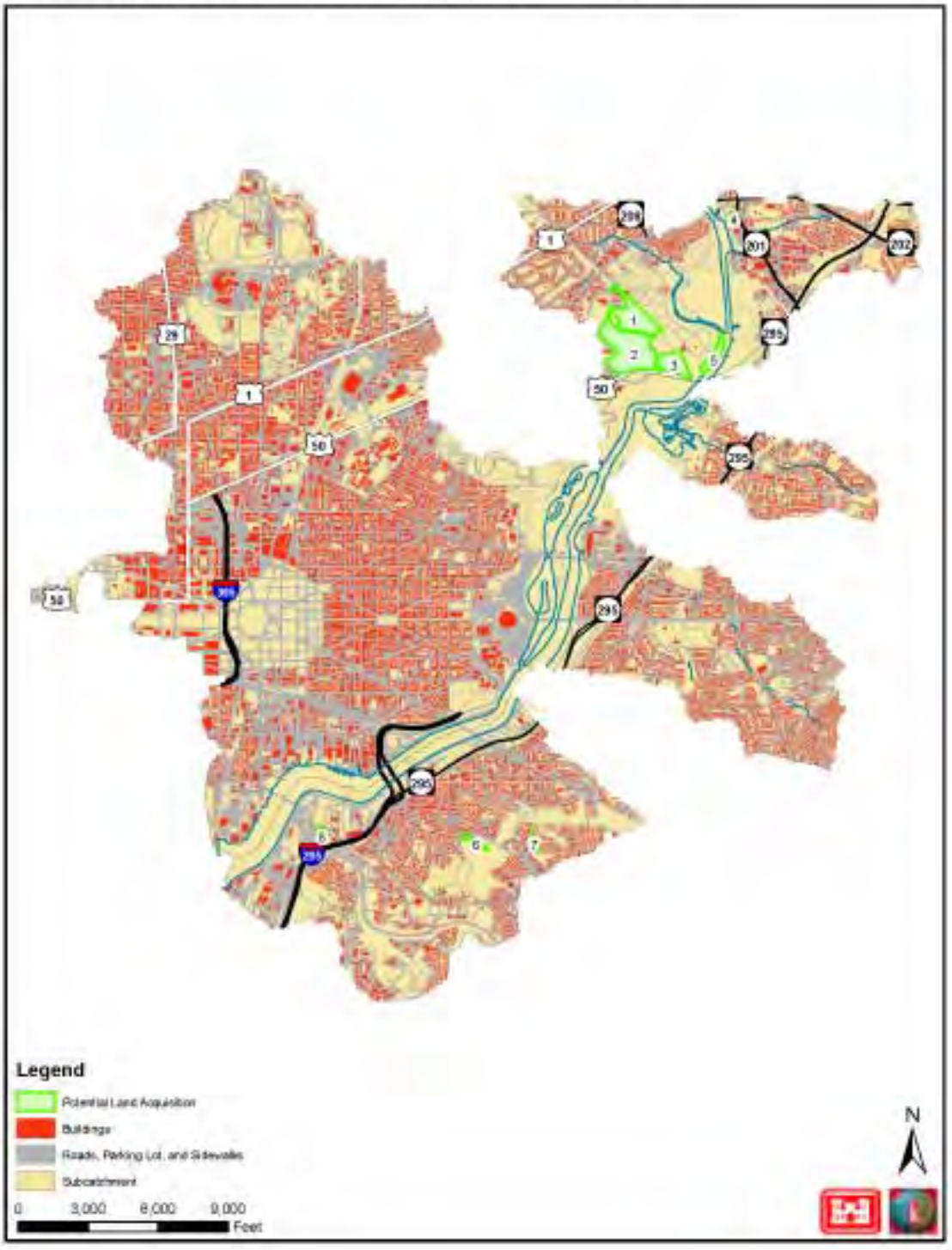

Table 11. Tidal River Reach – Land Acquisition Projects

Project ID	MAP ID	Jurisdiction	Site Location Name	ADC Map Book Location	Owner	Ownership	Approx. Acreage	General Description of Proposed Actions	Estimated Cost ($)	Project Score (pts)	Priority Ranking[1]
TRR-L-08-L-1	1	DC	1350 Pennsylvania Avenue SE, Washington, DC	12 A 8, 12 A 9, 12 B 8, 12 B 9, 12 C 9	District of Columbia	Public	40.3	Land Acquisition	4,030,000		High
TRR-L-08-L-2	2	DC	33rd Place NE, Washington, DC	12 A 9, 12 A 10, 12 B 9, 12 B 10, 12 C 10	USA and District of Columbia	Public	76.7	Land Acquisition	7,670,000		High
TRR-L-08-L-3	3	DC	Fort Lincoln Drive NE, Washington, DC	12 C 10	USA and District of Columbia	Public	22.1	Land Acquisition	2,210,000		High
TRR-L-08-L-4	4	PG	Kenilworth Avenue, Bladensburg, MD	12 D 7	State of Maryland	Public	2.6	Land Acquisition	260,000		Medium
TRR-L-08-L-5	5	PG	Eastern Avenue, Mount Ranier, MD	12 D 9, 12 D 10	Washington Sub. Sanitary Commission	Private	10.8	Land Acquisition	1,080,000		High
TRR-L-08-L-6	6	DC	008 Good Hope Drive NE, Washington, DC	17 H 7, 17 J 7, 17 J 8	Woodmont LLC	Private	3.8	Land Acquisition	380,000		Low
TRR-L-08-L-7	7	DC	007 28th Street SE, Washington, DC	17 K 7	General Properties Corporation, Granite Leasing Corporation	Private	2.0	Land Acquisition	200,000		Low
TRR-L-08-L-8	8	DC	008 Howard Road SE, Washington, DC	17 E 7	Poplar Point One LLC, Poplar Point North LLC	Private	4.2	Land Acquisition	420,000		Low

DC = District of Columbia
PG = Prince George's County
[1] Potential land acquisition projects were identified by the following criteria: adjacency to streams/stream channel erosion, forested riparian corridors, NWI wetlands, private parcels forming a gap between a contiguous riparian corridors, forest, NWI wetland or parkland, adjacency to existing forest or mature forest, adjacency to or within a FEMA 1-percent-annual-chance floodplain, size of private parcel.

E. Toxic Hotspots

Figure 20a—Tidal River Reach - Toxic Hotspots	
Site Location:	Two studies referenced indicate five hotspots for contaminated sediments in the AnacostiaTidal River Reach in Washington, DC. These are listed below: 1. Off the right descending bank of the river in the crook of the bend upstream of the South Capitol Street Bridge 2. Off the left descending bank in the crook of the bend upstream of the South Capitol Street Bridge (across from the Navy Yard) 3. Off the left descending bank downstream of the John Phillips Souza bridge 4. Off the left descending bank immediately upstream of the CSX train Bridge 5. Off the left descending bank immediately upstream of the Benning Road NE Bridge.
Description of Existing Conditions:	There are several areas that are considered to be hotspots for sediments contaminated with the persistent, bioaccumulative and toxic chemicals polychlorinated biphenols (PCBs) and polyaromatic hydrocarbons (PAHs), as well as chlordane, dichlorodiphenyltrichloroethanes (DDT and its degraded forms DDE and DDD), dieldrin, and heptachlor epoxide. These hotspots are located along the either sides of the mainstem of the river. Contamination sources include both ongoing and legacy sources from the PEPCO Energy facility on Benning Road NE, Poplar Point, the old Kenilworth Landfill, and the Washington Gas and Light property north of the Washington Navy Yard. Other upstream sources are delivered via combined sewer overflows, stormwater outfalls, and nonpoint source runoff, and atmospheric deposition (USEPA, 2009). The hotspots are addressed in the District of Columbia's plan for the River, Anacostia 2032: Plan for a Fishable and Swimmable Anacostia River, as a key concern and significant impediment to achieving the goals of a clean and fishable river. The persistence of the chemicals contaminating the sediments and their tendency to bioaccumulate presents long-term implications. Capping the sediments with clean sediments is a remediation approach under consideration, although it is not clear whether capping will work in the Anacostia River environment.
Project Description:	**Monitoring, Modeling, Source Control**, **Continued Study of Remediation Possibilities** - The U.S. Environmental Protection Agency has developed a white paper to summarize past monitoring efforts, identify hotspots and chemicals of concerns, and explore whether solutions such as capping the sediments will work. The white paper states that there has been insufficient monitoring to characterize localized loadings of either PCBs or PAHs. Continued study of remediation possibilities by those already studying the issue, increased monitoring and modeling, and initiating or continuing source control efforts at contributing sites is therefore recommended.

Figure 20a—Tidal River Reach - Toxic Hotspots	
References:	U.S. Environmental Protection Agency, Region 3 White Paper on PCB and PAH Contaminated Sediment in the Anacostia River, February 2009. District Department of the Environment Anacostia 2032: Plan for a Fishable and Swimmable Anacostia River, District of Columbia, May 2008.