

TRASH MONITORING IN THE ANACOSTIA WATERSHED

Addressing Litter in an Urban River

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Virginia Water Monitoring Council
04/10/19

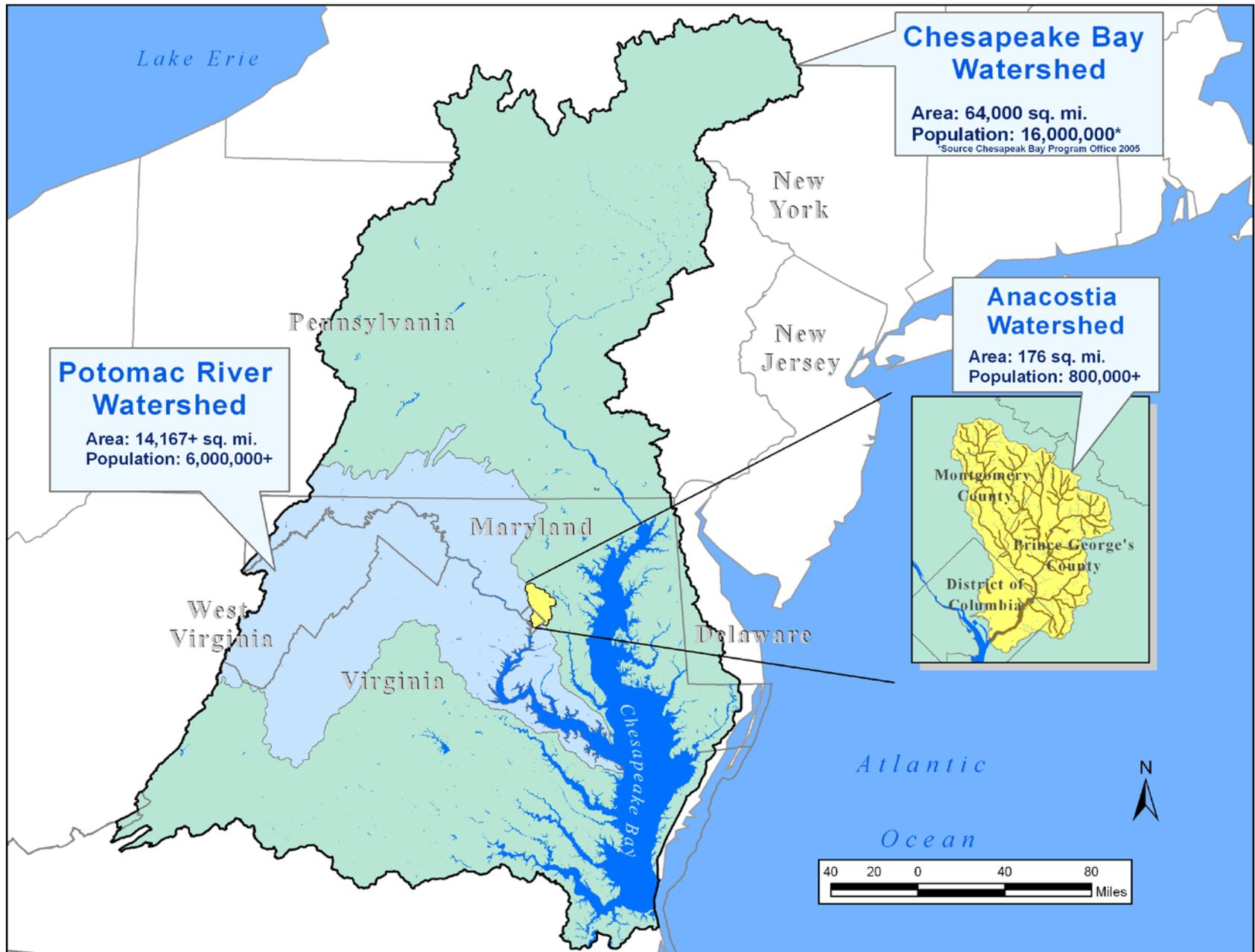


Metropolitan Washington
Council of Governments

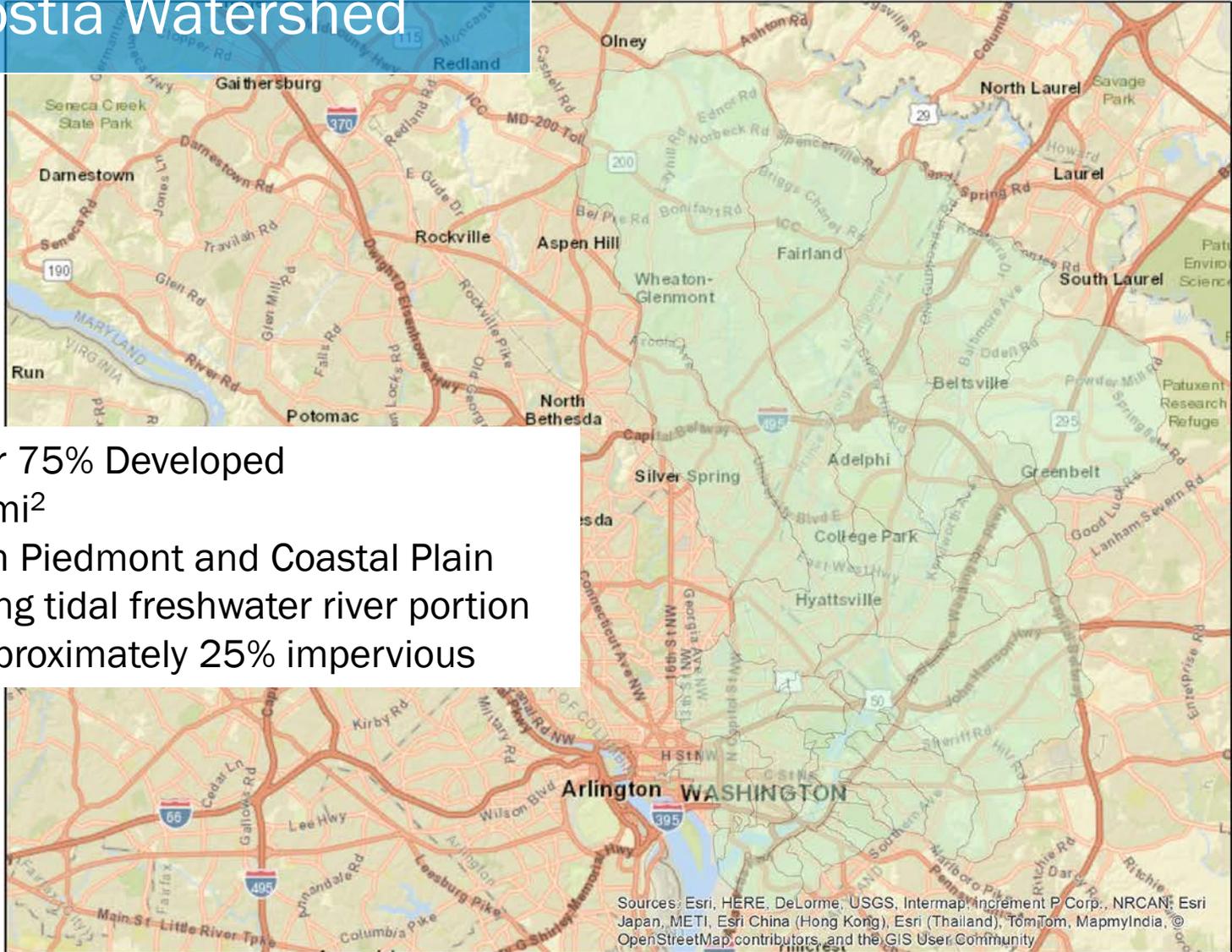
About COG

- The Metropolitan Washington Council of Governments (COG) is an independent, nonprofit association
- Brings area leaders together to address major regional issues in the District of Columbia, suburban Maryland and Northern Virginia
- Membership is comprised of 300 elected officials from 24 local governments, the Maryland and Virginia state legislatures, and U.S. Congress





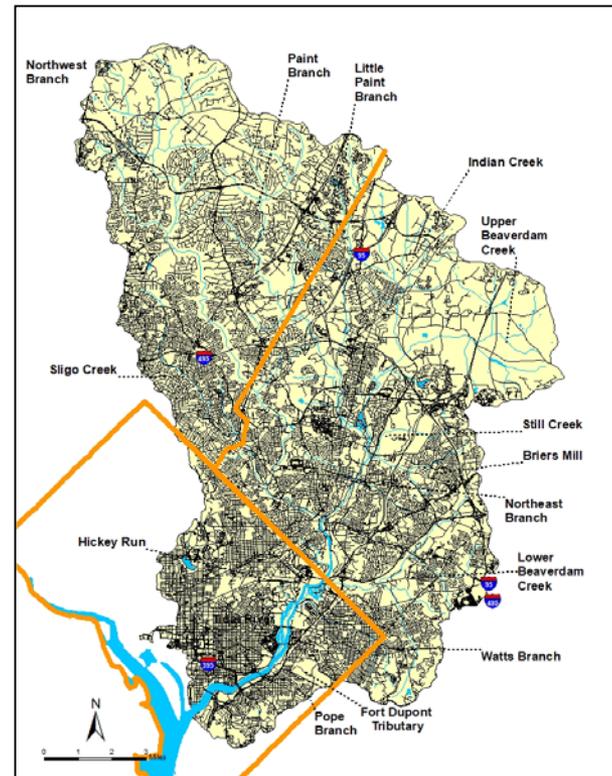
Anacostia Watershed



- Urban, over 75% Developed
- Size : 176 mi²
- Drains both Piedmont and Coastal Plain
- 8.4 mile long tidal freshwater river portion
- Overall, approximately 25% impervious

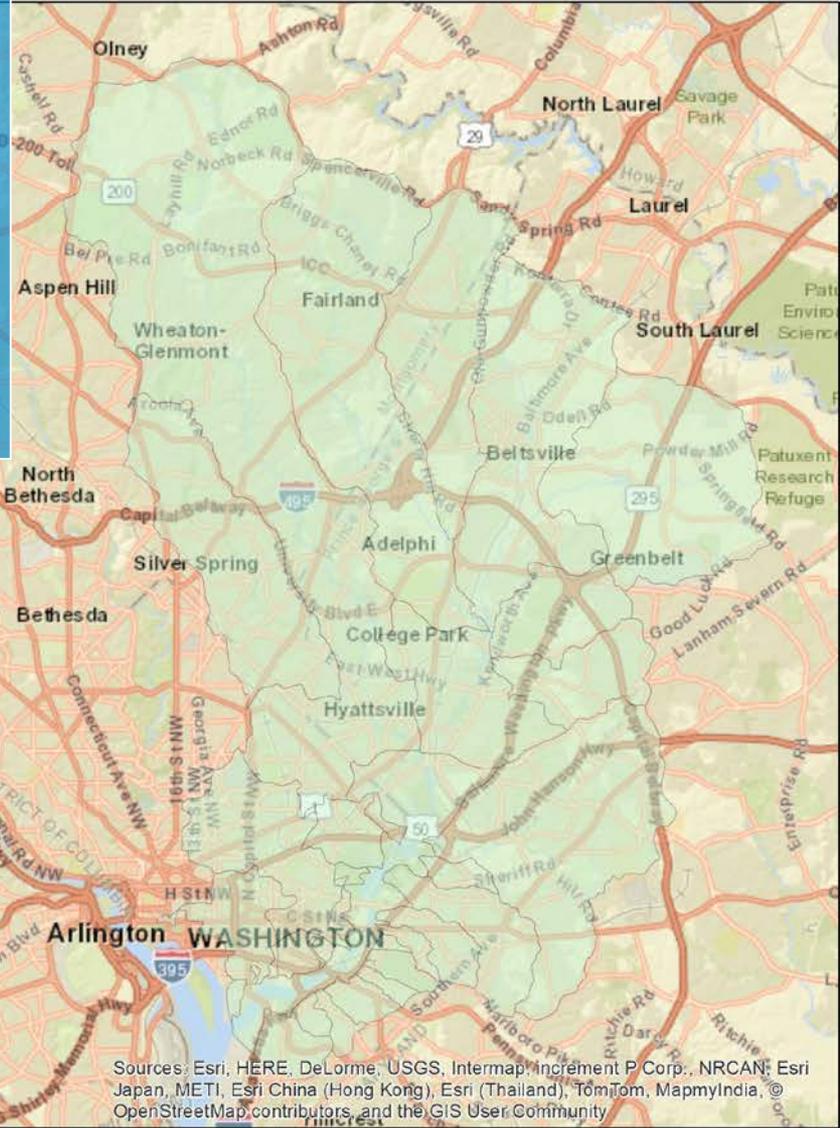
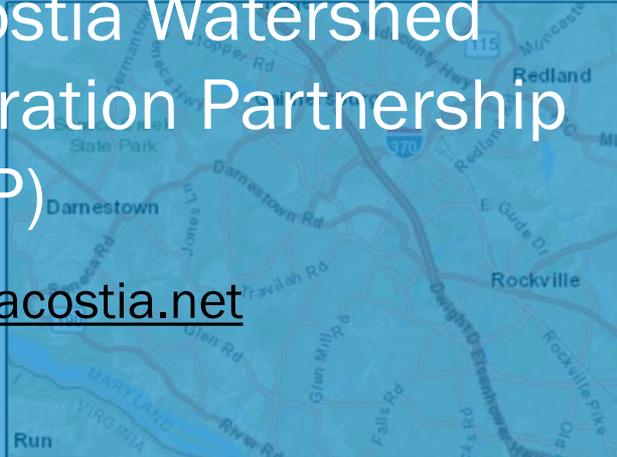
The Anacostia Watershed

- Over 2,960 miles of centerline road length
- Over 6,000 pipe outfalls discharging to the streams and river
- Stream flow is characterized as flashy



Anacostia Watershed Restoration Partnership (AWRP)

www.Anacostia.net



Sources: Esri, HERE, DeLorme, USGS, Intermap, increment P Corp., NRCAN, Esri Japan, METI, Esri China (Hong Kong), Esri (Thailand), TomTom, MapmyIndia, © OpenStreetMap contributors, and the GIS User Community

History

- 1990 – 1992 COG/Trash Reduction Workgroup develops monitoring protocol
- 2006-2008: Data Request and Anacostia Watershed was listed as impaired by trash
- 2008-2010: Workgroup reformed; Baseline load development
- 2010 - Anacostia Watershed the second Trash TMDL in the nation
- 2011-Current: COG is providing the trash monitoring service for the three jurisdictions
- 2018 TMDL – vacated with stipulation



What is Trash?

- All improperly discarded waste material, including, but not limited to, convenience food, beverage, and other product packages or containers constructed of steel, aluminum, glass, paper, plastic, and other natural and synthetic materials thrown or deposited on the land or water.
- Minimum size = Approximately one inch diameter; bottle cap size



ANACOSTIA WATERSHED TRASH SURVEY (Cont'd)

STATION NO.: _____ Total Weight: _____ (Check if applicable)

DATE : _____ Less Container Weight: _____ (Check if applicable)

Trash Item	Field Count	Number of Items (Sub-total)	Optional Weight ()
1 Plastic Bags	Other		
	Carry Out		
2 Plastic Bottles			
3 Glass Bottles			
4 Aluminum Cans			
5 Styrofoam (cups, packaging, etc.) 10 peanuts = 1	Other		
	Expanded Polystyrene		
6 Paper (newspapers, magazines, etc.)			
7 Cardboard			
8 Cloth/Clothing/Carpeting			
9 Food Packaging			
10 Auto: Oil Quart Containers			
Oil Filters			
Antifreeze Containers			
Body Parts: Large >1 ft ²			
Small <1 ft ²			
11 Car Batteries			
12 Tires (cars, trucks)			
13 Construction Debris :			
Bricks (>1/2 brick)			
Concrete			
Lumber			
Misc. (e.g. drywall, etc.)			
14 Appliance(s)			
15 Wooden Pallets			
16 Metal (Drums, Cans, Pipes)			
17 Shopping Carts			
18 Toiletries/Drug Containers			
19 Sports Equipment/Toys			
20 Miscellaneous			
TRASH TOTAL			
DEBRIS SUBTOTAL			
TOTAL WEIGHT		Total	

Container Weight = _____

of Strainers = _____

ANACOSTIA WATERSHED TRASH SURVEY (Cont'd)
Total Weight: _____

STATION NO.: _____ Date: _____
Less Container Weight: _____

Trash Item	Field Count	Number of Items (Sub-total)	Optional Weight ()
1 Plastic Bags	Other		
2 Plastic Bottles			
3 Glass Bottles			
4 Aluminum Cans			
5 Styrofoam (cups, packaging, etc.) 10 peanuts = 1	Other		
6 Paper (newspapers, magazines, etc.)			
7 Cardboard			
8 Cloth/Clothing/Carpeting			
9 Food Packaging			
10 Auto: Oil Quart Containers			
Oil Filters			
Antifreeze Containers			
Body Parts: Large >1 ft ²			
Small <1 ft ²			
11 Car Batteries			
12 Tires (cars, trucks)			
13 Construction Debris :			
Bricks (>1/2 brick)			
Concrete			
Lumber			
Misc. (e.g. drywall, etc.)			
14 Appliance(s)			
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16 Metal (Drums, Cans, Pipes)			
17 Shopping Carts			
18 Toiletries/Drug Containers			
19 Sports Equipment/Toys			
20 Miscellaneous			
TRASH TOTAL			
DEBRIS SUBTOTAL			
TOTAL WEIGHT		Total	

Container Weight _____ # of Strainers _____

ANACOSTIA WATERSHED TRASH SURVEY - MDE 8 Digit Watershed Code - 02140205

DATE: _____ START TIME: _____
CREW: _____ END TIME: _____

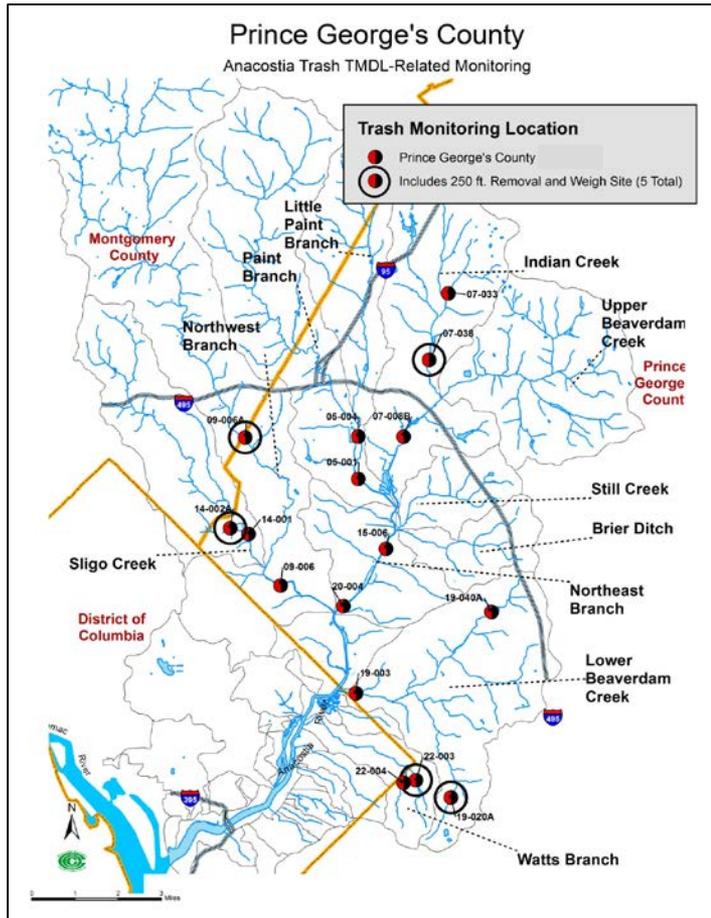
SURVEY TYPE (check applicable)	
1 Stream	Length (ft) No. of Trash "Strainers" Riparian Buffer Conditions:
2 Trash Netting System	Net Number and Total Weight (lbs) Total Number of Nets/ Nets Surveyed
3 Road Right of Way	300' long and 5' wide on either side of curb gutter per side
4 Stormwater Management Pond	
5 Storm Drain Outfall (Trash Fence)	DA (Acres/mi ²)=
GENERAL LAND USES (check all applicable)	
<ul style="list-style-type: none"> • Low Density Residential (large lot, single family) • Medium Density Residential (small lot, single family, and/or townhouses) • High Density Residential (apartments) • Commercial • Industrial • Institutional (libraries, schools, religious) • Recreational Area (developed) • Forest • Agriculture 	
GENERAL STATION DESCRIPTION:	
PHOTO NUMBERS:	
TOTAL NO. OF OBSERVED ITEMS:	
TOP THREE ITEMS AND ASSOCIATED SUB-TOTALS:	
TOTAL WEIGHT (OPTIONAL): _____ (lbs)	

Stream Trash Survey Protocols

- 37 sites
 - 16 “picks”
 - 500 ft. stretch count
 - Trash
 - “Strainers”
 - Upstream 250 ft. pick all trash
 - Classify, sort, weigh
-
- Basic Criteria: Wadable, clear water, all weights are “wet weights”, large items not picked, only larger than bottle cap, count to top of the bank or “bank full”.



Prince George's County

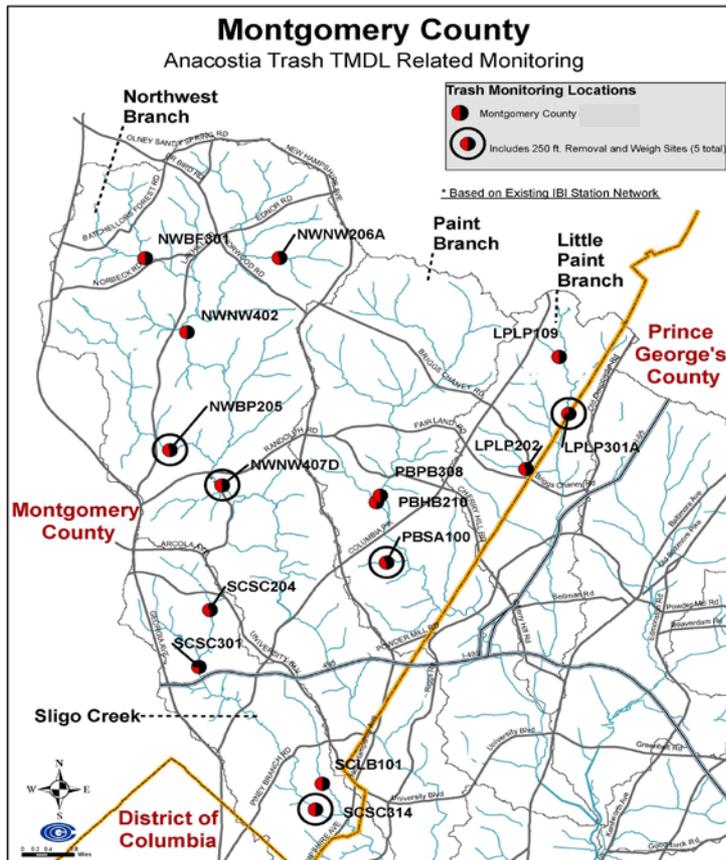


Site selection:

- Based on County biological network
- Original 2008 TMDL report sites



Montgomery County



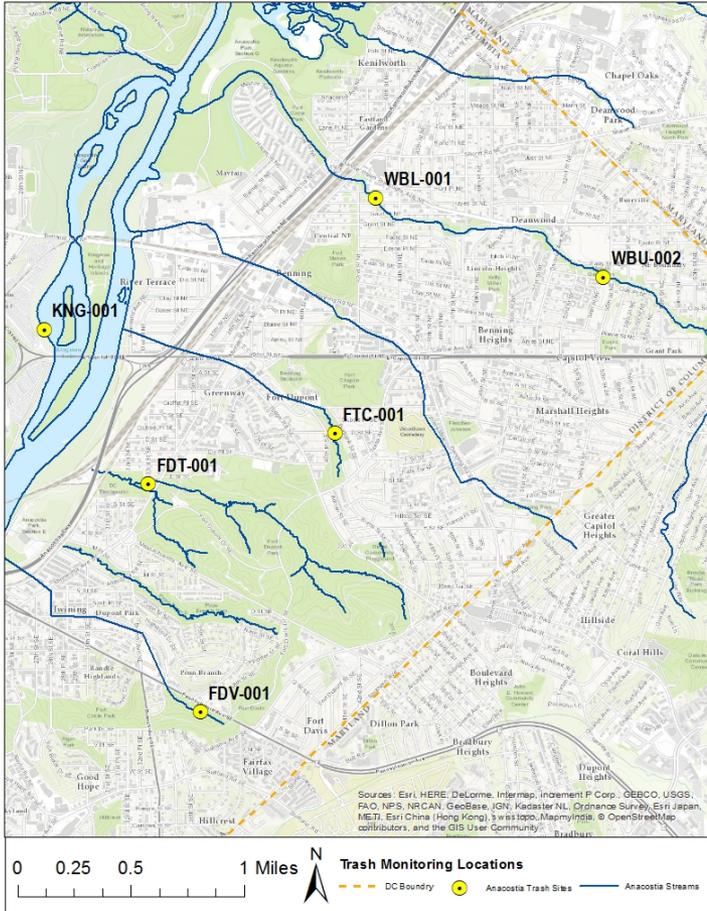
Site selection:

- Based on County biological network
- Original 2008 TMDL report sites



District of Columbia Stream

- 6 sites in the Anacostia watershed
- 7 sites in the Potomac and Rock Creek watershed



1. Plastic Bags
2. Plastic Bottles
3. Food Wrappers
4. Aluminum Cans
5. Polystyrene foam
6. Paper
7. Cardboard:
8. Clothing/Carpeting
9. Glass Bottles
10. Auto
11. Automotive batteries:
12. Automotive/Car:
13. Construction Debris
14. Appliances:
15. Wooden Pallets:
16. Metal (drums, cans, pipes and foil):
17. Shopping Carts
18. Toiletries/Drug Containers
19. Sport Equipment/Toys
20. Miscellaneous:



TRASH ITEMS/CATEGORIES

1. Plastic Bags: Typical “carryout” items include plastic grocery bags and shopping bags. Typical “other” items include garbage bags, newspaper sleeves, sheet stretch wrap, mulch bags and the shreds or parts of torn bags.
2. Plastic Bottles: Typical items include plastic containers of any size, used to store liquids. Exceptions include auto products containers such as oil quart, antifreeze, car wax containers, etc. They are recorded in a separate category.
3. Food Wrappers: Typical food items that comes packaged such as potato chip bags, candy wrappers, juice pouches, etc. Recent biodegradable “take-out” containers are included.
4. Aluminum Cans: Typical items include aluminum containers of any size, typically used to store liquids.
5. Polystyrene foam: (Extruded and expanded polystyrene cups, packaging, etc.): Extruded polystyrene foam (other) are typically thermal insulation sheets and expanded polystyrene foam are typically coffee cups, coolers, or cushioning material in packaging made expanded polystyrene beads.
6. Paper: Typical items include newspaper, napkins, receipts, coated paper cups and plates, etc.
7. Cardboard: Typical items include corrugated thick sheets of paper.
8. Clothing/Carpeting: Typical items include shirts, pants, socks, hats, shoes, purses, backpacks, wallets, umbrellas and carpet and pads. Recent “wet-wipe” towelettes are included in this category.
9. Glass Bottles: Typical items include glass containers of any size, typically used to store liquids.
10. Auto: Products Containers- Typical items include bottles, cans, tubes, and other containers that held products used in the care and maintenance of an automobile. Items include oil and antifreeze containers, engine fluid bottles, washer fluid bottles, car wax or polish containers, etc. Vehicle body parts - Anything that was once part of an automobile separated out to large (items greater than 1 square foot) and small (items less than 1 square foot).
11. Automotive/Car batteries: Items include small 6 volt to more typical 12 to 24 volt batteries.
12. Automotive/Car: Items include various sized vehicle tires.
13. Construction Debris: Typical items that were used in the construction or deconstruction of something and include bricks, lumber, concrete, drywall, vinyl tile, siding, or roofing material, and tools.
14. Appliances: Typical items include bicycles, strollers, scooters, lawnmowers, furniture, and appliances such as washing machines, refrigerators, radiators, etc.
15. Wooden Pallets: Typical item include whole or part of wooden pallets.
16. Metal (drums, cans, pipes and foil): Typical items include small and large non-aluminum food or drink containers. It also includes aluminum foil and metal drums, posts and pipes.
17. Shopping Carts: Typical item include various metal and plastic shopping carts.
18. Toiletries/Drug Containers: Typical items include personal care products and their packaging and prescription and over-the-counter drug container and packaging and hypodermic syringes.
19. Sport Equipment/Toys: Typical items include all types and sizes of recreational balls and any toy or discernible part of a toy larger than 1 inch.
20. Miscellaneous: Items that do not fit in any other category or are not identifiable.



1. Plastic Bags: Typical “**carryout**” items include plastic grocery bags and shopping bags. Typical “**other**” items include garbage bags, newspaper sleeves, sheet stretch wrap, mulch bags and the shreds or parts of torn bags



Strainers

Natural or anthropogenic features such as log/debris dams, large protruding tree roots and rootwads, gabion baskets, large appliances, shopping carts, etc.

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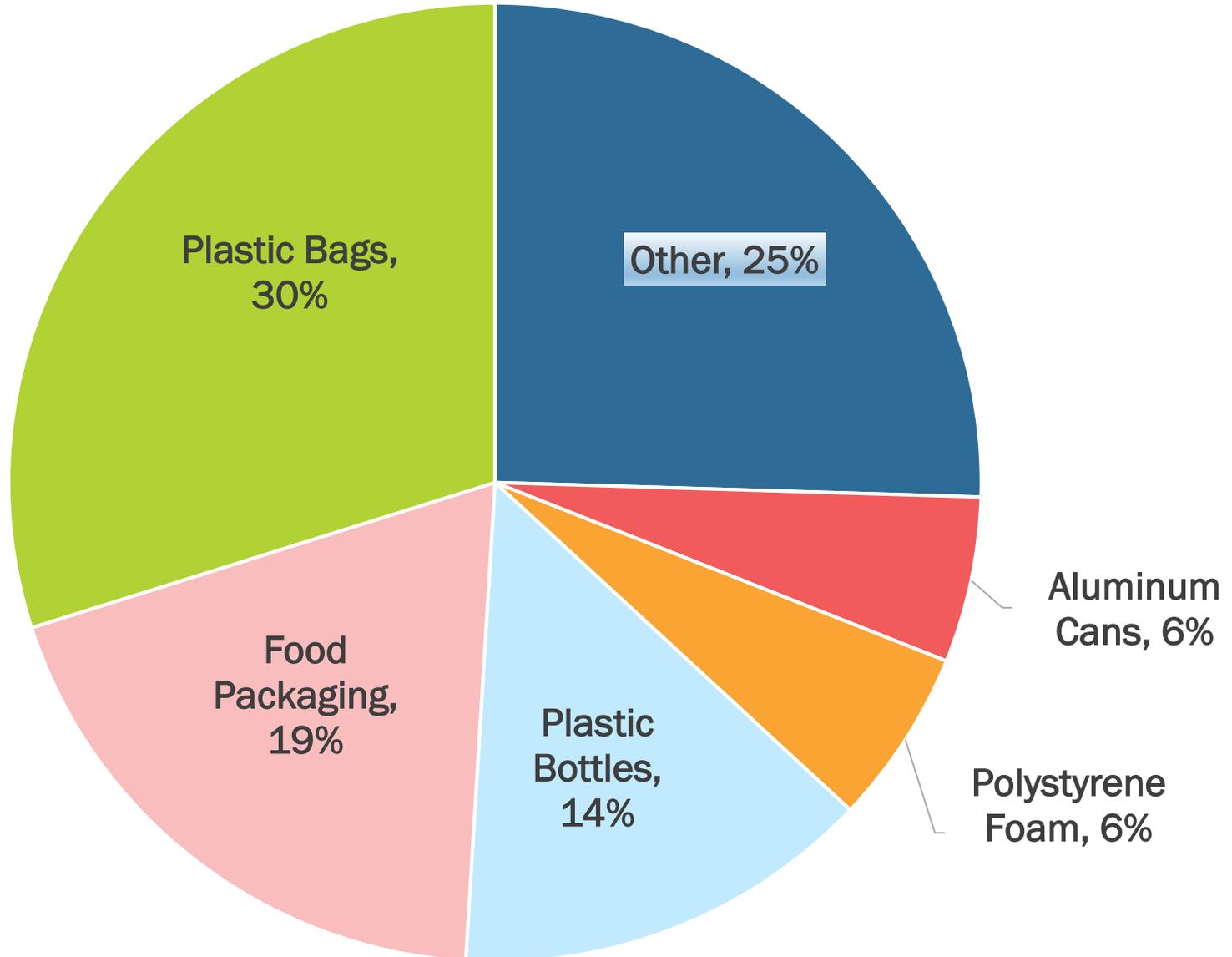
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WBL-001



Top Trash Items by Count



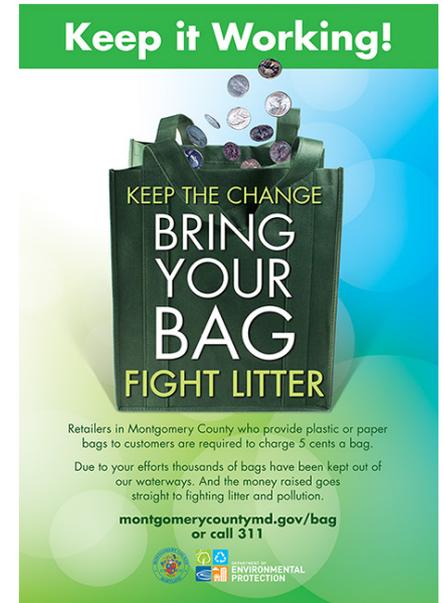
Jurisdictional Approaches:

- 2010 District of Columbia Plastic Bag Law
- 2012 Montgomery County Carryout Plastic Bag law
- 2016 Foam Ban in all three Jurisdictions
- 2019 District of Columbia Plastic Straw Ban



Jurisdictional Approaches: Programmatic

- Enforcement of anti-littering/dumping codes
- Outreach Programs
- Education Programs
- Volunteer Trash Pickup Events
- Improvement Districts Litter Pickup and Removal Services

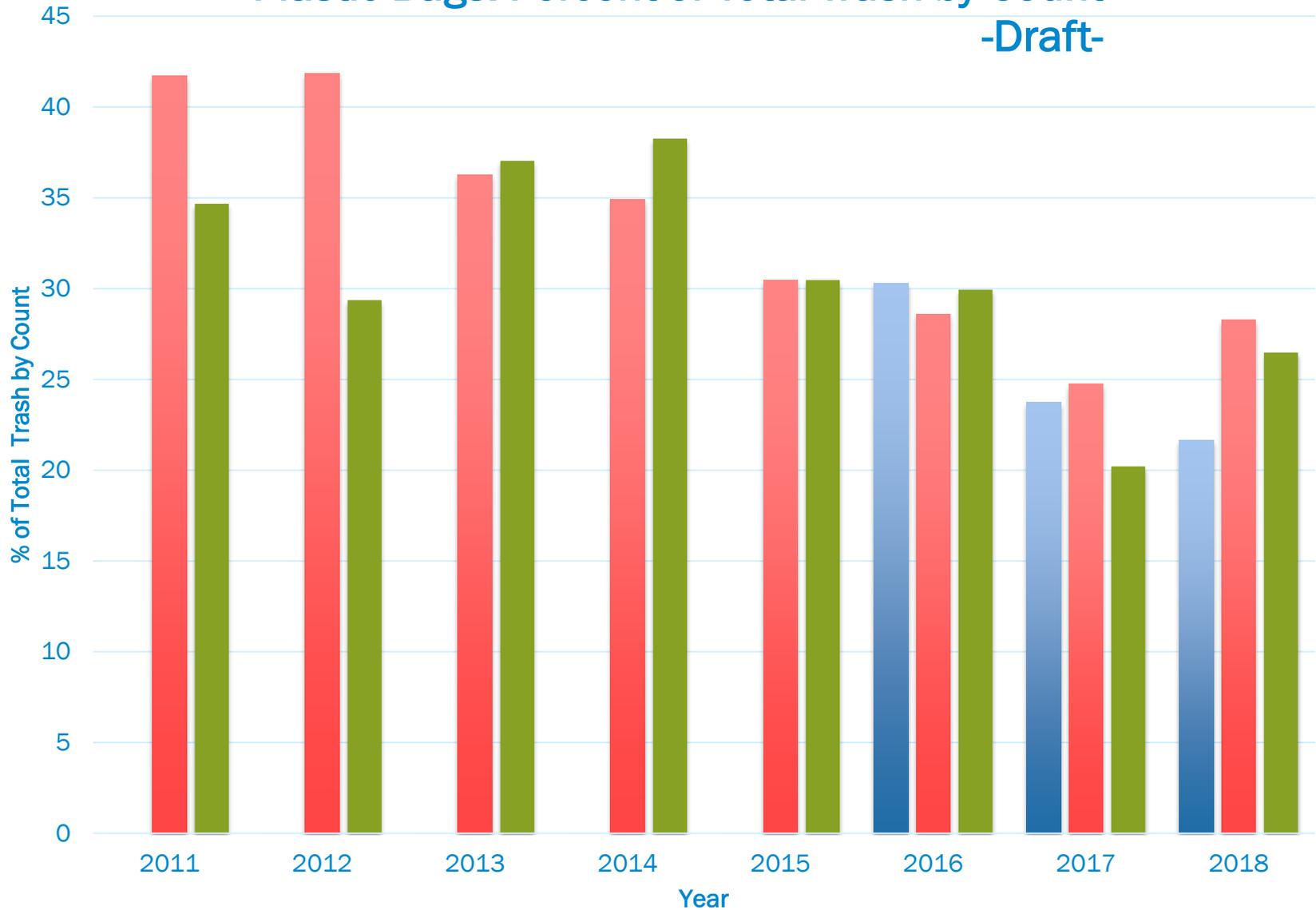


Jurisdictional Approaches: Structural

- Maintenance of Stormwater BMPs:
 1. Above Ground (e.g., Ponds, Bioretention, etc.)
 2. Underground Proprietary Devices (e.g., Stormfilters, Terre Kleen, etc.)
- Trash Booms
- Fresh Creek Technologies Trash Netting Systems
- Bandalong™ Litter Traps
- Customized Litter Traps
- Tidal River Skimmer Boats
- Street Sweeping
- Storm Drain Inlet/Catch Basin Cleaning
- CSO Tunnel Improvement Project



Plastic Bags: Percent of Total Trash by Count -Draft-



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