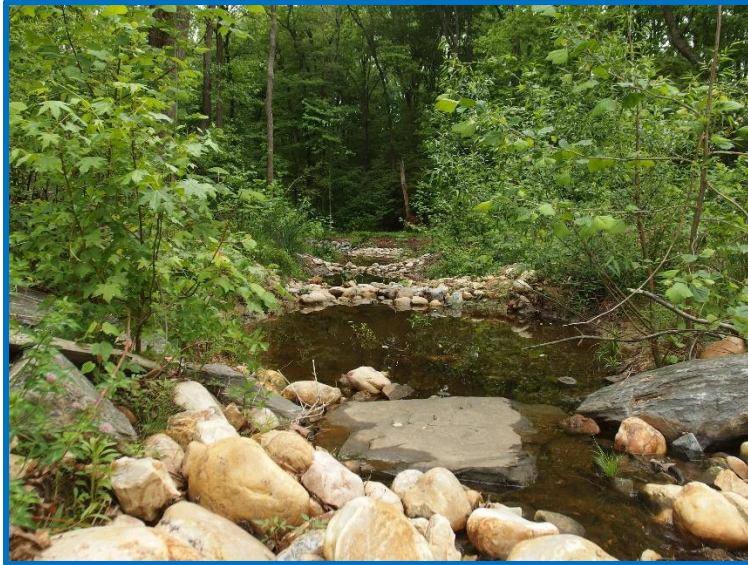


Anne Arundel County, MD

## Litter and Floatables Comprehensive Plan



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## **Introduction**

Litter can be loosely defined as any materials improperly discarded by the public, and may also include materials spilt during business and/or waste management operations. The state of Maryland defines litter as “all rubbish, waste matter, refuse, garbage, trash, debris, dead animals, or other discarded materials of every kind and description.” When exposed to storm water or any runoff, litter can become a pollutant in the storm drain system, our water ways, and eventually the Chesapeake Bay. The US EPA defines floatables as “any foreign matter which may float or remain suspended in the water column” including plastics (bottles, food packaging, and other items), polystyrene (Styrofoam) items, plastic bags, aluminum cans, foil bags, and paper products. Litter and floatables are the most visually impactful pollutants. Floatables present a clear danger to wildlife, as both aquatic and terrestrial organisms can ingest or become entangled in debris. Litter and floatables also constitute potential flooding hazards by clogging storm drain inlets. Small and large floatables can hinder the growth of aquatic vegetation, decreasing spawning areas and habitats for fish and other organisms.

Prevention and removal of litter and floatables in the County’s waterways will have significant positive effects on water quality and aquatic life and habitat. Eliminating litter and floatables from our waterways will make recreational activities more enjoyable and make our rivers and streams even more aesthetically pleasing, leading to an increased public interest in our waterways.

## **II. Existing Conditions**

Litter is a pollutant that does not occur naturally. Whether intentional or accidental, litter exists solely as a result of human behavior. Population trends, demographics, infrastructure, and land use are all important factors that may influence the extent of a litter problem within a municipality, and which must be considered when implementing litter reduction practices.

Anne Arundel County has a total area of 379,353 acres (593 square miles). Approximately 113,916 acres - 30 percent of the total area of the County - is water. The County is bordered to the east by the Chesapeake Bay and numerous tidal tributaries; to the north by the Patapsco River, Baltimore County, and Baltimore City; to the west by the Patuxent River and Prince Georges and Howard Counties; and to the south by Calvert County. The County is divided into 12 primary watersheds, which are further divided into numerous smaller subwatersheds (Figure 1). Portions of the Patapsco Tidal watershed are listed by MDE as “impaired” for trash.



**Figure 1.** Primary watersheds and non-tidal stream reaches in Anne Arundel County.

## **Streams and Waterways**

Anne Arundel County has numerous creeks, streams, and rivers (Figure 1). There are approximately 1,324 miles of streams within Anne Arundel County, all of which directly or indirectly lead to the Chesapeake Bay. The County has 533 miles of shoreline and most of its boundaries are defined by water, principally by the Chesapeake Bay to the east, the Patuxent River to the west, and the Patapsco River to the north.

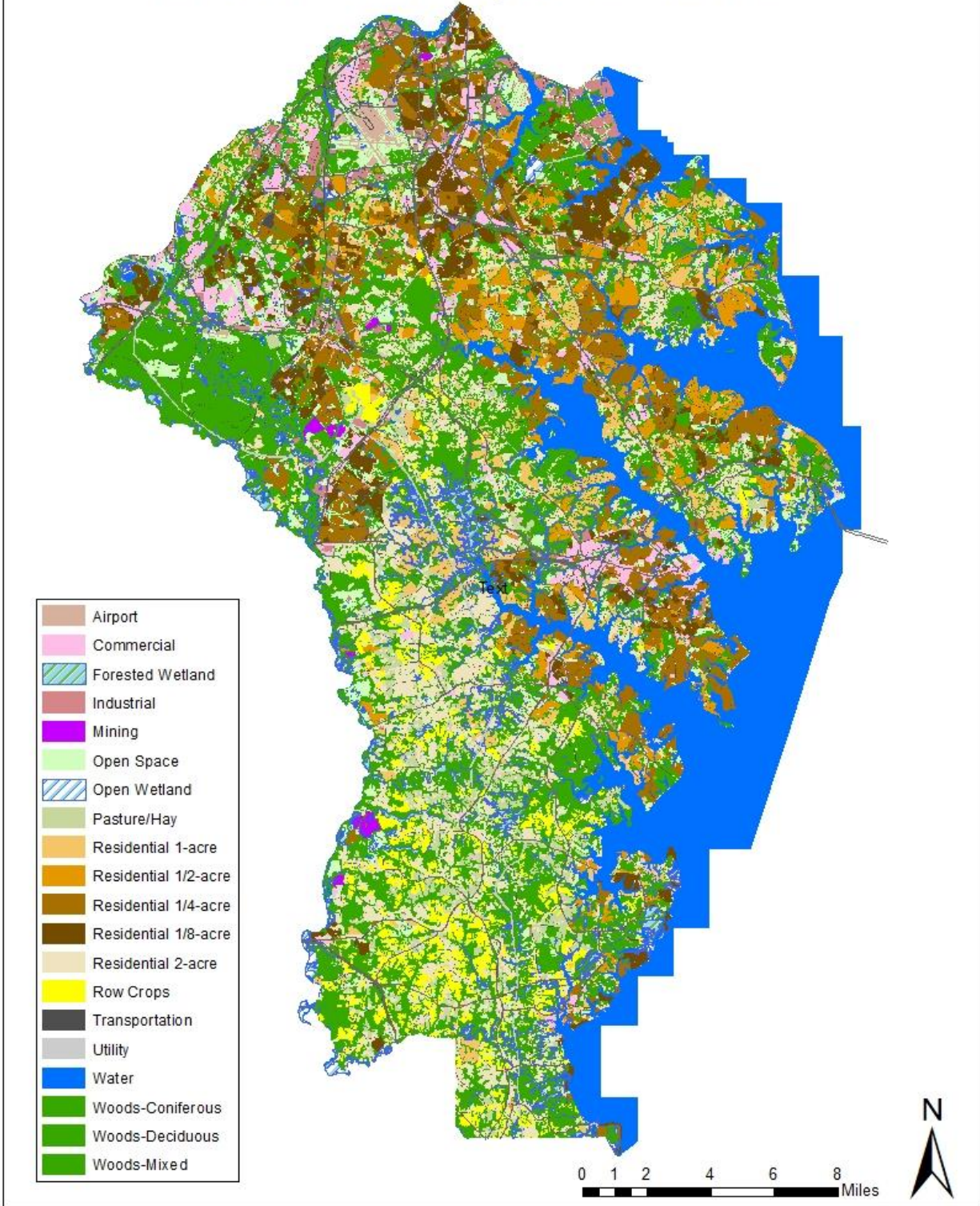
## **Land Use**

Land use is strongly correlated with the amount of litter that enters the storm drain system. Multiple studies have shown that urban run-off is the primary source of litter (Los Angeles Regional Water Quality Control Board, 2007). Studies have also shown that commercial land-use areas generate more gross pollutants than residential or light industrial land use areas despite the presence of trash cans, recycling bins and, more intensive street sweeping efforts in commercial areas (Walker and Wong, 1999; Allison and Chiew, 1995). County land cover from 2017 is shown in Figure 2.

There are urban concentrations of residential and commercial property in the northern portion of the County (North County) and Annapolis. Suburban character is prevalent in its eastern and western portions (West County). The southern portion (South County) is mostly rural and undeveloped, as are some areas within the central portion of the County. However, both the southern and central portions include several shoreline communities where development can be characterized as small villages.



## Anne Arundel County 2017 Land Cover



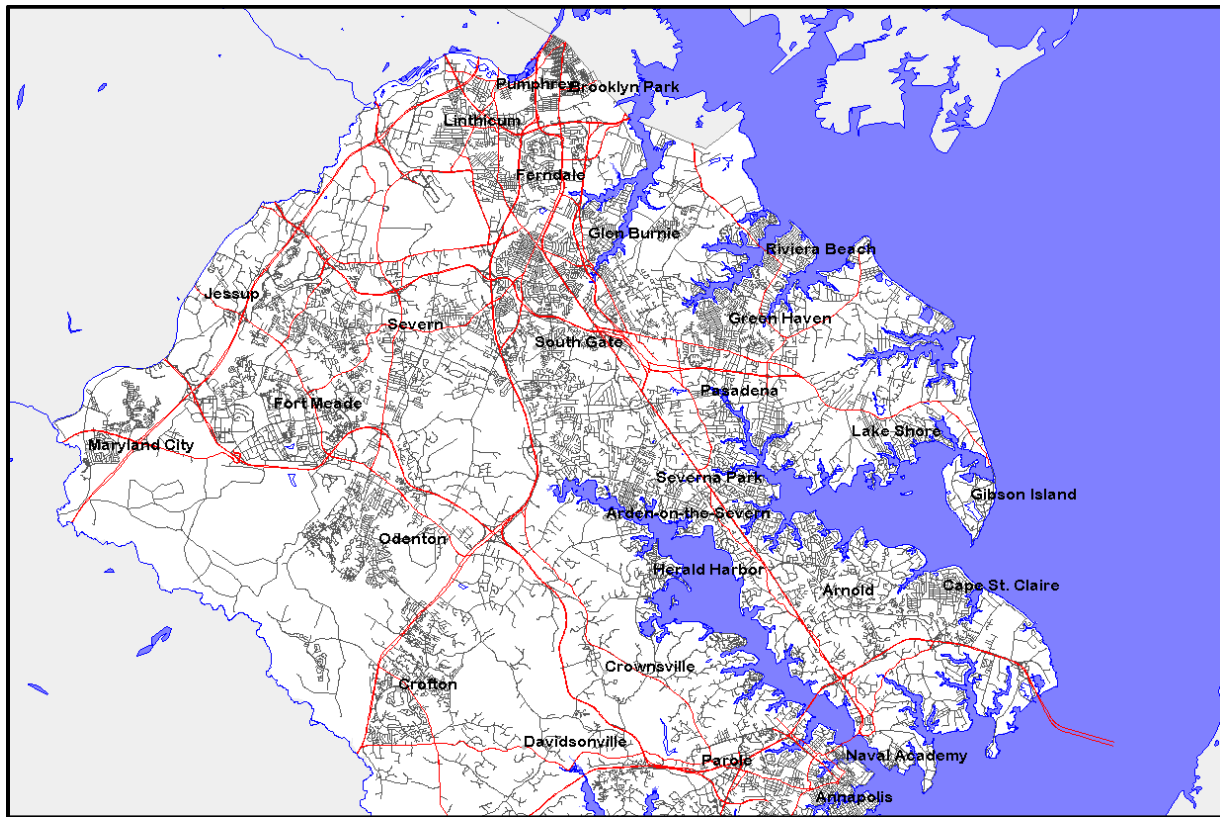
**Figure 2.** 2017 Land Cover in Anne Arundel County.

## Demographics

Based on the 2010 US Census, Anne Arundel County has an estimated population of 537,656, with an over-18 population of 412,595. There are a reported 212,562 total housing units in the County, of which 199,378 (94%) are occupied and 13,184 (6%) are vacant. The number of owner occupied units is 148,006 (74% of all occupied units), while the number renter occupied units is 51,372 (26% of all occupied units) (Maryland Department of Planning, 2012). Vacant properties are often “hotspots” for litter and illegal dumping activity, and some studies have shown that neighborhoods with higher rates of home ownership are likely to produce less litter than neighborhoods with high rates of renters (Baltimore City DPW, 2016; O’Brien, 2012.)

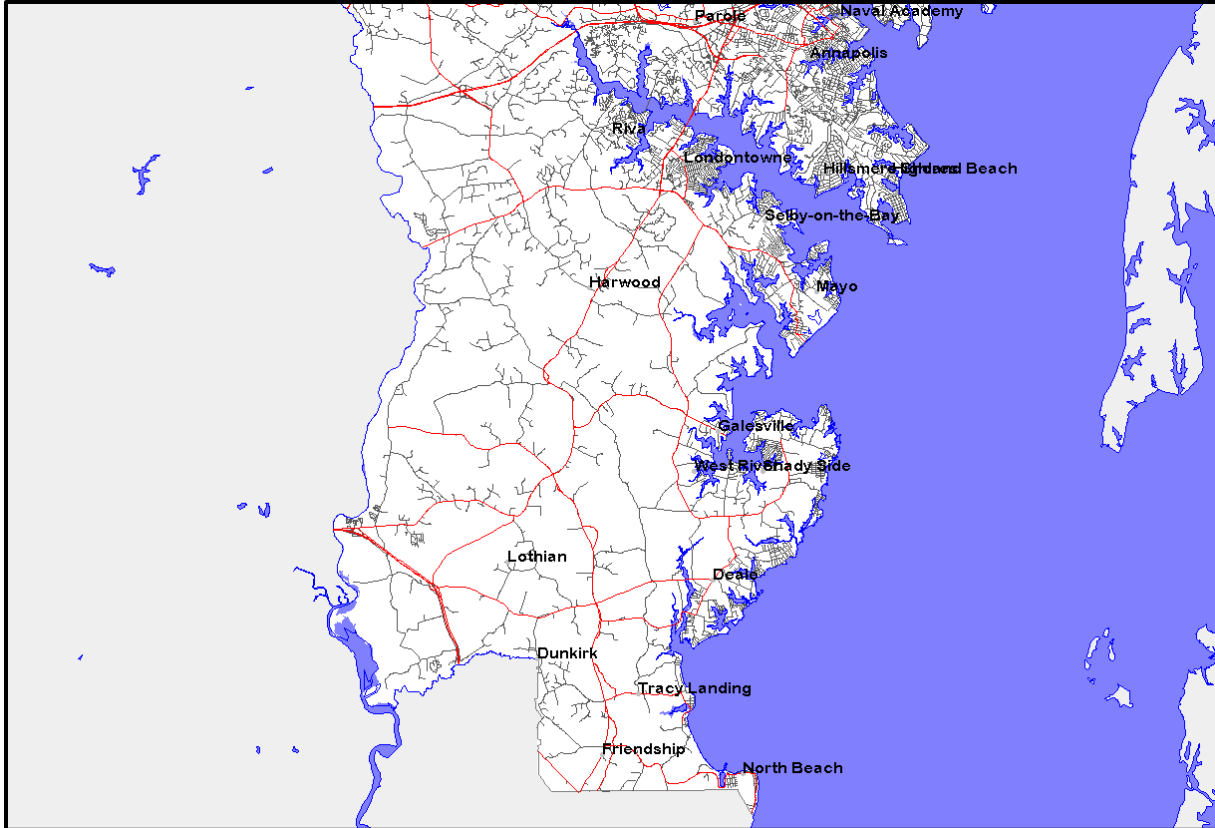
## Transport Infrastructure

There are currently 6,715 county-owned public roads – approximately 1,825 centerline miles – in Anne Arundel County. The Anne Arundel County Bureau of Highways (BOH) is responsible for all maintenance activities associated with county-owned roads and their respective right-of-ways, including street sweeping and removal of litter, trash, storm debris. There are approximately 1,213 miles of state-owned roads and highways in Anne Arundel County maintained by Maryland Department of Transportation (MDOT) State Highway Administration (SHA). Figures 3 and 4 show the network of County and State-owned roads in highways in Anne Arundel County.



**Figure 3.** County and state-owned roads (black) and highways (red) in northern Anne Arundel County.





**Figure 4.** County and state owned roads (black) and highways (red) in southern Anne Arundel County.

### **Drainage Infrastructure**

Anne Arundel County’s storm drain system has 985 miles of storm drain pipes and over 38,000 storm drain inlets. Storm drain pipes collect runoff, via the storm drain inlets, and ultimately empty into waterways such as creeks and streams at storm drain outfalls, and eventually drain into the Chesapeake Bay. As of June 2019, there were 6,188 closed storm drain outfalls in the County. Litter that finds its way into a storm drain will inevitably end up in a water body. Some storm drain pipes serve as conduits for segments of historic streams. The network of storm drain pipes in northern and southern Anne Arundel County is shown in Figures 5 and 6, respectively.

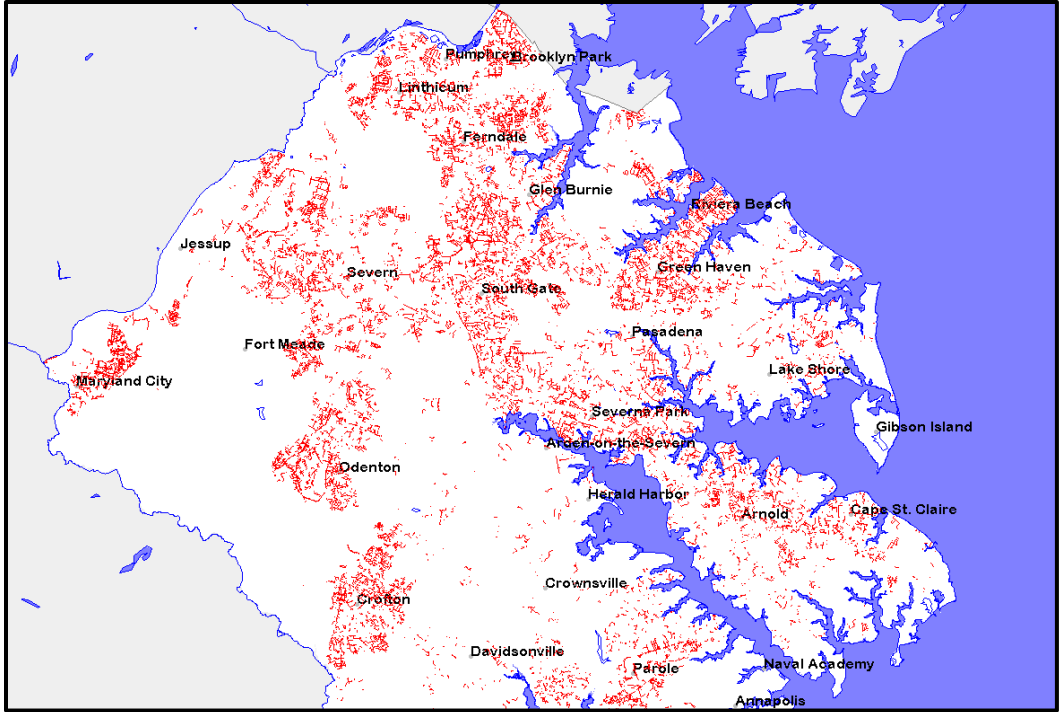


Figure 5. Storm drain pipes (red) in northern Anne Arundel County.

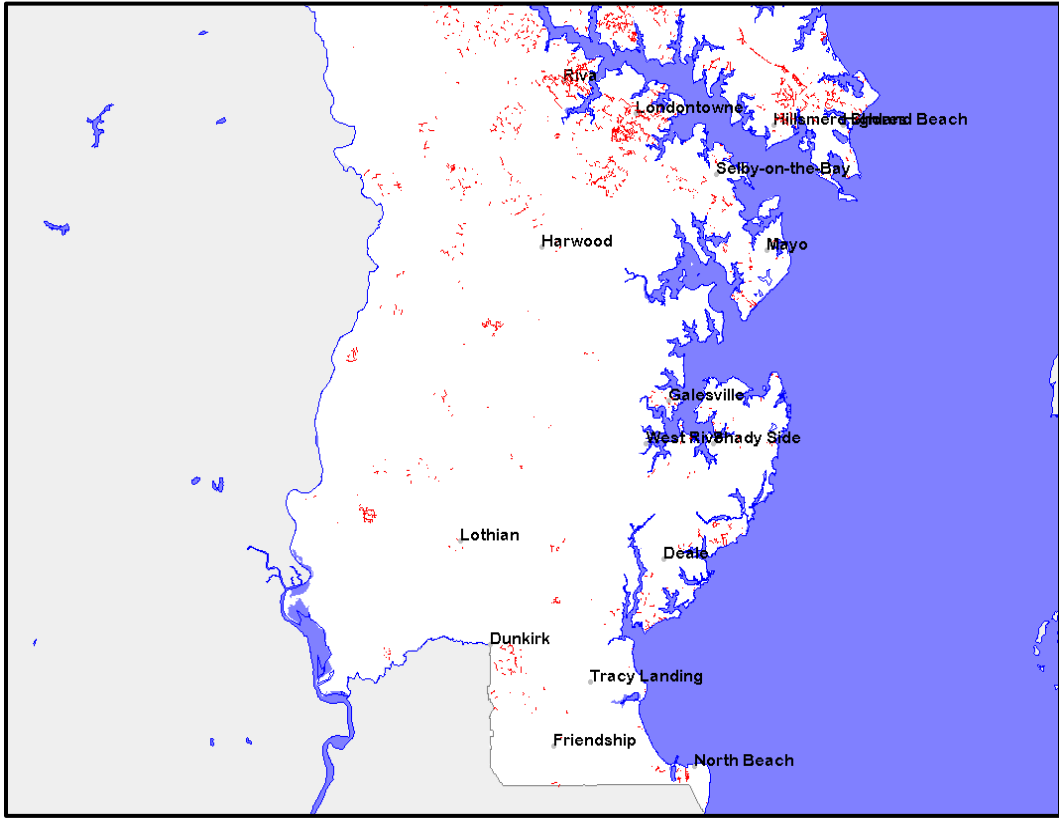


Figure 6. Storm drain pipes (red) in southern Anne Arundel County.

### III. Current Programs and Practices

The programs and practices currently employed by Anne Arundel County to reduce litter and floatables can be divided into two categories: 1) Pollution Prevention and Source Elimination and 2) Cleanup, Removal, and Collection (Table 1). Pollution prevention and source elimination programs can be described as “proactive” solutions, attempting to stop litter before it starts. On the other hand, cleanup, removal, and collection programs are “reactive” solutions, focused on correcting the problem after it has already occurred.

**Table 1.** Current litter reduction programs and practices employed by Anne Arundel County.

<b>Pollution Prevention/Source Elimination</b>	<b>Cleanup/Removal/Collection</b>
Education & Outreach	Roadside Cleanup
Recycling Programs	Alley Cleanups
Hazardous Waste Disposal	Community Cleanups
Storm Drain Stenciling	Stream Cleanups
Law Enforcement	Street Sweeping
Reporting	Inlet Cleaning and Storm Drain Vacuuming

#### Education & Outreach

The County’s Bureau of Waste Management Services (WMS) operates a robust public education and outreach program targeted to waste reduction, reuse, and recycling, as well as household hazardous waste disposal. The success of WMS’ Recycling and Waste Reduction Division’s recycling program is achieved through effective, consistent communication and education. Sustaining program promotion and customer education are key to keeping customers informed while also motivating them to continue to participate as the recycling programs changes and evolves. Lack of a comprehensive communication strategy can result in higher contamination levels in collected recyclables, less recycling by new residents, and a loss of interest from existing customers who may become frustrated with changing program guidelines or apathetic towards the goal. Therefore, the Recycling Division has made communication and education its primary focus, with the goal of catalyzing a steady incremental growth in the residential recycling rate.

WMS recognizes the importance of keeping citizens educated about its programs, particularly with regards to its changes and advancements, and to encourage residents to “Recycle More Often” and to “Recycle More, Recycle Right.” Recycling Program Specialists provide public outreach at attend schools, fairs, festivals, HOA meetings, community outreach events, and more. WMS also provides technical assistance with recycling at larger-scale events such as the Anne Arundel County Fair, Annapolis Greek Festival, and more. A total of 22 fairs and festivals were attended in FY19, and recycling assistance was provided to 14 events hosted in the County. Anne Arundel County promotes its recycling program to the public through several methods such as:

- Providing technical assistances, and services when possible, to small businesses and multifamily units;
- Improving communication with customers by maximizing the use of various media including direct mail, broadcast media, social media, newspaper advertisements, and its websites

(<http://www.recyclemoreoften.com/> and <http://www.aacounty.org/departments/public-works/waste-management/> )

- Attending civic and community meetings and events, workshops, displays, and special promotions;
- Specially-designed programs and contests for school aged children; and
- Educating customers on new programs, changes to existing programs, source reduction, schedule updates, and holiday collections.

Education programs are offered to students, faculty, parents, and more throughout Anne Arundel County's public and private schools, as well as day care and home schooling groups. Technical assistance with recycling is also provided upon request, as well as assistance with obtaining Green School Certification through the Maryland Association for Environmental and Outdoor Education (MAEOE) program. In FY19, Recycling Program Specialists provided 34 elementary school programs, 14 middle school programs, 6 high school programs, and 13 summer camps programs, as well as providing 27 tours of our County Landfill. The Recycling Division also administers three contests annually for County students, including a poster contest for elementary schools, a sculpture contest for middle schools, and a fashion contest for high school students. This helps generate even more excitement about the importance of recycling. The County utilizes a multi-media outreach approach. In addition to attendance and participation in multiple community events, recycling-themed mailers and brochures are distributed and advertisements supporting recycling can now be heard on music streaming services. Additional information on the County's recycling and household hazardous waste programs may be found at the following websites:

- <http://www.recyclemoreoften.com/>
- <http://www.aacounty.org/services-and-programs/household-hazardous-waste-drop-off-days>
- <https://www.facebook.com/annearundelrecycling/>

This ongoing and extensive outreach effort has proven to be very successful. Since the inception of the education and outreach program in 2008, the Countywide recycling rate has increased from 31% to 40%.

## **Recycling**

### *Residential Curbside Collection*

WMS offers curbside collection of recyclables one day a week for approximately 163,000 residential households, an increase of 1,000 households since 2016. Residents are provided, free of charge, one lidded recycling cart (available in 35-gallon, 65-gallon, or 95-gallon sizes) per household for single-stream recyclables. The lidded carts are more effective at preventing recyclables from being blown out of the receptacle. Lidded containers are also more effective with rodent and pest control than the lidless variety. The County does provide previously used 18-gallon or 32-gallon lidless recycling containers via request, when available. In 2019, efforts continued to promote the exclusion of plastic bags, wrap, and film from the recycling stream. All customers (residential, CORP, and Small Business) were encouraged to place their recyclables loose in the container, not bagged.



In 2017, yard waste was prohibited from being placed in plastic bags for curbside pickup, further reducing the number of plastic bags entering the waste stream, resulting in a cleaner finished compost product.

#### Small Business Recycling Program

The WMS Recycling Division offers a Small Business Recycling Program for offices looking to recycle. This operation is an extension of the residential program with contractors servicing the businesses on the roster with weekly pick-up of containers up to 96 gallons. In FY19, over 200 small businesses were signed up for Small Business Recycling and more than 1,300 tons of single-stream recycling was collected.

WMS Recycling Division staff is available for presentations, technical support, and Maryland Recycling Act (MRA) assistance regardless of whether a business elects to use the County for collection of recyclables. Currently there are 269 County-based businesses that report to the County for MRA purposes and thus are known to be actively participating in a recycling program, an increase of 64 businesses from the last reporting period.

#### Parks

The WMS Recycling Division provides recycling containers and collection services for County parks and County buildings. Recycling collection occurs on a once per week basis if the park has been provided with 95-gallon recycling carts. If the park has been provided with roll-off recycling containers (20 cubic yards), collection occurs on-call as needed. WMS does not provide County parks with trash receptacles or collection for standard trash.

#### Schools

The County's Solid Waste Management Plan is required to address and implement a strategy for collecting, processing, marketing, and disposing of recyclable materials from the County's public schools. Although Anne Arundel County Public Schools (AACPS) operate independently from the County's recycling and solid waste management plan, the public schools are an important recycling partner with the County. AACPS have a single stream-recycling program which allows the schools to place the same items accepted by the County's residential recycling program into one container. Each school has recycling containers located in each classroom, office, cafeteria, and common area. As previously discussed, both the WMS Recycling Division and the WPRP have robust education and outreach initiatives focused on public schools in the county.

#### County Office Recycling Program (CORP)

With recycling being so heavily promoted in the County, it is only fitting that the County employees lead by example and practice recycling as well. The County Office Recycling Program (CORP) was developed to assist in providing County offices and facilities with the necessary tools behind an effective recycling program (e.g., containers, signage, and pick-up service); all offices/facilities have a Recycling Coordinator that directly communicates with the recycling program office. Approximately 1,100 tons of single-stream recycling was collected at 121 County sites (offices, parks, pools, etc.) in FY19.

In October 2017, a drop off bin for textile recycling was placed in the parking lot of the County offices at the Heritage Complex in Annapolis, MD.

### Recycling Centers

Anne Arundel County has three recycling centers open to use for County residents, all of which operate Monday through Saturday from 8 AM to 4 PM. Un-bagged plastic, paper, metal, and glass items are accepted. Clean and dry plastic bags – not accepted in curbside recycling bins – can be recycled at the County Recycling Centers or at participating local grocery and retail stores. A full list of materials accepted at the recycling centers can be found on the County’s recycling website [https://www.aacounty.org/departments/public-works/waste-management/Materials\\_Accepted](https://www.aacounty.org/departments/public-works/waste-management/Materials_Accepted)

### **Hazardous Waste Disposal**

In FY19, there were six household hazardous waste events (two at each of the Recycling Centers). These events accounted for the proper disposal of 161 tons of household hazardous waste, successfully keeping these materials out of the County’s landfills, roadside ditches, and waterways – an increase of 46 tons from the previous reporting period. These events are vital in helping to keep harmful toxins out of the County landfill, as well as discouraging illegal dumping of hazardous materials. The County does not accept hazardous waste for disposal at its landfill. All household hazardous waste collected at the facilities during these events is packaged, transported, and disposed of by a licensed hazardous waste contractor.

In 2019, The Anne Arundel County Department of Health took action to reduce the risk of medical waste contamination and promotes a cleaner, safer community by placing medical sharps disposal boxes for public use at the County Police Department’s three District Stations and at the County Police headquarters. County residents are able to safely dispose of lancets, needles, syringes and other home healthcare sharps 24 hours a day, seven days a week, at the four District Stations, while a drop-off box at the Anne Arundel County Police Headquarters is available from 8 a.m. to 4 p.m. on weekdays, except holidays. The drop-off boxes are not intended for business use.

### **Storm Drain Marking**

Storm drain marking by NGOs is supported by the County in that the County permits groups to conduct marking of County-owned storm drain structures. Storm drain marking is an effective way of communicating to the public that trash and litter that finds its way down storms drains will inevitably end up in the County’s waterways. In 2018, the County purchased custom designed storm drain stencils and medallions that can be loaned to NGOs, schools, and other organizations for use. In FY19, two public schools and one community association utilized the stencils. Also, in FY19, 40 medallions were given to the Hillsmere community of Annapolis for placement on all of the community’s storm drains.



**Figure 7.** Storm drain stencil (left) and medallion (right) used by Anne Arundel County.

### **Law Enforcement and Reporting**

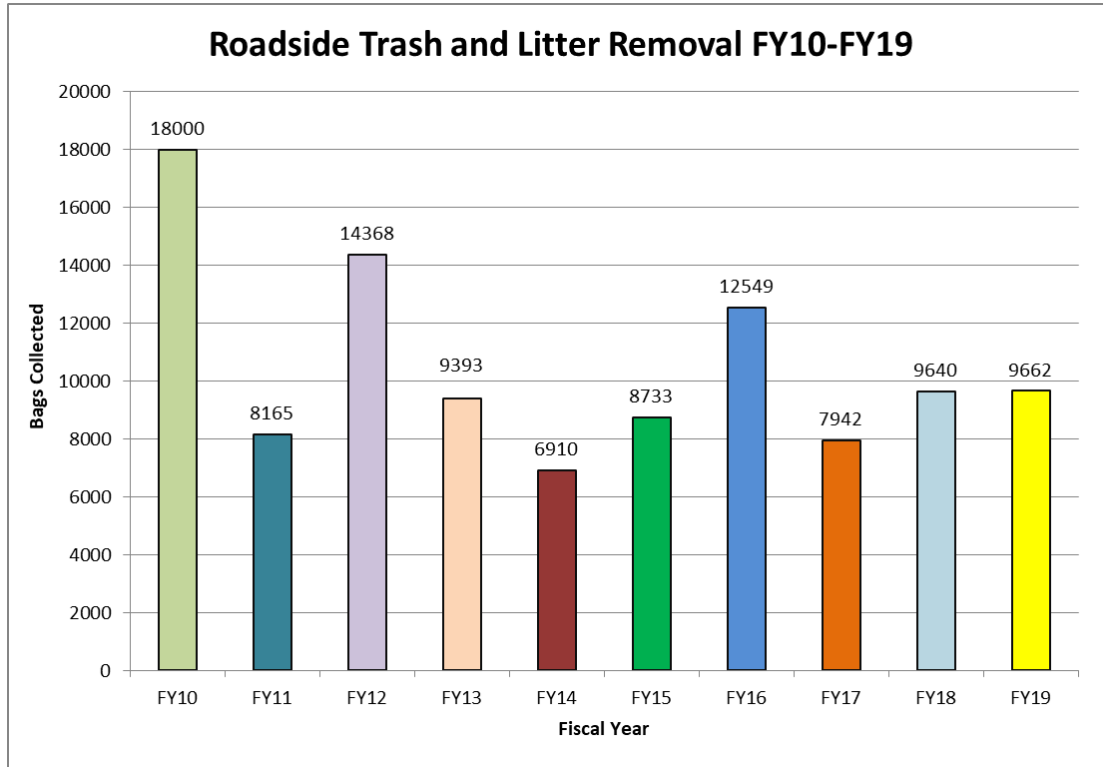
Maryland State law requires that all commercial and residential vehicle trash/recycling loads be properly covered to eliminate debris from blowing out. Littering from a vehicle and illegal dumping can be reported to the police by calling 911 if the act is in progress. A separate phone number is available to report littering/illegal dumping if it has already occurred. Litter laws are enforceable by state and local police, and a violation can carry a maximum penalty of \$30,000. County Bill #95-16, enacted in February 2017, amended Article 13 of the County Code to make it a civil offense to rake, blow, and deposit litter and yard waste into County right-of-ways, storm drains, and waterways; first time offenders are subject to a \$125 fine, while subsequent offenses are subject to fines up to \$500. Enforcement of litter laws may prove to be an effective deterrent from engaging in littering.

### **Roadside Litter Cleanup**

The County Bureau of Highways (BOH) is responsible for all maintenance activities associated with County-maintained roads. Litter is collected from County roadways following a programmed frequency, as well as upon citizen request. Additionally, BOH conducts weekday and weekend roadside litter and trash removal throughout the year, using supervised inmate labor in partnership with the County Department of Detention Facilities. The program was first started in 2007 with a focus on high litter count road segments, dump sites and illegal roadside signs that were proliferating across the County. Since the inception of the program BOH has constructed a list of high litter areas based on staff and citizen observations. Weekend roadside litter pickup occurs every other weekend throughout the year, dependent on weather. The overall effectiveness of the program ultimately depends on the number of inmates eligible for the program. The goal of the weekend pickup program is to realize an improvement in the condition of roadsides in Anne Arundel County without a reduction to other Highways services. Weekend litter removal activities follow a programmed frequency throughout the year. Litter removal crews bag recyclables and other trash items separately and crews are asked to empty the recyclable items out of their collection bags into containers provided by the WMS Recycling Division.

A total of 9,662 thirty-gallon bags of litter were removed from roadsides from July 1, 2018 to June 30, 2019, with 7,319 bags collected during the routine work week and 2,343 bags collected by the weekend litter removal program (Figure 8). Since FY10, the County's roadside litter cleanup program has removed

an average of 10,533 30-gallon bags of litter from roadsides per fiscal year. Litter collection may vary from year to year largely as a result of the number of work release inmates made available to the BOH. BOH also performs debris collection from roadsides, which involves pickup of larger items such as discarded tires, appliances, and furniture as well as tree limbs. In FY19, BOH collected over 776 tons of roadside debris.



**Figure 8.** Number of 30-gallon bags of trash and litter removed per fiscal year in BOH roadside cleanup operations (weekday and weekend combined).

### Community Cleanups

The County also provides 40-cubic yard roll-off bins throughout the year for citizen groups, communities and the Watershed Protection & Restoration Program of the County to aid in community and watershed cleanup activities. WMS also assists in hauling the trash and recyclable material collected from these activities. In FY19, WMS assisted in 154 community cleanups by providing dumpsters and/or hauling services.

Communities within a 3-mile radius of Maryland Live! Casino in Hanover are eligible for Local Development Council (LDC) grants. This grant funding may be used for beautification projects, including litter and trash cleanup. In FY19, LDC grant beautification projects resulted in the removal of over 79 tons trash, litter, and debris.

### Stream Cleanups

BOH and WMS both supported several watershed cleanup initiatives during the reporting period. In partnership with these efforts, these agencies supported three events and hauled away more than 9,300 pounds of material for proper disposal. Specific examples of clean-up events supported by the County are listed in Table 2.



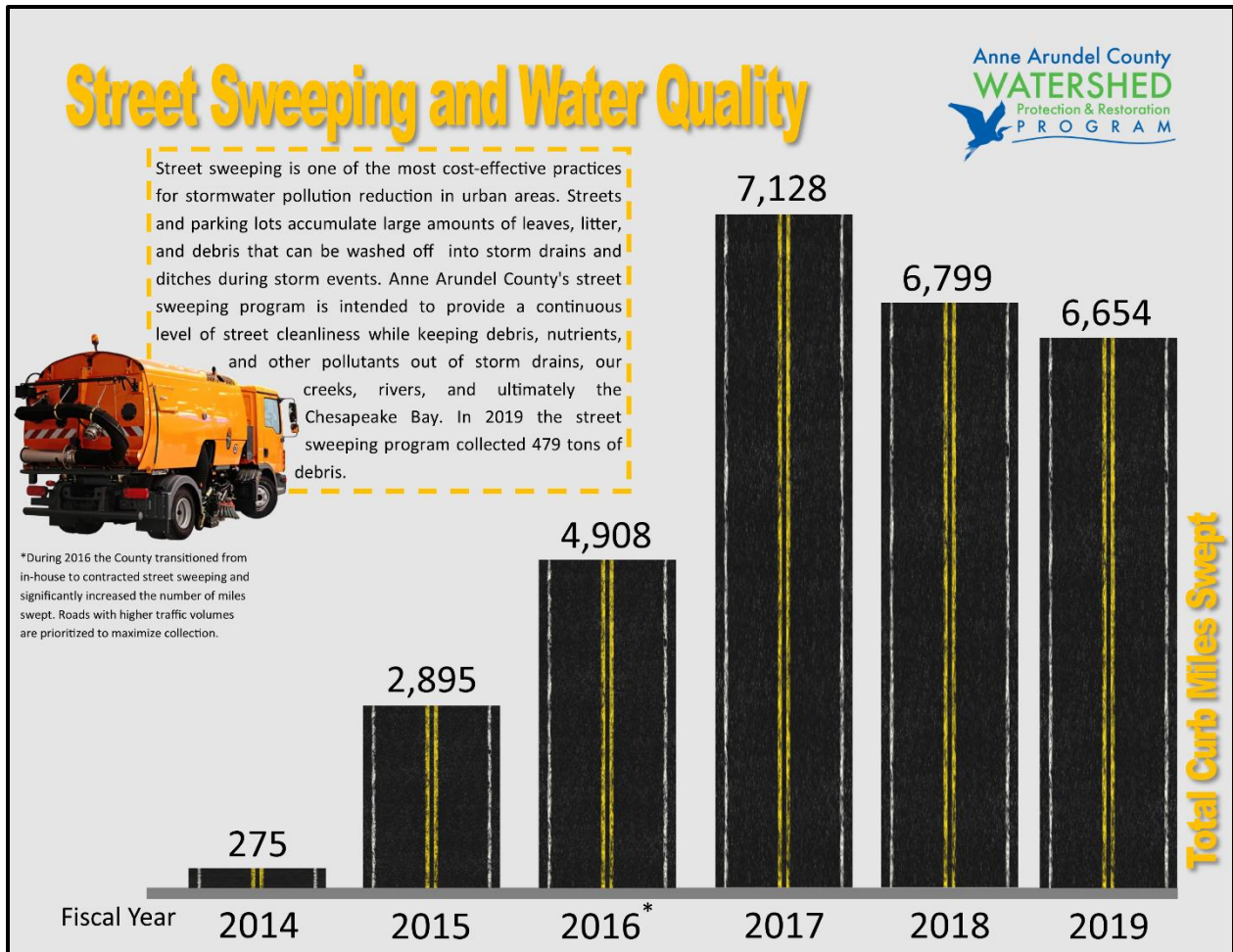
**Table 2.** Community cleanup activities supported by the County in FY 19.

<b>Date</b>	<b>Organization/Location</b>	<b>Location</b>	<b>Amount of Trash Removed</b>
March 30, 2019	South River Federation	Church Creek - 55 Forest Plaza, Annapolis, MD	.31 tons
April 13, 2019	Restore Rock Creek	Fort Smallwood Park – Pasadena, MD	.65 tons
May 4, 2019	Patuxent Preserve	Patuxent River – Patuxent River Road, Gambrills, MD	3.72 tons

The Anne Arundel Watershed Stewards Academy (WSA) was created in 2009 to build capacity within communities to reduce pollutants entering our waterways via stormwater runoff. The WSA employs hands-on training courses for Stewards via an intensive classroom instruction and field-experiences, and assists the Stewards in working within their communities to develop good intentions into positive action. Most recently (2019), WSA successes include implementing over 20 acres of in-the-ground restoration projects, planting over 7,000 native trees and plants, and removing 5.5 tons of trash from County streams and watersheds.

### **Street Sweeping**

Anne Arundel County BOH’s street sweeping program is designed to keep sediment and litter/debris out of storm drains, creeks and, rivers, and ultimately the Chesapeake Bay. The street sweeping program targets arterial roads, local and collector streets, industrial/business parks, and County facility parking lots (including park and rides). The program also targets NPDES priority areas - routes that consist of curbed streets in impaired watersheds, streets serviced by the MS4 that have a relatively large litter count, lack engineered storm water quality controls, or otherwise constitute an environmental “hotspot.” Currently, the County is targeting those curbed roads with high traffic volumes or outfalls that discharge to and/or touch a tidal or non-tidal water body, with the Patapsco River Watershed slated to be a priority street sweeping area given the Baltimore Harbor Trash TMDL. Arterial roads, local and collector streets, industrial/business parks, and NPDES priority areas are swept twice per month (25 times per year), while parking lots are swept once per month (12 times per year). BOH tracks street sweeping data by curb miles and debris tons. The County swept 6,654 curb miles from July 1, 2018 to June 30, 2019, equating to 554 curb miles per month. Depending on debris disposal costs and other factors, the number of curb miles swept may vary by 5% annually. Current funding levels support sustainable accomplishment of approximately 6,800 miles annually, a 40% increase over FY16 levels. In FY19, the street sweeping program collected approximately 479 tons of material from County maintained streets, a 32% increase from the previous year.



**Figure 9.** The number of curb miles swept per fiscal year under the County’s curb sweeping program since Fiscal Year 2014.

### Inlet Cleaning and Storm Drain Vacuuming

Anne Arundel County BOH conducts manual and mechanical storm drain inlet cleaning on approximately 25,850 inlets throughout the County. Work is conducted on a rotating basis, with each inlet being serviced about once every three years. Special attention is given during and after rainfall events to insure proper drainage. BOH also solicits requests for storm drain inlet cleaning via telephone. In FY19, the County manually cleaned and removed debris from catch basins, inlets and outlets of pipes to maintain proper drainage for 4,932 structures. In addition, the County inspects catch basins, manholes, and associated pipes to identify structures for cleaning with a sewer vacuum or power rodder. Vacuum truck loads are first dewatered and then taken to the County landfill. Storm drain cleaning via vacuum truck data is tracked in both tons (dewatered) and number of structures serviced. A total of 3,987 structures - for a total of 288.6 tons of material removed - were serviced with a sewer vacuum. A total of 120,752 linear feet of pipe were cleaned.

The County also cleans and removes debris from roadside inlet and outlet ditches and concrete swales, removes leaves from ditch lines and curbs by hand and leaf vacuum, and cleans and reshapes roadside

ditches by machine. In FY 19, the County cleaned 180,217 linear feet of ditches. Year to year variability in linear feet of ditch and curblin cleaning is routinely around 30%.

### **Maryland Clean Marina Initiative**

The Maryland Clean Marina Initiative, operated by Maryland DNR, promotes marinas, boatyards, and yacht clubs that voluntarily adopt pollution prevention practices, encouraging patrons to utilize certified Clean Marinas and to adopt clean boating practices. The Clean Marina certification is awarded based on an evaluation of a marina's stormwater management, waste containment and disposal practices, and emergency preparedness. Two certifications were awarded to marinas in Anne Arundel County in 2018. Currently, 46 of the 156 marinas in Anna Arundel County are certified Clean Marinas or Clean Marina Partners. More information on the Clean Marina program, including a list and map of certified Clean Marinas, can be found at <https://dnr.maryland.gov/boating/Pages/cleanmarina/cleanmarinas.aspx>

### **Scrap Tires**

Residents may dispose of scrap tires from on-road vehicles at each of the Anne Arundel County Waste Management Service Facilities. Residents may dispose of up to four tires for free, and quantities over four for \$7.00 per tire. Businesses may dispose of tires at the Millersville Landfill and Resource Recovery Facility at a per-ton charge, which may change in response to the cost the County pays for tire handling.

MDE's Scrap Tire Program establishes state-wide tire disposal regulations as well as a Scrap Tire Fund generated from the collection of a tire disposal fee. The program is also responsible for cleaning up existing illegal tire dumps.

## **IV. New Legislation**

On February 19, 2019 Anne Arundel County lawmakers voted in favor of passing Bill 5-19, which bans food service businesses from using and selling polystyrene (Styrofoam) containers. The bill took effect in April 2019 but food service facilities will have until February 2020 to comply with the new legislation. The City of Annapolis has implemented a similar ban, which took effect on September 1, 2019.

On May 24, 2019 The State of Maryland officially passed legislation banning single use Styrofoam containers. The bill, which takes effect on July 1, 2020, bans the use of polystyrene in food packaged in-state, including food packaged at food service facilities, grocery stores, and schools.

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