

# Environmental Stewardship in Carroll County



2019

**Carroll County has long been a leader in the State with programs, policies, and regulations that demonstrate our dedication and commitment to environmental stewardship.**

## **Commissioners' Environmental Principles**

In October 2011, the Board of County Commissioners adopted a set of environmental principles to emphasize the County's commitment to environmental stewardship. The Board's support for clean air, land, and water was detailed in its vision. (See sidebar)

## **Carroll County Master Plan Goals**

### **Commissioners' Environmental Principles**

1. Maintain and improve environmental quality and encourage economic prosperity while preserving the county's rural character.
2. Promote land use, planning, and development concepts and practices that support citizens' health, safety, well-being, individual rights and the economic viability of Carroll County.
3. Maintain safe and adequate drinking water and other water supplies including efforts to protect and restore the Chesapeake Bay.
4. Strive to protect our natural resources for future generations.

The adopted Carroll County Master Plan seeks a holistic approach to protection of environmental resources by incorporating stewardship into other activities and policies, as demonstrated by incorporation of environmental stewardship into more than half of its goals. For more details, view the Master Plan at <http://ccgovernment.carr.org/ccg/compplanning/MasterPlan/2014/>.

### **Environmental Goals in Master Plan**

Goal 3 ♦ Protect and enhance the water quality of Carroll County's rivers, streams, reservoirs, and aquifers; comply with applicable state and federal requirements related to water quality and quantity; and maintain and protect adequate water supplies to serve current and planned development.

Goal 7 ♦ Preserve at least 100,000 acres of agricultural land to support the production of agricultural products and promotion of related agribusiness.

Goal 8 ♦ Preserve 80 percent of undeveloped land in the Priority Preservation Area, as adopted by the Board of County Commissioners.

Goal 9 ♦ Provide an affordable, coordinated and comprehensive system of public and private parks, recreational facilities and programs, and open space that will enhance our communities.

Goal 11 ♦ Protect, maintain, and restore, where feasible, the environmental resources and natural ecosystems in the County by promoting land use practices that are in balance with, and minimize the effects on the natural environment, subject to appropriate cost/benefit analysis.

Goal 12 ♦ Protect certain mineral resources of current and future economic importance from preemptive land uses and to ensure availability for recovery in a manner that minimizes impacts to surrounding areas; and for reclamation purposes, assure recovery to an environmentally sensitive, aesthetically pleasing condition.

Goal 14 ♦ Facilitate a development pattern that remains consistent with the fabric of our communities, is in harmony with the surrounding built and natural environments, encourages community interaction and, in rural areas, preserves the County's rural character.

Goal 15 ♦ Pursue policies that facilitate development in appropriate areas, including the Designated Growth Areas, thereby protecting and conserving agricultural and environmental resources, preserving open space, and providing public facilities and services efficiently and cost-effectively.

# Land Conservation & Preservation



Carroll County has a rich tradition of agriculture that continues to be strong today and continues to support agriculture as the county's number one industry. The countywide desire to preserve the farming way of life and support agricultural industries has resulted in tremendous rates of participation in one of the most successful agricultural land preservation programs in the country. **Carroll ranks among the top county programs in the United States with the number of acres preserved through conservation easements<sup>1</sup>.** The preservation of the agricultural industry in the county is strengthened through conservation of intermingled lands steeped in natural resources. Carroll County landowners have voluntarily placed easements on over 71,623 acres of land, limiting their development rights and thus ensuring that the land will be farmed for generations to come. Since FY 1980, over \$221,336,338 in State and County funds have been invested in agricultural land preservation in Carroll County. Each acre of land under an easement also helps to preserve the rural character of the county which is so often imperiled by increased development and the diminished ability of farmers to continue farming as a result of development's side effects.

*From FY 1980 through FY 2018, 71,623 acres were permanently preserved through easement programs, which is roughly 1/4 of the total county land area.*

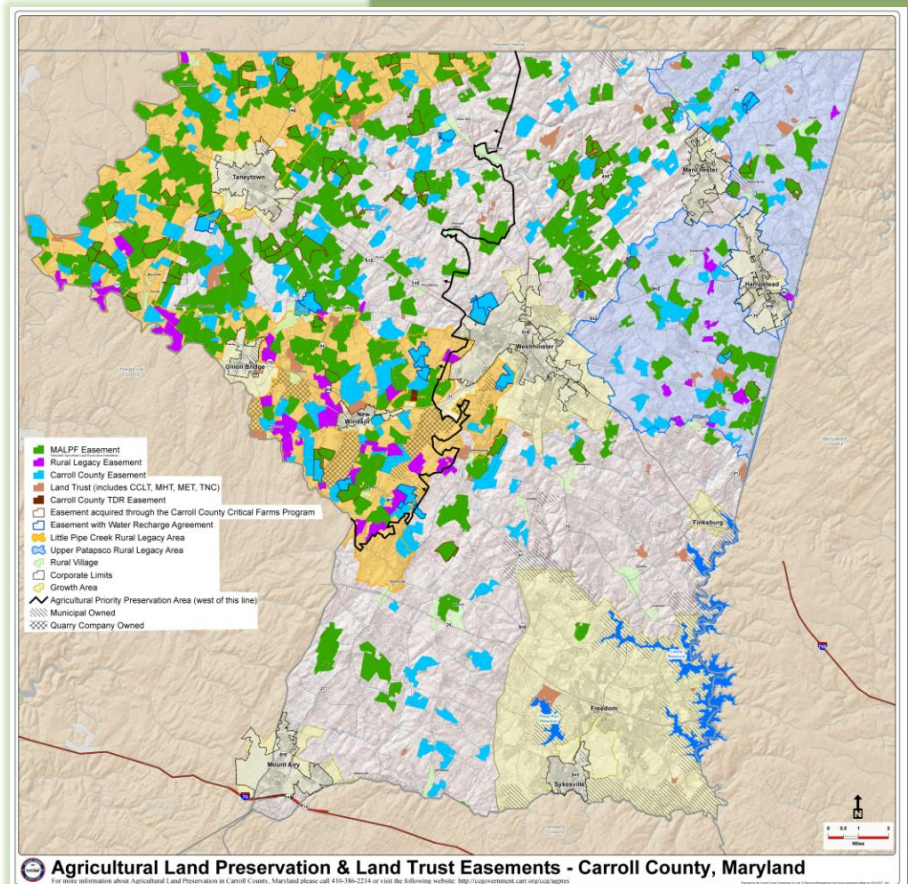
## Agricultural Land Preservation Program

Carroll County Agricultural Land Preservation Program 410-386-2214  
<http://ccqgovernment.carr.org/ccq/aapres/> [carrollaapres@carrollcountymd.gov](mailto:carrollaapres@carrollcountymd.gov)

Program	Acres Preserved
MALPF	43,934
Carroll County	20,714
Rural Legacy	4,458
Land Trusts & Conservancies	2,517
<b>Totals</b>	<b>71,623</b>

One of Carroll's best-known success stories is its Agricultural Land Preservation Program. The community has long recognized the benefits to be reaped through ensuring the continuance of the strong agro-economy. For many decades, Boards of County Commissioners have consistently supported the County's **goal of preserving 100,000 acres of farmland**, as demonstrated through the continued funding, staff, and other resources needed. The County's diverse programs and approaches to preservation and payment options continue to ensure land is available to support a viable agricultural industry, while also promoting the county's heritage, protecting environmental resources, and maintaining the aesthetic charm and way of life so many enjoy. Preservation programs contributing to Carroll's success include:

- ♦ Maryland Agricultural Land Preservation Foundation (MALPF)
- ♦ Carroll County Agricultural Land Preservation Program
- Water Recharge Credit
- ♦ Carroll County Critical Farms Program
- ♦ Rural Legacy Program, with two delineated Rural Legacy Areas (Little Pipe





- Creek and Upper Patapsco)
- ♦ Participation of Land Trusts and Conservancies, such as the Carroll County Land Trust, Maryland Environmental Trust, and The Nature Conservancy.

### Water Recharge Credit

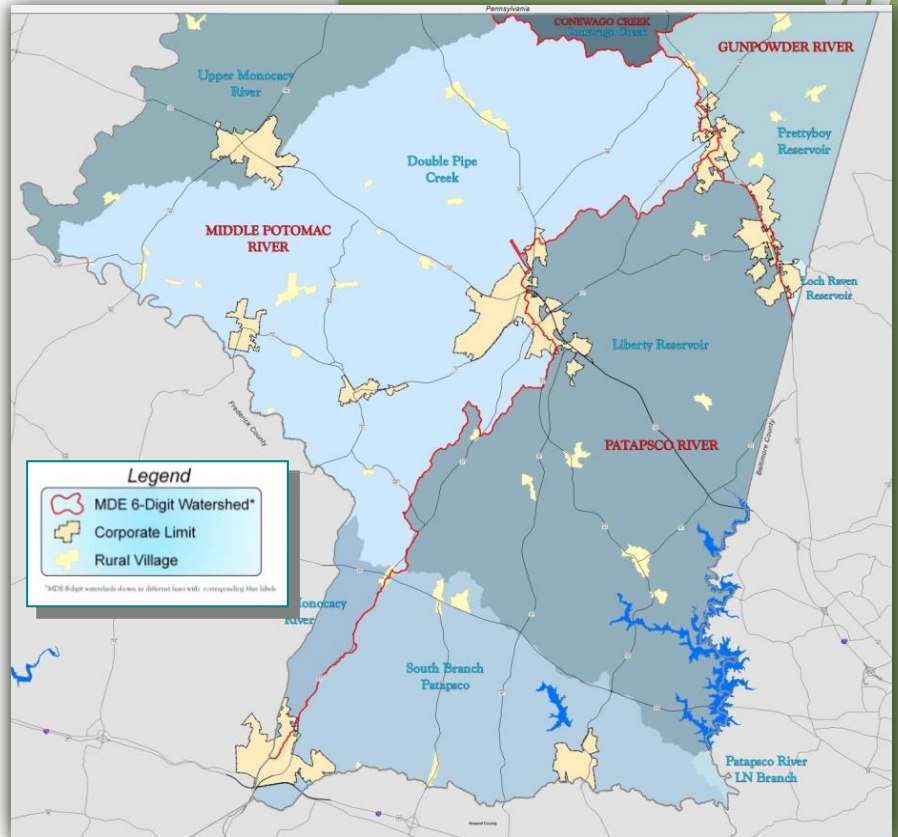
In Carroll County, water recharge credits have become a tool for offsetting water requirements for development and permanently protecting undeveloped land. Maryland Department of Environment (MDE) regulates the appropriation of water to landowners and municipalities based on recharge rates, or amount of rainfall that reenters the aquifer. MDE appropriations are made conservative through the consideration of drought recharge and periods of low stream flow.

Municipalities across the Piedmont, due to MDE requirements, only have enough recharge to develop at 1-2 units per acre, rather than the 3.5 dwelling units per acre prescribed for Priority Funding Areas. Municipalities can only claim recharge from land they own and control.

Carroll County implemented a program to offer water recharge credits, as a provision of the Agricultural Land Preservation Easements, by which groundwater recharge on farms is protected in perpetuity and then the water appropriation is transferred to municipalities to develop at Smart Growth densities. These credits are included as part of the conservation easement acquired through the Agricultural Land Preservation Program. Farms suitable for water recharge credits are selected strategically for their location, geology, high recharge capacity, and current agricultural operations. As of October 2018, **Carroll has acquired recharge credits on roughly 3,562 acres through 25 conservation easements.**

### Rural Legacy Areas (RLAs)

**Two locally designated Rural Legacy Areas – Little Pipe Creek and Upper Patapsco – encompass 58,575 and 40,170 acres, respectively, of land eligible for participating in this State program.** Greenbelts of forests and farms around rural communities are intended to preserve their cultural heritage; to preserve critical habitat for native plant and wildlife species; to support natural resource economies such as farming, forestry, tourism and outdoor recreation; to protect riparian forests, wetlands, and greenways to buffer tributaries of the Chesapeake Bay from pollution runoff. The County contributes funds toward the purchase of RLA easements.



**As of October 2018, water recharge areas were protected on 3,562 acres incorporated into 25 easements.**

**Carroll County drains to 9 different watersheds:**

- ♦ Upper Monocacy River
- ♦ Conewago Creek
- ♦ Prettyboy Reservoir
- ♦ Double Pipe Creek
- ♦ Liberty Reservoir
- ♦ Loch Raven Reservoir
- ♦ Lower Monocacy River
- ♦ South Branch Patapsco River
- ♦ Lower North Branch Patapsco River

# Agriculture Programs & Best Management Practices (BMPs)

## Soil Conservation Partnership/Maryland Agricultural Water Quality Cost-Share Program (MACS)

Carroll County farmers have a long, proud tradition of voluntary participation and installation of BMPs cost-shared by MACS. Even though Maryland's revised nutrient management regulations now mandate many of these BMPs, participation in the MACS program is voluntary. **Farmers who receive cost-share grants from MACS still invest additional funds themselves** in projects to protect natural resources on their farms, adopt sustainable farm management practices, and comply with Maryland's revised nutrient management regulations.<sup>1</sup>

### Nutrient Management Plans

Farmers are required to follow nutrient management plans when fertilizing crops and managing animal waste. These plans specify how much fertilizer, manure, or other nutrient sources may be safely applied to crops to achieve yields and prevent excess nutrients from impacting waterways. These plans generally are required for all agricultural land used to produce plants, food, feed, fiber, animals, or other agricultural products. Maryland's updated regulations now require farmers to establish setback areas next to waterways.<sup>1</sup>

### Conservation Resource Enhancement Program (CREP)

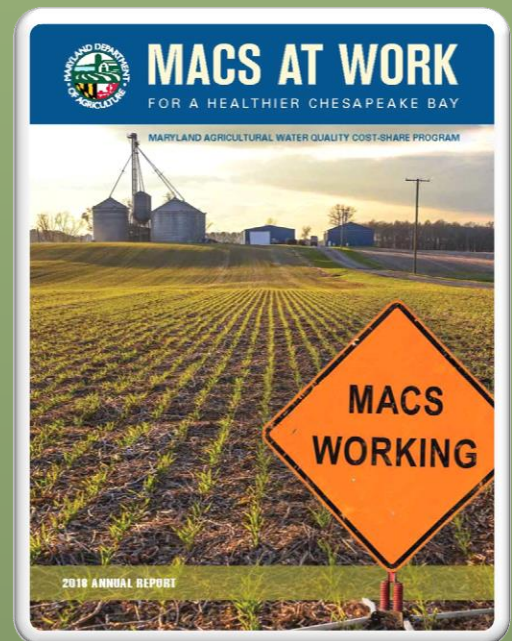
CREP is a federal-state program that pays landowners to take environmentally sensitive cropland out of production for 10 to 15 years and to install conservation practices that protect water quality and provide wildlife habitat. In Fiscal Year (FY) **2018, 16 CREP projects** were completed in Carroll County with \$60,176 in cost-share grants to install stream protection measures.<sup>2</sup>

### Best Management Practices (BMPs) Installed

In FY 2018, the program provided almost **\$437,673** in capital funds for Carroll County farmers to invest in installing **36 conservation projects** on their farms to control soil erosion, to reduce nutrient runoff, and to improve water quality. For FY 2018, Carroll County farmers **completed the highest number of projects of all Maryland counties.**<sup>2</sup>

### Cover Crops

Farmers who plant certain cover crops on harvested crop fields in the fall help to recycle residual plant nutrients, to protect against wind and water erosion, and to improve soil for next year's crop. Cover crops help to prevent nitrogen and phosphorus from reaching the Bay. In **FY 2018**, through participating in MACS alone, Carroll County farms planted **over 19,967 acres of cover crops.**<sup>2</sup>



*All figures in this section are directly from the Maryland Agricultural Water Quality Cost-Share Program, Opening Doors for Maryland's Conservation Farmers: 2018 Annual Report. Maryland Department of Agriculture. [https://mda.maryland.gov/resource\\_conservation/counties/MACS2018.pdf](https://mda.maryland.gov/resource_conservation/counties/MACS2018.pdf)*

## Natural Resources Conservation Service (NRCS)

Maryland NRCS of the U.S. Department of Agriculture assists private landowners with voluntary efforts to reduce soil erosion, enhance water supplies, improve water quality, increase wildlife habitat, and reduce damages caused by floods and other natural disasters through technical assistance, cost shares, and financial incentives. In 2014, the Farm Bill was enacted. NRCS offers voluntary Farm Bill conservation programs that benefit both agricultural producers and the environment, summarized below from the [USDA NRCS Maryland website](#).

### *Regional Conservation Partnership Program (RCPP)*

The RCPP encourages partners to join in efforts with producers to increase the restoration and sustainable use of soil, water, wildlife, and related natural resources on regional or watershed scales. Through the program, NRCS and its partners help producers install and maintain conservation activities in selected project areas. Partners leverage RCPP funding in project areas and report on the benefits achieved. (Source: [USDA NRCS website](#))

### *Environmental Quality Incentives Program (EQIP)*

EQIP helps agricultural producers promote agricultural production and environmental quality as compatible goals. Through EQIP, farmers receive financial and technical assistance to implement structural and management conservation practices that optimize environmental benefits on working agricultural land. Priorities include reducing nonpoint source pollution; conserving ground and surface water resources; reducing emissions and ozone precursors and depleters; reducing soil erosion and sedimentation; promoting at-risk species habitat conservation; energy conservation; and biological carbon storage and sequestration.

Maryland has identified the following additional priorities:

1. Livestock Management
2. Grazing Management
3. Erosion Control
4. Nutrient Management
5. Pest Management
6. Wildlife Habitat Enhancement

[\[https://www.nrcs.usda.gov/wps/portal/nrcs/detail/md/programs/financial/eqip/?cid=nrcseprd416254\]](https://www.nrcs.usda.gov/wps/portal/nrcs/detail/md/programs/financial/eqip/?cid=nrcseprd416254)

### *Agricultural Management Assistance Program (AMA)*

AMA provides cost share assistance to agricultural producers to voluntarily address issues such as water management, water quality, and erosion control by incorporating conservation into their farming operations. Producers may construct or improve water management structures or irrigation structures; plant trees for windbreaks or to improve water quality; and mitigate risk through production diversification or resource conservation practices, including soil erosion control, integrated pest management, or transition to organic farming. Assistance is also available for constructing seasonal high tunnels and associated practices.



***In 2017-18, the Cover Crop Program in Carroll County saw another successful year with 19,967 acres enrolled. The NRCS EQIP, RCPP, and AMA Programs participated in 112 contracts, totaling \$950,550.<sup>1</sup>***

Panora Acres in the Gunpowder Patapsco Watershed provides an example of how EQIP funds are used in Carroll County. The Sellers family had 300 head of dairy cattle eroding the streambanks and increasing nutrient concentrations in runoff. Through EQIP, the family installed stream crossings to allow safe passage and avoid erosion and nutrients in the stream. They fenced their cattle out of 2½ miles of the stream and planted buffers to stabilize the banks.

[\[https://www.nrcs.usda.gov/wps/portal/nrcs/main/md/newsroom/features/\]](https://www.nrcs.usda.gov/wps/portal/nrcs/main/md/newsroom/features/)

# Land Conservation through Parks

Carroll County Recreation & Parks

<http://ccqgovernment.carr.org/ccq/recpark/>

410-386-2103

[ccrec@carrollcountymd.gov](mailto:ccrec@carrollcountymd.gov)

The significant contribution and role that parks play in the conservation of land and natural resources should not be overlooked. Carroll actively pursues and purchases land for parks and conservation of land and natural resources. These large land areas provide opportunities for eco-tourism, environmental education, water recharge, and passive recreation.

In addition to the conservation of biodiversity and resources, Carroll also has a long history of providing environmental education opportunities to residents. The County's first nature center, Piney Run, was opened in 1981, and a second nature center, Bear Branch, was opened in 1991. In addition, over 100,000 students have participated in Outdoor School since its inception in 1977 at a County park, a tradition that continues today for all local 6<sup>th</sup> grade students. Carroll continues to provide increased opportunities for citizens to experience nature first hand through outdoor recreation with over 40 miles of hiking and water trails.

Recreation and Parks also provides tours, field trips, and classes, as well as informal education opportunities in outdoor "classrooms." Piney Run and Bear Branch Nature Centers both utilize active "Weed Warrior" programs that help to remove invasive species in parks. Through a partnership with the American Chestnut Foundation, Hashawha continues to serve as a home for a chestnut tree orchard as part of an organized national effort to reintroduce the American Chestnut.

For every 1,000 residents, the County provides 47 acres of County and municipal parks and recreation lands and 36 acres per 1,000 residents of natural resource lands. Carroll County parks, recreation and resource lands serve a growing population with diverse recreation needs.

## Resource Management

Carroll County Bureau of Resource Management

<http://ccqgovernment.carr.org/ccq/resmqmt/>

410-386-2506

[ccwater@carrollcountymd.gov](mailto:ccwater@carrollcountymd.gov)

### Natural Resources Easements

*Acquired through Land Development*

#### Water Resource Protection

Carroll County places high value on protecting our important water resources. The Water Resource Management Program largely focuses on the protection of streams, ponds, and wetlands through the implementation of buffers and easements. Water Resource Protection Easements provide a buffer to the stream system from adjacent land use and provide many benefits to the stream, watershed, or drainage area in which it resides. Benefits include filtering runoff, stabilization, nutrient uptake, moderating stream temperatures, and providing wildlife corridors. There are two types of Water Resource Protection Easements – Forested and Non-Forested. Requirements for both types are almost identical except that non-forested easements require a dense and vigorous cover of non-

March 20, 2019



**Carroll protected  
258 miles of buffered  
streams.**



lawn vegetation be maintained, while the forested easements are expected to be in forested condition. Each Deed of Easement defines permitted and restricted activities within the established easement. Restricted activities prohibited by the easements are soil disturbance; storing or dumping of materials; composting or broadcast spreading of yard waste; storing, maintaining, or operating motorized vehicles; housing or otherwise maintaining domestic animals; and burning of vegetation.

Carroll County Bureau of Resource Management (BRM) maintains a water resource easement inspection program, similar to the Floodplain and Forest Conservation inspection programs. The inspections are done on a three-year cycle or in response to citizen complaints.

**Floodplain Protection**

Carroll County recognizes the importance of protecting floodplains and the benefit this provides to both property owners and the environment. Floodplain is preserved through a Floodplain Protection Easement, which helps to protect human life and health, minimize property damage, encourage appropriate construction practices to minimize future damage, and to protect water supply, sanitary sewer disposal and natural drainage.

Floodplains are an important asset to the community, performing vital natural functions such as:

- ◆ Temporary storage of floodwaters
- ◆ Moderation of peak flood flows
- ◆ Maintenance of water quality
- ◆ Prevention of erosion
- ◆ Provision of habitat for diverse natural wildlife populations
- ◆ Improved aesthetics

Through the development process, property owners provide a Floodplain Protection Easement in perpetuity to preserve the natural vegetation and to prevent alteration of floodplains and the setbacks wherever floodplains are delineated. The floodplain setback is based on the floodplain width, stream buffer, or 100 feet from the top of the streambank on any mapped Federal Emergency Management Administration (FEMA) stream, whichever is largest.

Carroll County maintains a floodplain easement inspection program, similar to the water resources and forest conservation easements inspection programs. The inspections are done on a three-year cycle or in response to citizen complaints.

**Forest Conservation**

Forest conservation easements are secured for the long-term protection for all retention, reforestation, afforestation, off-site reserve, and forest bank areas. The easement is conveyed to the County during the development process. Adequate fencing or other protective measures may be included to prevent encroachment into the area.

Easement Type	Acres Preserved	# of Easements
Water Resource Protection	1,962	394
Floodplain Protection	690	217
Forest Conservation	4,202	1,531
<b>Totals</b>	<b>6,854</b>	<b>2,142</b>



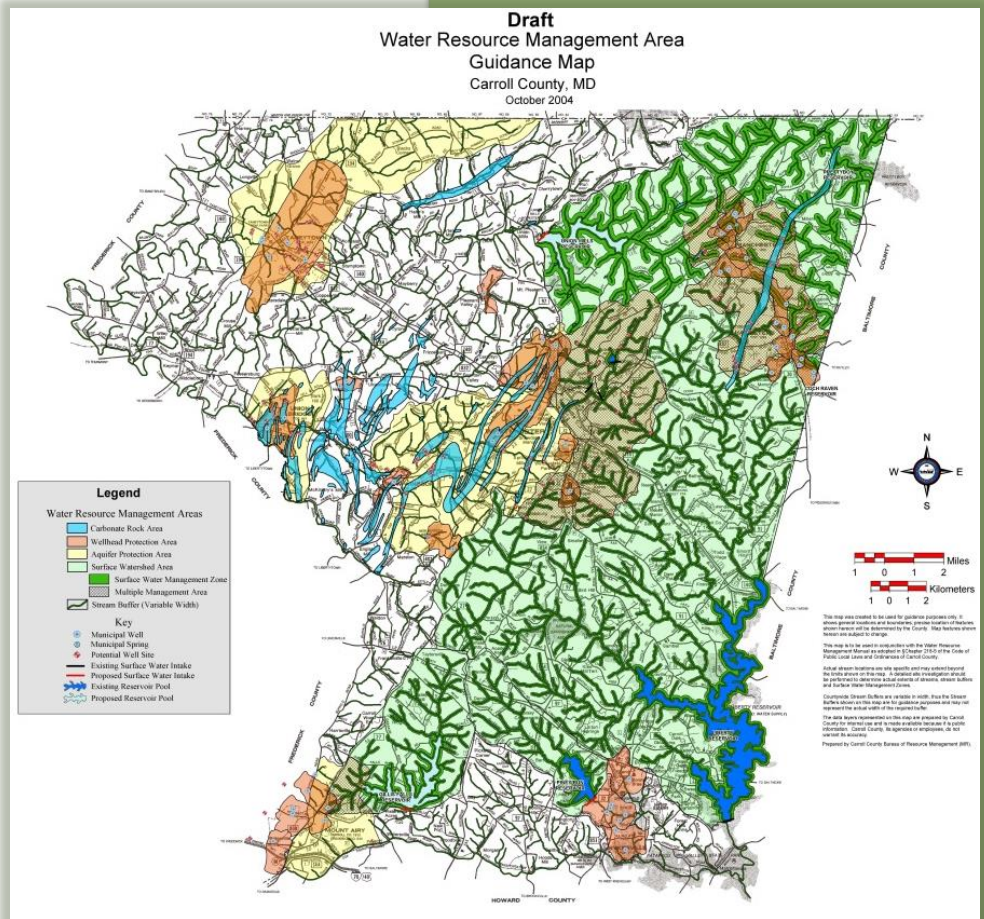
# Carroll County Environmental Codes



## Water Resource Management

The purpose of Chapter 154, Water Resource Management, is to protect the quality and quantity of ground and surface water resources in Carroll County. The Code, adopted in 2004, established management standards and design criteria for land use subsequent to review; standards for review of development activities; enforcement procedures for pollution violations; and requirements for the protection of existing and future water resources.

Water Resource Management also addresses wellhead protection areas, aquifer protection areas, surface watershed management areas, carbonate rock areas, streams, ponds and wetlands. Chapter 154 specifically addresses management standards and design criteria implemented for regulated substance use, sale, maintenance and storage within Water Resource Management areas; safeguards used to demonstrate that the integrity of water resources will not be altered by proposed activities; and protection of well and potential well sites with a 200-foot buffer requirement.



## Floodplain Management

The County joined the CRS as a Class 8 in 2006 and based on work completed by staff in 2017, the County has improved to a Class 7, which took effect on May 1, 2018. As such, eligible policy holders within the County will receive a 15% discount on their flood insurance policies. Improving from a Class 8 (\$73 discount per policy) to a Class 7 (\$111 discount per policy) equates to an average additional savings of \$38 per policy, per year. However, the average discount increases from \$211 savings to \$317 savings for policies within the FEMA floodplain. The total premium discount for all flood insurance policies, as a Class 7 Community, exceeds \$20,000. Staff is currently working on additional creditable activities to improve their rating to a Class 6 Community.

The Carroll County Floodplain Management Program requires protection of floodplains by setting minimum technical standards for performing floodplain studies and producing consistent, accurate, current, and verifiable floodplain mapping. This mapping can be used to evaluate flood hazards, set flood insurance rate zones, and regulate new subdivision and building construction in and around floodplains. The floodplain mapping data long-term will enable prospective and existing property owners, lending institutions, and insurers to consider the risk prior to buying, building, financing, or insuring property, homes, or businesses subject to flood hazards.

March 20, 2019

**For more information  
on the Flood Insurance  
Rate Maps, visit...**

<https://carrollco-md.maps.arcgis.com/apps/w ebappviewer/index.html?id=5d4faa1998ca4a1486401a40f38d6df3>





The current Flood Insurance Rate Maps (FIRMs) issued by FEMA were adopted by Carroll County in October of 2015. These FIRMs replaced the maps produced by FEMA in 1981 and use more precise topography and more accurate hydrology. Nearly a decade’s worth of data capturing, surveying, analyzing, modeling, and public review went into the creation of these maps to more accurately map the flooding risk in Carroll County. During the summer of 2015, a comprehensive review of Chapters 153 and 38, as well as the Carroll County Floodplain Manual, was completed to ensure compliance with all State and Federal requirements.

### Forest Conservation

The Carroll County Forest Conservation Code (Chap. 150) is intended to protect not only forests and trees in developing areas, but also any sensitive areas identified during the local planning or comprehensive land use plan adoption process. It requires that prior to the approval of any subdivision of land or development which results in the cumulative disturbance of 40,000 square feet or greater, applicants shall submit a Forest Stand Delineation (FSD) and a Forest Conservation Plan (FCP). These plans must be approved by Carroll County before development can proceed. The Carroll County Forest Conservation Technical Manual gives additional procedural information.<sup>3</sup>

“Carroll County’s Forest Conservation Code includes a **pioneering effort** that established the use of a *forest banking* program. Forest banking is a conservation tool that involves the establishment of new forest on areas that are then placed in easement, which generates mitigation credits that can be exchanged for a payment. The payment typically comes from a developer who must replace forest that has been cleared at another location. Although the code has evolved since its first iteration, the use of forest banking as a mitigation alternative has survived because of its effectiveness... In Carroll County, 563 acres of forest have been created by forest conservation banks since the inception of the Maryland Forest Conservation Act in 1991. Carroll County landowners are engaged in the establishment of viable and marketable forest conservation banks.”<sup>4</sup>

### Landscaping

Carroll County recognizes that landscape requirements for new development effectively add intrinsic value to the landscape in many ways, including the following:

- ◆ The preservation and enhancement of the aesthetic value of Carroll County's landscape;
- ◆ The augmentation of a sense of community in new development by visually tying properties together;
- ◆ The creation of a sense of place by using trees and other vegetation to define space and to buffer incompatible uses;
- ◆ The moderation of the impact of wind, temperature, rainfall, frost and other climatic elements;
- ◆ The effective conservation of energy use through that moderation; and
- ◆ The enhancement of property values by providing amenities to development design.

Carroll County Forest Conservation Acres Banked <sup>5</sup>	
Element	Acres
<b>Total bank acres</b>	563
<b>Other acreage</b>	
<b>On-site retention</b>	3,351
<b>On-site planting</b>	1,475
<b>Off-site planting</b>	314

*Source: Carroll County Forest Conservation State Report, FY 1992 to FY 2017*

The County's landscape requirements (Chap. 157) enhance the aesthetic and environmental setting of new residential, commercial, industrial, and institutional development in Carroll County through the establishment and ongoing maintenance of prescribed landscaping.

### *Grading & Sediment Control*

On November 8, 2018, the Board of County Commissioners directed staff to schedule a public hearing on proposed amendments to Chapter 152, Grading, Erosion, and Sediment Control. Changes to Chapter 152 include additions and modifications to the Definitions section, change the validity of the approved soil erosion and sediment control plan from 2 to 3 years, eliminate the inspection requirement of "on the average of once every two weeks," and update the Penalty section to be consistent with other Chapters of the Code. A public hearing on the amendments was held on November 29, 2018, and the amendments were approved by the Board of County Commissioners. Additional information regarding the Code amendments can be found at <http://ccggovernment.carr.org/ccg/attorney/ordinance/>.

### *Stormwater Management*

The goal of stormwater management is to manage stormwater by using environmental site design (ESD) to the maximum extent practicable (MEP) to maintain after development, as nearly as possible, the predevelopment runoff characteristics, thus reducing stream channel erosion, pollution, siltation, sedimentation, and local flooding, and to use appropriate structural best management practices (BMPs) only when necessary. This will help restore, enhance, and maintain the chemical, physical, and biological integrity of streams, minimize damage to public and private property, to reduce the impacts of land development.

On November 8, 2018, the Board of County Commissioners directed staff to schedule a public hearing on the proposed amendments to Chapter 151, Stormwater Management, along with revisions to the Carroll County Stormwater Management Supplement to the 2000 Maryland Stormwater Design Manual Volumes I and II. The amendments to Chapter 151 include additions and modifications to the Definitions section, address repairs/replacement of impervious surfaces, change regional pond requirements, add requirements relating to downstream flooding, prohibit the use of plastic modular underground rainwater storage systems, add a statement regarding building construction in a dam breach inundation area, add maintenance, inspection and certification requirements for privately owned stormwater management facilities, and update the Penalty section to be consistent with other Chapters of the Code. A public hearing on the amendments was held on November 29, 2018, and the amendments were approved by the Board of County Commissioners. Additional information regarding the Code amendments can be found at <http://ccggovernment.carr.org/ccg/attorney/ordinance/>.

## *Environmental Site Design*

(non-structural practices)

**Residential:  
Extended  
Shoulder**



**Residential:  
Drywell with Debris Filter**



**Commercial:  
Parking Island  
Filtration/  
Infiltration**



**Facility at  
Westminster  
High School**



**Beneficial Capture,  
Treatment, & Release of  
Stormwater Runoff**

## Urban Stormwater Mitigation

Carroll County since 2008 has been actively working on retrofitting existing stormwater management facilities to address our Phase I National Pollutant Discharge Elimination System (NPDES) Municipal Separate Storm Sewer System (MS4) permit requirements. Not only is Carroll County moving forward in reaching our impervious restoration goals, the County is accomplishing restoration of its old stormwater management facilities by bringing them up to current standards and redesigning these facilities to allow for easier access and maintenance. The majority of the facilities are designed to treat one inch of water quality, while providing infiltration and channel protection. The main goals are to reduce the amount of water leaving the facility, to decrease the downstream property impacts, and to improve runoff water quality.

Stormwater mitigation and watershed restoration provide a significant water quality and quantity benefit to our local streams and water bodies, including nutrient reduction, sediment and erosion control, and flood control. These activities and practices also contribute to improving the health of the Chesapeake Bay.

### *Collaboration with Municipalities*

In FY 2013 and FY 2014, via the Water Resource Coordination Council (WRCC), the County and municipalities collaborated to develop, sign, and implement a Memorandum of Agreement (MOA) to cost-share the capital costs of meeting the municipalities' stormwater mitigation requirements (80% County/20% municipalities). The MOA also specified the County's responsibility for providing administrative and operating support services for the stormwater mitigation program. The WRCC acts as the forum for setting project priorities and were an integral part of the MOA process. The MOA was signed on October 23, 2014. This cooperative and progressive co-permittee arrangement and associated MOA are unique to Carroll County in Maryland. The program has been very successful at providing a cost-effective and collaborative approach to meeting permit restoration requirements.

### *Staff*

Approximately **23 (about 54.7%) employees out of 42** in the Department of Land & Resource Management are involved in watershed restoration initiatives – 3 on a full-time basis, 10 on a part-time basis greater than 50 percent or more of their time, and 10 on a part-time basis of less than 50 percent. Additional employees are involved with maintenance in the Department of Public Works.

### *Expenditures & Budget*

Carroll County's annual operating expenditures for this program have more than doubled since 2008, from approximately \$334,000 annually, to more than \$1.9 million annually. **From July 2005 to June 30, 2018, the County invested almost \$22.3 million** – not including more than \$6 million in grants from outside sources – in Capital outlays. Additionally, \$20.4 million have been programmed to watershed restoration efforts in the Community Investment Program, or CIP, for Fiscal Years 2019 through 2024.

FY 2019-2024	Capital	Operating
<b>Total Budget</b>	\$20,400,000	\$14,000,000
<b>Average Annual Budget</b>	\$3,400,000	\$2,333,000



**Urban Stormwater Retrofit**

***Under the MOA, the Carroll County Commissioners pay 80% of the municipalities' capital costs to meet their restoration requirement.***



**For the 6-year period (2019-2024), Carroll County plans to invest** almost \$14 million in operating expenses and more than \$20.4 million in capital expenditures for a **grand total of over \$34.4 million** – assuming that no grants are received. This equates to an annual expenditure of approximately \$5.7 million over that time period.

Since 2009, the Bureau of Resource Management has been very successful in acquiring grants for restoration efforts. The Chesapeake Bay Trust (CBT), Maryland Department of Natural Resources (DNR), Maryland Department of the Environment (MDE), National Fish and Wildlife Foundation (NFWF), and Maryland State Highway Administration (SHA) has supported BRM by providing funds in excess of \$13.4 million. These funds have gone towards projects such as stormwater management pond retrofits, installation of new BMPs, tree plantings, and various monitoring studies being performed in Carroll County. For additional information on the grant program, please visit the BRM website at <http://ccgovernment.carr.org/ccg/resmgmt/>.

#### Stormwater Facilities, Renovations

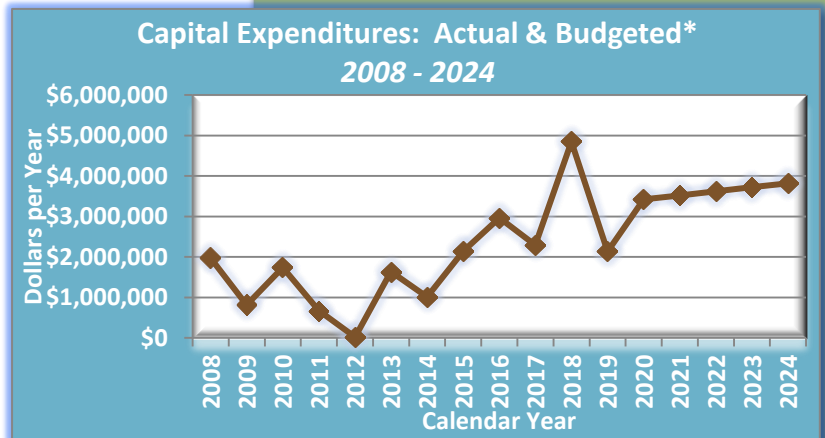
Capital funding of approximately \$320,000 per year is programmed for stormwater facility renovations, for a total of \$1,920,000 for FY 2019 to FY 2024. The program funding, which began July 1, 2015, is designed to support long-term improvements to existing stormwater management facilities which are beyond routine maintenance but are not undertaken as part of the County’s Watershed Assessment and Improvement (NPDES), Community Investment Program (CIP). The program evaluates and repairs 4 to 6 facilities per year over a 30-year period. The funding is used for pipe replacement, erosion repairs, filter media replacement, and other items which will extend the useful life of a facility and to maintain compliance.

#### Progress

As of June 2018, the County had restored 2,323 impervious acres. This included 688 acres of restoration to comply with the 10 percent required under the prior permit, which did not include the municipal impervious area. During this permitting term, 1,635 acres of impervious area have been restored, which is 101 percent of the required goal of 1,614 acres.

#### Watershed Assessments and Restoration Plans

Stream corridor assessments were completed for each of the 9 watersheds within Carroll County. Through these assessments, the general condition of a stream system was quickly assessed and measures identified to improve the overall health of the drainage network. Eight types of impairments were assessed, including stream bank erosion, inadequate streamside buffers, trash dumps, pipe outfalls, exposed pipes, channel alteration, in-stream construction, and fish blockages.



Source: Carroll County 2018 NPDES MS4 Annual Report. \*Capital Programs included: Watershed Assessment and Improvement (NPDES), Environmental Compliance, and Stormwater Facility Renovations



Impervious Area	Acres	Percent
Untreated County	8,070	2.8% of County area
Restoration Requirement	1,614	20% of Total Urban Impervious
Progress to Date for This Permit Term	1,635	101%

County staff works closely with property owners to access streams on their properties in these watersheds, with almost 54 percent granting permission to perform the stream walk. As a result, staff accomplished **assessments on roughly 786 of the 1,464 miles (54%) of stream corridor** within these watersheds. Each of the 9 watersheds was assessed over a 6-year period.

In addition to the on-the-ground field assessments, County staff conducted an analysis using Geographic Information Systems (GIS) of each of the 9 watersheds. A characterization plan was developed for each watershed describing its unique background, character, and data collected.

Information provided by the characterization plans and stream corridor assessments were used as a tool to develop watershed restoration plans. The restoration plans are used to identify opportunities for water quality improvements within the watershed, as required by the County's NPDES MS4 permit, and are designed to meet approved total maximum daily loads (TMDLs) for affected watersheds. Each restoration plan focuses on identified impacts discovered during the assessment process and prioritizes projects based on water quality data.

## Stream Buffer Initiative (Tree Planting)

The goal the stream buffer initiative is to re-establish forested corridors along as many streams as possible. This completely voluntary initiative was developed from Carroll County's stream corridor assessments to help landowners obtain trees to address inadequate streamside buffers.

Reestablishing and enhancing streamside buffers helps streambank stabilization, protects and enhances water quality through nutrient uptake, traps sediment, and removes pollution. The trees in the buffer support a diversity of species, provide structurally complex habitats, and serve as travel corridors. The trees, when fully established, provide shade to waterways, helping regulate water temperatures.

Landowners whose properties had inadequate buffers were provided education on the importance of stream buffers and offered grant-assisted buffer plantings at no cost to the landowner. Interested property owners chose the stream-side areas they wanted to be planted and how much of that area and selected those plantings from a list of native deciduous trees and shrubs. A mixture of overstory and understory tree and shrubs were selected based on environmental conditions such as ground saturation and existing trees on site that suggested optimal survivability.

Stream buffer initiative plantings include a 3-year maintenance term, which consists of mowing, stake repair, and shelter maintenance. Successful plantings require the survival of 100 trees per acre. Each planting is inspected bi-annually for 10 years to ensure the success of the program, and once every 3 years thereafter.

The minimum size area accepted is 0.1 ac or 20-30 trees per property owner. Ideal planting locations include areas contiguous to existing forest and areas along the stream. Trees are planted in rows using 15-foot spacing to allow for easy access for mowers and maintenance. The included

*Stream buffers are vegetated areas along streams that reduce erosion, sedimentation and pollution of water.*



So far, 158.32 acres of trees have been planted in Carroll County since spring 2013 on both private landowner properties as well as municipality owned land. Plantings by watershed include:

- ◆ 55.24 acres in Double Pipe Creek
- ◆ 34.79 acres in Liberty
- ◆ 12.22 acres in Lower Monocacy
- ◆ 11.17 acres in Prettyboy
- ◆ 16.70 acres in South Branch
- ◆ 28.20 acres in Upper Monocacy

maintenance package provides mowing by a contractor for 3 years 3 times a year and resetting tree shelters 4 times a year.

## Public Outreach

In Carroll County, staff is continuously involved in environmental education efforts. LRM staff regularly volunteer to speak at schools, community organizations, club meetings, and other venues in an effort to ensure that effective and timely environmental information is available to the community.

The County and municipalities provide materials on stormwater pollution prevention and other environmental issues and opportunities at their offices and at various events held throughout the year. In addition, storm drain stenciling is implemented throughout the county and is often coordinated as a volunteer or outreach event.

### NPDES MS4 Public Outreach Plan

The intent of this plan is to raise public awareness and encourage residents and businesses to take measures to reduce and prevent stormwater pollution. The plan reviews public outreach opportunities currently available to residents and businesses in Carroll County and the municipalities and suggests opportunities to round out and improve outreach. This is a dynamic, iterative plan, which is revised on a regular basis as projects are completed and other needs arise.

### Webpages

*Protecting Carroll County Waters.*

(<http://ccgovernment.carr.org/ccg/plan/npdes/>) This is a dedicated NPDES webpage and is the primary source of information related to the NPDES MS4 permit. It describes basic information regarding actions the average property owner may take to help prevent stormwater runoff pollution and helpful links and educational brochures and materials. The page also features the Pollution Prevention Hotline to be used for non-emergency concerns.

*Resource Management Bureau.*

(<http://ccgovernment.carr.org/ccg/resmgmt/>) This site provides information about the County's and municipalities' stormwater program and County and municipal contacts, including various agricultural and urban best management practices (BMPs). Educational materials for both children and homeowners are available for viewing or download, as is the Bureau's quarterly newsletter, *Down to Earth*.

### Newsletters

In addition to use of the County Encounters, municipal newsletters, and other broader topic newsletters, the Resource Management staff issue a quarterly *Down to Earth* newsletter chock full of current information regarding projects, events, and relevant topics.

### Videos

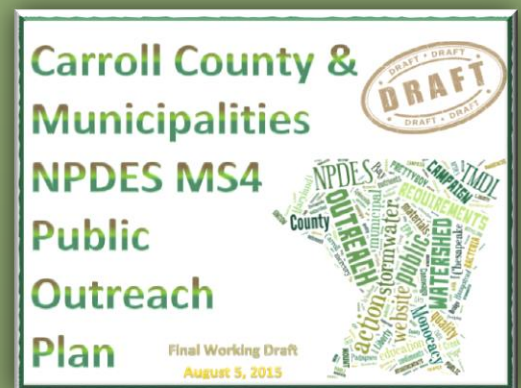
LRM staff, in conjunction with Carroll's Community Media Center, produced a video about stormwater for homeowners in 2017. The video introduced homeowners to stormwater and why it is important. Future videos will

*March 20, 2019*



Citizens throughout the county can call the non-emergency Stormwater Pollution Prevention Hotline to report suspected illicit discharges, illegal dumping, and spills.

**410-386-2210**





show homeowners the various sources of pollutants around their homes and yards and simple practices they can employ to reduce runoff and prevent pollution, as well as other information about stormwater. Completed videos are aired on local cable television as well as available online and at the County's social media sites.

### *Carroll Clean Water Partnership (CCWP)*

The CCWP program was initiated in January 2016. The sponsors of the Partnership hope to foster a business-friendly environment for local businesses to identify and address potential pollutants and good housekeeping measures, and, as a result, gain community recognition for "Partners" for their contribution to achieving clean water. The program aims to assist Partners with voluntary activities related to stormwater pollution prevention. Static cling window decals are provided to Partners. The website provides informational materials, the self-inspection checklist, event information, a list of Partners, and other relevant information. (<http://ccgovernment.carr.org/ccg/npdes/ccwp/>)

### *Public Workshops*

*Workshop: Homeowners & Stormwater.* The EAC partners with the WRCC to host free workshops designed to share information with homeowners about how to prevent stormwater pollution and minimize stormwater runoff from their properties. The first workshop was held in March 2017. Starting in 2019, a series of municipal workshops will be offered every other year. (<http://ccgovernment.carr.org/ccg/npdes/workshop/>)

*Workshop: Carroll County Businesses for Clean Water.* The EAC partners with the WRCC to host free workshops designed to help businesses understand stormwater regulations that affect them and good housekeeping practices they can employ. The first workshops were held in January 2016 and March 2018. The workshops will continue to be offered every other year, and topics will vary each time. (<http://ccgovernment.carr.org/ccg/npdes/workshop/>)

### *Schools*

Staff partners with the Carroll County Public Schools' elementary science programs each year to educate and engage fourth and fifth grade students on issues related to water quality that coincide with the curriculum. Sessions are provided on topics such as biological/stream health, stormwater, and the importance and benefits of tree planting. In addition, Outdoor School students participate in tree planting events.



# Septics



## Conventional Septic System Replacement with BAT

While MDE regulations no longer requires all new septic systems installed to use Best Available Technology (BAT) to reduce the potential new nitrogen loads, there are site-specific reasons that it may be necessary. The Carroll County Health Department works with private property owners to replace failing conventional systems with BAT systems. The Health Department administers monies from the Bay Restoration Fund (BRF) to help pay for eligible systems.

## Conversion from Private Septic to Public Sewer System Connection

Carroll County works closely with its eight municipalities on public water and sewer planning. In the process of identifying potential future public sewer service areas, areas on existing private septic systems are often considered for inclusion in the Future Sewer Service Area, particularly if systems are documented to be failing. Conversion from private septic to public sewer for these homes helps to reduce the amount of pollution to the Bay. When BRF are available to assist with these connections, the Health Department processes the grant application(s). MDE has an alternate BRF program that may be considered for multiple connections at once.

Action	# of Septics
Conventional System Replaced with BAT <sup>6</sup> : 2009-2018	184*
Conversion from Conventional System to Public Sewer Service: 2006-2018	25*

\* As of November 2018

# Solar Energy

### Zoning:

Zoning Administration

410-386-2980

<http://ccqgovernment.carr.org/ccq/zoningad/>

[cczoning@carrollcountymd.gov](mailto:cczoning@carrollcountymd.gov)

### Permitting:

Bureau of Permits & Inspections

410-386-2674

<http://ccqgovernment.carr.org/ccq/permits/Solar.aspx>

[jgreen@carrollcountymd.gov](mailto:jgreen@carrollcountymd.gov)

### County Solar Projects:

Department of Public Works

410-386-2035

<http://ccqgovernment.carr.org/ccq/pubworks/>

[smoser@carrollcountymd.gov](mailto:smoser@carrollcountymd.gov)

### SolSmart Silver Designation

Carroll County received a Silver designation from the national [SolSmart](#) program for making it faster, easier, and more affordable for homes and businesses to go solar. This designation recognizes Carroll County for taking bold steps to encourage solar energy growth and remove obstacles to solar development. For companies looking to expand, a SolSmart Silver designation is a signal that Carroll County is “open for solar business.” More than 200 cities, counties, and small towns have achieved SolSmart designation since the program launched in 2016. Carroll County was the first county in Maryland to receive a SolSmart designation.

As a SolSmart designee, Carroll County is helping solar companies greatly reduce the cost of installations and pass those savings on to consumers. This allows even more local homes and businesses to obtain affordable, clean, and reliable electricity through solar. The actions Carroll County has





taken will help encourage solar companies to do business in the area, driving economic development and creating local jobs.

### Zoning

With the increasing popularity of solar energy as an alternative to traditional energy sources for homes and as a commercial venture, the County Commissioners amended Chapter 158 Zoning of the County Code of Public Local Laws and Ordinances in 2014 to incorporate provisions allowing solar energy conversion facilities. Initial recommendations for code requirements were prepared by the Environmental Advisory Council (EAC). The code addressed both accessory uses in residential, commercial, and industrial zones, as well as requirements for commercial operations.

In 2016, at the Board’s request, the EAC recommended revisions to the residential solar surface area requirements of the zoning code. The Board adopted the amendment in October 2016, increasing the allowable surface area on residential properties. To review the zoning requirements related to solar facilities, see <http://ccgovernment.carr.org/ccg/attorney/code/> and choose Chapter 158.

### Permitting

The Carroll County Bureau of Permits & Inspections provides permitting and inspections to ensure that solar panels are safe for use. These include electrical, building, and possibly plumbing permits. The staff works with applicants to facilitate a quick review process, usually within 5-7 business days if the application is complete, accurate, and code-compliant. A checklist of required information, as well as fee schedules and contact information, are available on the Bureau’s webpage at <http://ccgovernment.carr.org/ccg/permits/Solar.aspx>.

### County Solar Projects

Carroll County Government has actively worked to reduce energy usage at its facilities. Equipment is regularly replaced with energy efficient models and parts as opportunities arise. The County has a contract with Johnson Controls to regularly evaluate energy usage and make recommendations for energy and cost-saving measures. The contract guarantees a certain level of savings for the County through implementation of the recommendations. The County has also pursued grants to fund the cost of replacement of lights with more energy efficient lighting.

A significant source of energy savings will be realized through the installation of solar arrays on three different County properties – Carroll Community College, Hoods Mill Landfill, Hampstead Wastewater Treatment Plant, and a fourth undetermined site (as of January 2019). These three facilities were completed and online in 2018. Department of Public Works staff anticipates up to 25 percent reduction in the County’s energy bill for County facilities through these projects. A low fixed-rate of \$.077 per kilowatt hour is guaranteed by the contract through 2037 for the 13.4 megawatt hours to be supplied by the solar panels.

### Public Outreach

The EAC created a public outreach booklet, *A Guide to Residential Solar Installation in Carroll County*, to help provide Carroll’s residents with basic information to navigate the process in Carroll County of installing accessory

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Lot Size	Solar Panel Surface Area Maximum Square Footage for Ground-Mounted Systems
<= ¼ acre	120 square feet
>¼ acre	240 square feet
>1 acre to 3 acres	480 square feet
>3 acres	Aggregate square footage of the roof, or roofs of structures, situated on the subject property

Permits Issued in Carroll County for Solar Energy Conversion Facilities FY 2015, 2016, 2017, & 2018	
Fiscal Year	# of Permits
2015	383
2016	606
2017	463
2018	312



Carroll Community College



solar facilities in residential districts. The booklet, which is available on the EAC's webpage provides information regarding the process, certified installers, frequently asked questions, questions to ask the solar company/installer, financing, and more. The booklet is available on the EAC webpage at <http://ccgovernment.carr.org/ccg/eac/>.

## Solid Waste & Recycling

Carroll County Bureau of Solid Waste  
[recyclecarroll.org](http://recyclecarroll.org)

410-386-2035  
[SolidWasteRecycling@carrollcountymd.gov](mailto:SolidWasteRecycling@carrollcountymd.gov)

Carroll County actively seeks to divert waste from the landfill. Recycling participation is on the rise in Carroll County. Options for both curbside and drop off opportunities have increased, as has the type of materials that can be recycled.

Curbside, single-stream recycling was implemented in 2007 (and expanded in 2008), making it easy and convenient for residents to participate. Most standard household recycling can simply be placed at the curb.

Carroll's Resource Recovery Facility is conveniently located in the center of the county and accepts many items that are not eligible for curbside pickup, such as Styrofoam, electronics, automobile batteries, antifreeze/waste oil, cooking oil, and textiles. Carroll County has taken advantage of grant opportunities to purchase and distribute large recycling containers that added to the ease of handling curbside recycling.

Carroll County also encourages property owners to divert yard waste from the landfill. Citizens can dispose of grass, leaves, and branches in the mulching area of the Resource Recovery Facility. These items are mulched at the landfill. Citizens are encouraged to consider backyard composting. The County provides an opportunity to purchase compost bins and rain barrels at a discounted rate.

The Recycling program offers a semi-annual household hazardous waste collection to ensure household chemicals are not improperly discarded. The Recycling office diligently works to inform citizens and instill the "Reduce, Reuse, Recycle!" theme.

Through all recycling efforts, **the County has achieved a 57.5 percent recycling and waste diversion rate that includes a 5 percent source reduction credit in 2016** (based on MDE's website, "Maryland State, County, and City Recycling," <https://mde.maryland.gov/programs/land/recyclingandoperationsprogram/pages/recyclingrates.aspx>). The State-mandated recycling rate is 35 percent.

To proactively address changing and future solid waste needs, a Solid Waste Work Group evaluated options and prepared a report with recommendations. A Solid Waste Advisory Council (SWAC) was established in 2014 to help implement recommendations of the various solid waste plans and advise staff. The SWAC meets regularly.

### Accepted through Single-Stream, Curbside Recycling (must be loose, not in plastic bags)

- ◆ Glass jars & bottles
- ◆ Aluminum, tin and steel cans, containers, and foil
- ◆ Cereal boxes and other paperboard boxes
- ◆ Cardboard
- ◆ Aseptic/gable-top milk and juice cartons
- ◆ Books (paperback)
- ◆ Plastic bottles
- ◆ Magazines and catalogs
- ◆ Newspaper, office paper, and junk mail
- ◆ Plastics containers #1-#7 (except #6)
- ◆ Paper bags
- ◆ Cardstock, color paper
- ◆ Shredded paper (in paper bags)
- ◆ Aerosol cans (empty)

### Accepted at Resource Recovery Facility (either on a regular basis or part of special event)

- ◆ Expanded Polystyrene Foam/Styrofoam
- ◆ Rigid plastics
- ◆ Residential Electronics
- ◆ Household Hazardous Waste
- ◆ Textiles
- ◆ Backyard Trimmings
- ◆ Vinyl Siding
- ◆ Car batteries, antifreeze, and waste oil

Plastic bags are NOT accepted in single-stream recycling or the Resource Recovery Park. They are collected at the grocery stores.

# Water Resources Coordination Council (WRCC)

Carroll County Land & Resource Management  
<http://ccqgovernment.carr.org/ccq/plan/wrcc/>

410-386-2949  
[LRM@carrollcountymd.gov](mailto:LRM@carrollcountymd.gov)

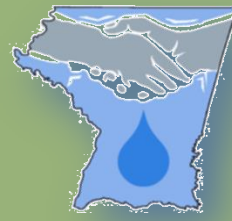
The Water Resource Coordination Council (WRCC) was formed in March 2007 by a non-binding joint resolution (#697-07) between the County, municipalities, and Carroll County Health Department. The Council provides a mechanism for cooperative problem solving of critical water resource management issues facing the County and municipalities. The Council fosters discussion between jurisdictions in order to develop regional (watershed) or countywide approaches to policies, procedures, and solutions regarding water resource development and protection. The WRCC offers a forum for the dissemination of ideas, solutions, and cost-saving approaches to water resource development and protection in Carroll County.

Among other things, the WRCC worked collaboratively to develop a Water Resources Element (WRE). The WRE identifies drinking water and other water resources needed for existing and future growth. It also identifies suitable receiving waters (where stormwater and treated wastewater can be discharged) and land areas for stormwater management and wastewater treatment. In Carroll County, the WRE addressed the County and all eight municipalities in one document and was jointly adopted. The WRCC also serves at the local Watershed Implementation Plan team, addressing issues related to the local implementation of the Chesapeake Bay Total Maximum Daily Loads (TMDLs).

The members have worked together to address cost-sharing of stormwater projects and provide shared staff to address NPDES MS4 compliance work. On October 23, 2014, the Board of County Commissioners and the Mayors of all eight municipalities signed a Memorandum of Agreement (MOA). With the MOA, the Board committed to funding 80 percent of the municipalities' capital costs for stormwater mitigation projects. In December 2014, MDE issued the County's fourth generation NPDES Phase I MS4 permit, in which the municipalities were named as co-permittees. The MOA outlines the distribution of permit responsibilities.

In October 2018, the WRCC received international recognition as a *Utility of the Future Today* under the Partnering & Engagement activity area for coordination and joint leadership on significant water resource issues facing the county as a whole. The WRCC was one of 32 water utilities recognized for transformational work in community engagement, watershed stewardship, and recovery of resources such as water, energy, and nutrients. The Utility of the Future Today program was launched in 2016 by the National Association of Clean Water Agencies (NACWA), the Water Research Foundation (WRF), and the WaterReuse Association, with input from the U.S. Environmental Protection Agency (EPA). The recognition celebrates the achievements of water utilities that transform from the traditional wastewater treatment system to a resource recovery center and leader in the overall sustainability and resilience of the communities they serve.

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# Environmental Advisory Council

Carroll County Land & Resource Management  
<http://ccqgovernment.carr.org/ccq/eac/>

410-386-2140  
[EAC@carrollcountymd.gov](mailto:EAC@carrollcountymd.gov)

Originally formed as the Environmental Affairs Advisory Board in the early 90s, the Board of County Commissioners created the Environmental Advisory Council (EAC) through County Code (Chap. 31) in 2004. The EAC is dedicated to exploration and promotion of the County's environmental management responsibilities, to providing the Commissioners with educated advice that is in the best interest of the County and the County's residents, and to promote environmental educational. The 9-member EAC functions at the direction of the Carroll County Board of Commissioners and, as such, works cooperatively with County environmental staff to research environmental policy issues; to advise the Board of County Commissioners; to foster environmental education; and generally to act in the best interest of County residents by promoting effective environmental protection and management principles.

The EAC periodically accepts nominations for Environmental Awareness Awards. Winners are recognized in a joint ceremony with the Board of County Commissioners. A tree planting ceremony is held at the community college, generally around Arbor Day, to honor the award winners.

Other additional recent work by the EAC includes, among other things:

- report to the Board providing possible Carroll County options for promoting the use of community solar,
- report to the Board providing possible Carroll County options for reducing expanded polystyrene (EPS) use,
- report to the Board providing possible Carroll County options for reducing single-use plastic bag (SUPB) use,
- Guide for Residential Solar Installation in Carroll County, and
- Business/public workshops regarding stormwater.



The collage includes several documents:

- Expanded Polystyrene (EPS) Reduction in Carroll County: Single-Use Food Service Ware and Loose Fill Packaging Products** - A report with a table of contents.
- Community Solar in Carroll County** - A report with a table of contents.
- A Guide to Residential Solar Installation in Carroll County** - A comprehensive guide with a table of contents and a 'Why Install Solar at your Home?' section.

## References

- 1 Carroll Soil Conservation District. Conservation News and 2016 Annual Report. 2016.
- 2 Maryland Department of Agriculture. Maryland Agricultural Water Quality Cost-Share Program. *MACS at Work for a Healthier Chesapeake Bay: 2018 Annual Report*. [https://mda.maryland.gov/resource\\_conservation/counties/MACS2018.pdf](https://mda.maryland.gov/resource_conservation/counties/MACS2018.pdf)
- 3 Carroll County, Maryland, Forest Conservation Technical Manual. May 2011. <http://ccqgovernment.carr.org/ccq/resmgmt/forconsmanual.pdf>
- 4 Slater, James E. Jr., and Glenn D. Edwards. 2010. "Chapter 4 Incentive Driven Conservation," *A Sustainable Chesapeake: Better Models for Conservation*, The Conservation Fund. <http://www.conservationfund.org/a-sustainable-chesapeake-better-models-for-conservation/>
- 5 Carroll County Health Department. 2018.

## Did you know the following information about Carroll County?

- Population = 167,997 (CC Comp Planning, Dec 2018)
- Total Acres = 289,920
- Total Square Miles = 453
- 8 Incorporated Municipalities



## For More Information...

Please contact Brenda Dinne, EAC Secretary, by emailing [bdinne@carrollcountymd.gov](mailto:bdinne@carrollcountymd.gov) or [eac@carrollcountymd.gov](mailto:eac@carrollcountymd.gov); calling 410-386-2140; or at 225 North Center Street, Westminster, Maryland 21157.