

NA17NOS4190152, Task 47  
2/15/2019

**George Washington Regional Commission  
Coastal Zone Management  
Technical Assistance Program Report FY2017**



**Virginia Coastal Zone  
MANAGEMENT PROGRAM**

## Table of Contents

<b>Product #1: Training and Coordination Summary</b> .....	3
<b>A. CZM Coordination Meetings</b> .....	3
<b>B. Regional Stormwater Managers Technical Committee Meetings</b> .....	3
<b>C. Deliverables</b> .....	3
<b>Product #2: Stormwater Best Management Practices Signage</b> .....	3
<b>A. Project Summary</b> .....	3
<b>B. Deliverables</b> .....	3
<b>Product #3: Benefits Accrued from Prior CZM Grants</b> .....	3
<b>A. Plant Central Rapp Natives Campaign</b> .....	4
<b>Appendices</b> .....	5

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## Product #1: Training and Coordination Summary

### A. CZM Coordination Meetings

George Washington Regional Commission (GWRC) staff and their consultants participated in the following CZM-related meetings:

1. CZM Program Meeting – 11/8/2017
2. CZM Program Meeting – 1/11/2018
3. CZM Program Meeting – 6/13/2018
4. Coastal Policy Team Meeting – 9/12/2018
5. CZM Program Meeting – 10/23/2018

### B. Regional Stormwater Managers Technical Committee Meetings

These regularly scheduled meetings assist regional staff to continue to develop useful regional initiatives to assist local governments to understand and comply with State stormwater management regulations. Among other topics, GWRC and the local governments spent considerable time discussing compliance with environmental regulations and areas of overlap between programs. The meetings also provided opportunities to discuss grant opportunities which could further other regional environmental initiatives.

Additionally, the Regional Stormwater Managers and GWRC staff participated in the development of the Chesapeake Bay Phase III Watershed Implementation Plan (WIP III). Meetings for the WIP III planning process were held on July 10th, August 16th, September 20th, and November 28th.

### C. Deliverables

1. Regional Stormwater Managers Technical Committee Meeting Summaries (Appendix A)

## Product #2: Stormwater Best Management Practices Signage

### A. Project Summary

GWRC worked with its member localities to identify stormwater best management practices (BMPs) located in high traffic areas throughout the region. Creating this catalog helped GWRC to evaluate which BMPs would serve as practical sites to install signage focused upon increasing awareness and education about stormwater management and water quality. GWRC then designed signage which identifies the type of stormwater BMP, describes the environmental benefits provided, and details information about local water quality and the Chesapeake Bay. Signs include recommendations citizens can implement in their daily activities to minimize their impact on stormwater pollution. GWRC provided the local jurisdictions with digital sign design files for each identified location, along with production cost estimates.

### B. Deliverables

1. Sign Designs (Appendix B)
2. Digital Sign Design Files and Production Cost Estimates

## Product #3: Benefits Accrued from Prior CZM Grants

*Description:* CZM projects/tasks in previous years that have produced measurable benefits in subsequent years and/or have served as a foundation for additional projects.

## A. Plant Central Rapp Natives Campaign

During the FY15 CZM grant cycle, GWRC received funds to develop a strategy for a native plants campaign for the George Washington region. GWRC received additional funds through an FY16 CZM competitive grant to implement the “*Plant Central Rapp Natives*” campaign. The implementation phase included production of a full-color native plants guide, campaign launch event, outreach events, coordination with local native plant providers, and creation of a campaign website. Implementation of the campaign has been very successful. Members of the planning team have organized outreach efforts and distributed the native plants guide around the region. With additional CZM 306A funding, GWRC is now working with CZM staff and local partners to install a native plant demonstration garden at Cedell Brooks, Jr. Park in King George County. This garden will help to further enhance the campaign by demonstrating how residents can incorporate native plants into their landscaping.



## Appendices

Appendix A: Regional Stormwater Managers Technical Committee Meeting Summaries

Appendix B: Sign Designs

## Appendix A: Regional Stormwater Managers Technical Committee Meeting Summaries

### A. Attendance Record

<i>Committee Members</i>	<i>11/15/2017</i>	<i>3/13/2018</i>	<i>6/28/2018</i>	<i>8/2/2018</i>
<b>Caroline County</b>				
David Nunnally	x	x	x	x
<b>City of Fredericksburg</b>				
Kevin Utt	x	x	x	
<b>Friends of the Rappahannock</b>				
Kathleen Harrigan		x		
<b>GWRC</b>				
Darren Coffey	x	x		
Shaina Schaffer	x	x	x	
Tim Ware	x	x	x	
Kate Gibson		x	x	x
Linda Millsaps			x	x
<b>King George County</b>				
Heather Hall		x		x
Michael Newchok		x		
Brad Hudson				x
<b>Stafford County</b>				
Scott Rae	x	x		x
Paul Santay				x
<b>Spotsylvania County</b>				
Troy Tignor		x		
<b>Town of Port Royal</b>				
Jim Heimbach				
<b>Tri-County City SWCD</b>				
Marta Perry	x		x	
<b>Other Participants</b>				
Eldon James - RRBC		x	x	
Kevin Byrnes - Regional Decision Systems, LLC			x	x
Doug Pickford - Conservation Concepts			x	x
Ross Pickford - Conservation Concepts				x
Elizabeth Andrews - VCPC	x			
Dr. Carl Hershner - VIMS	x			
Drew Williams – The Berkley Group	x			
Denise Nelson – The Berkley Group	x			
Brent McCord – Rappahannock Area Health District (VDH-RAHD)				x
<b>Total</b>	<b>11</b>	<b>12</b>	<b>10</b>	<b>11</b>

### B. Meeting Minutes



## Stormwater Quarterly Regional Planning Meeting

November 15, 2017

3:00 p.m. – 4:30 p.m.

GWRC Conference Room

### Notes

Tim Ware, GWRC Executive Director, opened the meeting and welcomed everyone. Introductions were made around the table. Shaina Schaffer gave an overview on some regional planning activities including:

- A. Native Plants Campaign –GWRC received funding to implement the *Plant Central Rappahannock Natives* campaign through the VA Coastal Zone Management competitive grant. During the previous fiscal year GWRC worked with a native plants planning team to research local awareness of native plants, perceptions, and barriers to use. The planning team then developed a campaign strategy based upon their research results. The campaign officially kicked off at the City of Fredericksburg's Earth Day Festival. GWRC is currently working with CZM staff to pull together an application to establish a demonstration garden at Cossey Park.
- B. FY 17 CZM Technical Assistance (TA) Grant –The FY 17 CZM TA grant will continue the quarterly stormwater meetings and will also design signage for BMPs in public access areas. The BMP sign designs will be made available to the GW localities. A meeting will be held soon to kick-off this project.

Elizabeth Andrews, Virginia Coastal Policy Center (VCPC) and Dr. Carl Hershner, Virginia Institute of Marine Sciences (VIMS) joined the call to provide a summary of the HB 1774 Stormwater Workgroup. Elizabeth noted that the purpose of the workgroup was to evaluate alternative methods for managing stormwater in rural Virginia localities. The workgroup was divided into two subcommittees. The first subcommittee considered the potential of using volume credits, regional BMPS and VDOT drainage ditches to manage stormwater. The subcommittee determined that enhancing VDOT drainage ditches to better manage stormwater offered the most benefit. The Chesapeake Bay Program is already reviewing ditch maintenance as a nutrient removal strategy. The other subcommittee focused upon ease of administration of stormwater programs in rural localities and came up with the tiered approach which is based upon imperviousness of the area. Under the tiering system, most areas would be in the first tier and would be able to use MS-19 for stormwater. Additionally, the locality would be permitted to accept stamped/sealed plans from a third-party engineer instead of having to perform a plan review.

Denise Nelson, Environmental Engineer for The Berkley Group, gave a presentation of the Institute for Sustainable Infrastructure's (ISI) Envision rating system. The Envision program considers sustainability options for infrastructure projects. Unlike the LEED program, Envision takes a holistic evaluation of the project's sustainability rather than looking solely at the sustainability of the site's

buildings. Additionally, there are credits in the Envision Rating system that overlap with the activities associated with the National Flood Insurance Program (NFIP) Community Rating System (CRS). Envision likely also overlaps with other environmental programs such as Effective Utility Management (EUM), American Public Works Administration Accreditation, and Virginia Department of Environmental Quality Virginia Environmental (DEQ) Virginia Environmental Excellence Program (VEEP) Environmental Management System (EMS). Dave Nunnally expressed interested in using Envision in the future on a project in Caroline County. Kevin Utt suggested letting the Department of Conservation and Recreation know about the overlap between Envision and CRS.

The next meeting will be held in February. Darren suggested that members of the group could host future meetings. The group thought that would be a good idea. Marta mentioned that she could check with Richard Street at Spotsylvania County to see if they could host the February meeting. A doodle poll will be issued to select the date and time.



## Stormwater Quarterly Regional Planning Meeting

March 13, 2018

10:00 a.m. – 11:30 a.m.

Spotsylvania Code Compliance Conference Room

### Notes

Tim Ware, GWRC Executive Director, opened the meeting and welcomed everyone. Introductions were made around the table. Shaina Schaffer gave an overview on some regional planning activities including:

- A. Native Plants Campaign –GWRC received funding to implement the *Plant Central Rappahannock Natives* campaign through the VA Coastal Zone Management competitive grant. During the previous fiscal year GWRC worked with a native plants planning team to research local awareness of native plants, perceptions, and barriers to use. The planning team then developed a campaign strategy based upon their research results. The campaign officially kicked off at the 2017 City of Fredericksburg's Earth Day Festival. Additional CZM grant funding for a demonstration garden at Cossey Park has been approved. GWRC, CZM staff, and the planning team are working with the City of Fredericksburg Parks and Rec Department to coordinate next steps for the garden.
- B. FY 17 CZM Technical Assistance (TA) Grant –The FY 17 CZM TA grant will continue the quarterly stormwater meetings and will also design signage for BMPs in public access areas. A kick-off meeting for the BMP signage project was held in February. The group briefly discussed the first draft sign that was produced for a bioretention facility at Stafford County school. Kathy Harrigan from the Friends of the Rappahannock (FOR) mentioned that they might have a cross section that could be used for the sign. Dave mentioned that there was some concern from Caroline County schools over whether the signs would be advertised to the public which could result in safety concerns. The group agreed that these signs are not intended to draw people to the sites and any signs for school sites should be located in the front of the school areas near parking lots. Darren suggested that the if any of the proposed sites are school properties, the GW localities need to check with the schools before recommending the site for this project. Kevin shared some pricing information that he had pulled together.

The group then had a roundtable discussion focused upon the development of the Phase III WIP/Chesapeake Bay Midpoint Assessments. Kevin began with an overview of the State's schedule for the Phase III WIP development noting that the timeline shows the final draft Phase III WIP being submitted in early 2019.

The group then discussed some of the state level changes. Eldon mentioned that HB 1307 (Rural tidewater VA, tiered approach to water quality technical criteria) and 1308 (acceptance of signed plan in lieu of review) had passed with very little discussion. The group mentioned that there is

concern about accepting a signed plan that has not been reviewed by someone that holds the VA DEQ Stormwater Management Plan Review certification. It was noted however that the bill states a locality in rural tidewater VA may accept the signed plan but is not required to accept the plan without performing a local review. Dave also noted that there is an ongoing study about using roadside ditches stormwater BMPs. Maryland has been doing this for several years and so far the studies have had good results.

Kathy asked the group if they have been getting reports from citizens of sewage overflow issues during storm events. She noted that FOR occasionally receives calls and that citizens may not know who to contact in the event of an issue. She also mentioned that NYC has been doing an outreach campaign on preventing overflows. She asked if that might be something the GW region would be interested in pursuing however it did not seem to be as common of an issue in the region since there are no combined sewer systems. The group mentioned that they would share the appropriate contact info with Kathy so she could best direct any calls that she receives.

The next meeting will be held in June. A doodle poll will be issued to select the date and time.



## Stormwater Quarterly Regional Planning Meeting

June 28, 2018

10:00 a.m. – 11:30 a.m.

GWRC Conference Room

### Notes

Tim Ware opened the meeting and welcomed everyone. Tim then introduced Linda Millsaps, the new GWRC Executive Director. Shaina Schaffer gave an overview on some regional planning activities including:

- A. Native Plants Campaign – CZM grant funding was planned for a native plants demonstration garden at Cossey Park however there were some issues at that site. GWRC is currently working with CZM staff and King George County to change the demo garden site to Cedell Brooks Jr. Park in King George County. Dave Nunnally also mentioned that he would like to have a small native plants garden at the Caroline County Planning Office.
- B. BMP Signage Project Update –The group briefly discussed the draft signs and stormwater diagram that was produced. Marta suggested that the sign include slogans like “When it rains it drains.”

Members of the group then provided some brief updates from their locality. Kevin Utt noted that they had submitted their draft Chesapeake Bay TMDL Action Plan update to DEQ earlier that month. He also mentioned that the Virginia Flood Management Association would be holding 3 workshops this fall (Fredericksburg, Hampton Roads, and Roanoke). Dave Nunnally then gave an overview of the Rappahannock River Basin Commission Technical Committee meeting that he had recently attended. Dave also mentioned that he would like to do a living shoreline project at Port Royal in the future. He also had an idea to get a pontoon boat to serve as a floating classroom.

The group then discussed the upcoming WIP Phase III development. Doug Pickford from Conservation Concepts noted that they had received a NFWF grant to assist with WIP III support. The Berkley Group will also be supporting GWRC with WIP Phase III development. Doug mentioned that their scope of work for the grant was somewhat vaguely defined and they would like to coordinate their efforts with the Berkley Group. There are a few items that the group would like to consider during the Phase III WIP development including whether the baseline data for septic systems is accurate, whether the projections for septic growth are realistic, areas in the region that might be best suited for Healthy Watersheds implementation. Members of the group are planning to attend the Phase III WIP workshop that DEQ will hold at GWRC on July 10th.

The next meeting will be held in September. A doodle poll will be issued to select the date and time.

**GWRC/Rappahannock Area Health District (RAHD)  
Regional Septic Program Discussion**

**Meeting Minutes**

**Meeting Date & Time:** Thursday August 2<sup>nd</sup>, 10:00 am -12:00 noon

**Location:** GWRC Conf. Room, 406 Princess Anne St, Fredericksburg

**Attendance:** Linda Struyk Millsaps & Kate Gibson, GWRC; Doug & Ross Pickford, Conservation Concepts; Kevin Byrnes, RDS, LLC; Dave Nunnally, Caroline Co.; Paul Santay and Scott Rae, Stafford Co.; Brad Hudson and Heather Hall, King George Co.; and Brent McCord, Rappahannock Area Health District (VDH-RAHD)

- 
1. **GWRC Regional WIP III Response Coordination: Staff & Consultant Effort:** Doug Pickford led off the discussion, summarizing the development of GWRC's two consulting efforts to help local governments address DEQ's WIP III efforts. Linda Millsaps reviewed the focus of the Berkley Group effort to respond to the DEQ outline for the region's WIP III submission.
  
  2. **RDS, LLC Septic Property Pilot Mapping Exercise:** Kevin Byrnes summarized his efforts to collect different types of data from local governments and the RAHD to develop a map of septic and sewer properties in several GWRC localities. Due to a computer system crash, the initial Caroline project example will have to be re-done; however, roughly 60% of the list of septic sites provided by VDH were located by matching with County 911 address and parcel records. In King George Co, the County provided a list of properties on County sewer, and addresses at NSWC-Dahlgren were assumed to be on the naval base sewer system. The remainder of the County addresses were assumed to be served by on-site septic tank and drain field. For Spotsylvania Co., about 68 percent of the addresses on the VDH septic system list were located and mapped. From the experience of matching the VDH list with different local information sources, several conclusions were drawn:
    - a) Many older VDH septic records have an obsolete tax map number and no address or a temporary address that could not be matched with either current address or land records.
    - b) Some VDH records only had an obsolete business name without a street address.
    - c) Coordination between State, local and private record-keeping of septic systems is virtually non-existent and all present at the meeting suggested that sharing information between VDH and local government would help improve regional septic management.
    - d) King George, Spotsylvania and Stafford counties all provide 5-year notification of county-wide septic pump-out requirements (Caroline only notifies those affected property owners in the County's defined RPA); but King George, Caroline and Stafford representatives indicated that they all typically only get a 50% return of the required confirmation of the completed pump out service. While all representatives indicated that follow-up mailings to non-responding residents were performed, no one mentioned any subsequent County enforcement actions being taken.
    - e) The Caroline representative said that the County Utility Dept. maintained a log of those served addresses with each tank load of effluent that dumped at the County's waste water treatment plant, but he was not aware of any coordination of these records with their pump-out notification program. None of the other local representatives were aware of any local tracking

or reporting of completed pump-outs and the final disposal location used by property owners or by the pump & haul operators.

- 3. RAHD Regional & Local Office Roles in Septic System Management:** Brent McCord, VDH: Mr. McCord summarized the general septic permit issuance process by the Department and that the RAPD office has contracted with Va. Correctional Enterprise (VCE) to scan all their septic records to create an electronic copy of all their records to expedite record retrieval and to provide a convenience to be able to share the “as permitted” system drawings with property owners or others interested.

General discussion ensued of the VDH role and possible interest in working collaboratively with local government personnel and private pump & haul operators.

**4. Local Perspectives: Septic Program Status & Project Interest**

- a. Caroline County: Dave Nunnally explained briefly that the County does the annual 5-year pump-out notification to properties in the County RPA and that there is still political sensitivity in the County over the County’s initial attempt at implementing the program county-wide, scaling it back to the minimal area required under the Chesapeake Bay Preservation Act. He mentioned that the County receives calls when septic systems fail and property owners are looking to convert to sewer or seek public assistance to comply with the pump-out requirement. He also noted that the County reports the total number of reported pump-outs (confirmed by property owner documentation) to DEQ as a Chesapeake Bay program requirement. Being able to report more confirmed pump-outs would be desirable to show higher compliance.
- b. City of Fredericksburg: Kevin Byrnes shared information provided by City staffer Kevin Utt, noting that the City only has about 30 septic sites city-wide. Mr. Utt noted in his e-mail that conversion of a septic system to public sewer was worth a .5 lb. of nitrogen reduction credit in the Bay TMDL water quality model.
- c. King George County: J. Bradley Hudson and Heather Hall summarized the King George system operated by the County Sanitation Authority, noting that the KGSA/Board of Supervisors are dealing with some current management issues. They noted the general public attitude seems to be a desire to avoid connection with the County sewer system. They confirmed the County gets about a 50% response rate on the pump-out notification program, but no further analysis is performed to map the non-responding addressees.
- d. Spotsylvania County: Kevin Byrnes shared hand-out information provided by Hannah Lewis, who manages the County pump-out notification program.
- e. Stafford County: Paul Santay and Scott Rae: Both gentlemen discussed the County’s interest, indicating that the County is interested in any program that might lead to better information coordination with VDH and the private pump & haul operators. For those property owners that can’t afford to pay the private pump & haul operators to respond to the 5 year pump-out requirement, the County orders the service and bills the property owner on their tax bill for the year. Mr. Santay said the County had been told that the County could get no TMDL credit for septic pump-out actions and would be interested to know if they could get TMDL credit through the WIP III process.

**5. Roundtable Discussion of Regional Septic Project Feasibility, Scope, Deliverables & Schedule, Private Sector (Pump-out Operators) Involvement**

Mr. Pickford noted that in addition to the Chesapeake Bay TMDL and WIP III process, many of the localities in the region have local impairments, particularly for the e-coli standard; consequently, developing strategies and identifying budget needs for improved septic program management would have multiple benefits, including healthier surface waters and movement toward compliance on Bay TMDLs and local water quality impairments. After further general discussion, Mr. Byrnes suggested that we go around the table and ask each locality and the VDH representative to summarize if they saw benefit in the idea of addressing the septic issues. The following points were raised:

- a) VDH would like to share information with localities to enhance the accuracy and currency of their regional septic system information so that they could provide better information when asked by the general public, mortgage brokers and realtors, etc. Creating a unique identifier for each septic permit would help reduce confusion in tracking systems. Moreover, Mr. McCord indicated that VDH and more subdivision developers are interested in making greater use of mass drain fields which allow them some system performance and cost advantages over individual lot septic fields. Apparently some localities have been reluctant to allow such community systems to be installed.
- b) Stafford Co. staff endorsed the idea of creating a septic tank property GIS layer which could not only help track systems but, by adding building, household, soil and parcel information to the record of pump-out activity, and by identifying the addresses which had not returned their proof of pump-out service, that a better understanding of private landowner behavior about performing or ignoring pump-out notices could be helpful to design a better program to achieve higher compliance.
- c) King George Co. explained that they have problems getting information back from homeowners on septic and voluntary collaboration with private pump & haul operators could help protect the environment.
- d) Caroline Co. representatives indicated that developing better information on the location of homes and businesses on septic could help the County develop and evaluate management options for improved environmental protection. There was also interest in conducting further research in opportunities to identify communities that could be prospects for conversion from single septic systems to the use of mass drain fields that are easier to manage and are much more efficient and effective in treatment of wastewater.
- e) There was a general agreement that it would be beneficial to reach out to and meet with local private pump & haul operators to understand their perspective on problems with and ways to improve private market operations.
- f) There was some recognition that planning and pursuing efforts to improve local septic management under Gov. Northam's administration could be opportune, given:
  - the Governor's commitment to public health as a medical practitioner,
  - his desire to continue to improve water quality in the Chesapeake Bay, and
  - the State's need to continue pollution-reduction investments in the non-point sector to achieve the 2025 TMDL nitrogen reduction goals.

This initiative, with wide participation and cooperation by VDH, the GWRC, local governments and private pump & haul operators could develop into a demonstration project of wider statewide interest and impact in other local VDH districts.

## Appendix B: Sign Designs

- A. Bioretention Facility on the Canal Path/Heritage Trail in the City of Fredericksburg
- B. Extended Detention Pond at Cedell Brooks, Jr. Park in King George County
- C. Extended Detention Pond at Colonial Forge High School in Stafford County
- D. Rain Garden at Dixon-Smith Middle School in Stafford County
- E. Stormwater Pond at Mountain View High School in Stafford County

# BIORETENTION

## Canal Path/Heritage Trail



Stormwater management is important to reduce flooding and protect our waterways from pollution. To report stormwater pollution, please call 540-372-1179.

**STORMWATER** is precipitation that originates from storm events. When it rains, stormwater that does not soak into the ground becomes stormwater runoff and flows to nearby ditches, roads, storm drains, and waterways. As it flows over land, stormwater picks up pollutants such as oil, fertilizers, bacteria, and trash. Stormwater does not go to a treatment plant.

### Common pollutants in stormwater:

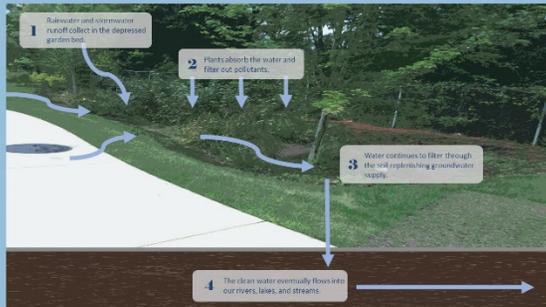
- Sediment
- Fertilizers
- Pet waste
- Litter/debris
- Pesticides
- Oil/grease

## What is a bioretention facility?

Bioretention facilities are landscape depressions that capture stormwater before it flows to ditches, stormdrains and waterways. These facilities have several benefits:

- **COLLECT AND ABSORB** rain that might otherwise contribute to flooding.
- **REMOVE POLLUTANTS** naturally.
- **ENHANCE** the aesthetics of the landscape.

## How does a bioretention facility work?



The main component of a bioretention facility is the filter bed which consists of sand, soil, organic material and a surface mulch layer. During storms, stormwater temporarily ponds 6-12 inches above the mulch layer. The plants absorb some of this water and the rest filters through the bed. The bioretention facility may have an underdrain system to return the filtered water to the stormwater system or the filtered water may continue to infiltrate into the soil.

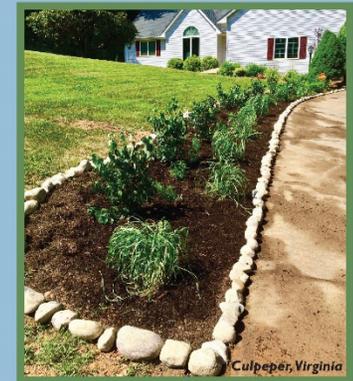
### Did You Know?

We all live in a watershed. Even if we do not live directly next to the water, the choices we make everyday do impact our waterways.

## What can YOU do?

Here are some tips of what you can do to help reduce stormwater pollution:

- Clean up after your pets both on walks and in your yard
- Never dump anything down the storm drain
- Dispose of all trash properly
- Sweep up grass clippings and leaves



# Extended Detention Pond

## Cedell Brooks, Jr. Park

**STORMWATER** is precipitation that originates from storm events. When it rains, stormwater that does not soak into the ground becomes stormwater runoff and flows to nearby ditches, roads, storm drains, and waterways. As it flows over land, stormwater picks up pollutants such as oil, fertilizers, bacteria, and trash. Stormwater does not go to a treatment plant.

Stormwater management is important to reduce flooding and protect our waterways from pollution. To report stormwater pollution, please call 540-775-7111

### Did You Know?

We all live in a watershed. Even if we do not live directly next to the water, the choices we make everyday do impact our waterways.

### Common pollutants in stormwater:

- Sediment
- Fertilizers
- Pet waste
- Litter/debris
- Pesticides
- Oil/grease

## What is an extended detention pond?

Extended detention ponds are landscape depressions that capture stormwater before it flows to ditches, stormdrains and waterways. These facilities have several benefits:

- **COLLECT AND temporarily STORE** rain that might otherwise contribute to flooding.
- **REMOVE POLLUTANTS** naturally.
- **RECHARGE** groundwater.

## How does an extended detention pond work?

An extended detention pond is designed to detain and store stormwater for 12 to 24 hours after each rain event. The pond includes an outlet structure designed to restrict flow so it temporarily backs up in the basin. The ponding allows pollutants to settle out of the stormwater. The outlet structure then slowly releases stormwater which also helps reduce stress on the receiving stream.

## What can YOU do?

Here are some tips of what you can do to help reduce stormwater pollution:

- Clean up after your pets both on walks and in your yard
- Never dump anything down the storm drain
- Dispose of all trash properly
- Sweep up grass clippings and leaves



# Extended Detention Pond

## Colonial Forge High School

**STORMWATER** is precipitation that originates from storm events. When it rains, stormwater that does not soak into the ground becomes stormwater runoff and flows to nearby ditches, roads, storm drains, and waterways. As it flows over land, stormwater picks up pollutants such as oil, fertilizers, bacteria, and trash. Stormwater does not go to a treatment plant.

Stormwater management is important to reduce flooding and protect our waterways from pollution. To report stormwater pollution, please call 540-658-8833.

### Did You Know?

We all live in a watershed. Even if we do not live directly next to the water, the choices we make everyday do impact our waterways.

### Common pollutants in stormwater:

- Sediment
- Fertilizers
- Pet waste
- Litter/debris
- Pesticides
- Oil/grease

## What is an extended detention pond?

Extended detention ponds are landscape depressions that capture stormwater before it flows to ditches, stormdrains and waterways. These facilities have several benefits:

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An extended detention pond is designed to detain and store stormwater for 12 to 24 hours after each rain event. The pond includes an outlet structure designed to restrict flow so it temporarily backs up in the basin. The ponding allows pollutants to settle out of the stormwater. The outlet structure then slowly releases stormwater which also helps reduce stress on the receiving stream.

## What can YOU do?

Here are some tips of what you can do to help reduce stormwater pollution:

- Clean up after your pets both on walks and in your yard
- Never dump anything down the storm drain
- Dispose of all trash properly
- Sweep up grass clippings and leaves



# Soak up the Rain

## Rain Garden

*When it rains*, precipitation drains down our gutters, across our parking lots, through lawns, and down streets picking up pollutants as it goes before flowing into storm drains and streams. Pollutants include everything from car oil to lawn fertilizer to bacteria from pet waste, not to mention trash. The polluted runoff flows into the storm drain or stream without ever being cleaned at a treatment plant before it empties into the Rappahannock and then heads to the Chesapeake Bay.

### What is a rain garden?

Rain gardens are landscape depressions that capture stormwater before it flows to ditches, stormdrains and waterways. They have several benefits:

- **COLLECT AND ABSORB** rain that might otherwise contribute to flooding.
- **REMOVE POLLUTANTS** naturally.
- **BEAUTIFY** the landscape.

**1**  
Runoff flows over land and collects in rain garden

**2**

Together plants and soil collect water and filter out pollutants

**3**

Filtered water exits rain garden

### Why stormwater matters

Clean and controlled stormwater reduces flooding and protects rivers, lakes, and streams from pollution. To report stormwater pollution, please call 540-658-8833.

### Did you know?

Even if you don't live by the river, your stormwater eventually ends up in the river. No matter where we live, our everyday choices affect the Rappahannock.

### What can YOU do?

- **Clean** up after your pets
- **Never dump** anything down the storm drain
- **Dispose** of all trash properly
- **Sweep** up grass clippings and leaves



# Soak up the Rain

## Stormwater Pond

When it rains, precipitation drains down our gutters, across our parking lots, through lawns, and down streets picking up pollutants as it goes before flowing into storm drains and streams. Pollutants include everything from car oil to lawn fertilizer to bacteria from pet waste, not to mention trash. The polluted runoff flows into the storm drain or stream without ever being cleaned at a treatment plant before it empties into the Rappahannock and then heads to the Chesapeake Bay.

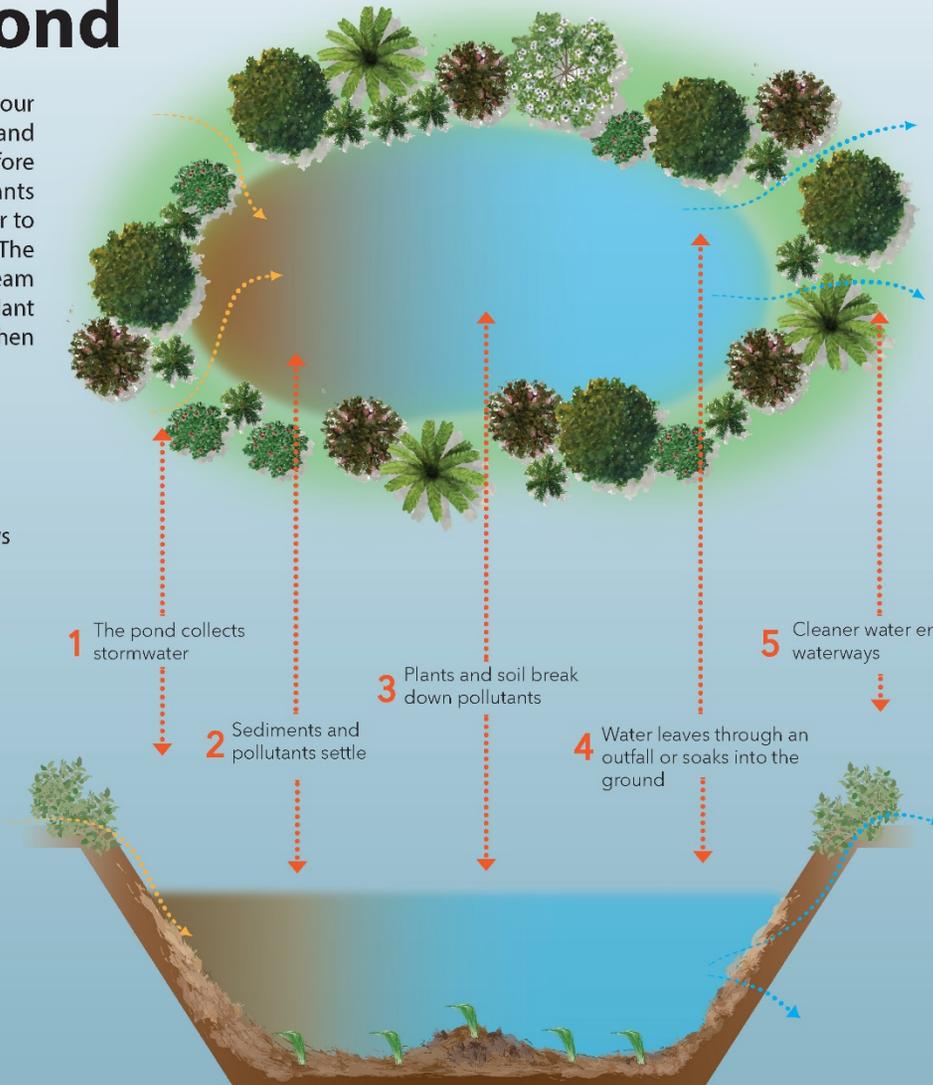
### What is a stormwater pond?

Stormwater ponds capture runoff before it flows to ditches, storm drains and waterways. These facilities have several benefits:

- **COLLECT AND ABSORB** rain that might otherwise contribute to flooding.
- **REMOVE POLLUTANTS** naturally.

### What can YOU do?

- **Clean** up after your pets
- **Never dump** anything down the storm drain
- **Dispose** of all trash properly
- **Sweep** up grass clippings and leaves



Stormwater management is important to reduce flooding and protect our waterways from pollution. To report stormwater pollution, please call 540-658-8833.

### Stormwater Pond Benefits

- Reduces flooding
- Removes pollution
- Recharges groundwater
- Controls runoff volume
- Protects wildlife habitat



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