DUMFRIES, VIRGINIA
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29 September 2015

Bryant Thomas
Water Permits & Planning Manager
Virginia Department of Environmental Quality
Northern Regional Office
13901 Crown Court
Woodbridge, Virginia 22193

RE: Town of Dumfries, VAR040117
2014-15 MS4 General Permit Annual Report
VSMP MS4 Program Plan Update (draft)

Mr. Thomas:

The Town of Dumfries is pleased to submit our VSMP MS4 Annual Report along with a Draft Program Plan that is intended to more effectively implement the General Permit's Minimum Control Measures (MCMs) and other requirements. The Town has worked over the past year to improve our MS4 Program. Action Plans to address all applicable TMDL's are in active development. The Berkley Group and Draper Aden Associates are under contract to complete this plan in accordance with the state's requirements as quickly and thoroughly as possible. We thank you and your staff for continuing to work with us to achieve full program compliance.

The Town anticipates an extremely productive 2015-16 permit year with numerous program improvements and accomplishments well beyond the MCMs we have set in the first two years of this permit cycle. The Program Plan outlines these intended improvements in detail and we stand ready to implement them upon the Plan's approval. The required public review and input is anticipated to occur in the next 30-45 days with formal adoption by Town Council thereafter. Your cursory review of the attached draft would be much appreciated as it will continue to ensure our success as we move forward with our MS4 Program.

Please contact either myself or Richard West with any questions you might have regarding either document.

Sincerely,

Daniel Taber
Town Manager

Copies to: Richard Paul West, Director of Public Works
Darren Coffey, The Berkley Group

Town of Dumfries, Virginia

MS4 Annual Report

Reporting Period: July 1, 2014 – June 30, 2015

In compliance with the Virginia Stormwater Management Program (VSMP) General Permit for Stormwater Discharges from Small Municipal Separate Storm Sewer Systems (MS4)

Town of Dumfries

MS4 Annual Report

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Background Information

Introduction: The Town of Dumfries comprises approximately 1.6 square miles of urban mixed use land development located approximately 25 miles south of Washington, D.C. The sole watershed area, Quantico Creek, discharges into the Potomac River. This report addresses items of the Town of Dumfries MS4 Program pertinent to the Virginia General Permit for Discharges from Small Municipal Storm Sewer Systems as defined by 9VAC25-890-40.
Name: Town of Dumfries Municipal Separate Storm Sewer System
Permit Number: VAR040117
Reporting Period: July 1, 2014-June 30, 2015
Modifications of Department Roles and Responsibilities: MS4 Coordinator oversees MS4 Program under the guidance of Public Works Director.
New Outfalls and Associated Acreage: None

Certification Statement

MS4 Owner: Town of Dumfries

Permit Number: VAR040117

Certification:

> "I certify under penalty of law that this document and all attachments were prepared under my direction or supervision in accordance with a system designed to assure that qualified personnel properly gather and evaluate the information submitted. Based on my inquiry of the person or persons who manage the system or those persons directly responsible for gathering the information, the information submitted is to the best of my knowledge and belief true, accurate and complete. I am aware that there are significant penalties for submitting false information including the possibility of fine and imprisonment for knowing violations."

Print Name: Richard Paul West

Title: Director of Public Works

Signature: _____ Date: 29 Sep 2015

Print Name: Dan Taber

Title: Town Manager

Signature: _____ Date: 29 Sept 2015

Status of Compliance

Minimum Control Measure #1: Education & Outreach on Stormwater Impacts

BMP 1.1 Develop and Implement Stormwater Public Education and Outreach Program A written comprehensive Public Education and Outreach Program was developed in September 2015 to more effectively target audiences such as children, minorities, and Limited English Proficiency (LEP) individuals and families. The program enumerates past activities, will maintain planned ongoing activities, and sets forth future activities for permit years 3-5.

BMP 1.2: List of Education and Outreach Activities Conducted During Reporting Period:
• The Town distributed approximately 100 handouts and kits from it's booth at its Fall Festival (September 13, 2014) on water pollution, littering, and pet waste.
  ○ "Taking Care of Stormwater"
  ○ "Town of Dumfries, Virginia, "How to Dispose of Leaves the Bay-Friendly Way"
  ○ Dog waste "kits" consisting of pet waste baggies and a container for them. (Appendix A)
• The Town participated in the NVRC's "Only Rain" campaign and the results of that campaign's effectiveness have been published. (Appendix A)
• "No Dumping, Drains to Creek" stickers were placed at drain outlets throughout the Town during the reporting cycle.

BMP 1.3: List of Education and Outreach Activities To Be Conducted During Next Reporting Period: • A Public Education and Outreach Program was developed in September 2015 to meet the requirements. Planned activities for 2015-16 include: educational materials targeting automobile repair shops, commercial automobile washes, restaurants (proper fats, oil, and grease disposal), and pet waste. • The Town will continue to utilize volunteers and distribute educational materials online and at Town events such as the Fall Festival. • A NVRC "Only Rain" survey was administered in September 2015.

Minimum Control Measure 1 Evaluation
Appropriateness of the identified BMPs The Public Education and Outreach (PEO) Program comprehensively addresses all of the General Permit requirements and targets four primary areas: automobile repair shops, commercial automobile washes, restaurants, and pet waste.
Effectiveness of BMPs in addressing discharges into impaired waterways The Town's PEO program was developed to achieve the best results in a relatively short period of time. The number of facilities targeted are significant, but limited, which enables contact and activities to be accurately tracked and monitored. The public outreach events conducted in 2014 will continue at a much higher level of intensity to strengthen the effectiveness of the BMPs.
Progress towards achieving the identified measurable goals The PEO program will enable the Town to track its progress toward achieving its goals.
Modifications to any operators, departments, roles and responsibilities The Town contracted with The Berkley Group in October 2014 to assist with the development and implementation of the Town's MS4 program. An updated Program Plan is drafted along with a Public Education and Outreach Plan. These plans are being implemented in the 2015-16 permit year.

Steps to be taken to address deficiencies
The Town's reliance on partnering with the NVRC will be significantly reduced due to the PEO Program which will more effectively implement MCM 1 as set forth in the Program Plan.

Plans for the next reporting cycle
The public outreach activity for the next reporting cycle will be significantly improved over past reporting cycles with recurring events such as the Fall Festival along with continuing to partner with NVRC. The Town will program activities conducted by Town officials with a focus to educate local businesses and residents about stormwater. These activities are set forth more specifically in the Public Education and Outreach program developed in September 2015.

Minimum Control Measure #2: Public Involvement/Participation

BMP 2.1: Maintaining Updated MS4 Program Plan and Annual Reports
The Town of Dumfries' MS4 Program Plan has been updated and is now ready for public comment and review. The Annual Reports are posted and maintained on the Town's website at: http://www.dumfriesva.gov/government/document-center.

BMP 2.2: Public Participation Events
The Town of Dumfries participated in two Public Participation events. They are listed below:

Quantico Creek Cleanup (part of the Potomac River Watershed Cleanup Day)	April 11, 2015
Fall Festival	September 13, 2014

- The Quantico Creek Cleanup consisted of 25 volunteers and resulted in 60 bags of trash (34 recyclable) and approximately 250 pounds of bulk trash pickup.

Minimum Control Measure 2 Evaluation

Appropriateness of the identified BMPs
In September 2015 the Town completed an update of its MS4 Program Plan. This updated plan more closely aligns with the requirements of the General Permit and will enable the Town to make significant improvements in the effectiveness of its MS4 program, including increased public participation primarily through written media and personal contact with business owners and residents.

Effectiveness of BMPs in addressing discharges into impaired waterways
To date the identified BMPs have had limited effectiveness due to the general nature of the educational outreach. Moving forward more targeted participation will be sought through direct contact with businesses and local residents (primarily via Homeowners Associations).

Progress towards achieving the identified measurable goals
The creation of a Public Education and Outreach Plan (PEOP) will greatly enhance the Town's overall Program Plan and educational and outreach efforts.

Modifications to any operators, departments, roles and responsibilities
The Berkley Group will continue to work with Town departments and staff in the implementation of the Dumfries MS4 Program.

Steps to be taken to address deficiencies
The creation of the PEO Plan will address the major program deficiencies experienced to date.

Plans for the next reporting cycle
The Town will continue its Quantico Creek Cleanup Day in association with the Potomac River Watershed Cleanup Day, but it will also intensify its activities in accordance with the PEOP. Public involvement and participation will most significantly increase through one-on-one contact with businesses and residents.

Minimum Control Measure #3: Illicit Discharge Detection & Elimination

BMP 3.1: Storm Drain System, Outfalls, and Information Map The Town maintains a storm sewer map that identifies pipes, inlets, and outfalls. All outfalls are uniquely identified on the map in accordance with a Corps of Engineers Report. The storm sewer map is updated when necessary. The Town maintained its log of all known stormwater BMPs installed in the town after January 2003. No new or additional BMPs were entered into the tracking system during the reporting period.
BMP 3.2: Maintenance of BMP Tracking System The Town received a grant from DEQ in 2015 to update and verify all know BMPs from the period of July 1, 1999 thru June 30, 2015. The Town has the most complete BMP Tracking System to date and will continue to maintain the database in accordance with the Program Plan.
BMP 3.3: Bacteria Sampling and Testing Bacteria sampling and testing continued through the reporting year by Jim White, a citizen volunteer monitor with the Prince William Soil and Water Conservation District. (Appendix B)
BMP 3.4: Notification of Regulated Downstream MS4 The Town sends and receives notifications of other MS4s – both up and downstream – through its Public Works and Zoning Program Administrator under the direction of the Public Works Director. An upstream notification was received by VDOT and is in the Town files. The Town will pursue a notification from Prince William County Schools as well. The Town will notify downstream MS4s (Prince William County, VDOT).
BMP 3.5: Illicit Discharges & Connections Ordinance The Town will adopt an IDDE Ordinance in the 2015-2016 reporting cycle. An ordinance has been drafted in the 2014-2015 permit cycle.
BMP 3.6: Written Procedures to Detect & Eliminate Illicit Discharges The Town developed an IDDE Procedure during the 2014-15 reporting cycle and is attached (Appendix C).
BMP 3.7: Promotion and Facilitation of Public Reporting of Illicit Discharges The Town will continue promoting the IDDE program in the 2015-16 reporting cycle.

Minimum Control Measure 3 Evaluation
Appropriateness of the identified BMPs The Town made great strides in the implementation of MCM 3 in the 2014-15 permit cycle. Significant progress will continue.
Effectiveness of BMPs in addressing discharges into impaired waterways An IDDE program was developed and one IDDE was reported and resolved.
Progress towards achieving the identified measurable goals More systems are in place to track the requirements of MCM 3. The BMP Historical Data grant greatly improved the Town's BMP database.
Modifications to any operators, departments, roles and responsibilities The Public Works and Zoning Administrator position assists with the implementation and notifications required herein.
Steps to be taken to address deficiencies The Town's IDDE ordinance will significantly strengthen this component of its MS4 Program.
Plans for the next reporting cycle The Town will promote the IDDE program in the next reporting cycle.

Minimum Control Measure #4: Construction Site Stormwater Runoff Control

BMP 4.1: Ordinance and other legal authorities to require Erosion & Sediment Controls The Town maintains an Erosion and Sediment Control Program consistent with Virginia Regulations. The Director of Public Works is a Certified Combined Administrator. The Town has adopted an Erosion & Sediment Control Ordinance Chapter 26, Article 4. Available online at: https://www.municode.com/library/va/dumfries/codes/code_of_ordinances?nodeId=PTIICOOR_CH26EN_ARTIVERSECO
BMP 4.2: Inspections and Tracking of Land Disturbance Activities As of July 1st, 2015, the Town was responsible for conducting all inspections of land-disturbing activities. The Town enters Land Disturbing Permits into a Permit Tracker database when issued.
BMP 4.3: Require VSMP Permit for Land Disturbing Activities The Town requires all land disturbing activities encompassing areas of over 2,500 square feet to secure a VSMP storm water permit, through the Town's MS4 Permit Program, for the activity.
BMP 4.4: Promote to the Public a Mechanism for Receipt of Complaints Regarding Regulated Land Disturbing Activities The Town will create a method to receive complaints via its website as well as encourage and document phone calls. Currently citizens would call Town Hall and be directed to the Public Works Department. No calls reporting land disturbing violations were received during this reporting period.

Regulated Land-Disturbing Activities
Project Name: Canon Ridge Subdivision Lot 1 *Total Acres Disturbed:* 0.49 acres
Project Name: Canon Ridge Subdivision Lot 2 *Total Acres Disturbed:* 0.49 acres
Project Name: Danforth Homes The Point *Total Acres Disturbed:* 1.49

Minimum Control Measure 4 Evaluation
Appropriateness of the identified BMPs The identified BMPs are appropriate and effective, but land disturbing activities in the Town were very limited during this reporting period.
Effectiveness of BMPs in addressing discharges into impaired waterways The Town conducted all inspections of land-disturbing activities.
Progress towards achieving the identified measurable goals The Town will track and document the permits and inspections in its existing system.
Modifications to any operators, departments, roles and responsibilities The Public Works and Zoning Program Administrator position can assist in tracking this information for reporting in each permit cycle.
Steps to be taken to address deficiencies The information required in the Annual Reports needs to be kept in a separate file system so that it is easily extracted and accessible. The information should be available to the public on the Town's website as well.
Plans for the next reporting cycle The Town will promote the use of its website to receive complaints and encourage phone calls.

Minimum Control Measure #5: Post-Construction Stormwater Management in New Development & Redevelopment

BMP 5.1: Ordinance and other legal authorities to address Post-Construction Runoff The Town's Code of Ordinances Environment chapter addresses erosion and sediment control and stormwater runoff. These legal authorities are directly supported by the Code of Virginia. Other local tools also help enforce these regulations in terms of the site plan review process and enforcement of the standards set forth in Prince William County's Design and Construction Standards Manual (DCSM), which has been adopted by the Town.
BMP 5.2: Require long-term operation and maintenance of stormwater management facilities not owned by the Town The Town provides developers with a template maintenance agreement in the Design and Construction Standards Manual (Section 720.15). The maintenance agreement requires that the owner submit to the Town an annual inspection report, along with one certified by a professional engineer every 3 years, to assure safe and proper functioning of the facilities.
BMP 5.3: Require long-term operation and maintenance of stormwater management facilities owned by the Town The Town will establish a program for inspection and maintenance of stormwater management facilities owned by the Town in the form of a "Stormwater Post Construction Inspection Manual". The manual will list all of the stormwater management facilities the Town is responsible for, by department, and include the following: type of stormwater management facility, the Town ID #, a periodic inspection checklist, and the annual inspection check list.
BMP 5.4: Track stormwater management facilities No Enforcement actions were needed or taken during this reporting cycle. No new facilities were brought online during this reporting period. See Appendix D for a complete list of publicly held facilities.

Minimum Control Measure 5 Evaluation
Appropriateness of the identified BMPs The identified programmatic BMPs are an effective means of managing post-construction runoff.
Effectiveness of BMPs in addressing discharges into impaired waterways The Town performs routine maintenance and regular inspections of publicly maintained stormwater ponds.
Progress towards achieving the identified measurable goals The Historical BMP grant completed in September 2015 will better enable the Town to track and maintain the existing facilities as well as new facilities as they come online.
Modifications to any operators, departments, roles and responsibilities The Public Works Department will create a more effective tracking system for permits, facilities, and maintenance agreements so that MCM 5 can be more effectively implemented on an ongoing basis.
Steps to be taken to address deficiencies The optional periodic inspection checklist is a tool departments are encouraged to utilize as stormwater management facilities are maintained. If deficiencies are found during maintenance, they are reported to the responsible party within the department, and repairs scheduled.
Plans for the next reporting cycle The next reporting cycle will include a schedule to inspect all privately owned stormwater management facilities at least once every 5 years, along with an improved tracking database for the permits, facilities, inspections, and agreements.

Minimum Control Measure #6: Pollution Prevention & Good Housekeeping

BMP 6.1: Develop Written Procedures to Minimize or Prevent Discharges The Town of Dumfries shall develop and implement written procedures for daily operations designed to minimize or prevent discharges. Procedures shall be written for: daily street and parking lot maintenance, equipment maintenance, and pesticide, herbicide, and fertilizer application, storage and transport of materials.
BMP 6.2: Identify All Municipal High-Priority Facilities and Municipal High-Priority Facilities With a High Potential For Pollutant Discharges The Town evaluated all of its municipal facilities and the Public Works shop is the only identified high priority facility.
BMP 6.3: Develop and Implement Specific Stormwater Pollution Prevention Plans (SWPPPs) for High Priority Facilities With a High Potential for Discharging Pollutants The Town evaluated its high priority facilities during this reporting cycle and will develop a SWPPP for the Public Works shop in 2015.
BMP 6.4: Implement Turf and Landscape Nutrient Management Plans The Town has two properties that qualify for Nutrient Management Plans: Weems-Botts and Ginn Memorial Park. Currently the Town has a policy that no nutrients, herbicides or pesticides be administered by Town staff. The Town did not administer nutrients, herbicides, or pesticides to either site during the reporting period.
BMP 6.5: Implement Employee Training On Written Procedures to Minimize or Prevent Discharges Town staff received Illicit Discharge Training on April 3, 2015 with five members in attendance. The training was conducted by Chris Mueller, The Berkley Group's Stormwater Management Specialist. Town staff receives regular training sessions on Fridays and stormwater is a planned, recurring topic for subsequent years. Town staff is scheduled to attend a pipeline safety training in October 2015.
BMP 6.6: Require Municipal Contractors Use Appropriate Control Measures and Procedures for Stormwater Discharges to the MS4 System The Town will develop contract language in the Town's Terms & Conditions to ensure compliance. The document will be accessible on the Town webpage for download.
BMP 6.7: Street Sweeping Town staff sweeps 21.67 lane-miles of street, at least monthly, depending on the weather.
BMP 6.8: Litter Pickup The maintenance crew provides litter pickup throughout the town on a weekly basis, weather permitting. A part-time position was added in the 2014-15 permit year and picks up litter several days each week. The Town has received numerous positive comments about the employee's effectiveness from citizens, elected officials, and other staff members.
BMP 6.9: Snow and Ice Removal The maintenance crew was instructed in proper snow removal and ice control application to provide environmentally conscientious winter road maintenance.

Minimum Control Measure 6 Evaluation
Appropriateness of the identified BMPs Six new programmatic BMPs have been added to this MCM for subsequent permit years. These 9 measures will greatly enhance the Town's good housekeeping efforts.
Effectiveness of BMPs in addressing discharges into impaired waterways The Town's street sweeping efforts alone should make a significant impact toward the Town's 5 percent reduction goal in this permit cycle. The TMDL Action Plan which is underway will quantify that program's effectiveness.
Progress towards achieving the identified measurable goals The additional litter pick-up position has significantly increased this MCM's visibility and program effectiveness.
Modifications to any operators, departments, roles and responsibilities The new Public Works part-time position is a significant positive modification. Additionally, the Public Works and Zoning Program Administrator is an important addition to the program's administrative support.
Steps to be taken to address deficiencies This MCM's deficiencies have been addressed with the addition of six new measures to compliment the initial three measure implemented by the Town over the first two permit years.
Plans for the next reporting cycle The next reporting cycle will reflect the implementation of the six new measures. This will more comprehensively address the intent of the Pollution Prevention MCM.

Information Collected and Analyzed

Bacteria sampling was performed. (Appendix B)

BMP Modifications

No modifications were made as permit extension was granted. Modifications will be made in accordance with new program plans to meet updated permit requirements.

Notice of External Assistance

The Town is a member of the Northern Virginia Clean Water Partners Regional Stormwater Education Campaign to produce radio ads and other public education & outreach efforts.

Proposed Programs

The Town has no proposed programs which would require approval status pursuant to Section II C of the General Permit.

Section I B 9 Requirements

The Town of Dumfries must comply with the WLA's assigned by the Chesapeake Bay TMDL as well as the Potomac River Bacteria TMDL. No TMDL has been assigned to Quantico Creek.

Illicit Discharges Reported

There were no illicit discharges reported during this period.

Permanent Stormwater Management Facilities

See Appendix D

Agreements

There were no new or terminated signed agreements between the Town and any applicable third parties.

Written Comments

There were no public comments regarding either the MS4 Program Plan or any modifications during the reporting period.

APPENDIX A: Education and Outreach Materials

MS4 General Permit Annual Report

Resources

Stormwater Information

Ferguson, Bruce. *Introduction to Stormwater: Concept, Purpose, Design.* 1998.

Woolworth, James W. *Out of the Gutter — Reducing Polluted Runoff in the District of Columbia.* Natural Resources Defense Council, July 2002.

After the Storm — A Citizen's Guide to Understanding Stormwater. US EPA 2003. www.epa.gov/npdes/pubs/after_the_storm.pdf

Stormwater Managers' Resource Center. www.stormwatercenter.net

Low Impact Development Center. www.lowimpactdevelopment.org/EPA03.htm

Center for Watershed Protection. www.cwp.org

Rain Gardens and Rain Barrels

Rain barrels may be purchased at local nursery, hardware, garden centers or from local community groups. If not available in your local area, search the internet for sources to purchase a rain barrel. The Alliance for the Chesapeake Bay and other conservation organizations often coordinate rain barrel workshops. Check our Web site or contact one of our offices for more information.

Clean Virginia Waterways (How to Build A Rain Barrel). http://www.longwood.edu/CLEANVA/rainbarrels.htm

Rain Gardens (A how-to manual for homeowners). http://learningstore.uwex.edu/pdf/GWQ037.pdf

Roof Gardens/ Greenroofs

Building Green: A Guide to Using Plants on Roofs, Walls and Pavements. The London Ecology. 1993.

Urban Agriculture Notes. www.cityfarmer.org/sub-rooftops.html

http://www.greenroofs.com/Greenroofs101/index.html

Conservation Landscaping

Alliance for the Chesapeake Bay. www.AllianceChesBay.org

National Wildlife Federation. www.nwf.org

This publication was developed by the Alliance for the Chesapeake Bay, a regional non-profit organization that builds and fosters partnerships to restore and protect the Bay and its rivers.

This publication is funded by the Chesapeake Bay Restoration Fund, http://dls.state.va.us/cbrfac.htm

and

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www.acb-online.org

THE VOICE OF THE BAY

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Melinda Russell Design. 2009

ALLIANCE for the CHESAPEAKE BAY

THE VOICE OF THE BAY

Taking Care of Stormwater

A BayScapes Guide for Homeowners

This guide is designed to help you understand and implement practices in your own backyard and community to reduce the impact of stormwater runoff within your watershed.

BayScapes promote environmentally-sound landscaping practices at homes, businesses and public spaces that conserve water, prevent pollution and create wildlife habitat for the benefit and restoration of our local waterways and the Chesapeake Bay.

BayScapes

What is stormwater runoff?

Stormwater runoff is water from rain, melted snow or irrigation that does not soak into the ground but flows directly into local waterways without being treated.

Impervious surfaces are non-porous areas such as parking areas, streets and rooftops that prevent or retard water from entering the soil. Compacted soils beneath lawns, sports fields and pastures also create unexpected impervious areas.

Why is stormwater a problem?

Highly developed urban and suburban areas have a large percent of impervious surfaces such as rooftops, driveways, sidewalks and parking lots. Many streams in these communities have water quality issues that can reduce their recreational value and harm wildlife and insects that depend on them to survive.

Traditional drainage systems concentrate and quickly remove runoff with gutters, curbs, storm sewers, pipes, and paved channels. These systems create a large flow of fast-moving and sometimes highly polluted water discharging into local rivers — causing erosion, flooding and unstable stream channels. Pollutants can include litter, pet waste, vehicle fluids and lawn fertilizers and pesticides.

What can you do?

You can adopt and implement conservation landscaping in your backyard and community.

BayScapes is a program developed by the Alliance for the Chesapeake Bay and the U.S. Fish and Wildlife Service to teach landscaping and conservation practices that will help protect the Chesapeake Bay watershed.

BayScaping reduces air and water pollution by limiting the need for mowing and reduces pesticide, herbicide and fertilizer use. BayScaping also provides food and shelter for wildlife — butterflies, songbirds and small mammals, to name a few — by replacing some of the millions of acres of habitat lost to development and changing land uses.

This brochure is intended as an introduction to simple stormwater management practices which you can implement in your own backyard to help reduce the impact of stormwater runoff. Solutions to neighborhood and community runoff issues may require the support and expertise of local planning officials. By learning more about these alternative design methods, you can help promote these practices in your own community.

Alternatives to Impervious surfaces

The following options are some of the most common alternatives to impervious surfaces on personal property and in the community.

Natural resource preservation and conservation landscaping

Preserving the natural landscape can improve the marketability of a community and homes within it. Existing wooded areas, mature trees and natural terrain provide an attractive appearance along with recreational amenities. Landscaping with plants native to the Bay region's climate and soil conditions (conservation landscaping), requires less water, fertilizer, pesticides and maintenance than non-native plant varieties in ornamental gardens.

Plant more trees

According to the American Forestry Association, a single urban tree provides a benefit of $273 per year. Trees provide many benefits: energy savings by reducing heating and cooling costs; sheltering and feeding wildlife; cleansing the air by absorption of carbon dioxide and nutrients; and reduction of the impacts of stormwater runoff by intercepting rainfall and slowing runoff. The roots of a tree also help to hold the soil in place, thus reducing erosion.

Grass swales are an alternative to the curb and gutter system. Grasses or other low-growing vegetation are planted to reduce runoff velocity and allow filtration, while high-volume flows are safely channeled into a storm sewer or retention basin. Native plant species such as white ash, red cedar, chokeberry, sunflowers and switch grass, which tolerate salt spray and snow compaction in the winter months, can be planted along roadside swales and add beauty and wildlife habitat.

Decks, patios and pathways

These areas can be constructed with pervious materials that allow water to be absorbed into the ground. Wood, stone, cobble, loosely laid brick and paving blocks are some of the materials that can be used in the landscape.

Rain Gardens

What is a rain garden?

A rain garden is a unique garden strategically located to intercept stormwater and allow it to soak into the soil, where it is filtered and cleaned by plants, soil and bacteria.

A rain garden allows about 30% more water to soak into the ground compared to a conventional lawn. These gardens are designed to treat and filter stormwater runoff in four to six hours after a rainfall event; therefore, they will not become a breeding area for mosquitoes.

Benefits:

- Increasing the amount of water filtering into the ground and recharging the groundwater supply, while reducing the amount of pollutants such as sediment and nutrients from entering local waterways.
- Providing valuable wildlife habitat and educational opportunities to observe birds and butterflies visiting the garden.
- Reducing stream-bank erosion by decreasing the volume and power of a storm's runoff.
- Adding beauty with an attractive, low-maintenance landscape feature

How does a rain garden work?

A rain garden has four zones: the ponding area, middle zone, outer zone and berm area:

- The *ponding area* is the wet area where the runoff enters the rain garden from the outer zone. The plants that grow in this area must tolerate standing water *and* fluctuating water levels.
- The *middle zone* is slightly drier and the plants must tolerate fluctuating water levels.
- The *outer zone* includes the berm and is the driest of the three zones. The plant material selected for the outer zone must be able to tolerate normal moisture conditions most of the time.
- The *berm area* is a low "wall" that surrounds the garden on three sides. Its function is to hold the water in during a storm event.

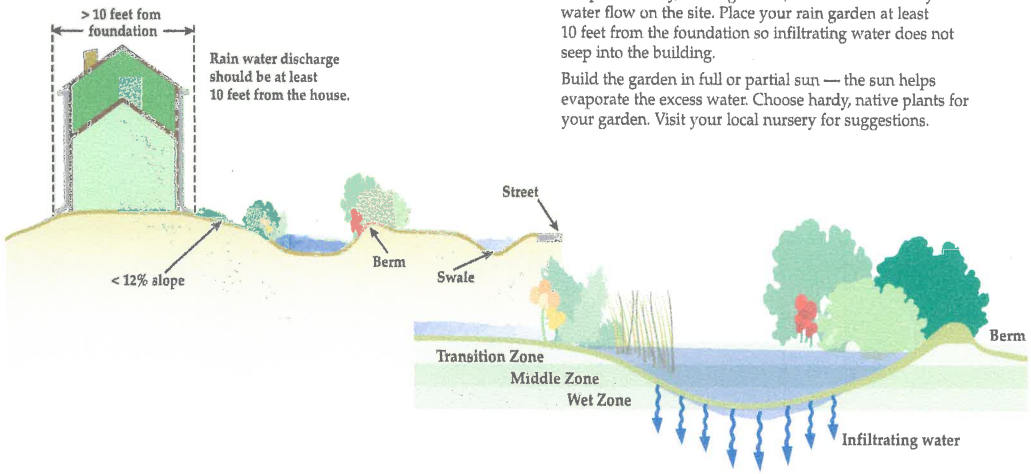
Within the garden, a mulch/organic layer plays an important role in removing harmful chemicals. Shredded hardwood mulch is recommended because it allows for a greater surface area for absorption and resists flotation and washout. The planting medium (available premixed at some nurseries and landscaping companies) should be a good mixture of 20% leaf mulch, 50% sandy soil and 30% topsoil so water can easily soak into the ground.

These gardens have similar maintenance requirements as other landscaped areas around your home. However, if sediment builds up in the garden, it must be removed because it will reduce the rain garden's filtering ability. Do not use this area for composting organic yard waste.

Design and plant material

Each garden design depends upon the topography, soil permeability, drainage basin, volume and velocity of water flow on the site. Place your rain garden at least 10 feet from the foundation so infiltrating water does not seep into the building.

Build the garden in full or partial sun — the sun helps evaporate the excess water. Choose hardy, native plants for your garden. Visit your local nursery for suggestions.



Rain Barrels

Stormwater can be collected from rooftops by diverting downspouts into rain barrels. Rain barrels help slow the flow of runoff from impervious surfaces and store water for future landscape uses. Multiple rain barrels can be linked together to increase storage capacity.

Why have a rain barrel?

Lawn and garden watering make up nearly 40 percent of a typical household's water use during the summer growing season. A rain barrel could save most homeowners about 1,300 gallons of water during the summer months, lowering water bills significantly. The water collected and stored in the rain barrel can also be used for washing cars and cleaning windows, but not for drinking.

Where can I get a rain barrel?

You can purchase or order a rain barrel at most local lawn and garden centers. You can also make your own using a large trash can or food grade container (i.e. 55-gallon drum). Do not use containers that have previously stored chemicals, motor oils or other toxic products. See the *Resource Section* for online sources to purchase a rain barrel or learn how to make one.

How do I install a rain barrel?

Most are easy to install; however, installation methods vary depending upon the brand. Installation of a typical rain barrel will involve disconnecting and cutting off a portion of the downspout and redirecting it into the top or side of the barrel. The rain barrel should be placed on concrete blocks, bricks, etc. for ease of attaching a hose to the spigot. A tight-fitting, small-mesh screen should be placed on top of the rain barrel to prevent mosquito breeding. Always be sure to empty your barrel before winter freezes and turn it upside down to prevent water collecting in it.

What is a cistern?

A cistern is a large rain barrel that has a greater holding capacity and can be installed either above or below ground, depending on the model. A little more up-front engineering and physical space may be needed when installing a cistern. Water from an outdoor cistern may be used to water your lawn and garden. Indoors, this stored water can be used for flushing toilets, washing clothes, and for drinking if filtered adequately. A cistern is considerably more expensive than a rain barrel, but it can provide for more of your water needs and may pay for itself in the long run.

Roof Gardens

Roof areas may represent up to 50% of the impervious surface in an urban or suburban community, but planting vegetation on a specially designed rooftop can capture rooftop runoff. The vegetative layer retains water both in the soil and the vegetation. This water is later released through evapotranspiration. Plants can be installed in containers to make up a simple roof garden. Greenroofs, on the other hand, involve planting vegetation directly on a specially constructed roof surface and require engineering expertise.

Benefits

There are many benefits of roof gardens and greenroofs. In fact, a recent study estimated that the greening of all of Chicago's rooftops would produce $100 million in saved energy annually. One inch of rain on a 1,000 square foot roof generates about 623 gallons of water.

Other benefits include:

- Reduced stormwater runoff (up to 50%),
- Improved air and water quality,
- Reduced energy consumption (by insulating buildings),
- Increased habitat for birds and beneficial insects,
- Sources of urban food production,
- Enhanced building value and extended roof life,
- Reduced heat island effects and sound barrier.

Design and Plant Material

The slope of your roof will determine what kind of roof garden you can have. Consult a licensed engineer regarding the load carrying capacity of the roof to ensure that the structure will support your garden design. A low-cost way to start a roof-top garden on a flat roof is to use containers, such as plastic swimming pools.

Plant material for a roof garden should tolerate dry, hot and sunny growing conditions. Certain native wildflowers, grasses and shrubs will also survive in a raised bed containing at least eight inches of soil (i.e. plastic swimming pool). Vegetables for human consumption can be grown if a heavy layer of organic mulch is applied.

Before planting, consider the following:

- Can the roof support a garden? Consult an engineer to determine if your roof can support the weight.
- Will the roof garden consist of a variety of containers or a greenroof that is professionally designed and installed?
- If planning a roof garden consisting of containers, what type of plants will be planted?
- If the plants last more than one season, is there a way to protect them from freezing temperatures and drying winter winds?
- Who will maintain the garden?

Town of Dumfries, Virginia

How to Dispose of Leaves the Bay-Friendly Way

When autumn arrives, hikers and bikers go the extra mile to find fall foliage. But it can be hard for homeowners to love fall leaves when they drop off of tree limbs and onto green lawns. And in a number of communities, the once-accepted methods of getting rid of leaves—chucking them into the trash can or lighting large piles on fire—are no longer allowed, due to limits on landfill space and concerns over human health.

So what is a watershed resident to do with autumn's fallen leaves? Here are four tips to help you get rid of your leaves while reducing your impact on the Chesapeake Bay.

Mulch them

Leave the rake in the shed and the leaf-blower at the hardware store—mulching allows you to get rid of leaves without having to wrestle them into precarious piles first! Just run over fallen leaves with a lawn mower, mulching blade attached. The blade will cut the leaves into small pieces, which will settle undetected beneath the green canopy of your lawn. A long-term study of leaf-mulching confirmed the practice even benefits your backyard, as the leaves feed the underground microbes that benefit soil health.

Compost them

Fallen leaves are critical to composting. Leaves, twigs and other carbon-rich "brown" plant material can be added to existing compost piles to bring balance to nitrogen-rich lawn clippings, fruit and vegetable waste and other "green" plant material. Or, large piles of leaves can be composted on their own. If kept moist and periodically turned, the leaves will decompose and create a dark, crumbly compost that can enrich the soil in your garden.

Paper bag them

If putting fallen leaves to use in your lawn or garden just isn't an option, then consider curbside collection. A number of local governments collect leaves each fall, whether they are raked in piles to the curb or placed in paper bags. Even garbage-collection services often offer yard waste pick-up, transporting leaves to municipal composting facilities to keep them out of landfills.

Don't burn them

A lit match is a tempting solution to the leaf pile problem, but burning leaves can pollute the air and harm our health. According to the U.S. Environmental Protection Agency, the open burning of leaves puts particulate matter and hydrocarbons into the air. The former can increase your chances of respiratory infection, while the latter contains toxic and cancer-causing compounds.

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Documentation of reaching desired targets for "Only Rain" Campaign.

Advertising during period of July 1, 2014 through June 30, 2015

August 3, 2015

COMCAST SPOTLIGHT

Prepared by Raj Bhansali
Director of Research, Comcast Spotlight -Washington DC

Northern Virginia Regional Commission

This document provides support that 20% of each target audience has been reached by the advertising campaign enacted by the Northern Virginia Regional Commission.

This is the second year that the Northern Virginia Regional Commission "Clean Water Partners" have partnered with Comcast Spotlight to target localities in Virginia. In support of the "Only Rain" campaign, we have targeted localities in the following counties:

- Alexandria
- Arlington
- Fairfax County
- Fairfax City
- Falls Church
- Loudoun County
- Stafford County

In targeting these areas, the Potomac geographic super zone, Alexandria trade zone, Fairfax Zone trade zone and Fairfax County trade zone were used to reach target customers for three segments of residential customers.

- Lawn Care (fertilizers)
- Personal Auto Care (oils and lubricants)
- Pet Waste (dog waste)

In this campaign, English Language Networks, Spanish Language Networks and the digital platforms "Xfinity.com", "Cox.com" and "CSV+" were used to further reach customers within these segments across each locality. However, due to limitations of data, only the English Language Networks and Xfinity.com are included for analysis.

Please note that Dumfries receives coverage from the Potomac super zone, but is not included in the analysis due to a limitation of data.

We will be reference the 2014 analysis provided to the Northern Virginia Regional Commission as "the 2014 study." Additionally, the 2014 points of analysis have been included in the appendix.

Trade Zone Definitions:

The Fairfax County trade zone represents Cox Cable households in the county of Fairfax and independent cities of Fairfax City and Falls Church. This trade zone additional represents Comcast households in the city of Reston. In 2014, this only served the Cox households in this territory.

The Fairfax Zone trade zone represents Verizon FiOS households in the county of Fairfax and independent cities of Fairfax City and Falls Church

The Potomac super zone represents all Verizon FiOS households across the Greater Washington DC Region. This differs from the Fairfax trade zone in that the networks covered are different. For this analysis, we are limiting our scope of data to the counties/ independent cities of Arlington, Fairfax County, Fairfax City, Falls Church, Loudoun and Stafford

The Alexandria trade zone represents Comcast households in the independent city of Alexandria.

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Advertising Response for Target Groups

Similar to the analysis provided in September 2014, an evaluation advertising response was provided for each of the three targeted attribute groups in support of the "Only Rain" campaign. While not specific to waste disposal, these attribute groups should represent overall behavior by advertising medium.

The survey questions are from Ad-ology (a nationwide syndicated data service) and are phrased: "Where have you seen/heard an ad in the past 12 months that led you to take action? In 2014, Ad-ology's question requested response in the "past 30 days." For the 2015 study, the question is "past year 12 months."

"Take action" is defined as: clicking on a banner ad, doing an Internet search, going to the advertiser's website, buying the product advertised, or calling/visiting the advertiser.

As the exact target attribute is not available, the most similar attribute was used.

For Dog Waste: "Dog Owners" was used
For Lawn Care: "Personal Yard Care/ Landscaping Enthusiast" was used
For Auto Care: "Personal Car Maintenance/Restoration" was used

	Dog Owners		Personal Yard Care/ Landscaping Enthusiasts		Personal Car Maintenance/ Restoration	
Media	Audience %	Rank	Audience %	Rank	Audience %	Rank
Television (over-the-air, online, mobile or tablet)	63.80%	1	61.20%	2	68.00%	1
Ads/Coupons in your mailbox	63.60%	2	66.60%	1	67.00%	2
Emailed ad or newsletter	54.10%	3	54.80%	3	60.80%	3
Sponsored search result (like on Google, Yahoo or Bing)	53.00%	4	49.90%	5	59.30%	4
Daily Deals (like Groupon or LivingSocial)	50.50%	5	46.00%	7	53.80%	5
Newspaper (print, online, mobile or tablet)	50.30%	6	53.70%	4	53.70%	6
Magazine (print, online, mobile or on tablet)	47.40%	7	46.20%	6	52.40%	8
Radio (over-the-air, online, mobile or tablet)	46.50%	8	42.40%	8	53.40%	7
Ad on a social network	46.40%	9	NA	NA	47.80%	10
Internet banner ad	45.40%	10	41.10%	9	51.80%	9

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In 2015, television advertising ranked either #1 or #2 and internet banner advertising #9 or #10 among each of the three attribute groups. In the 2014 study, television ranked #1 and internet banner advertising ranked #4 for each of the three attributes. Differences in the advertising response year over year may have been influenced on how the question is asked.

Selection of advertising properties (networks/platforms)

With television media and internet display advertising being among the advertising solutions that Comcast Spotlight offers our clients, we analyzed the three target attributes using the Scarborough Research syndicated data set for the Washington DC DMA (March 2014-February 2015 survey period). In conjunction to pricing this provides guidance on the networks to use. For Dog Waste, we used the attribute of "Own a Dog." We limited the analysis to the geographic scope identified by Clean Water Partners. This analysis is to show the selected properties helped achieve the target goal of 20% by attribute.

County Of Residence: Alexandria City, VA OR Arlington, VA OR Fairfax City, VA OR Fairfax, VA OR Falls Church City, VA OR Loudoun, VA OR Stafford, VA

TARGET	A18+ Intab
Lifestyle Characteristics: Own a Dog	547
Household Activities: Lawn Care	943
Unpaid/ Personal Labor: Anti-Freeze/Coolant OR Oil Filter/Oil Change	1,386

Scarborough Research- Washington DC DMA (Base adults 18+), March 2014-February 2015 survey period

The above survey respondents in tabulation ("in tab") are considered significant and therefore can be used for analysis.

	Lifestyle Characteristics			Leisure Activities Past 12 Months			Auto Repairs Pst.Yr:Unpd.Labor-HH		
	Own A Dog			Lawn Care			Anti-Freeze/Coolant OR Oil Filter/Oil Change		
Cable Network:	Adults 18+ Reach	Reach %	Index	Adults 18+ Reach	Reach %	Index	Adults 18+ Reach	Reach %	Index
AEN -TV	94,032	21.6%	116	128,441	18.0%	97	216,119	19.1%	102
AMC -TV	69,343	16.0%	111	110,053	15.4%	107	149,588	13.2%	92
APL -TV	50,651	11.7%	102	78,170	11.0%	96	124,220	11.0%	96
CNN -TV	122,688	28.2%	113	192,800	27.1%	108	304,503	26.9%	107
CSNM-TV	18,870	4.3%	67	61,425	8.6%	133	82,936	7.3%	113
ENT -TV	47,767	11.0%	146	31,218	4.4%	58	82,336	7.3%	97
ESPN-TV	120,902	27.8%	101	208,777	29.3%	106	342,872	30.3%	110

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	Lifestyle Characteristics			Leisure Activities Past 12 Months			Auto Repairs Pst Yr:Unpd Labor-HH		
	Own A Dog			Lawn Care			Anti-Freeze/Coolant OR Oil Filter/Oil Change		
Cable Network:	Adults 18+ Reach	Reach %	Index	Adults 18+ Reach	Reach %	Index	Adults 18+ Reach	Reach %	Index
FAM -TV	59,369	13.7%	106	59,428	8.3%	65	141,248	12.5%	96
FX -TV	84,762	19.5%	136	90,357	12.7%	88	155,558	13.7%	96
HGTV-TV	107,405	24.7%	122	166,255	23.3%	115	240,307	21.2%	105
HIST-TV	108,096	24.9%	103	198,724	27.9%	116	280,361	24.8%	103
HLN -TV	28,556	6.6%	160	32,739	4.6%	112	45,017	4.0%	97
MASN-TV	29,043	6.7%	82	85,132	12.0%	146	109,193	9.6%	118
NGC -TV	72,698	16.7%	109	127,958	18.0%	117	171,987	15.2%	99
OWN -TV	28,687	6.6%	133	33,162	4.7%	94	52,732	4.7%	94
OXYG-TV	14,464	3.3%	91	12,384	1.7%	47	40,262	3.6%	97
SPK -TV	40,008	9.2%	125	54,865	7.7%	105	91,696	8.1%	110
TOON-TV	15,060	3.5%	57	21,161	3.0%	48	72,211	6.4%	104
USA -TV	101,816	23.4%	109	147,028	20.6%	96	253,955	22.4%	105
XFINITY.COM	77,402	17.8%	107	96,225	13.5%	81	192,606	17.0%	102
COX.COM	26,118	6.0%	78	66,701	9.4%	122	84,193	7.4%	97

These 19 networks and 2 digital properties were used to reach the targeted groups. It is important while 19 English language networks were utilized since July 1, 2014; only 9 were utilized in at the time of the 2014 study. These commercials did not air on 19 networks simultaneously, and differed by trade zone and by month.

The Spanish language networks of Galavision, CNN en Español, and ESPN Deportes were utilized to target the Hispanic audiences in the target localities.

Additionally, CSV+ was utilized in conjunction with Xfinity.com and Cox.com to reach the target audiences. CSV+, a video ad network, provides another opportunity to reach all audiences regardless of Internet Service Provider. Both Spanish language networks and CSV+ were excluded from this analysis.

The networks selected for the campaign over-index or provide a large number of targeted viewers, who were reached at least one time. If a network indexes over 100 for an attribute, it suggests that the network is more likely to deliver that attribute compared to the general population. It is treated as an indicator of value and helps ensure that the campaign will deliver its goal the message to a more qualified audience.

For television networks, the question is positioned as "viewed network past 7 days." For Xfinity.com and Cox.com the question is positioned as" visited site past 30 days." The data is collected via self-reporting by respondents and is therefore treated as suggestive.

Overall Campaign Delivery

In order to understand performance, the overall number of television homes that viewed a commercial (household impressions) and the number of persons who were exposed to the digital display (person impressions) was analyzed for the period of July 1, 2014 to June 30, 2015.

The television household impressions are taken from Nielsen's sample estimates for the Washington DC DMA or television marketplace. Since the estimates are derived from a sample, Spanish language networks did not have enough coverage area to provide audience estimates from. Therefore this analysis is limited to the English language networks for each zone as well as for internet banner advertisements.

	30 second units	Delivered Impressions 7/1/2014-6/30/2015
Total Household Impressions	6818	4,808,970
9794 Fairfax Zone	275	271,022
AEN	77	34,485
ESPN	19	29,445
FAM	17	40,687
FX	79	63,943
USA	55	84,559
Rotational spots	28	17,903
1581 Fairfax County	2297	602,155
APL	298	78,486
CNN	190	91,146
ESPN	152	116,179
FAM	18	21,557
HIST	188	67,635
AEN	154	16,086
AMC	154	23,461
ENT	154	12,825
FX	154	24,501
NGC	180	42,839
OWN	154	19,848
SPK	154	19,665
USA	108	47,300
Rotational spots	239	20,627
9555 POTOMAC	2568	3,831,722
AMC	77	152,431
APL	267	487,506
CSNM	11	4,962
ENT	303	635,727
HLN	231	297,974
MASN	87	55,666
OWN	77	131,574
OXYG	243	388,877
SPK	77	84,140
TOON	230	1,124,677
ESPN D	363	NA
GALA	357	NA
Rotational spots	245	468,188
0340 Alexandria, VA	714	104,071
AEN	77	7,853
AMC	77	10,394
APL	90	8,847
ENT	77	9,518
ESPN	31	8,759
FX	77	10,449
HGTV	22	10,218
OWN	77	7,651
SPK	77	5,801
USA	55	19,096
Rotational spots	54	5,485
6030, INTERCONNECT	964	-
CNN E	442	NA
ESPN D	445	NA
GALA	77	NA

Nielsen Company –Washington DC Live+SD data extrapolated through Strata CablePost. Strata uses its NuMath methodology to derive zone based estimates

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For the English language networks, 5,134 ":30" second commercials (or combined ":15" second commercials) aired. That resulted in over 4.8 million television household impressions delivered during this campaign. These figures should also be treated as suggestive as they are derived from the Nielsen television sample for the entire Washington DC TV market for the period of July 1, 2014 through June 30, 2015. Additionally, 1,684 ":30" second commercials on Spanish language networks for a total of 6,818 commercial units.

Please note that the 3.8 million impressions delivered by the Potomac super zone include areas outside of the target localities. This includes homes in the District of Columbia, parts of Maryland, and the Virginia areas of Spotsylvania, Culpeper and Fredericksburg City.

In 2015, the digital products of Cox.com and CSV+ were added to Xfinity.com. Conversely, the 160x 600 Banner that part of the 2014 campaign was not included in 2015. Unlike television, digital impressions have return path data and therefore we can guarantee those impressions during the month.

2014	Xfinity.com			
	300 x 250 In-Banner Video		160 x 600 In-Banner Video	
	(50,000 Impressions/Month)	+/-	(30,000 Impressions/Month)	+/-
July	55,179	5,179	33,082	3,082
August	54,567	4,567	31,974	1,974
September	54,252	4,252	31,161	1,161
October	52,662	2,662	31,699	1,699
November	52,188	2,188	31,523	1,523
December	52,298	2,298	31,893	1,893
	321,146	**21,146**	**191,332**	**11,332**

2015	Xfinity.com		Cox.com		CSV +	
	300 x 250 In-Banner Video		300 x 250 In-Banner Video		In-Stream Video	
	(30,000 Impressions/Month)	+/-	(30,000 Impressions/Month)	+/-	(30,000 Impressions/Month)	+/-
March	33,374	3,374	33,098	3,098	31,212	1,212
April	33,119	3,119	31,699	1,699	30,622	622
May	33,069	3,069	30,252	252	30,360	360
June	33,099	3,099	33,063	3,063	30,452	452
	132,661	**12,661**	**128,112**	**8,112**	**122,646**	**2,646**

For each product and banner type, the digital platforms outperformed what was the guaranteed number of impressions by month. Overall, 840,000 impressions were expected to be delivered. The campaign exceeded what was forecasted by 55,897 impressions, or roughly 6.7%.

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Campaign Performance –20% reach of target group

To understand the delivery of the overall campaign we created target logic to properly identify the audience we reach, using the below zone definitions and networks within. For the campaign delivery, the base for the calculation of reach is the adult population for the combined geographies in Northern Virginia. This was based on the actual delivery of the networks in each zone. For reporting purposes, we provided this as one estimate.

Alexandria (Comcast)	Fairfax County (Cox & Comcast Cable)	Fairfax Zone (Verizon FiOS)	Potomac Superzone (Verizon FiOS)
A&E	ANIMAL PLANET	A&E	AMC
AMC	A&E	ESPN	ANIMAL PLANET
ANIMAL PLANET	AMC	ABC FAMILY	COMCAST SPORTSNET
E!	CNN	FX	CARTOON NETWORK
ESPN	E!	USA	E!
FX	ESPN		HEADLINE NEWS
HGTV	ABC FAMILY		OXYGEN
OWN	FX		OWN
SPIKE	HISTORY		SPIKE
USA	NATIONAL GEOGRAPHIC		MASN
	OWN		
	SPIKE		
	USA		

Overall, more than 20% of each of the three attribute groups was reached at least one time through the utilization of the networks selected. When we add in the digital products of Xfinity.com and Cox.com - the respective home pages of each Internet Service Provider - the overall reach increases to over 40% of each targeted attribute groups.

County Of Residence: Alexandria City, VA OR Arlington, VA OR Fairfax City, VA OR Fairfax, VA OR Falls Church City, VA OR Loudoun, VA OR Stafford, VA

	Lifestyle Characteristics		Leisure Activities Past 12 Months		Auto Repairs Pst.Yr: Unpd.Labor-HH	
	Own A Dog		Lawn Care		Anti-Freeze/Coolant OR Oil Filter/Oil Change	
	Reach	Reach %	Reach	Reach %	Reach	Reach %
Population of Target Area	*434,602*	*100.0%*	*712,358*	*100.0%*	*171,596*	*100.0%*
NVRC Campaign (Television only)	172,253	**39.6%**	251,713	**35.3%**	50,953	**29.7%**
NVRC Campaign (TV &Cox.com/Xfinity)	233,192	**53.4%**	344,117	**48.3%**	77,714	**45.3%**

Scarborough Research- Washington DC DMA (Base adults 18+), March 2014-February 2015 survey period

Northern Virginia Regional Commission

Summary

Through use Comcast Spotlight's targeted media offerings; the data strongly supports the Clean Water Partners goal of reaching at least 20% of each target attribute among the defined geographies in Northern Virginia. The reach increases over 40% when Xfinity.com and Cox.com are included for each attribute. This period evaluation greatly surpassed that of the 2014 study.

Attribute	2014 Study (Previous)	2015 Study (Current)
Pet Waste (dog waste)	32.8%	53.4%
Lawn Care (fertilizers)	31.9%	48.3%
Personal Auto Care (oils and lubricants)	35.9%	45.3%

Much of this growth is due to the overall number of networks used during the July 1, 2014 through June 30, 2015 period. However the amount of numbers being used at any given time was roughly the same. When the Spanish language networks and CSV+ Video Ad network are added, this will further grow. However, that impact cannot be quantified.

While these results appear favorable for the attainment of goals, these are derived from samples and therefore have variance associated with it.

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Appendix

1. 2014 Advertising Response

	Dog Owners		Personal Yard Care/ Landscaping Enthusiasts		Personal Car Maintenance/ Restoration	
Media	Responded Last 30 Days	Rank	Responded Last 30 Days	Rank	Responded Last 30 Days	Rank
Television	47.9%	1	43.9%	1	50.7%	1
Sponsored search result (like on Google, Yahoo or Bing)	39.1%	2	36.3%	2	42.8%	2
Radio	26.8%	9	23.8%	8	31.5%	6
Newspaper (print, online, mobile or tablet)	34.4%	3	34.0%	3	37.6%	3
Mobile smartphone app or text message	23.9%	10	18.5%	10	30.1%	9
Magazine (print, online, mobile or on tablet)	29.2%	5	25.9%	7	31.2%	7
Internet banner ad	34.1%	4	27.7%	4	36.7%	4
Ads mailed to you	27.7%	7	26.8%	5	31.5%	5
Ad or newsletter emailed to you	27.5%	8	26.5%	6	30.4%	8
Ad on a social network	28.0%	6	20.5%	9	29.4%	10

[Source: 2014 Ad-ology® AudienceSCAN study.Methodology]

2. Selection of Advertising Properties

TARGET	A18+ Intab
Lifestyle Characteristics: Own a Dog	486
Household Activities: Lawn Care	928
Unpaid/ Personal Labor: Anti-Freeze/Coolant OR Oil Filter/Oil Change-	210

	Lifestyle Characteristics			Leisure Activities Past 12 Months			Auto Repairs Pst.Yr:Unpd.Labor-HH		
	Own A Dog			Lawn Care			Anti-Freeze/Coolant OR Oil Filter/Oil Change		
Cable Network:	Adults 18+ Reach	Reach %	Index	Adults 18+ Reach	Reach %	Index	Adults 18+ Reach	Reach %	Index
APL -TV	76,018	18.8%	131	92,040	12.9%	90	31,386	16.6%	115
CNN -TV	116,459	28.7%	95	234,296	32.8%	109	61,549	32.5%	108
ENT -TV	42,130	10.4%	128	53,483	7.5%	93	13,530	7.1%	88
ESPN-TV	118,414	29.2%	91	256,549	35.9%	112	48,350	25.6%	80
HGTV-TV	104,778	25.8%	124	175,105	24.5%	118	39,541	20.9%	100
HIST-TV	125,117	30.9%	118	218,108	30.5%	117	51,017	27.0%	103
HLN -TV	18,415	4.5%	141	32,211	4.5%	140	5,876	3.1%	96
NGC -TV	51,036	12.6%	82	124,630	17.5%	114	40,636	21.5%	140
TOON-TV	27,907	6.9%	154	24,775	3.5%	78	3,413	1.8%	40
XFINITY.COM	33,782	8.3%	90	64,402	9.0%	98	26,179	13.8%	150

Scarborough Research- Washington DC DMA (Base adults 18+), March 2013-February 2014 survey period

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3. Overall Advertising Delivery

Television

		Results Flight to date 2/24/14- 8/17/14
Total Household Impressions		3,193,924
9555, POTOMAC		2,871,055
	HLN -TV	173,544
	OXYG-TV	310,261
	TOON-TV	1,061,087
	ENT -TV	479,889
	APL -TV	340,469
	Rotational spots (5 Nets)	505,805
0356, Fairfax County		292,881
	APL -TV	47,143
	ESPN-TV	56,371
	CNN -TV	77,371
	HIST-TV	64,132
	NGC -TV	31,764
	Rotational spots (5 Nets)	16,100
0340, Alexandria, VA		29,988
	APL -TV	10,786
	ESPN-TV	6,705
	HGTV-TV	12,497

Digital

Month 2014	Xfinity.com	
	300 x250 ad size (50,0000 impressions/ month)	160x 600 ad size (30,000 impressions/month)
February	56,111	31,754
March	55,975	31,600
April	55,137	33,089
May	55,799	31,854
June	55,573	32,710
July	55,179	33,082

Northern Virginia Regional Commission

4. Campaign Performance

County Of Residence: Alexandria City, VA OR Arlington, VA OR Fairfax City, VA OR Fairfax, VA OR Falls Church City, VA OR Loudoun, VA OR Stafford, VA

	Lifestyle Characteristics		Leisure Activities Past 12 Months		Auto Repairs Pst.Yr: Unpd.Labor-HH	
	Own A Dog		Lawn Care		Anti-Freeze/Coolant OR Oil Filter/Oil Change	
	Reach	Reach %	Reach	Reach %	Reach	Reach %
Population of Target Area	*405,333*	*100.0%*	*714,109*	*100.0%*	*189,232*	*100.0%*
NVRC Campaign (Television only)	102,673	**25.3%**	168,084	**23.5%**	46,679	**24.7%**
NVRC Campaign (TV and Xfinity.com)	132,924	**32.8%**	228,091	**31.9%**	67,938	**35.9%**

Scarborough Research- Washington DC DMA (Base adults 18+), March 2013-February 2014 survey period

APPENDIX B: Bacteria Sampling

MS4 General Permit Annual Report

2014 – 2015 Coliscan Sampling Results

To be provided by Prince William County Soil & Water Conservation District.

The Town will forward to DEQ as soon as it is received.

APPENDIX C: IDDE Written Procedures

MS4 General Permit Annual Report

IDDE Investigation Process

Definitions:

Illicit Discharge Detection Inspection Team: MS4 Program Coordinator, Public Works Director, Public Works Assistant Director, Field Support Team

Lead Investigator: May be any member of the illicit discharge detection inspection team, other town staff, or other agency such as the Virginia Department of Environmental Quality.

Investigation and Documentation Process:

- Report of IDDE event received by town staff (report may have been received by phone, in person, email, etc.)
- Staff forwards information to illicit discharge inspection team who will fill out illicit discharge reporting form. A lead investigator will be assigned.
    - Rainfall data may be taken from online source.
    - For form:
        - Names: Name to match town staff email addresses.
        - Incident location.
- IDDE form will be forwarded to MS4 Coordinator.
- MS4 Coordinator will fill out fields in IDDE Investigation Form.
- During investigation, illicit discharge team will update folder with documentation, photos, letters, emails, etc. associated with the IDDE event.
    - Files saved in the folder will be saved by [date investigation initiated year – month -day] [other additional title]. Examples:
        - 2014-02-06 IDDE Report Form.pdf
        - 2014-02-06 Investigation Notes.docx
    - A time frame upon which to conduct an investigation or investigations to identify and locate the source of any observed continuous or intermittent non-stormwater discharge to be prioritized as follows per MS4 permit: (i) illicit discharges suspected of being sanitary sewage or significantly contaminated must be discharged first, (ii) investigations of illicit discharges suspected of being less hazardous to human health and safety such as noncontact cooling water or wash water may be delayed until after all suspected sanitary or significantly contaminated discharges have been investigated, eliminated, or

identified. Discharges authorized under a separate VPDES or state permit require no further action under this permit.

- If an illicit discharge is found, but within six months of the beginning of the investigation neither the source or the same non-stormwater discharge has been identified, then this shall be documented.
- If the observed discharge is intermittent, then Lead Investigator must document that a minimum of three separate investigations were made in attempt to observe the discharge when it was flowing. If these attempts are unsuccessful, the operator must document.
- Investigators may use the Center for Watershed Protection's publications as guides, http://www.cwp.org/online-watershed-library/cat_view/64-manuals-and-plans/79-illicit-discharge-detection-and-elimination:
  - *Illicit Discharge Detection and Elimination: A Guidance Manual for Program Development and Technical Assessments*
  - *Illicit Discharge Detection and Elimination: Technical Appendices*
  - *Illicit Discharge Detection and Tracking Guide*

- When IDDE event is "closed", the Lead Investigator will complete the illicit discharge inspector form.
- The illicit discharge inspection form will be included with the MS4 Annual Reports, as it will include required information: (i) date that suspected discharge was observed, reported, or both; (ii) how the investigation was resolved, including any follow-up, and (iii) resolution of the investigation and the date the investigation was closed.

Last updated: 12/15/2014

APPENDIX D: Permanent Stormwater Management Facilities

MS4 General Permit Annual Report

Permanent Stormwater Management Facilities

LOCATION	BMP TYPE	VAHU6	IMPAIRED WATER	ACRES TREATED
17565 Old Stagecoach Road	Stormwater Management Pond	PL52	Quantico Creek	1.6533
17640 Overlook Road	Stormwater Management Pond	PL52	Quantico Creek	0.3799
17569 Summerduck Road	Stormwater Management Pond	PL52	Quantico Creek	0.8012
17445 Jefferson Davis Highway	Stormwater Management Pond	PL52	Quantico Creek	1.9919
17335 Jefferson Davis Highway	Stormwater Management Pond	PL52	Quantico Creek	2.8172
3731 Greentree Lane	Stormwater Management Pond	PL52	Quantico Creek	54.0492
3730 Greentree Lane	Stormwater Management Pond	PL52	Quantico Creek	24.9661
17975-95 Main Street	Manufactured BMP System -- Stormceptor	PL52	Quantico Creek	1.0800
2525 Pointe Center Court	Manufactured BMP System -- Stormceptor	PL52	Quantico Creek	1.7950
17944 Main Street	Bioretention Facility	PL52	Quantico Creek	0.6177
17865 Main Street	Manufactured BMP System -- Stormceptor	PL52	Quantico Creek	0.5630
17484 Jefferson Davis Highway	Manufactured BMP System -- Stormceptor	PL52	Quantico Creek	1.9785
17950 Dr. David Cline Lane	Infiltration Trench	PL52	Quantico Creek	0.2366