Public Education and Outreach
and
Public Involvement and Participation
Program

1. Background - Coordinating efforts amongst local MS4 operators

Educating, reaching out to, and involving the public in stormwater issues is accomplished primarily through participation in the Rivanna Stormwater Education Partnership (RSEP). The RSEP is a collaborative effort among local public entities in the City of Charlottesville and the surrounding County of Albemarle that hold small MS4 permits under the National Pollutant Discharge Elimination System program. The RSEP is dedicated to helping its members achieve the MS4 permit requirements related to education, outreach, and public participation in stormwater management.

The MS4 permit holders that comprise RSEP are Albemarle County, the City of Charlottesville, and the University of Virginia. Other members of RSEP are Albemarle County Public Schools, the Albemarle County Service Authority, and the Rivanna Water and Sewer Authority. The Thomas Jefferson Soil and Water Conservation District (TJSWCD) provides support to RSEP and serves as its coordinating body.

Founded in March 2003, the RSEP meets a minimum of six times a year to plan and implement stormwater education initiatives and share information about each partner's stormwater programs. Education initiatives are undertaken by the RSEP to help make citizens aware of stormwater issues, while also equipping them with practical knowledge and actions to help improve local water quality. RSEP utilizes a multi-faceted approach to educate and provide outreach across targeted urban areas (Figure 1). Past campaign materials, including print ads, movie theatre ads, posters on public transit buses, magnets, radio spots, and utility bill inserts are written in simple, easy to understand language and often utilize simple pictures or drawings to help the message come across to all generations and all education levels. RSEP also provides some campaigns in Spanish. Education and outreach materials are available at www.rivanna-stormwater.org. Each partner pays an annual membership fee to help fund RSEP projects. In addition, the RSEP has successfully applied for and partnered on grants to supplement education efforts.

The RSEP has produced effective and far-reaching education programs that have benefited from the variety of expertise and resources each partner offers. Planning and implementing education initiatives through the RSEP has resulted in Rivanna River watershed-focused projects and has avoided the over-exposure and redundancy that might result if each partner were carrying out projects on their own.

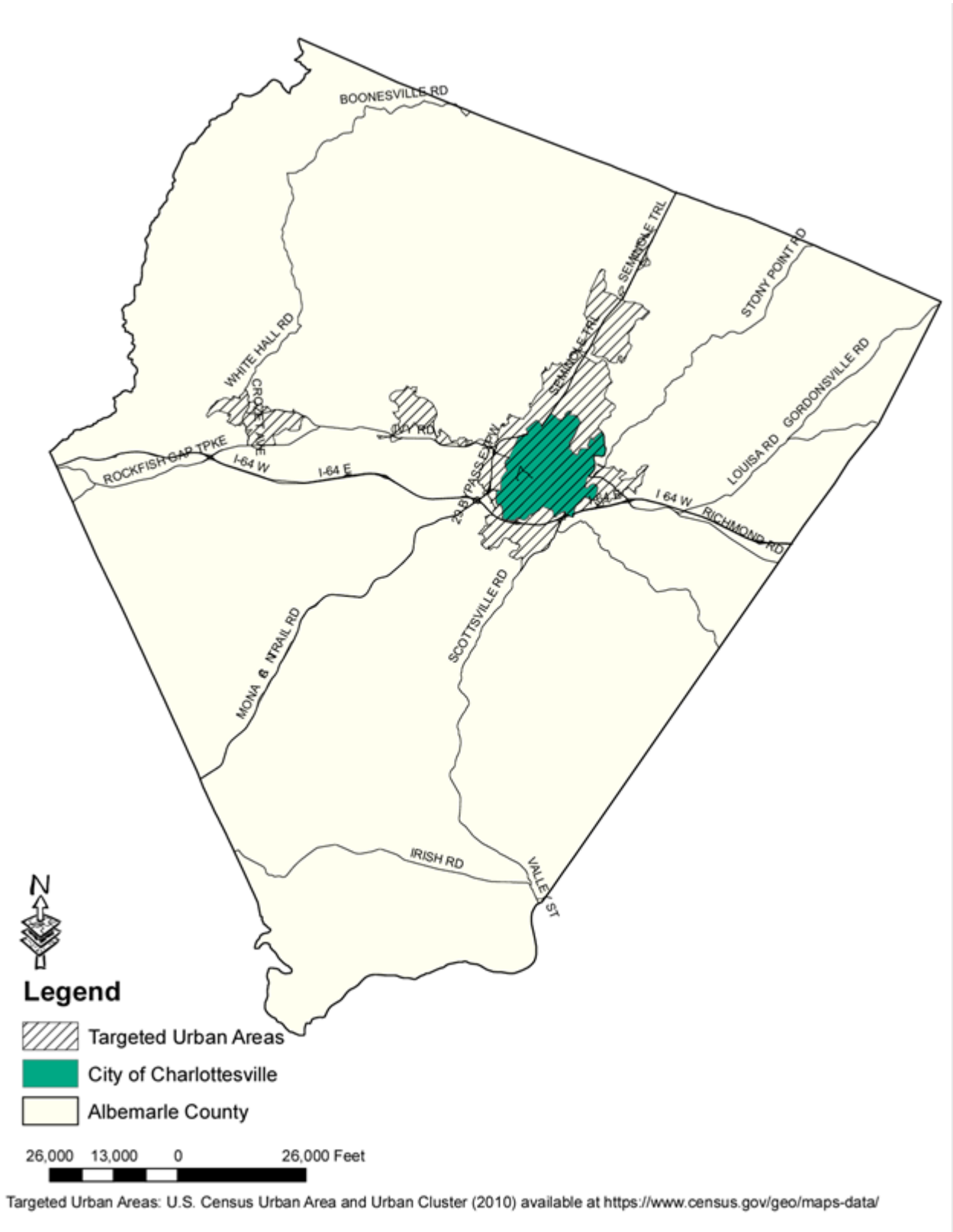

Figure 1. Urban Areas Targeted by RSEP Education and Outreach

2. Identification of high-priority water quality issues and their importance

RSEP held several meetings to discuss and determine the high priority water quality issues for the region, which will be the focus of their education and outreach campaigns for the current MS4 permit cycle. During the 2013-2018 permit cycle, RSEP chose local and regional water quality impairments, bacteria, sediment, and nutrients (nitrogen and phosphorus), as their high priority issues. Campaigns conducted during this time frame were considered successful. However, RSEP found the chosen issues limited in some ways the extent of outreach efforts that the group could undertake. For the 2018-2023 permit cycle, RESP members have chosen to address broader categories of water quality issues, namely runoff volume reduction, potential runoff pollutants, and TMDL pollutants as the high priority issues. By grouping regional water quality impairments as one high priority issue, RSEP can still address this highly important topic, while allowing the group to also address other issues that also have the potential to impact water quality in the region.

The reasoning behind choosing each of these high-priority issues is further described in the following sections. Examples of planned education and outreach campaigns and general content ideas are provided in Table 1. Using the iterative adaptive approach, the plan may be modified at any time during the permit cycle to address changes in local stormwater issues or concerns.

a. Runoff Volume Reductions

One of the biggest challenges facing urban waterways is the sheer volume of runoff being transported from impervious surfaces to the streams. In developed areas, rainwater falls on impervious surfaces, such as buildings, parking lots, and driveways which prevent water from infiltrating into the ground and recharging local aquifers. This rainwater flows rapidly across impervious surfaces and into storm sewers, which direct the water to local streams. As a result of this rapid transport to local streams, stream flow volumes and velocities are significantly higher than would be observed under natural conditions. These high, rapid flows can cause stream bank erosion and changes in stream ecosystem habitats. Best management practices (BMPs) can be installed to mitigate the impacts of development by slowing down the transport of water from impervious surfaces to local streams.

While localities and developers are required to install BMPs for certain construction projects, maintenance of these BMPs is not always taken into account during their installation. In addition, there are many BMPs homeowners can implement or install to reduce the runoff volume and velocity from their properties and contribute to healthier streams. RSEP intends to provide education and outreach to both homeowners as well as new and existing BMP owners during the permit period. The goal of this education program will be to educate recipients on the negative impacts of increased stormwater volume and velocity and also provide ideas for ways they can reduce, mitigate, or treat runoff from their property.

b. Potential Runoff Pollutants

As stormwater flows across roadways, parking lots, and driveways, it picks up pollutants such as sediment, oil, nutrients, bacteria, and trash that are lying on the surface. Sources of these pollutants can be as varied as the pollutants themselves, ranging from pet waste left by a local resident to a diesel fuel spill on a local industrial site to cigarette butts tossed on the ground by passing smokers.

There are two primary ways to handle potential runoff pollutants. The first is to prevent the potential pollutant from becoming a water quality issue. Educational messaging for this approach will range from reminding restaurants how to properly handle their used cooking oil to reminding residents to obtain a soil test before applying fertilizer on their lawns. The second way to handle potential runoff pollutants is to try to capture them after they are out in the environment. While this approach is not ideal, it is a necessary component of a comprehensive outreach program. In addition to reducing runoff as previously discussed, certain BMPs can also help trap or absorb these pollutants in the environment and prevent them from reaching local waterways. In addition, the illicit discharge and elimination (IDDE) programs run by the various MS4 permit holders will help to identify and eliminate possible illicit discharges resulting from human activity in the watershed. IDDE outreach and education efforts provided by RSEP have warned against storm drain dumping and encouraged use of the RSEP Water Pollution Hot Line to report suspected illegal discharges.

c. TMDL Impairments – Bacteria, Sediment, Nitrogen, Phosphorus

The Chesapeake Bay TMDL requires pollution reductions in sources of phosphorus, nitrogen, and sediment loads across the Bay watershed and sets pollution limits need to achieve desired water quality standards. These TMDL impairments have significant impacts in the local area. In addition to sediment reductions required in the Chesapeake Bay TMDL, sediment source reductions are also required by the Rivanna River Benthic TMDL. Local TMDLs for streams such as Meadow and Lodge Creek also touch on sediment as a pollutant source, with bacteria as an added pollutant of concern in many local streams.

TMDL impairments are logical topics for MS4 outreach and education programs, as most of the streams with TMDLs in the local areas are urban streams and MS4s are concentrated in the urban areas. Of the stream miles assessed within the targeted urban areas, almost 30% have an impaired benthic macro-invertebrate community, as a result of too much sediment in our waterways[1]. The *Final Report of the Benthic TMDL Development for the Rivanna River Watershed* submitted to VA DEQ (2008) identifies an existing sediment load from land-based and in-stream erosion from the MS4 point source. Over a quarter (26%) of streams assessed within the targeted urban areas are considered impaired by excessive amounts of bacteria[2]. Bacteria impairments in these streams can be caused by a variety of sources urban stormwater, pet waste, leaking sewer pipes, wildlife excrement, and agricultural uses. In addition, the MS4 general permit requires permittees to utilize turf and landscape management plans to minimize nutrient usages, while also prohibiting the usage of deicers containing urea, nitrogen, or phosphorus. Similar messaging is also relevant to home and business owners.

The goal of outreach and education campaigns focusing on TMDL impairments will include a variety of approaches, strategies, and target audiences. Licensed dog owners in the City and County can be targeted to pick up pet waste to reduce bacteria. Strategies utilized to address reductions in runoff volume can be used to target sediment. While homeowners, gardeners, and landscape maintenance professionals can be targeted to address fertilizer usage.

3. Providing public involvement opportunities during the reporting cycle

[1] *Final 2012 305(b)/303(d) Water Quality Assessment Integrated Report*, VA DEQ, 2014

[2] *Final 2012 305(b)/303(d) Water Quality Assessment Integrated Report*, VA DEQ, 2014

This Outreach and Education Plan will be posted on the RSEP website, the City of Charlottesville's website, Albemarle County's website, and UVA's website and will remain available for the duration of the 2018-2023 MS4 Permit Cycle At any time during the permit cycle, the public can visit any of these website to report potential illicit discharges, improper disposal or spills to the MS4, complaints regarding land disturbing activities, or other potential stormwater pollution concerns. In addition, the public can also utilize these websites to provide input on any of the RSEP partners MS4 programs, including the Outreach and Education Plan.

4. Adjusting target audience and messages to address any observed weaknesses or shortcomings

As necessary, RSEP will adjust target audiences and messages to address any observed weaknesses or shortcomings in the public education and outreach program. Additional educational materials have already been developed and may be modified or improved to address changing needs. In addition, the messaging described in Table 1 or activities described in Table 2 may be altered to appeal to different target audiences or to address a different high priority issue than the one listed. Other methods beyond those currently described in Tables 1 and 2 are likely to be employed as well. For example, RSEP members are currently discussing the possibility of creating a humorous stormwater education video to appeal to residents, brainstorming ways to partner with local arts on an educational display, considering starting a "love your watershed" initiative, as well as brainstorming additional "new" strategies to engage audiences in different ways. Some of these "new" ideas will require support and resources beyond what RSEP alone can provide and thus are not listed as planned education strategies or public involvement opportunities. However, RSEP will continue to pursue these ideas where feasible to find innovative ways to reach new audiences.

5. COVID-19 Pandemic Adjustments

The COVID-19 pandemic that began in March 2020 created unprecedented changes in daily life and business functions. The Governor of Virginia enacted executive orders which required people to stay at home, forced businesses to adjust or cease operations, and limited gatherings to no more than ten people. As such, many traditional public involvement opportunities, such as fairs, stream cleanups, and other springtime gatherings were prohibited. In addition, the changes in daily and business life have resulted in changes in other areas such as a dramatic decline in usage of public transportation. Ridership on Charlottesville Area Transit declined more than 50% in March 2020 as compared to March 2019. In light of these shifts in behavior, Tables 1 and 2 have been adjusted to address the fact that some previously planned efforts or initiatives may need to be adapted or replaced to adjust to changing public health concerns and public behavior.

Table 1. Outreach and Education Strategies

				High Priority Issues Addressed		
Strategy *Examples*	**Public Audience**	**Time Frame *Anticipated Frequency***	**Anticipated Relevant Message (s)**	**Runoff Volume Reductions**	**Potential Runoff Pollutants**	**TMDL Pollutants**
Written Materials *Utility Bill Inserts*	Homeowners and residents	Spring *Two or Three times during permit cycle*	Pick up After Your Pets: Animal waste that is washed off of lawns and sidewalks sends harmful bacteria into the storm drain system and into streams and rivers, creating problems for swimmers and fish.		✓	✓
			Use moderation when applying lawn products such as fertilizers, pesticides or herbicides. Better yet, get your soil tested, fertilize only in the fall, and look into non-chemical products to protect your lawn. Call the Cooperative Extension Service in Albemarle County at 872-4580 to find out how to get your soil tested.		✓	✓
Media Materials *Charlottesville Public Access Station PSAs*	Homeowners and residents	Winter *Once during permit cycle*	We all prefer healthy streams and lakes…but most of our local waters are somewhat polluted. When it rains, pollution is carried directly into streams by runoff from parking lots, streets, and lawns. Here's what YOU can do to reduce pollution: (one) pick up after your pet, (two) don't over-fertilize your lawn, and (three) capture the water from your rooftop in a rain barrel...or in a rain garden. Do your part to keep our streams clean and healthy. Visit Rivanna-stormwater.org.	✓	✓	✓
Media Materials *Cville Weekly Ads*	Homeowners and residents	Fall or Spring *Annually*	While being good to your pet, don't be bad to the river. Every time it rains, runoff from your lawn carries bacteria and other organisms from your pet's waste into local streams. Dispose of your pet's waste properly by bagging it and throwing it away.		✓	✓
			Don’t over-fertilize your lawn. Excess nutrients from fertilizer are a major source of water pollution when they are carried by rain runoff into stormdrains and local waterways. Apply fertilizer based on a soil test. Don’t rake leaves down storm drains or into streams.		✓	✓

			When leaves are washed into streams they decompose there and degrade water quality. Compost them or bag for proper disposal. When you mow your lawn, don't dispose of grass clippings down a storm drain. Like decomposing leaves, grass clippings degrade water quality. Leave them on your lawn.			
Written Materials *Charlottesville Area Transit Bus Ad*	Homeowners and residents	Fall *Once during permit cycle – may not be utilized if ridership numbers do not warrant the effort*	While being good to your pet, don't be bad to the river. Every time it rains, runoff from your lawn carries bacteria and other organisms from your pet's waste into local streams. Dispose of your pet's waste properly by bagging it and throwing it away.		✓	✓
Media Materials *Radio Ads*	Homeowners and residents	Summer *Once during permit cycle*	Did you know 1 quart of motor oil can contaminate 250,000 gallons of water? Every year in the U.S., millions of gallons of used motor oil, chemicals, and other wastes are disposed of illegally – down a storm drain or in the trash. Unlike sewage, stormwater is not treated. Storm drains empty directly into local streams and eventually reach the Chesapeake Bay. Please do your part to keep our waterways healthy. Recycle used motor oil at the Rivanna Solid Waste Authority's Ivy location or return it to where you bought it.		✓	
			Planning to wash your car this weekend? Ever wonder where all that water goes after it runs off your driveway? This water does not get treated and carries oil, soaps, and cleaners into storm drains; it flows directly into local streams and eventually reaches the Chesapeake Bay. To help prevent this, consider using biodegradable cleaning products, and wash your car on the lawn, instead of the driveway. Even better, take your car to a carwash facility that recycles its wash water.		✓	✓
			Pet waste commonly contains bacteria and parasites harmful to humans and other pets. Waste left on		✓	✓

			trails, sidewalks and grassy areas can wash into creeks and lakes, harming aquatic life and making the water unsafe for swimming and wading. Our own Moores Creek has been found to contain harmful levels of E. coli. By picking up after dogs and cats, you can improve local water quality and keep your community safer! Remember: Always scoop pet waste and dispose of it properly by throwing it in the trash or flushing it down the toilet.			
Alternative Materials *Magnets*	Homeowners and residents	Spring *Once during permit cycle*	Hand out magnets regarding cigarette butt litter, picking up pet waste, and proper car washing at Earth Week or other tabling events. May be distributed in other ways should tabling events remain unfeasible or poorly attended.		✓	✓
Alternative Materials *Stickers*	Homeowners and residents	Spring *Once during permit cycle*	Hand out stickers with stormwater focused messaging at Earth Week or other tabling events. May be distributed in other ways should tabling events remain unfeasible or poorly attended.		✓	✓
Media Materials *Social Media Promotion*	Homeowners and residents	Twice Yearly *Annually*	Provide stormwater focused social media content to existing local Facebook pages or other social media outlets. Share stormwater video online.	✓	✓	✓

Table 2. Public Involvement Opportunities

Description of public involvement activity	Anticipated time period and frequency	Metric to determine if the activity is beneficial to water quality
Tabling at Earth Day Eco Fair and other Events	2-3 Events *Annually* May be adapted to virtual or other engagement events if public events remain unfeasible or poorly attended	Number of individuals spoken with
Participant Workshop	Once per permit cycle	Number of workshop attendees

UVA Addendum to 5-yr MS4 Education and Outreach Plan

University of Virginia Initiatives:

1. Background

The purpose of this addendum is to address education and outreach programs specifically targeted the University of Virginia (UVA) community. Educational programs and outreach events are primarily conducted by the University's Environmental Resources as well as the Clean Water Working Group.

Environmental Resources (ER) within the UVA Facilities Management provides a number of university-wide services including pollution prevention, erosion and sediment control, greenhouse gas monitoring, and stormwater management. ER is responsible for coordination and oversight of all environmental regulatory requirements at UVA. The Clean Water Working Group (CWWG) is a student-led task force that collaborates with ER. The students are given the opportunity and resources to investigate and recommend stormwater practices to reduce UVA's impacts on local streams and ultimately the Chesapeake Bay. To encourage and promote community involvement, both ER and CWWG engaged in outreach and education directed toward UVA students, staff, faculty, and visitors.

2. High Priority Water Quality Issues

Similar the RSEP's campaign, UVA's education and outreach campaigns are designed to help improve local and regional water quality. UVA will focus on the same high-priority water quality issues using the same rationale as those described in the RSEP Outreach and Education Plan.

a. Runoff Volume Reductions

Education on the concepts of stormwater runoff, ways UVA is working to reduce stormwater runoff help students, faculty, staff, and visitors understand the importance of stormwater management.

b. Potential Runoff Pollutants

Potential pollutants at UVA range from cigarette butts and litter at Beta Bridge to runoff from car washing or pet waste. Education around these topics allow members of the UVA community as well visitors to understand how their every-day actions can help or harm their local waterways.

c. TMDL Impairments – Bacteria, Sediment, Nitrogen, Phosphorus

Most sources of TMDL Impairments on UVA property are managed under existing programs, SOPs, or UVA BMP installation. For example, all fertilizer and de-icing material is purchased and applied by UVA staff. Pets are not allowed in most UVA residences. However, visitors to UVA often walk their dogs on or through grounds. Efforts to educate members of the UVA Community and visitors on their impacts on these activities can help produce positive outcomes after they have left UVA.

3. Student to Student Outreach

To promote stormwater related events, the CWWG document their projects to update the student body and those that are not in the taskforce but are interested in stormwater issues.

- Facebook page https://www.facebook.com/UVACleanWater/
- UVA mailing lists including the UVA Sustainability email list and Facebook Page, the Engage@UVA email list, and other email lists targeted toward potential interested student groups such as the Environmental Sciences Organization.

4. Adjusting target audience and messages to address any observed weaknesses or shortcomings

The CWWG will review previous campaigns at the start of each semester and new ideas for campaigns will be considered for implementation. Campaigns created by CWWG are anticipated to change from year to year depending on student interest and participation levels. ER will remain involved to provide oversight and work with other UVA departments as needed. Educational efforts and engagement activities described in the tables below will be altered as needed to address different audiences, issues, or may be held at different times than those stated.

5. Nature of this Addendum

This plan is intended to be a supplement to the RSEP Public Education and Outreach and Public Involvement and Participation Program Plan. This plan is not intended as a stand-alone document and therefore may not cover all program requirements which have previously been covered in the RSEP Plan. Tables 1 and 2 are intended to serve as guides for potential activities that may occur based on previous student interest levels. Planned activities may be adjusted at any time to reflect student interest and availability.

6. COVID-19 Pandemic Adjustments

The COVID-19 pandemic that began in March 2020 created unprecedented changes in daily life and business functions. The Governor of Virginia enacted executive orders which required people to stay at home, forced businesses to adjust or cease operations, and limited gatherings to no more than ten people. UVA students left for spring break in early March and were not allowed to return to UVA, as the remainder of the semester was completed virtually. As such, many traditional public involvement opportunities, such as tabling events for World Water Day, numerous Earth Week events, stream cleanups, Dell tours and other springtime gatherings were prohibited. In addition, other educational material such as signage, storm drain marking, and flyers are ineffective as there are few people to view them.

UVA had already completed enough Table 1 and 2 actives during the fall and spring semester to meet the intention of this Outreach and Education Plan addendum before the COVID-19 pandemic began. However, the long term impacts and changes in behavior are unknown. Tables 1 and 2 will be updated, as needed, to address the fact that some previously planned efforts or initiatives may need to be adapted or replaced to adjust to changing public health concerns and public behavior.

Table 1. Outreach and Education Strategies

				High Priority Issues Addressed		
Strategy *Examples*	**Public Audience**	**Time Frame *Anticipated Frequency***	**Anticipated Relevant Message (s)**	**Runoff Volume Reductions**	**Potential Runoff Pollutants**	**TMDL Pollutants**
Written Materials *Storm Drain Markers*	Students, Faculty, Staff and Visitors	Spring *Once during permit cycle*	Student created message resulting from design competition reminding those walking by not to pollute runoff going down the storm drain.		✓	
Written Materials Flyers	Students, Faculty, Staff and Visitors	Spring Semester *Annually*	Design a flyer to promote involvement in CWWG efforts and promote using email, bus posters, or posting of flyers in strategic locations.	✓	✓	✓
UVA Stormwater Tours *Dell Tours*	Students, Faculty, Staff and Visitors	Fall and Spring Semesters *Annually*	Provide tours of UVA stormwater best management practices to interested community groups, student groups, and classes. Topics covered include runoff volume reductions, runoff pollutants, and how the BMPs treat TMDL pollutants.	✓	✓	✓

Table 2. Public Involvement Opportunities

Description of public involvement activity	**Anticipated time period and frequency**	**Metric to determine if the activity is beneficial to water quality**
Stream Clean Up Events	1 Event *Annually*	Number of individual participants
Stormwater Related Design Competition	Once per permit cycle	Estimated number of students viewing the flyer
Tabling at public fairs or other events	1 Event *Annually*	Estimated number of visitors