

Elizabeth Haub School of Law

Environmental Law & Policy Hack

Competition

The Issue: Nutrient Pollution

**Protecting the Chesapeake Bay from Nutrient Pollution through
Riparian Buffer Conservation Easements in the Shenandoah Valley**

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1. About the Authors

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Alexis is a first-year law student. While obtaining her undergraduate degree, she studied Government and Politics, focusing her studies at the cross-section of government and the environment. Growing up in Florida along the waterways, she has a passion for water wildlife and ensuring that the next generations can enjoy the environment for years to come. Her experience with environmental protection projects includes working on policy-based solutions for a wide range of nationwide shared resources such as the air and water.

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Gabriella is a first-year law student. She has always been fascinated by marine life and how the environment and humanity interact with each other. Her interest in environmental policy stems from her wanting to protect the environment on a global scale after receiving her undergraduate degree in Environmental Biology and graduate degree in Ecology and Evolutionary Biology. Having worked on many environmental projects ranging from studying toxic air pollutant distribution and impacts in lower socioeconomic communities to researching hypoxic zones in the Gulf of Mexico, she hopes to bridge policy and science to create a better future.

2. Executive Summary

Nutrient pollution is a perfect example of a natural phenomenon that has been usurped and overwhelmed by human influence. As humans have built roads, homes, and farm fields, the natural plant buffers have slowly disappeared, and nutrient pollution into our waterways have increased. In the Chesapeake Bay watershed, these nutrients have had a detrimental impact on its water quality and ecosystem health. Often, while discussing solutions to nutrient management problems, the solution is aimed at the agricultural community. The Shenandoah Valley is a major agricultural center in the Chesapeake Bay Watershed. While some farmers have committed to conservation, the magnitude of the financial and land obligations that are often expected deters many others from participating. By creating a “Riparian Buffer Conservation Easement” program we can protect waterways, ensure longevity of the conservation measures, and minimize the commitment landowners must make. Additionally, this allows landowners to take advantage of local conservation incentives and cost-share on top of the easement tax incentives. This would also help soften the costs of pending legislation. However, the system serves those who understand it. Thus, implementing an education program that promotes Riparian Buffer Conservation easements is critical. Our proposal, and award money allocation, emphasizes working with local agricultural organizations to implement free or affordable classes on using cost-share, the benefits of conservation, and how to place your property under easement.

3. Introduction

3.1 The Problem

The Chesapeake Bay is a 200-mile estuary that encompasses parts of six states—Delaware, Maryland, New York, Pennsylvania, Virginia and West Virginia—and the entire District of Columbia, fifty major rivers, and 64,000 square miles.¹ This watershed is home to not only wildlife, but 18 million people who live, work, and rely on the Bay.² Unfortunately, this critical area that we call home is under threat from the very people that rely on it. At its healthiest in the 1600s, the Chesapeake watershed was comprised.³ However, as our population continues to grow in both urban and agricultural development, we have stripped our watershed of these buffers and our pollution flows practically uninhibited.⁴

Why do we care? Why does nutrient pollution matter? The polluted agricultural runoff includes a significant amount of nutrients, including nitrogen and phosphorous that are limiting agents for plant growth.⁵ This overloading of nutrients arises from the constant input of the states within the watershed and travels down into the Bay to stimulate a surge of phytoplankton blooms. This sudden and exponential growth of organic matter consumes the previously limited nitrogen and spreads along the water's surface, blocking sunlight from reaching the organisms underneath, therefore preventing underwater grasses from growing.⁶ Sometimes the blooms can be even more harmful, as some algae can be naturally toxic and produce toxins that would be

¹ *More Than Just The Bay*, Chesapeake Bay Found., <https://www.cbf.org/about-the-bay/more-than-just-the-bay/> (last visited Oct. 19, 2021).

Watershed, Chesapeake Bay Program, <https://www.chesapeakebay.net/discover/watershed> (last visited Oct. 19, 2021).

² *Id.*

³ *Nitrogen & Phosphorus*, Chesapeake Bay Found., <https://www.cbf.org/issues/agriculture/nitrogen-phosphorus.html> (last Visited Oct. 19, 2021).

⁴ *Id.*

⁵ Jack E. Davis, *Booms, Blooms, and Doom: The Lift of the Gulf of Mexico Dead Zone*, 70 *Ala. Rev.* 156, 156-170 (2017)

⁶ *Id.*

harmful when animals and humans are exposed.⁷ Once the algal bloom consumes the nutrients, they then become a limiting agent instead of a catalyst, and there is not enough to sustain the bloom. As the algal bloom dies and sinks to the bottom bacteria naturally steps in to break down the dead matter. This natural decomposition process generates carbon dioxide and consumes massive quantities of oxygen, significantly lowering, or sometimes wholly removing, the oxygen available in the water where the bloom had occurred.⁸ At the end of the eutrophication process, and little to no oxygen is left, the area is labeled as a “dead zone.” The largest source of anthropogenic nitrogen in coastal ecosystems is synthetic nitrogen-based fertilizer, which has increased in usage from zero in 1910 to 118 billion kilograms of nitrogen per year worldwide in 2013.⁹

As our population grew in the Chesapeake Bay watershed, we needed more farms and more production to sustain us, and thus more fertilizer usage, resulting in more nitrogen and phosphorus run-off.¹⁰ It is estimated that 300 million pounds of excess nitrogen enters Chesapeake Bay every year.¹¹ Most excess nutrients, specifically nitrogen and phosphorous, come from animal feed lots, sewage treatment plants, and polluted runoff.¹² However, the Chesapeake Bay Foundation (CBF) has identified that “the largest source of pollution to the Bay comes from agricultural runoff, which contributes roughly 40 percent of the nitrogen and 50 percent of the phosphorous entering the Chesapeake Bay.”¹³ Within the three major member-

⁷ *Dead Zones*, Chesapeake Bay Found., <https://www.cbf.org/issues/dead-zones/> (Last visited Oct. 19, 2021)

⁸ Jack E. Davis, *Booms, Blooms, and Doom: The Lift of the Gulf of Mexico Dead Zone*, 70 *Ala. Rev.* 156, 156-170 (2017)

⁹ Thomas C. Malone & Alice Newton, *The Globalization of Cultural Eutrophication in the Coastal Ocean: Causes and Consequences* (August 2020), <https://doi.org/10.3389/fmars.2020.00670>

¹⁰ *Dead Zones*, Chesapeake Bay Found., <https://www.cbf.org/issues/dead-zones/> (Last visited Oct. 19, 2021)

¹¹ *Id.*

¹² *Id.*

¹³ *Id.*

states of Pennsylvania, Maryland, and Virginia, there are around 87,000 family- owned farms (Chesapeake Bay Commission, 2015). It has been degraded to such a state that in 2018 the Chesapeake Bay Foundation’s health index rated the Bay at 33/100, with 100 being the Bay’s optimal health.¹⁴ The quality today is so poor that the watershed is listed on the Environmental Protection Agency’s “dirty waters” list.¹⁵

The three major sources of nutrient pollution today are the Eastern Shore of Maryland, southeastern Pennsylvania, and the Shenandoah Valley in Virginia.¹⁶ The Shenandoah Valley is a major agricultural center as its unique geologic makeup contributes to soil composition and fertility, driving forces for agricultural productivity.¹⁷ The predominant rock-types in the area are limestone (carbonate) and shale (clastic). The mineralogy of limestone is predominately calcite, CaCO_3 , and the mineralogy of shales tend to be quartz, SiO_2 , feldspars, Na/Ca/K-rich, and clay minerals such as kaolinite, which is Al-Si rich.¹⁸ There are no major sources of Phosphate (PO_4) or Nitrates (NO_3) from the rock and soil compositions in this area. However, rivers and streams exiting the Shenandoah Valley pump significant amounts of these constituents into the Chesapeake Bay watershed daily.¹⁹ It is estimated that agriculture – comprised of both bovine (livestock) farmland, as well as cropland – contributes 42% of the nitrogen, 58% of the phosphorus, and 58% of the total suspended solids (TSS) pollutant load to the Bay.²⁰ Therefore,

¹⁴ *Id.*

¹⁵ *Id.*

¹⁶ *How Farms Affect the Chesapeake Bay’s Water*, NASA Earth Observatory, <https://earthobservatory.nasa.gov/images/88523/how-farms-affect-the-chesapeake-bays-water> (last visited Oct. 19, 2021).

¹⁷ Chesapeake Bay Commission, 2015, Healthy Livestock, Healthy Streams

¹⁸ *Id.*

¹⁹ *Id.*

²⁰ *Id.*

in this analysis we will be specifically targeting Shenandoah Valley’s relevant regulatory structure and a proposed policy designed to improve nutrient management in the area.

3.2 What can be done?

The key to our success and the foundation of our policy hack is the 12,000 miles of shoreline.²¹ Currently, Best Management Practices (BMPs) are being utilized throughout the Chesapeake watershed to prevent or reduce pollutants from entering the waterway.²² There are a variety of recommended practices ranging from planting cover crops, managing manure, creating forest buffers, not tilling and restoring urban streams.²³ In the Shenandoah Valley, the Department of Environmental Quality has provided guidance for establishing Local Area Planning Goals (LAPGs) and have created a list of more than 50 effective BMPs that are to be implemented in the area.²⁴ In addition, in 2010, the EPA created the Chesapeake Bay Total Maximum Daily Load (TMDL), which is a mandate that establishes targeted reductions for nitrogen, phosphorus, and total suspended solids intended to be met by 2025. The current measures of the TMDL for the Chesapeake Bay watershed “limits of 185.9 million pounds of nitrogen, 12.5 million pounds of phosphorus, and 6.45 billion pounds of sediment per year.”²⁵

Since the largest contributor of nutrient pollution is agricultural runoff, it is logical that establishing a designated boundary to filter the nutrients before it reaches the water would be a

²¹ *Promoting Healthy Northern Shenandoah Valley Watersheds*, Northern Shenandoah Valley Regional Commission, <https://www.nsvregion.org/watershed-implementation.html> (last visited Oct. 19, 2021).

²² *Id.*

²³ *Chesapeake Bay Program releases best management practice guide*, Chesapeake Bay Program, https://www.chesapeakebay.net/news/blog/chesapeake_bay_program_releases_best_management_practice_guide (last visited Oct. 19, 2021).

²⁴ *Promoting Healthy Northern Shenandoah Valley Watersheds*, Northern Shenandoah Valley Regional Commission, <http://www.nsvregion.org/watershed-implementation.html> (last visited Oct. 19, 2021).

²⁵ *Chesapeake Bay TMDL Fact Sheet*, U.S. Environmental Protection Agency, <https://www.epa.gov/chesapeake-bay-tmdl/chesapeake-bay-tmdl-fact-sheet> (last visited Oct. 19, 2021).

solution. However, the best boundary is not a man-made filter, but a culmination of a variety of local plants that can filter water 2-8 times more effectively than naturally forested streambanks.²⁶ These areas are called riparian buffers. Preserving and expanding these buffers are keys to improving water quality. It is especially vital in agricultural communities where there is consistent use and reliance on the land for producing crops and livestock.²⁷ Preserving buffers usually requires fencing livestock out of the stream to prevent their destruction. The installation and maintenance of riparian vegetation along the waterway will capture sediment and remove nutrients via plant uptake before it is able to enter the watershed.²⁸ The removal of nitrogen specifically will occur in the water saturated zones of the buffer where there is an abundance of organic matter. The bacteria naturally present in the buffer will use nitrogen as an energy source and will convert it to gas. Meanwhile, the plant roots will absorb the nitrogen and use it for their own growth, thus removing it before it enters the water system.²⁹

Therefore, the installment and protection of riparian buffers throughout the Shenandoah Valley will make a large impact in minimizing nutrient pollution into the Chesapeake Bay. In this brief we will introduce the various regulatory structures present to monitor and improve water quality in the Chesapeake Bay at the federal, state and local level, while specifically targeting the Shenandoah Valley. Then, we will go into detail about our specific policy proposal for how best to respond to nutrient pollution in the Shenandoah Valley through limited-area conservation easements and education.

²⁶ Whitescarver, R., 2017, Leaves on Native Trees: Getting More on the Ground, <https://www.gettingmoreontheground.com/2017/08/12/leaves-native-trees-foundation-freshwater-ecosystems-2-2/> (a)

²⁷ *The Science Behind the Need for Riparian Buffer Protection*, WeConservePA, <https://conservationtools.org/guides/131-the-science-behind-the-need-for-riparian-buffer-protection> (last visited Oct. 19, 2021).

²⁸ *Id.*

²⁹ *Id.*

4 Regulatory Structure

4.1 Federal Structure

Clean Water Act and TMDLs

Federally, this area of the watershed is governed by the Clean Water Act. The purpose of the Clean Water Act (CWA) is "to restore and maintain the chemical, physical, and biological integrity of the Nation's waters."³⁰ Agricultural run-off pollution is considered to be a non-point source. Non-point sources are defined by the Clean Water Act as any source that is not a point source. The term point source is defined as:

Any discernible, confined and discrete conveyance, including but not limited to any pipe, ditch, channel, tunnel, conduit, well, discrete fissure, container, rolling stock, concentrated animal feeding operation, or vessel or other floating craft, from which pollutants are or may be discharged. This term does not include agricultural storm water discharges and return flows from irrigated agriculture.³¹

The last part of the definition is most relevant to the topic of phosphorus and nitrogen emissions into watersheds. Under CWA § 303(d) of the clean water act states must provide a list of “impaired waters” that are not able to meet current water quality standards by using traditional methods such as technology-based regulations or controls.³²

The EPA regulates the emissions from non-point sources in many ways. Specifically, for the Chesapeake Watershed, the EPA sets forth a Total Daily Maximum Load (TMDLs) for the allowance of pollutants. A TMDL is a calculation of the maximum amount of pollutant that can be in the water while still adhering to water quality standards.³³ TMDLs then allocate pollution

³⁰ 33 U.S.C. §1251(a)

³¹33 U.S.C. § 502 (14)

³² 33 U.S.C. § 303(d)

³³Environmental Protection Agency, *Clean Water Act Section 303(d): Impaired Waters and Total Daily Maximum Loads (TMDLs)* (Oct. 12, 2021 5:00 PM), EPA <https://www.epa.gov/tmdl>.

reductions on a sector-by-sector, source-by-source basis, including reducing pollutants from non-point sources. In 2010, the EPA created the Chesapeake Bay Total Maximum Daily Load (TMDL), which is a mandate that establishes targeted reductions for nitrogen, phosphorus, and total suspended solids intended to be met by 2025. The current measures of the TMDL for the Chesapeake Bay watershed “limits of 185.9 million pounds of nitrogen, 12.5 million pounds of phosphorus, and 6.45 billion pounds of sediment per year.”³⁴

In addition, CWA §319 established a grant funding program for non-point source monitoring. Each year the amount of allocated funds to each watershed differs. However, as of 2020 the EPA allocated \$172.3 million to the Nonpoint source monitoring program with State of Virginia getting \$3 million.

Barriers to Regulation

Further, there are many barriers to agriculture non-point prevention, but particularly problematic for Chesapeake Bay watershed because it contains multiple states. Another problem includes a lack of permitting withing the Nation Pollutant Discharge Elimination (NPDES) system. This system is the primary permitting exemption method for the Clean Water Act however agricultural pollution is outside that system. Further there is a lack of enforcement of TDMLs in practice.³⁵ This is widely problematic because this is the main federal method of regulating nonpoint source pollution in the Chesapeake Bay Watershed.

Another barrier is that per Section 309 of the Clean Water Act, states are required to put together a list of impaired waters and their status. Per the EPA website, Virginia, where

³⁴ Environmental Protection Agency, *Chesapeake Bay TMDL Fact Sheet* (Oct. 12, 2021 5:00 PM), EPA <https://www.epa.gov/chesapeake-bay-tmdl/chesapeake-bay-tmdl-fact-sheet>

³⁵ Environmental Protection Agency, *NPDES Permit Basics* (Oct. 12, 2021 6:00 PM), EPA <https://www.epa.gov/npdes/npdes-permit-basics>

the Shenandoah Valley watershed is located, has not updated this list since 2016 which was then approved in 2018.³⁶ As someone who is interested in water quality standards, it is not unreasonable to ascertain that a lot can change in three to five years, especially for a vulnerable watershed.

4.2 State Structure

Regulatory Authorities and Virginia House Bill 1422

The regulatory agencies responsible for controlling environmental protection for Virginia are the Department of Environmental Quality (DEQ) and the Virginia Department of Conservation and Recreation. In attempts to satisfy TDML requirements, Virginia has been pushing agriculturalists to implement best management practices (BMP), such as livestock stream exclusion. Virginia legislatures promised 95 percent exclusion to work towards these goals, however, the state is currently around 30 percent voluntary participation. In an attempt to meet exclusion goals, in early 2020 Virginia passed House Bill 1422, that mandates stream exclusion on all farms housing more than 20 cows.³⁷ A livestock stream exclusion system is essentially a system of fencing that prevents livestock from going into the streams or other critical areas that are not meant for grazing in order to improve water quality of streams.³⁸

This legislation also encourages farmers to develop management nutrient plans on agricultural cropland as well as establishing stakeholder groups to monitor and make sure that

³⁶ Environmental Protection Agency, *Chesapeake Bay TMDL Document* (Oct. 13, 2021 1:00 PM), EPA <https://www.epa.gov/chesapeake-bay-tmdl/chesapeake-bay-tmdl-document>.

³⁷ Chesapeake Bay Watershed Implementation Plan Initiatives, V.A. H.R. 1422 §§ 62.1-44.119- 62.1-44.123.

³⁸ USDA, *Fencing and Livestock Exclusion*, Water and Agricultural Information Center (Oct. 10, 2021 3:00 PM), <https://www.nal.usda.gov/waic/fencing-and-livestock-exclusion>.

there is progress to meet water quality goals from agricultural lands by 2025.³⁹ In order for farmers to develop a comprehensive nutrient management plan, Virginia laid out what a plan should look like in 4VAC50-85-140 better known as the Virginia Nutrient Pollution law. For the purpose of this brief, the relevant part of the Act is the Nitrogen provisions.⁴⁰ Mainly the nitrogen usages should not exceed crop nutrient needs, this will be determined by a nitrogen nutrient test during the growing season to decide different levels of usage.⁴¹

Virginia's Nonpoint Source Pollution Management Program

As of 2019, Virginia's Department of Environmental Quality set forth a Nonpoint Source Pollution Management plan that addresses nonpoint source pollution in the watershed. This is a five-step approach that seeks to address nonpoint source pollution, develop and implement watershed specific TDMLs, improve existing documents and watershed-based plans, increase public awareness, and obtain more funding.⁴² "To measure NPS Pollution Management Program success, DEQ tracks BMP installations and monitors water quality improvements related to NPS implementation plans to properly assess progress and needs in watershed restoration."⁴³ The DEQ lays out that these goals should be achieved within five years and seeks to balance BMPs with the benefits of the abundant agricultural area.

³⁹ Chesapeake Bay Foundation, *Farm Conservation Bills Pass Virginia House and Senate*, CBF Newsroom (Oct. 18, 2021 1:00 PM), <https://www.cbf.org/news-media/newsroom/2020/virginia/farm-conservation-bills-pass-virginia-house-and-senate.html>.

⁴⁰ 4VAC-50-85-140

⁴¹ *Id.*

⁴² Virginia Department of Environmental Quality, *Virginia Nonpoint Source Pollution Management Program Plan: 2019 Update*, DEQ (Oct. 10, 2021 10:00 AM), https://drive.google.com/file/d/1pTOE0j1KyOJXrLLm7QADez5uJKh5_N9/view.

⁴³ *Id.*

Virginia Conservation Easement Act

Currently there are over 750,000 acres under easements in Virginia.⁴⁴ To control this land, the Virginia Department of Conservation and Recreation implemented the Virginia Conservation Easement Act. This act requires that the purpose of these conservation easements to “include retaining or protecting natural or open-space values of real property, assuring its availability for agricultural, forestal, recreational, or open-space use, protecting natural resources, maintaining or enhancing air or water quality, or preserving the historical, architectural or archaeological aspects of real property.”⁴⁵ Chapter 10 of the Virginia Easement requires the person who is giving the easement be a holder which means a charitable organization or corporation. It is required that there is a third party who enforces these easements, they must be eligible to be a holder but not a holder themselves.⁴⁶ Further, the easement itself must be perpetual in duration unless otherwise noted. The easements are in the form of tax exemptions as well.⁴⁷

Virginia House Bill 1422

House Bill 1422 establishes a legal mandate for all Chesapeake Bay Farms with 20 or more cows to exclude livestock from any perennial stream. In addition, it requires all Chesapeake Bay croplands of larger than 50 acres to implement approved nutrient management plans.⁴⁸ On January 8th, 2020, Virginia House Bill 1422 entered the Virginia House of

⁴⁴ ARTICLE: THE WIND BLOWS IN VIRGINIA TOO--DECONSTRUCTING LEGAL AND REGULATORY BARRIERS TO THE DEVELOPMENT OF ONSHORE, UTILITY-SCALE WIND ENERGY IN VIRGINIA, 41 Wm. & Mary Env'tl. L. & Pol'y Rev. 151

⁴⁵ Va Code Ann. § 10.1-1009

⁴⁶ *Id.*

⁴⁷ *Id.*

⁴⁸ *Id.*

Representatives and passed by a vote of 79-20 on February 11th, 2020. On March 3rd, 2020 it then passed in the Virginia Senate by a vote of 77-19. Finally, the legislation was approved by the Governor on April 11th, 2020.⁴⁹ While 93 days is a relatively brief deliberation time for legislation, House Bill 1422 is quite controversial in the agricultural community of Virginia.

Both livestock exclusion and nutrient management plans are BMPs covered by state and local cost-share programs, such as endangered stream programs or Virginia's Conservation Reserve Enhancement Program (CREP).⁵⁰ Additionally, these options are the most cost-effective way to achieve significant reductions in nitrogen, phosphorus, and TSS.⁵¹ The Bill allows for repeal by December 31, 2025; essentially, if Virginia makes significant voluntary progress towards one or both goals by December 2025, the mandate will not be implemented. However, if there has not been significant progress, all qualifying properties will be expected to implement stream exclusion or nutrient management plans by July 1, 2026. Each violation may be punishable by a fine of up to \$2500. Exceptions are allowed if landowners are waiting on a response from a completed cost-share application submitted prior to December 31, 2025, or if the exclusion fencing was destroyed by an "Act of God" (natural disaster), a nonaffiliated third party, or an act of War, in this case, the impacted landowner has up to one year from the event to repair the fencing.⁵² Beyond the potential implementation of House Bill 1422, there is little other regulation requiring conservation measures.

⁴⁹ *Id.*

⁵⁰ Conservation Reserve Enhancement Program (CREP), <https://www.dcr.virginia.gov/land-conservation/sample-easement> (last visited Oct 19, 2021)

⁵¹ Chesapeake Bay Foundation, 2020 Virginia Legislative Session Chesapeake Bay Foundation (2020), <https://www.cbf.org/about/cbf/locations/virginia/offices/richmond/legislative-session/2020-virginia-legislative-session.html> (last visited Oct 19, 2021).

⁵² V.A. H.R. 1422

Barriers

These conservation efforts that Virginia is currently implementing are very promising. However, the problem with making an optional or solely encouraging a farmer or another agricultural business to implement these programs is that they will likely find, that it is too difficult to implement, or that it is too much work when there is nothing in it for them. The issue is there are few financial benefits to justify the work needed for implementation and maintenance of these programs. For something to work well, it must not only be well equipped in methodology but also practice. Furthermore, education is a barrier to these programs because farmers may not be aware that these programs and financial benefits exist or that BMPs could actually improve crop yields, water quality, and extend productive life of crop land.

4.3 Local Structure

However, many local organizations attempt to promote voluntary participating in conservation practices. There is an extensive hierarchy of voluntary, but not regulated, cost-share programs, ranging from targeting specific endangered streams through individual Soil and Water Conservation Districts and continue up through valley and state-wide programs, such as the Conservation Reserve Enhancement Program (CREP).⁵³ Another popular voluntary program is placing land under an easement, which promotes conservation and limits industrial use and subdivision of land, often while requiring the maintenance of conservation measures. These programs are not exclusive of each other, often a land under easement is also taking advantage of cost-share funding and other environmental programs.

⁵³ “CREP”, V.A. D.C.R.

5 Policy Proposal

5.1 Riparian Buffer Conservation Easements

Conservation Easements

Conservation Easements, or “Open Space Easements” are designed to protect areas of open land, often working farmland, from being subdivided and further developed. Commonly, easements place limitations on parcel divisions, restrictions on the erection of new buildings, limiting impervious surfaces, and requiring the implementation of conservation best management practices (BMPs). Some common BMPs include establishing healthy riparian buffers, reduction of soil-disturbing activities, implementing a nutrient management plan, and livestock exclusion measures.⁵⁴ Conservation Easements are permanent contractual agreements to implement land-use restrictions on properties; these restrictions are passed along to successive landowners. These contractual agreements are with certain private or public land trust organizations, such as the Virginia Outdoors Foundation or the Valley Conservation Council. After being placed under easement and satisfying any requirements for those easements, the land trust receiving the easement conducts an audit to ensure all measures of the easement remain in place.

By donating land under a conservation easement, the landowner is able to continue to use the land as they were, however, they are promising that it cannot be parceled or developed, which, in turn, lowers the property value. The IRS has created a systematic incentive program that allows landowners to take advantage of extensive tax deductions based upon the calculated loss in value due to the easement. This opportunity is great for families who are passionate about conservation

⁵⁴ Elements of a Conservation Easement, <https://www.dcr.virginia.gov/land-conservation/sample-easement> (last visited Oct 19, 2021)

and those who are looking to contractually ensure the future of their land as a farm or open-space.⁵⁵

Easements are a sustainable way to preserve land and promote conservation. Making the easement specific to reducing nutrient run-off, e.g., riparian buffer or cover crop, will improve water quality in the Shenandoah Valley. Virginia easements traditionally focus on preserving the entire property, which is a massive decision for landowners. Conservation-minded landowners are likely to be deterred by permanently encumbering all of their land with an easement and the cost of those “total easements” is very high due to the huge diminution of land value..

Riparian Conservation

We are proposing the implementation of “riparian buffer” conservation easements. As we discussed earlier, maintaining healthy riparian buffers and implementation of livestock exclusion measures are two imperative methods to improve stream water quality in agricultural-focused areas, notably, the Shenandoah Valley. When a property along perennial streams is placed under easement, the contract often stipulates implementing (or maintaining) riparian buffers and stream exclusion measures alongside the land-based measures. Our policy focuses on creating an option where farmers can place just the 100 foot buffer around streams under easement. This policy is aimed at enabling land owners to achieve specific conservation goals without relinquishing control over the land. Placing a 100 foot buffer under easement would protect the most integral zone for water quality while minimally interfering with the function of the farm. A 100-foot wide strip of forest and grass can reduce sediment by 97 percent, nitrogen by 80 percent and

⁵⁵ Income Tax Incentives for Land Conservation Land Trust Alliance, <https://www.landtrustalliance.org/topics/taxes/income-tax-incentives-land-conservation> (last visited Oct 19, 2021)

phosphorus by 77 percent.⁵⁶ This would allow landowners to guarantee their stream banks remain protected, provide a small monetary bonus, and minimize the anxiety and deterrent effect of property-wide conservation easements.

Virginia currently has a state-wide Conservation Reserve Enhancement Program (CREP) that offers incentives to contractually “rent” riparian land for 10-15 years, alongside federal incentive payments and cost-share opportunities.⁵⁷ While this program mirrors the area we aim to target, it is missing the permanent nature of a conservation easement. We would like to propose an option that follows the legal structure of conservation easements, but, only requires coverage of riparian zones like the ones CREP would target. Pennsylvania has implemented this type of program, known as the Riparian Buffer Protection Agreement.⁵⁸ In Pennsylvania, they target the 50 feet surrounding the water, calling this area the most critical for water quality protections.

A benefit of this program is that it need not exclude other conservation programs. Conservation easements have never barred landowners from obtaining other cost-share programs or enrolling in incentive programs.⁵⁹ The Virginia CREP program is widespread and effective,⁶⁰ placing this protected land under easement would solely solidify a landowner’s intention to preserve the riparian zone.

Additionally, with the looming deadline of VA House Bill 1422, farmers will likely have to implement these exclusion measures regardless. However, by placing the riparian land under

⁵⁶ “CREP”, V.A. D.C.R.

⁵⁷ *Id.*

⁵⁸ Riparian Buffer Protection Agreement ConservationTools, <https://conservationtools.org/guides/84-riparian-buffer-protection-agreement> (last visited Oct 19, 2021)

⁵⁹ “CREP”, V.A. D.C.R.

⁶⁰ *Id.*

easement, farmers are able to ease the financial burden that environmental conservation and House Bill 1422 inevitably places on the agricultural community.

Enforceability

The federal regulatory foundation of conservation easements is covered under 7 CFR § 1491.22 and enforcement of these easements is covered by 7 CFR § 1491.30-32.⁶¹ In the event of a violation, the land trust organization is first required to give notice and appropriate time to voluntarily correct the violation in accordance with the terms of their easement. From there, if the landowner still fails to comply with the easement, the land trust holder and Chief of NRCS are able to use any means within the Uniform Conservation Easement Act or the Virginia Open Space Lands Act⁶² and Virginia Conservation Easement Act.⁶³ Additionally, breaking easements will have significant monetary consequences through the IRS.⁶⁴ Through these measures, easements have been protected historically and we do not foresee difficulty enforcing riparian easements in the future, unlike other BMP implementation failures.

5.2 Education

5.2.1 Programs and Partners

Programs

While our policy can run simultaneously with other programs, it suits only those who know how to take advantage of the programs. The second part of our proposal is to encourage local agricultural organizations to create free or affordable evening classes for local farmers.

⁶¹ 7 C.F.R. §§ 1491.30 - 1491.32

⁶² V.A. Code Ann. §§ 10.1-1700-05

⁶³ “Elements of a Conservation Easement”, V.A. D.C.R

⁶⁴ “Income Tax Incentives”. Land Trust Alliance

These classes would focus on topics such as understanding conservation measures and how they benefit the farmer, how to apply for cost shares, how to use BMPs, and how to place land under conservation easements. This program would stress the importance and benefits of riparian buffers easements. Education programs are vital to the conservation easements' success because it is not enough to solely know about the program. How to best implement it and the ways that the agricultural industry can benefit from it is critical for the easement program to actually show benefits to the Shenandoah River Watershed.

The proposed informational sessions would be geared to the average farmer and agricultural facilitator so that the program would reach its target audience. Unfortunately, many environmental programs do not get a lot of participants because many people don't know about it. Thus, to circumvent this issue, we propose an educational program that not only teaches about what an easement is and how to put it in but all aspects of it. This clarity provides a greater chance that farmers will see a benefit for themselves and put in the necessary work to complete the job.

Partners

We propose that this program works in accordance with Shenandoah Riverkeepers network to do implement and execute these classes. The riverkeepers network is a non-profit environmental organization that uses community efforts and initiatives to protect rehabilitate the watershed's water quality. The Shenandoah Riverkeeper's network is within the Potomac River Keeper's network. The Shenandoah Riverkeeper would be one of the best programs for the class because they already have an open dialogue with farmers in the area.⁶⁵ They also have other

⁶⁵ Potomac River Keeper Network, *SHENANDOAH RIVER SHENANDOAH RIVER NETWORK* (Oct. 20, 2021 1:00 PM), <https://www.potomacriverkeepernetwork.org/shenandoah-river/>.

programs and fun events for the residents of the watershed with over 3,000 followers and likes on social media.⁶⁶ Furthermore, they run many clean water campaigns and reports on local algae counts. The Shenandoah Riverkeeper has not only the knowledge about the watershed, but connections to the community which would be extremely helpful to make our classes work and to spread awareness about the program.

Another partner could be the Virginia Bureau of Young Farmers. Young farmers is a community lead organization consisting of actual farmers in the area of Virginia.⁶⁷ This organization analyses agricultural issues and comes up with plans and solutions to the issues. They are an advocacy group and are well respected members of the community. This organization would be suitable for our conservation easement education program because it would be helpful to have a voice from within the community promoting the classes and implementing them. Also, they would be aware of the best way to convey educational information so that farmers and members of the agricultural community see the easements as benefits to them and not as a burden. Also, they do hold regular meetings and have other educational programs for farmers already in place.

⁶⁶ Shenandoah Riverkeeper (@ShenahdoaRiverkeeper), FACEBOOK (Oct. 19, 2021, <https://www.facebook.com/ShenandoahRiverkeeper/>).

⁶⁷ Young Farmers, *Young Farmers Virginia Farm Bureau*, Young Farmers Committee (Oct 12, 2021 10:00 AM) <https://www.vafb.com/membership-at-work/farmers-in-action/young-farmers>.

6 Conclusion

Nutrient management in the Chesapeake Bay Watershed has been an ongoing issue; unfortunately, there can never be a “catch-all” solution. In trying to improve eutrophication issues, environmental management strategies disproportionately place the burden on the agricultural community. While agricultural centers are significant contributors to the non-point source nutrient load, policies and programs need to adjust trajectory to work alongside the local farming communities instead of, seemingly, against them.

To work towards this cohesive goal in the Shenandoah Valley, we are proposing the implementation of a Riparian Buffer Conservation Easement program. This program would encourage the permanent implementation of two critical nutrient management conservation measures, healthy riparian zones and stream exclusion, while minimizing the deterring magnitude of a full-property conservation easement. In addition to the easement tax incentives, this will help local farmers satisfy the potential requirements included in upcoming legislation and is not dispositive to other conservation incentives.

The first step to conservation is education. With the \$2,000 award from winning the Elisabeth Haub School of Law Environmental Law & Policy Hack Competition Inaugural Problem, we hope to work through local organizations, like the Young Farmers or Shenandoah Riverkeeper, to fund free or affordable classes on how to apply for cost-share funding, the benefits of conservation on the farmers, understanding conservation laws and regulations, and how to place your farm under easement. Ideally, these classes will someday include how to implement a Riparian Buffer Conservation Easement in Virginia.

Appendix A – Certification

We hereby certify that the brief for University of Maryland Francis King Carey School of Law is the product of the undersigned. We further certify that the undersigned have read the Competition Rules and that this brief complies with these Rules.

Date October 20, 2020

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