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Incentivizing Conservation Practices through Government Cost-Share Programs in Virginia

DCR
Virginia Department of Conservation & Recreation

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Disclaimer

The author conducted this study as part of the program of professional education at the Frank Batten School of Leadership and Public Policy, University of Virginia. This paper is submitted in partial fulfillment of the course requirements for the Master of Public Policy degree. The judgments and conclusions are solely those of the author, and are not necessarily endorsed by the Batten School, by the University of Virginia, or by any other agency.

Honor Statement

On my honor as a student, I have neither given nor received unauthorized aid on this assignment.

Executive Summary

The Virginia Department of Conservation and Recreation (DCR) would like to increase enrollment in the Conservation Reserve Enhancement Program (CREP), which would help to make progress on Virginia's Chesapeake Bay Watershed Implementation Plan. CREP is a federal-state agricultural cost-share program that enrolls agricultural land in best management practices (BMP) intended to improve water quality, reduce soil erosion, and reduce nutrient pollution. Forested buffers on agricultural land are especially important to reduce agricultural pollution, which accounts for the bulk of Virginia's remaining pollution in the watershed.

This analysis includes a literature of the factors that lead to low enrollment as well as potential methods to increase enrollment.

In this project, I propose three alternatives for DCR to consider as it attempts to solve the problem of low enrollment:

1. Let present trends continue.
2. Advocate for more regular updates to CREP's average cost list.
3. Advocate for a more streamlined application process.

After evaluating each alternative based upon its effectiveness, costs, and political feasibility, I recommend DCR pursue Alternative 2: Advocate for more regular updates to CREP's average cost list. Despite the tradeoffs, this alternative combines affordability and political feasibility with a likelihood of increasing enrollment.

The final section of this report recommends steps for implementation of this alternative as well as considerations DCR should take with respect to stakeholders.

Introduction

Problem Statement

The Virginia Department of Conservation and Recreation (DCR) partners with the U.S. Department of Agriculture (USDA) to implement the voluntary Conservation Reserve Enhancement Program (CREP), which enrolls agricultural land in best management practices (BMP) intended to improve water quality, reduce soil erosion, and reduce nutrient pollution (*Conservation Fact Sheet: Conservation Reserve Enhancement Program – Virginia Chesapeake Bay*, 2017). Of the estimated 25,000 farms in Virginia, only about 2,500 (i.e., 10%) are currently enrolled in cost-share programs (J. Martin, personal communication, September 7, 2022). The low participation rate threatens Virginia's 2025 nutrient reduction targets for the Chesapeake Bay Watershed Implementation Plan (Strickler & Northam, 2019).

Client Overview

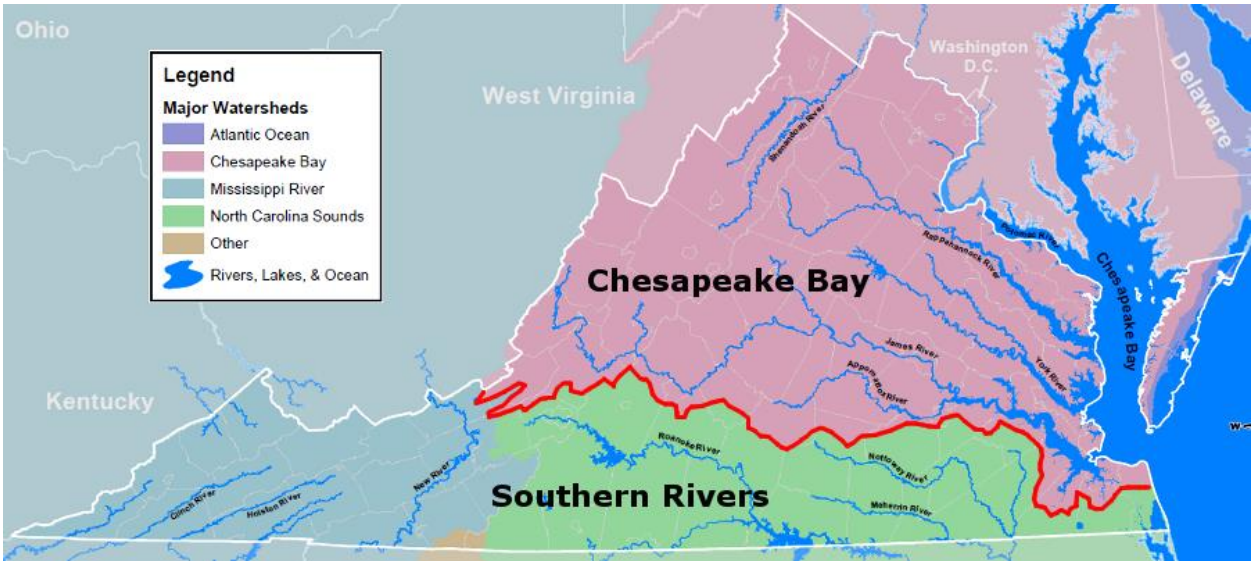
Virginia's DCR coordinates and manages agency programs that prevent the state's water quality from being degraded by nonpoint source pollution, which is pollution from diffuse sources such as sediment and excess fertilizers (Virginia DCR, n.d.-a; US EPA, 2015). Within DCR, the Soil and Water Conservation Division is responsible for administering pollution control programs that state law requires, including nutrient management, agricultural BMP, shoreline erosion advice, resource management planning, as well as the support of Virginia's 47 soil and water conservation districts (SWCD) (Virginia DCR, n.d.-a). As such, this Division partners with the USDA to incentivize agricultural BMP, and has allocated $6 million in matching funds for fiscal year 2023 (Strickler & Northam, 2019).

Background

At the federal level, CREP falls within the USDA's Farm Service Agency's (FSA) Conservation Reserve Program (CRP) (USDA FSA, 2020). CREP is an enhancement to CRP and serves as a public-private partnership program that allows states, Tribal governments, non-profits, and private groups to work with FSA to implement practices that target high-priority conservation and environmental goals (USDA FSA, 2021).

Nearly all lands in Virginia are eligible for CREP, which is separated into two regions. The Chesapeake Bay region encompasses Virginia's bay watershed and aims to plant 22,000 acres of riparian buffers and 3,000 acres of wetland restoration, while the Southern Rivers region encompasses the North Carolina Sounds watershed and aims to plant 13,500 acres of riparian buffers and 1,500 acres of wetland restoration (*Conservation Fact Sheet: Conservation Reserve Enhancement Program – Virginia Chesapeake Bay*, 2017; *Conservation Fact Sheet: Conservation Reserve Enhancement Program – Virginia Southern Rivers*, 2017). This is illustrated in Figure 1 below.

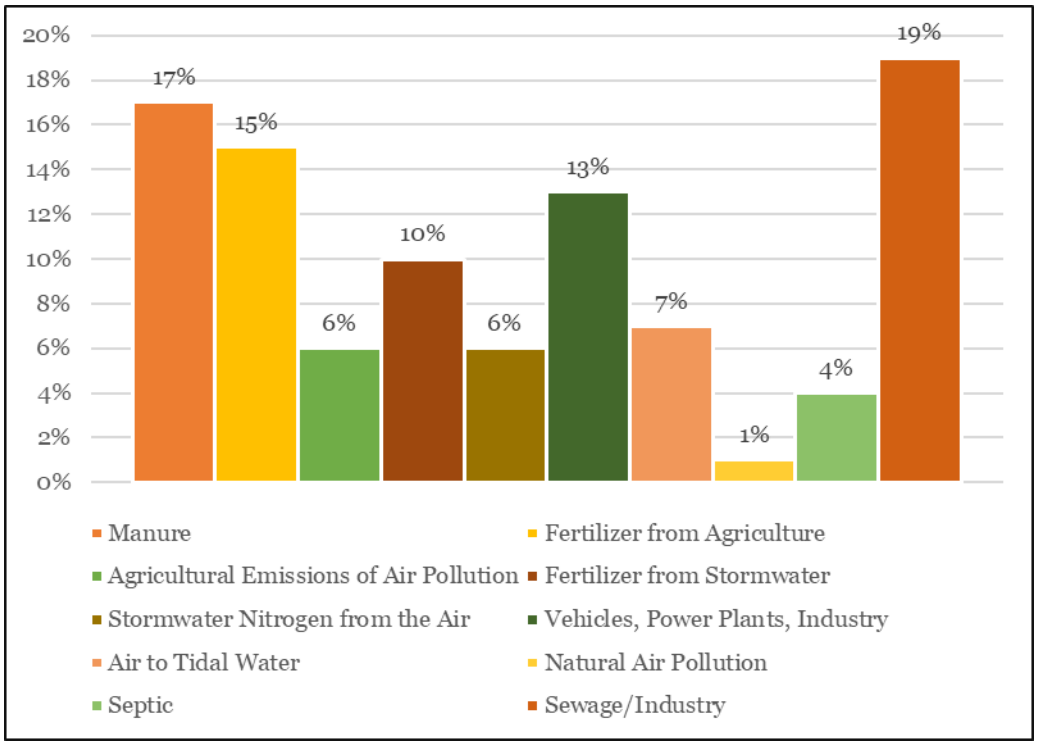
Figure 1: Map of the two CREP watersheds in Virginia



Source: Hydrologic Units of Virginia, n.d.

It is estimated that these efforts will decrease annual nitrogen loads in Virginia's watersheds by more than 500,000 pounds, phosphorus by more than 66,000 pounds, and sediment by more than 33,000 tons (*Conservation Reserve Enhancement Program (CREP) FY 2020 Overview*, 2019). These reductions will support the state in meeting its water quality improvement goals. As seen in Figure 2 below, 38% of nitrogen pollution to the Chesapeake Bay is from agriculture: manure (17%), fertilizer from agriculture (15%), and agricultural emissions of air pollution (6%).

Figure 2: Sources of Nitrogen Pollution in the Chesapeake Bay



Source: Chesapeake Bay Foundation's Chesapeake Bay Program, December 2012

Water Quality Consequences

The Chesapeake Bay is currently in poor health. The Chesapeake Bay Foundation's most recent biennial *State of the Bay* report found that too much pollution still reaches the watershed (*State of the Bay*, 2022). To improve and sustain long-term water quality, states are not on track to decrease pollution fast enough (*CBF's 2022 State of the Bay Score Unchanged*, 2023). Virginia, Maryland, and Pennsylvania together account for 90% of the Bay's pollution. Excess nitrogen and phosphorous are the Bay's two main

pollutants, which create algal blooms (*State of the Bay*, 2022). Algal blooms reduce water clarity and deplete the water's oxygen when they die and decompose, which creates the Bay's dead zone (*State of the Bay*, 2022). Pollution has also impacted the Bay's fish and shellfish populations, which has economic impacts on the fisheries that provide thousands of jobs and create billions of dollars each year (*State of the Bay*, 2022).

To address climate change, the Chesapeake Bay Program modeling estimated that an additional nine million pounds of nitrogen and 0.5 million pounds of phosphorus reductions are essential by 2025. Virginia's portion of that reduction is 1.722 million pounds of nitrogen and 0.193 million pounds of phosphorus (Strickler & Northam, 2019).

Policy Landscape

In May 2022, the USDA announced an additional $22.5 million in fiscal year 2023 to support farmers in the Chesapeake Bay watershed (*USDA Announces Initiative, Invests $22.5 Million in Water Quality Improvements in Chesapeake Bay*, 2022). On top of this, Virginia's Chesapeake Bay Watershed Improvement Plan has a deadline of 2025. While under-enrollment in CREP is not a new problem in Virginia, with the looming Watershed Improvement Plan deadline, DCR has an added incentive in addressing this issue. Stakeholders hope that more farmers enroll in CREP before the Chesapeake Bay Watershed Implementation Plan Phase 3 deadline (Harrison, 2022).

While Virginia and the other watershed states have made progress in reducing pollution from wastewater treatment plants, agriculture makes up most of the remaining pollution. Long term, this is not sustainable. Virginia must meet its 2025 goals by quickly accelerating pollution reductions. Recent increased investments are a hopeful step, but these funds must be sustained and targeted to the most advantageous practices, such as planting riparian forest buffers. Riparian buffers are critical to filter nutrient and sediment pollution and to mitigate climate change.

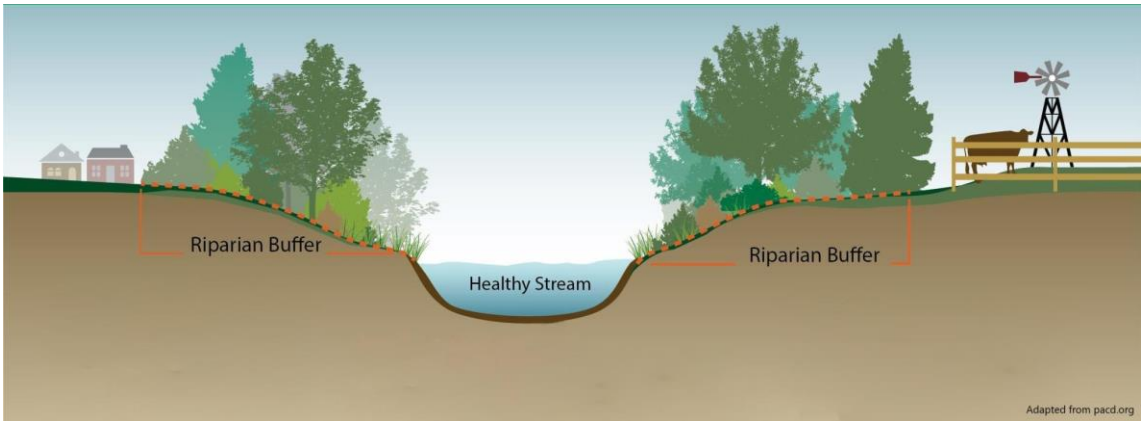
CREP Overview

CRP began in the U.S. in 1985 to focus on conservation practices as well as the retirement of highly erodible land. The 1996 Farm Bill established CREP as a supplementary program of CRP to better target environmental benefits (*Conservation Reserve Enhancement Program (CREP)*, n.d.). The financial incentives offered through CREP are higher than the incentives offered through CRP to appeal to landowners that could enroll crucial acreage (Suter et al., 2004). A 2008 survey conducted by the Virginia Department of Game and Inland Fisheries (DGIF) to measure the success of technical assistance programs offered by federal or state agencies found CREP enrollment at just 31.3% (Burnett, 2012). As mentioned above, the enrollment numbers have decreased even further since then.

How the Program Works

In Virginia, CREP helps farmers reestablish riparian forest buffers, grass and shrub buffers, and wetlands to decrease nutrient and sediment pollution in the state's waterways (Virginia DCR, n.d.-b). Hardwood trees, native warm season grasses, and/or otherwise approved shrubs and grasses are planted on all CREP-enrolled land (Virginia DCR, n.d.-b). CREP helps pay for forested riparian buffers up to 300 feet wide and cropland buffers up to 100 feet wide (Virginia DCR, n.d.-b). These buffers are illustrated in Figure 3 below. It is estimated that a 100-foot-wide strip of forest can decrease sediment by 97 percent, nitrogen by 80 percent, and phosphorus by 77 percent (Virginia DCR, n.d.-b).

Figure 3: Riparian Buffer Illustration



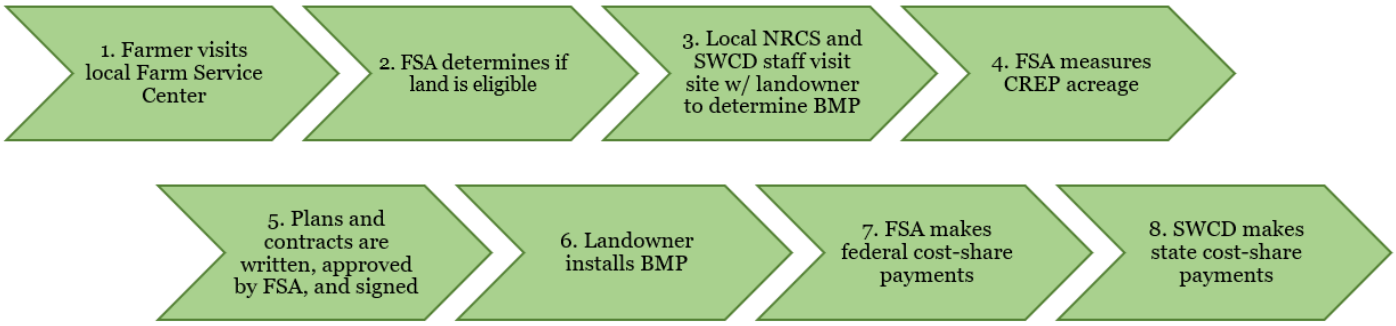
Source: Albemarle County, n.d.

The FSA reimburses up to 50% of a participant's eligible expenses for implementing BMP, while local SWCD offices reimburse the state's cost-share payments (Virginia DCR, n.d.-b). The state has traditionally reimbursed up to 35% of conservation practice costs that the local Farm Service office considers eligible. Therefore, total CREP cost-share has equated to 85% of eligible costs. However, this year, due to record funding, the FSA and Virginia are paying 100% of costs ("Record Funding Allows Farmers to Implement Conservation Projects for Free," 2022).

There are three types of payment: rental, federal incentive, and cost-share. Contracted acres for either 10 or 15 years (the farmer's choice) receive rental payments. The state pays $5 per acre per year of the contract, while the FSA gives a federal Soil Rental Rate per acre per year, which varies based on soil types (Virginia DCR, n.d.-b). Farmers must consult their local FSA office for their applicable rental rate. Forested riparian buffers, filter strips, and wetland restorations that meet the Natural Resources Conservation Service's (NRCS) minimum standards are eligible for federal cost-share reimbursement (Virginia DCR, n.d.-b).

To apply, the farmer first must visit the nearest Farm Service Center to begin the application process at any time year-round (Virginia DCR, n.d.-b). After that, the FSA determines if the land is eligible. If the land is eligible, then an NRCS conservationist and local SWCD staff visit the site with the landowner to plan the suitable conservation practices. FSA measures the CREP acreage, and then the parties write, approve, and sign the conservation plans and contracts. Next, once the application is complete, the landowner is eligible for CREP payments. Once the landowner finishes installing the BMP and it has been certified, the landowner can submit their bills to FSA. Both FSA and the local SWCD provide the cost-share payments, whereas FSA conducts random checks and pays annual rent throughout the contract. This sequence is illustrated in Figure 4.

Figure 4: CREP Enrollment Steps



Causes of CREP Low Enrollment

There are many potential causes to the problem of low enrollment. Research shows that landowners that did not pursue cost-sharing thought the application process was too complicated (22.0%), didn't want a long-term contract (21.6%), needed more financial incentive (19.8%) and/or needed the land for agricultural production (17.7%) (Burnett, 2012). These causes are explored further in the evidence on potential solutions section.

Another cause for under-enrollment is some farmers' fundamental religious and/or political beliefs, which may inhibit them from enrolling in any sort of government program. For example, in Virginia there are both libertarian and Mennonite farmers that appear morally opposed to enrolling in CREP. This is also the case in Pennsylvania, where Amish farmers asked a reporter to be identified by first name only to prevent their neighbors from criticizing them for taking federal money (Peterka, 2011). Some Amish farmers also explained that they weren't willing to make a big sacrifice in crops, despite the cash payments that would be made in return.

Meanwhile, a program very similar to CREP is also offered simultaneously in the state. The Virginia Agriculture Cost-Share (VACS) program operates at the state level with state funding. In many cases, it offers more financial incentive to producers, and the application process is less complicated compared to CREP's. The VACS program offers 10- and 15-year contracts and up to $300,000 per year in cost-share funding. The local SWCDs are the lead for VACS, and work with NRCS, but not with FSA. Because there are fewer parties involved, the turnaround time for VACS contracts is typically much

shorter compared to CREP. In some ways, VACS out-competes CREP. While CREP was popular early on as a program, other programs have now adapted to mimic CREP in a more simplified way, although CREP is still a better deal for some producers in the state.

Part of the reason for the difference in financial incentives is that the two programs use two different average cost lists, which denote how much funding a participant will receive for any given project, such as tree planting for a riparian buffer. CREP uses an average cost list maintained by the FSA, whereas VACS uses an average cost list maintained by the local SWCD. The SWCD is required to update the list annually (*Virginia Soil and Water Conservation Board Policy and Procedures FY 2023*, 2022). The FSA is not required to update the list as often, which leads to FSA's average cost list being outdated in comparison.

As an example, since 1998, the Thomas Jefferson Soil and Water Conservation District (TJSWCD) has installed 2,058 acres of riparian buffer through the CREP program (L. Hyatt, personal communication, February 28, 2023). However, the TJSWCD has not had any new CREP projects since 2020. In other words, in 2021 and 2022, there were no new CREP enrollments in the TJSWCD. During this same time period, the TJSWCD has installed 1,620 acres of riparian buffer through the VACS program. While the overall number of acres is lower, VACS enrollment in recent years has been more common compared to CREP.

Evidence on Potential Solutions

A growing body of work has sought to identify practices and techniques that may enhance enrollment of voluntary government programs. Overall, CREP enrollment is rather low considering the substantial monetary benefits that are offered to participants.

Overcoming Barriers to CREP Enrollment

As mentioned previously, some of the causes for low enrollment are: too complicated of an application process, too long of a contract, not enough financial incentive, and/or could not spare land for non-agricultural processes. There is also evidence of programs not taking farmers' values into consideration.

To understand factors influencing landowners' willingness to accept CREP's incentives to install riparian buffers, a 2002 study used hypothetical enrollment responsiveness to determine that the probability of installing a riparian buffer "increases with higher levels of incentive payments, a low percentage of income coming from farming, age of the farmer, and geographic location" (Lynch et al., 2002). Further, the study finds a "negative and significant relationship for the variable that represents farmers who expect to hold their land in the future rather than sell it for development" (Lynch et al., 2002). Virginia's growing urban centers, such as Richmond, and proximity to Washington, DC may have an impact in this regard.

A 2004 Cornell study developed an economic model for estimating landowners' receptiveness to CREP's financial incentives using GIS data (Suter et al., 2004). The authors found some interesting conclusions that may still apply today. First, landowners are indifferent between payments received upfront and payments that are spread out over the contract period. Second, enrollment levels decrease with greater pressure to sell land for development as well as with a higher percentage of irrigated cropland. Additionally, a farmer that has spent large amounts of time and money on irrigation equipment is less likely to enroll their land and lose out on the equipment's ensuing benefits. And finally, farmers are less likely to enroll land in CREP in counties where a large amount of land has already been enrolled in CRP.

More recent literature shows that a noteworthy method to working with farmers is through a relational values approach, a framework that promotes understanding of three important relationships of farmers to their land, community, and landscape (Chapman et al., 2019). Stakeholder interviews in Washington state revealed several additional reasons why a farmer might hesitate to enroll in CREP and install riparian buffers. For starters, farmers value a "neat and tidy" aesthetic, but riparian buffers are viewed as "messy." To overcome this, the literature suggests creating "'messy ecosystems'" in "'orderly frames'" (Nassauer, 1995). This idea was applied by a survey respondent who "'evened out'" the river using a variable width buffer. That is, while the buffer itself was messy, the field's straight edge showed that it was intentional and part of the farmer's plan. According to the 2019 study, "riparian buffer design could incorporate farmers' parcel-specific knowledge" which could help meet conservation goals while also validating farmers' expertise (Chapman et al., 2019). Farmers may feel disrespected when programs ignore this knowledge (Chapman et al., 2019).

Chapman et al.'s study shows that understanding potential participants' values can help to better design these programs, which can serve two purposes. First, participation can increase, and financial incentives can allow for projects through cost-shares without surpassing the full cost of these actions. Second, by incorporating values of stewardship and care for the land, conservation programs can strengthen these values.

Additionally, many of these barriers to enrollment are caused by transaction costs, which are the indirect costs related to the transfer of a good from one agent to another. Research shows that there are several benefits to reducing transaction costs, which can create barriers to the adoption of BMP. Transaction costs include the necessary time and/or expenditure on goods and services to complete the transaction. The good's specificity, the transaction's timing and/or frequency, as well as the transaction's uncertainty are all factors that influence transaction costs (Coggan et al., 2022). It is important to confront the perceived and actual transaction costs that may be creating these barriers.

The literature shows that the greatest perceived risk that farmers have when entering into a contract designed to improve water quality is related to the perception of paperwork associated with the arrangement (Rolfe et al., 2018; Rolfe & Star, 2019). Other studies evaluate how transaction costs influence each other, assessing the connection between compliance costs, psychological cost, and administrative burden (Ritzel et al., 2020).

There is also a growing body of literature that reports calculations of transaction costs of specifically environmental policy, highlighting that transaction costs are not small (Coggan et al., 2022). Studies show that the average private landholder transaction cost for implementing changes under European Agri-Environmental schemes (AES) was 15% of the total cost, while the average private landholder transaction cost for implementing changes under the Reef Rescue program near the Great Barrier Reef was 38% of the total cost (Coggan et al., 2022). Additionally, and as explained previously, research shows that establishing and nurturing relationships is important. A trusting rapport between the public and private parties in an environmental policy agreement decreases transaction costs (Coggan et al., 2022).

Conclusion

There are many reasons why eligible individuals might not enroll in programs that would benefit them and the environment. It seems likely that inconvenience and complexity are large drivers of the low enrollment problem in Virginia. The CREP enrollment process that navigates through FSA, NRCS, and SWCD is complicated and slow. These barriers need to be addressed by making the program more competitive and attractive to producers in order to increase enrollment.

Evaluative Criteria

Each proposed alternative will be rated on three criteria: effectiveness, costs, and political feasibility. Each criterion has its own measurement system indicated in the description below. The criteria are weighted equally to allow for a holistic evaluation.

Effectiveness: DCR's goal is to increase agricultural producers' enrollment in CREP in order to increase the number of acres converted to riparian buffers. Therefore, it is important that the policy alternative be simple and accessible for agricultural producers. Policy alternatives will be evaluated for the ease that they provide producers. To operationalize these considerations around effectiveness, I use a measure indicating whether the alternative has "low" effectiveness, "medium" effectiveness, or "high" effectiveness. "Low" effectiveness alternatives are likely to essentially maintain the enrollment process as is. "Medium" effectiveness alternatives are likely to incentivize enrollment based on research and conversations with DCR, SWCD, and NRCS staff, while "high" effectiveness alternatives are likely to incentivize enrollment to an even greater extent.

Costs: Costs will be a key determinant of whether a policy is implemented. DCR has a set budget to match USDA's funding, provide funding for its many other programs, and to implement any potential policy alternative. This criterion defines cost as the state budgetary portion of expenditures for CREP as well as other aspects of the total cost. Each alternative will have an estimated dollar figure for expenditures over the next year.

Political feasibility: Even if a proposal is within DCR's current capacity, it must also be acceptable to division, state, and federal staff within the present political climate. However, whether a given alternative is politically feasible is challenging to quantify. To operationalize these considerations around political feasibility, I use a binary measure indicating whether the alternative has "low" feasibility or "high" feasibility. "Low" feasibility alternatives are likely to meet at least one political roadblock. "High" feasibility alternatives are unlikely to meet such resistance based on research and conversations with DCR, SWCD, and NRCS staff.

Alternatives

There are three possible scenarios for CREP and VACS depending on the supply and demand for each program. The first scenario is that VACS is not fully enrolled and CREP is not fully enrolled. The second scenario is that VACS is fully enrolled and CREP is not fully enrolled. The third scenario is that VACS is not fully enrolled and CREP is fully enrolled. These scenarios are explored in the following analysis as appropriate.

Option 1: Let present trends continue.

Under the status quo, DCR will continue to coordinate on CREP. More specifically, DCR's Soil and Water Division will continue to partner with the USDA to incentivize agricultural BMP. As mentioned previously, this Division has allocated $6 million in matching funds for fiscal year 2023 (Strickler & Northam, 2019) while the USDA has allocated an additional $22.5 million in fiscal year 2023 to support farmers in the Chesapeake Bay watershed (*USDA Announces Initiative, Invests $22.5 Million in Water Quality Improvements in Chesapeake Bay*, 2022). This is a short-term solution for the FSA and Virginia to pay 100% of land conversion costs to incentivize agricultural BMP and reduce the nutrient load into the Chesapeake Bay ("Record Funding Allows Farmers to Implement Conservation Projects for Free," 2022). While DCR has allocated $6 million in matching funds for CREP this year, it has allocated $116 million for VACS (*Virginia Soil and Water Conservation Board Policy and Procedures FY 2023*, 2022).

Effectiveness: This alternative would not change anything about the program or its enrollment process. Given that the current enrollment process appears to be mired with bureaucracy, this alternative has a **low** effectiveness.

Cost: This alternative maintains the status quo. Therefore, the anticipated additional cost is **$0**.

Political feasibility: With this alternative, CREP will be maintained as is. Therefore, it has **high** political feasibility, because it receives support at the federal and state levels.

Option 2: Advocate for more regular updates to the FSA's average cost list. Both CREP and VACS match 100% of costs. However, each program adheres to a different cost list, meaning that the match totals are different. CREP uses a list determined by the FSA while VACS uses a list determined by the local SWCD. Whereas SWCD must update their list annually, FSA does not (*Virginia Agricultural BMP Cost-Share (VACS) Program Guidelines*, 2022). This leads to the FSA cost list being outdated, especially in relation to SWCD's list, and further leads to VACS being a better financial deal for most producers. For some producers CREP is still a better deal, but with VACS now offering up to $300,000 in annual payments, more producers are choosing VACS. If CREP wants to keep pace with the more nimble state-level cost-share program, then it needs to use a more current cost list to remain competitive. DCR could advocate to the USDA that FSA be required to update its cost list more regularly. The VACS cost list for 2023 is in the Appendix. DCR should compare this with FSA's cost list, which they will have better access to obtaining.

Effectiveness: This alternative would not change the enrollment process. However, it would call for changes to the program and would have positive financial benefits for the farmers. Updating CREP's average cost list would likely lead to increased enrollment in that program by bringing the incentive packages closer to parity. At the same time, increasing enrollment in CREP would likely simply shift some portion of the enrollments from VACS to CREP. If VACS is not fully enrolled and CREP is not fully enrolled, the net increase of bringing CREP to price parity with VACS is zero because, regardless, neither program would be fully enrolled. To increase CREP enrollment to a greater extent, CREP would need to use an average cost list that is higher than VACS's average cost list.

There is a need to calculate the potential enrollment increase by using results from real-world studies that focus on participation and enrollment in various programs. A study on increasing participation in health insurance programs found a 0.52 percentage point increase per 1% increase in benefit size (Remler & Glied, 2003). To the extent that this finding is transferrable to an agricultural program like CREP, we can expect a marginal

increase in enrollment by increasing the benefits. Therefore, this alternative has **medium** effectiveness.

It is difficult to project enrollment numbers without knowing CREP's current enrollment numbers, however DCR staff has better access to this data. To estimate the effectiveness on enrollment, find the cost difference between the list price and the new list price. Next, determine the percentage increase in this benefit, and multiply that by 0.52 to find the estimated rate of change. Then, take this rate and multiply it by the total current enrollment.

Costs: While DCR has a Media team that includes communications, marketing, and public relations staff, this policy alternative would require advocacy expertise (*DCR Media Center*, n.d.). DCR could rely on Virginia's Secretary of Agriculture and Forestry, Matthew Lohr, to fill this role. Part of Secretary Lohr's position is to act as a liaison between the programs and staff at the state level and programs and staff at the federal level. Given that this role is part of the Secretary's job, the additional cost would be **$0**.

Per DCR staff, CREP and VACS allocations have fluctuated over the years, and one or both funding sources have been fully expended in some years and not in others. Although this policy alternative would lead to more expenditures out of the CREP budget, it wouldn't necessarily lead to more costs to the state. In fact, this policy alternative could be revenue-positive for the state. If the policy induces more producers to enroll in CREP, it could shift money away from VACS and toward CREP. This would be a big win for the state given the federal funding for CREP. The cost savings of each enrolled project shifted could be estimated by taking the difference between what the state contributes for the average CREP project (35%) versus what the state contributes for the average VACS project (100%).

Political feasibility: U.S. Agriculture Secretary Vilsack displays a high level of support for the USDA's programs, and as stated previously, the USDA allocated an additional $22.5 million in fiscal year 2022 to help farmers improve water quality in the Chesapeake Bay watershed (*USDA Announces Initiative, Invests $22.5 Million in Water*

Quality Improvements in Chesapeake Bay, 2022). Secretary Vilsack has voiced support for boosting enrollment in agricultural programs, especially those that are tied to climate change and climate-smart solutions (*USDA Expands and Renews Conservation Reserve Program in Effort to Boost Enrollment and Address Climate Change*, 2021). Additionally, Virginia's Secretary of Agriculture and Forestry, Matthew Lohr, previously served as Chief of the USDA-NRCS, and likely maintains many contacts within both the agency and the department that would prove helpful with this effort (*Secretary of Agriculture and Forestry - Matthew Lohr*, n.d.). Therefore, this policy alternative ranks **high** in political feasibility.

Option 3: Advocate for a more efficient application process.

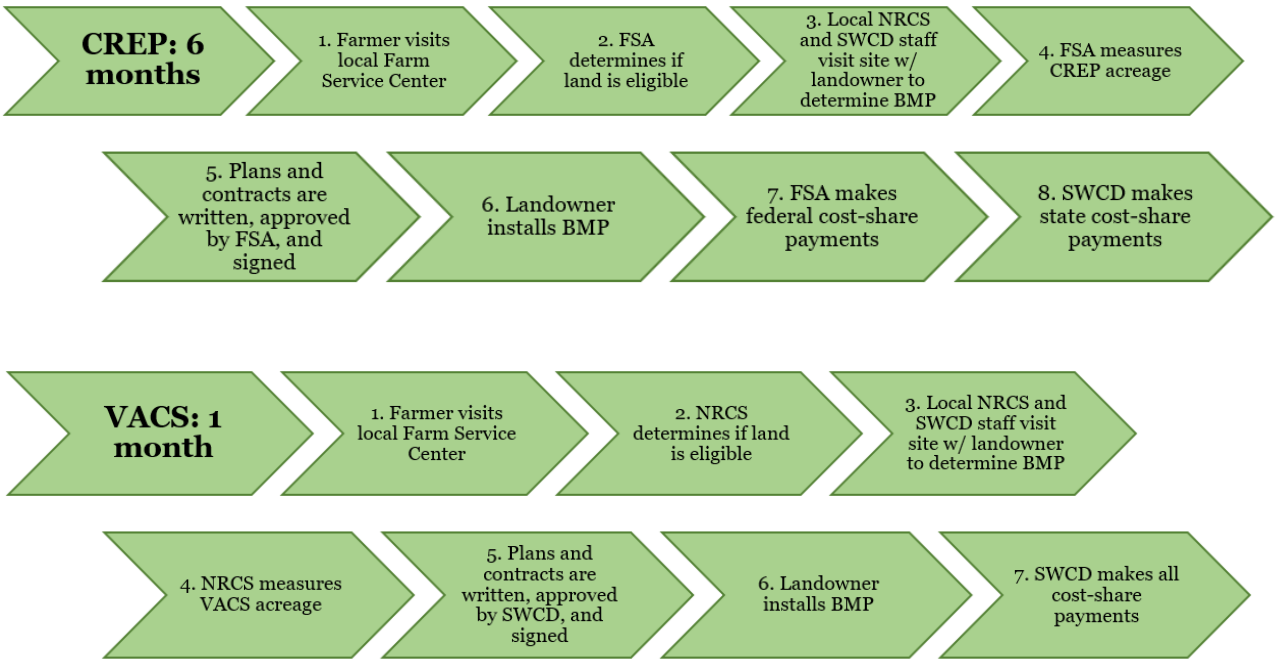
Many federal, state, and local agencies are involved in the CREP application process. For a producer, a typical enrollment process entails first contacting the local SWCD office or the local FSA. From there, the local NRCS dispatches staff to survey the property and provide technical assistance. The local SWCD staff helps with some of the paperwork. If the NRCS staff determines that a particular piece of property might qualify for CREP, the application is forwarded to the local FSA. From here, the FSA takes up to six months to issue a final opinion on whether an application is approved or rejected. If the application is approved, then the local SWCD issues the state cost-share payments and the FSA issues the federal cost-share payments.

DCR could advocate to the USDA on behalf of its producers and farmers that the CREP application process be more efficient and timely. The FSA takes too long to approve or reject applications, which makes VACS a more likely program for NRCS and SWCD staff to recommend to producers. On top of this, producers are less likely to recommend CREP to other producers if they have a negative enrollment experience.

Meanwhile, as mentioned before, CREP has competition from the statewide VACS program, which has a much more streamlined process. For VACS, the local SWCD takes the lead on coordinating. The local NRCS staff helps with surveying the land and providing technical assistance, while the SWCD staff then approves or rejects the

application. From start to finish, the VACS enrollment typically takes about a month. Figure 5 illustrates CREP enrollment compared to VACS enrollment.

Figure 5: Comparing Enrollment Steps for CREP and VACS



Effectiveness: This alternative would make the application process more efficient for producers. While there are many factors that influence a producer's decision to enroll in CREP, research shows that simplifying and streamlining the application process could make the program more attractive to some producers, particularly those who may be deterred by a lengthy or complex application process.

In general, research has shown that reducing administrative barriers and improving the efficiency of conservation program enrollment can increase participation rates among farmers and landowners (Coggan et al., 2022). As mentioned in the literature review, it is important to confront the perceived and actual transaction costs that may be creating these barriers.

Again, there is a need to calculate the potential enrollment increase by using results from real-world studies that focus on participation and enrollment in various programs.

The study on increasing participation in health insurance programs found that perceiving forms as long and complicated implies that a potential participant is 1.8 times less likely to take up the health insurance program (Remler & Glied, 2003). To the extent that this finding is transferrable to a program like CREP, we can expect an increase in enrollment by decreasing inconvenience. Therefore, this alternative has **high** effectiveness.

Costs: This alternative would require removing FSA from the CREP application process. CREP does not appear to be a priority for FSA, given the length of time it takes to approve or reject an application. Removing FSA would simplify the process by making it less complex and more efficient.

Similar to Option 2, while DCR has a Media team that includes communications, marketing, and public relations staff, this policy alternative would require advocacy expertise (*DCR Media Center*, n.d.). DCR could rely on Virginia's Secretary of Agriculture and Forestry to fill this role. Part of Secretary Lohr's position is to act as a liaison between the programs and staff at the state level and programs and staff at the federal level. Given that this role is part of the Secretary's job, the additional cost would be $0.

This alternative would also require shifting FSA's responsibilities to NRCS and SWCD staff. Given that NRCS and SWCD are already involved in the VACS process, they would need minimal training to fulfill this function. The existing uptake of VACS and CREP would affect the extent of this new responsibility. If neither VACS nor CREP are fully enrolled, the increase in CREP enrollment would likely not require an extensive additional amount of work for NRCS and SWCD. If VACS is fully enrolled and CREP begins to increase enrollment, the NRCS and SWCD staff would likely have more work on their plates. If VACS is not fully enrolled and CREP begins to increase enrollment, this increase would likely not require an extensive additional amount of work. Assuming that existing NRCS and SWCD staff can absorb these responsibilities, the total cost for this alternative is **$0.**

Again, similar to Option 2, this policy alternative may shift some costs from the state to the federal government. CREP and VACS allocations have fluctuated over the years, and one or both funding sources have been fully expended in some years and not in others. This policy alternative could be revenue-positive for the state if it induces more producers to enroll in CREP, thus shifting money away from VACS and toward CREP. This would be a big win for the state given the federal funding for CREP. The cost savings of each enrolled project shifted could be estimated by taking the difference between what the state contributes for the average CREP project (35%) versus what the state contributes for the average VACS project (100%).

Political feasibility: There are several political matters to navigate for this policy alternative. For starters, a state agency advocating for increased efficiency from a federal agency would require a delicate balance of voicing the need for improvements in a respectful way, because the USDA has allocated a significant amount of funding to the state. Additionally, there is both a state executive director of FSA in Virginia and a federal FSA administrator that likely hold veto power over this issue given their positions (*Dr. Ronald Howell, Jr., State Executive Director*, 2022; *FSA Administrator*, 2021). Plus, FSA receives dedicated funding each year for this program, including salaries, which would be shifted to a different agency were FSA to be removed from the CREP process.

These FSA officials may have a vested interest in keeping this program complicated because they may not actually want people to enroll. Historically, the FSA has been most focused on implementing their traditional crop programs and commodity payments. Given that FSA handles many competing priorities as an organization, it may be eager to shed this responsibility. However, the FSA officials' approach to this change is difficult to ascertain, therefore this alternative has **low** political feasibility.

Outcomes Matrix

	Option 1: Let present trends continue.	**Option 2: Advocate for more regular updates to CREP's average cost list.**	**Option 3: Advocate for a more streamlined application process.**
Effectiveness	Low	Medium	High
Marginal Costs			
State Costs	$0	Variable (see description above)	Variable (see description above)
Federal Costs	$0	Variable (see description above)	$0
Political Feasibility	High	High	Low

Recommendation

Based on the above analysis, the recommended policy alternative is Option 2: Advocate for more regular updates to CREP's average cost list. While the logistics of planning and executing such a process may be difficult, this policy alternative combines a medium impact on increased enrollments, a low cost, and a relatively high level of political feasibility that make it the most promising avenue to pursue. Bringing CREP to price parity with VACS will make CREP more attractive to producers, while bringing CREP above price parity with VACS may shift demand from VACS to CREP.

A note on costs: The costs are unknown at this time because the FSA has not shared the current enrollment figures for CREP in Virginia. Once DCR gains access to this data, they can use this information to project the marginal changes in costs for Option 2 and Option 3.

Implementation

DCR should begin by ground truthing this policy alternative with farmers and providers from all corners of the state. DCR should learn more by conducting focus groups and interviews to understand from Virginia farmers why they might hesitate to enroll in CREP. These focus groups would build on prior community surveys and outreach while helping DCR understand present-day challenges.

The focus groups would ideally use the relational values approach, which promotes understanding of three significant relationships of farmers to their land, community, and landscape. It would be beneficial for DCR to understand at a more fundamental level what Virginia farmers value on the ground. DCR should conduct interviews similar to the stakeholder interviews in Washington state, which revealed several reasons why a farmer might hesitate to enroll in CREP and install riparian buffers, as described in the evidence on potential solutions section.

The focus groups would need adequate attendance and participation. A similar effort led by Virginia Cooperative Extension to collect data on practice adoption and implementation was a very long, intense survey promoted by state and local agriculture groups, and the response rate was dismal. However, the timing was not ideal with being conducted during the Covid-19 pandemic, which prevented face-to-face outreach. DCR could partner with Virginia Cooperative Extension or another group to conduct focus groups.

Simultaneously, policy and data analysts at DCR need to gain access to the CREP enrollment figures so that they can project the cost differentials, potential enrollment increases, and the resulting demand responses for CREP and VACS following the programmatic changes identified as policy alternatives. Once DCR has confirmed that the recommended policy is its best course of action, it can move forward with this plan.

Secretary Lohr will be the lead on building a coalition of government agencies and staff that support this effort while also mobilizing interest groups to further support the overall effort. This coalition will share the deep core belief that agricultural land must

produce less runoff into the Chesapeake Bay watershed. As evidenced above, this is a serious issue. Various agencies and interest groups within this coalition will have differing policy beliefs on how best to solve this problem. For example, coalition members such as DCR, FSA, and the Chesapeake Bay Foundation may have differing views on increasing CREP enrollment or increasing VACS enrollment. These policy beliefs are more amenable to change than the deep core belief of wanting to decrease runoff into the Bay. Because the status quo is not satisfying this deep core belief, the situation is fertile ground for a negotiation. It is important that Secretary Lohr create a negotiation forum that allows for participation by major coalition members, that fosters long-term interaction, that builds trust, that focuses on important empirical questions, and that utilizes a negotiator or broker who is perceived by all sides as neutral.

Given the USDA's attention on the Chesapeake Bay's health, the Secretary should be prepared to seize on this opportunity for improvement while the policy window is open. There are several strategies that the Secretary can use to gain support. Secretary Lohr can lean on co-optation of the policy alternative idea by utilizing his strong interpersonal skills among the other political actors in the group. The Secretary may need to use compromises to make the alternative more politically acceptable. He can also employ rhetoric to frame this issue in a favorable way.

Considerations and Risks

It is important to note that there is potential for setbacks associated with implementing an advocacy campaign focused on bringing the CREP average cost list in alignment with VACS's average cost list. The USDA and FSA may not believe that increasing CREP's average cost list is necessary. Additionally, there may be DCR staff who do not believe this to be a priority. This might be especially true if there are cuts to DCR's budget, with many programs vying for the same pot of funding. To the extent possible, Secretary Lohr and DCR leadership should aim to assuage these risks.

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Appendix

2022-23 BMP COST ESTIMATE WORKSHEET

Name:
Tract #:

Designed By:
Reviewed By:
Date:

Structure	Amount		Price per amount		Total Price
Trough, with pad					
Concrete 500 gal	0	No.	$2,800.00	/Installed	$0.00
2 Hole Frost-free	0	No.	$2,800.00	/Installed	$0.00
4 Hole Frost-free	0	No.	$3,200.00	/Installed	$0.00
6 Hole Frost-free	0	No.	$3,500.00	/Installed	$0.00
Frost-Free Hydrant	0	No.	$300.00	/Installed	$0.00
Cobett	0	No.	$2,450.00	/Installed	$0.00
Extended Concrete Pad beyond 8' x 8'	0	Cu. Yd	$215.00	/Installed	$0.00
Pipeline/Tile					
1" PE (Plastic)	0	Ft.	$4.00	/Ft.	$0.00
1.25" PE (Plastic)	0	Ft.	$4.55	/Ft.	$0.00
1.5" PE (Plastic)	0	Ft.	$5.40	/Ft.	$0.00
2" PVC-Schedule 40	0	Ft.	$6.00	/Ft.	$0.00
Cut off Valve Box-if outside pad-metal top required	0	No.	$225.00	/Installed	$0.00
Pressure Reducer	0	No.	$225.00	/Installed	$0.00
Adjustment for rock-must be verified by TJ staff	0	Ft.	$2.25	/Ft.	$0.00
Well					
Drilling Average 400'	0	No.	$6,500.00	/No.	$0.00
Well Fracking (prices vary TJSWCD will evaluate costs on a case by case	0	No.	$2,500.00	/No.	$0.00
Well Head Protection-Board Fence	0	No.	$175.00	/No.	$0.00
Well Head Protection-Well Casing	0	No.	$325.00	/No.	$0.00
Well Permit ($350 MAX)	0	No.	$350.00	/No.	$0.00
New Electrical Service (Reviewed case by case)	0	No.	$2,000.00	/No.	$0.00
Electric Meter Base	0	No.	$900.00	/No.	$0.00
Pumping System for Well					
Pump and pressure tank (Costs for tanks over 44 gallon will be evaluated on a case by case basis)					
Pump and pressure tank (42-44 gallon tank)	0	No.	$3,400.00	/No.	$0.00
Pump and pressure tank (32-34 gallon tank)	0	No.	$3,100.00	/No.	$0.00
Pump and pressure tank (20-26 gallon tank)	0	No.	$2,700.00	/No.	$0.00
Shelter for Pressure Tank					
Underground Vault with Lid and Drain-minimum 4' diameter	0	No.	$1,850.00	/No.	$0.00
Concrete Well Casing with Lid (must meet frost free specs.)	0	No.	$750.00	/No.	$0.00
Framed Structure within an Existing Building (evaluated case by case)	0	No.	$800.00	/No.	$0.00
Fence-All Fencing Rates Include Two 16 foot gates per 1000'					
1 strand HT electric	0	Ft.	$3.15	/Ft.	$0.00
2 strand HT electric	0	Ft.	$3.35	/Ft.	$0.00
3 strand HT with 2 electric	0	Ft.	$4.45	/Ft.	$0.00
4 strand HT with 2 electric	0	Ft.	$4.65	/Ft.	$0.00
5 strand HT with 2 electric	0	Ft.	$4.85	/Ft.	$0.00
6 or 7 strand HT	0	Ft.	$4.85	/Ft.	$0.00
4 strand barb-T-posts	0	Ft.	$4.60	/Ft.	$0.00
5 strand barb-T-posts	0	Ft.	$4.75	/Ft.	$0.00
4 strand barb-All Wood Posts	0	Ft.	$5.35	/Ft.	$0.00
5 strand barb-All Wood Posts	0	Ft.	$5.50	/Ft.	$0.00
4-Ft fixed knot HT woven wire with 1 barb or HT electric	0	Ft.	$5.75	/Ft.	$0.00
Speciality Animal Fence-must be planned by TJ staff and approved by AG. Committee	0	Ft.	$6.75	/Ft.	$0.00
Ford Crossings					
Open Ford-light grading	0	Sq. Ft.	$3.50	/Square Ft.	$0.00
Open Ford-moderate grading	0	Sq. Ft.	$4.25	/Square Ft.	$0.00
Open Ford-heavy grading	0	Sq. Ft.	$5.00	/Square Ft.	$0.00
Culvert Stream Crossings (rates will be reviewed case by case depending on site conditions and design)					
With 24" Culvert -10' on each side of stream	0	Sq. Ft.	$7.00	/Square Ft.	$0.00
With 30" Culvert - 15' on each side of stream	0	Sq. Ft.	$8.25	/Square Ft.	$0.00
With 36" Culvert - 20' on each side of stream	0	Sq. Ft.	$9.50	/Square Ft.	$0.00
Water Reservoirs (rates will be reviewed case by case depending on site conditions, design and material quote)					
1200-1800 gallon concrete tank 5" thick concrete with riser and excavation	0	No.	$6,000.00	/Installed	$0.00
2000 gallon (or larger) concrete tank 5" thick concrete with riser and excavation	0	No.	$7,000.00	/Installed	$0.00
Spring Development (prices vary based on design-TJSWCD will evaluate costs on a case by case basis)					
Spring Development-New	0	No.	$4,500.00	/No.	$0.00
Planting					
Pasture (Seed/Lime/Fertilizer/Mulch)	0	Ac.	$400.00	/Ac.	$0.00
Critical Area w/ Grading, etc.	0	Ac.	$2,500.00	/Ac.	$0.00
Grassed Waterway	0	Ac.	$2,750.00	/Ac.	$0.00
Cover Crop	0	Ac.	$100.00	/Ac.	$0.00
Roof Runoff (prices vary based on type of structure-TJSWCD will evaluate costs on a case by case basis)					
6" Seamless Aluminum Gutters	0	Ft.	$8.00	/Ft.	$0.00
Downspouts 3-4"	0	Ft.	$6.00	/Ft.	$0.00
Downspouts 4-5"	0	Ft.	$7.00	/Ft.	$0.00

Underground Outlet 6"	0	Ft.	$6.50	/Ft.	$0.00
Underground Outlet 8"	0	Ft.	$8.50	/Ft.	$0.00
Fascia Boards	0	Ft.	$8.00	/Ft.	$0.00

Animal Waste (Price will be evaluated based on design and 3 bids)

Animal Waste Facility - Roof, Concrete Floor, 4' - 6' wall	0	Sq. Ft.	$32.00	/Sqft	$0.00
Animal Waste Facility - Roof, Concrete Floor, 8" curb	0	Sq. Ft.	$27.50	/Sqft	$0.00
Excavation - Grading for Construction of Dry Animal Waste Structure	0	No.	$8,000.00	No.	$0.00

Animal Trails & Walkways

Animal Walkway within floodplain-(9" of stone)	0	Sq. Ft.	$3.50	/Square Ft.	$0.00
Heavy Use Area Pad or animal walkway outside of floodplain (6" of stone)	0	Sq. Ft.	$3.00	/Square Ft.	$0.00

Labor Rates

Manual Labor	0	Hour	$25.00	/Hr.	$0.00
Tractor	0	Hour	$90.00	/Hr.	$0.00
Bobcat/Skid Loader	0	Hour	$125.00	/Hr.	$0.00
Mini Excavator	0	Hour	$125.00		$0.00
Track Loader	0	Hour	$125.00	/Hr.	$0.00
Dozer	0	Hour	$125.00	/Hr.	$0.00
Back Hoe (producer-owned)	0	Hour	$125.00	/Hr.	$0.00
Bush Hogging (maximum)	0	Acre	$65.00	/Acre	$0.00

Mobilization Fee

Transport, Loading of Heavy Equipment	0	No.	$350.00	/No.	$0.00

Tree Planting

300 Hardwood Trees/ac Planting (Site Prep included)	0.0	Acres	$3,200.00	/Acre	$0.00
Conifer Tree Planting (Site Prep included)	0.0	Acres	$540.00	/Acre	$0.00
Hardwood/Pine Planting	0.0	Acres	$2,275.00	/Acre	$0.00

Total Estimated Cost: **$0.00**
Estimated Cost Share:
Tax Credit on out of pocket expenses:

***Cost share paid on estimated or actual costs, whichever is less, not to exceed the amount approved by the TJSWCD Board of Directors, or the $300,000 cap. Buffers payments for the SL-6W practice are capped $12,000 for 10 year lifespans and $18,000 for 15 year lifespans. Upon completion of project, cost estimates will be revised to reflect actual installed values to determine allowable costs. Cost share paid on actual type of fence installed, up to extent allowed. Seeding and mulching costs included in individual component costs and are based on minimal soil disturbance. Fencing rates include two 16' gates per 1000 feet of fence. For rates and costs not listed, District staff will research and determine the appropriate cost(s) to use.