

ROUND 5 CFPF GRANT APPLICATION

2025

VIRGINIA COMMUNITY FLOOD PREPAREDNESS FUND

BLACKSBURG STREET AND MILL DAM
REMOVAL STUDY



TAZEWELL COUNTY
COMMUNITY ID #510160



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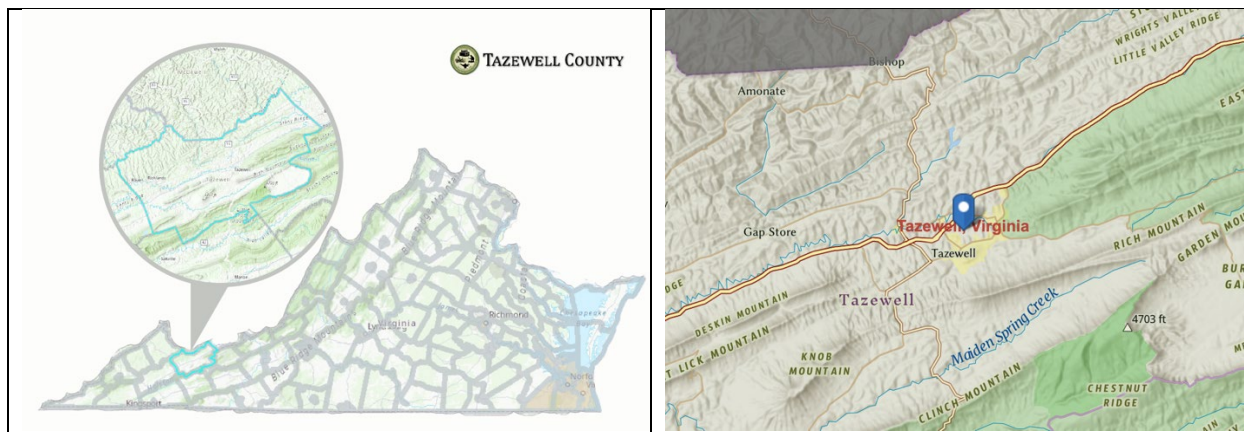
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INTRODUCTION

Tazewell County (County) is applying for Virginia Community Flood Preparedness Fund assistance to perform the “**Blacksburg Street and Mill Dam Removal Study**” for the Blacksburg Street Community (near 152 Blacksburg St, North Tazewell, VA 24630) in North Tazewell (**Figure 1**). The abandoned mill building and associated dam (formerly the Farm Bureau) **obstruct the natural flow of the Clinch River** as well as **capture significant debris**. Residents of North Tazewell noted that the mill building and dam cause water to build up and contribute to the **flooding of the community** on Blacksburg Street. The community reports **frequent flooding** from multiple sides of the river including flood waters running down Blacksburg Street that can completely **block vehicular access**. During the 2003 flood, several members of the community had to be rescued from the nearby church due to flooding. **Most of the neighborhood is in the 100-year floodplain**. Identified in the **2023 Tazewell County Flood Resilience Plan (a comprehensive, cohesive plan funded by the CFPF)**, the proposed study aims to identify a **long-term nature-based solution** based on **best available science** acknowledging the **consequences of climate change**. The solution selection process will **address socioeconomic inequities to enhance equity and be developed with transparency and input from the public**. A **nature-based solution** is usually the most **cost-effective** way to provide flood protection to this **low-income, moderate-high socially vulnerable** community. The County is requesting **grant funding of \$266,663** to be matched with in-kind County expenses of \$29,629 for a study **total cost of \$296,292**. This breakdown meets the requirements for a 90%/10% cost share.

This grant application has been **authorized** by C. Eric Young, the Tazewell County Administrator, and **supported** by Shanna Plaster, the Chair of the Tazewell County Board of Supervisors, and Todd Day, the Town of Tazewell Manager.

FIGURE 1. LOCATION MAP OF TAZEVELL COUNTY AND TOWN OF TAZEVELL



There are several actions that have the potential to help reduce flood risk for the Blacksburg Street Community such as the removal of the abandoned mill building itself, removal of just the dam, the acquisition of nearby undeveloped parcels for flood storage, and the acquisition of properties to return to natural areas for flood storage. Removing the mill building and/ or the dam will restore the natural flow of the creek, limit the accumulation of debris, and reduce flooding of the Blacksburg Street Community.

The study scope includes town planning and communication, dam removal planning, Baseline 2D Base Level Engineering (BLE) modeling, study of existing conditions, selection, and study of a preferred alternative, and communicating and documenting results. The mill building and dam removal project scope includes community engagement, gap analysis and document reviewing, topological and geomorphic surveying, hydrologic and hydraulic modeling, alternatives study, design and permitting, structure removal, and stream restoration.

The following outlines the specific problems the proposed project focuses on addressing, the project goals and objectives, a work plan, and evaluation processes.

NEEDS AND PROBLEMS

Tazewell County experiences persistent flooding which can be attributed to its steep topography and the presence of several smaller tributaries that feed into the region's larger streams and rivers. The area's mountainous terrain and the high volume of water from the streams and rivers increase the risk of flash flooding. The Blacksburg Street Community is especially susceptible to flooding as most of the neighborhood is surrounded by the Clinch River and within the 100-year floodplain.

Compounding the situation is the abandoned mill building, formerly known as the Farm Bureau. The structure obstructs the creek's natural flow and collects debris (**Figure 2**). In addition to debris blocking the flow, the presence of beaver dams and sedimentation contribute to water buildup. This blockage contributes to increased flooding from multiple sides of the creek, including water running down Blacksburg Street, blocking access to the road. Severity of flooding impacts in the area became apparent during a flood event in 2003 that prompted emergency rescues of several community members stranded in a nearby local church.

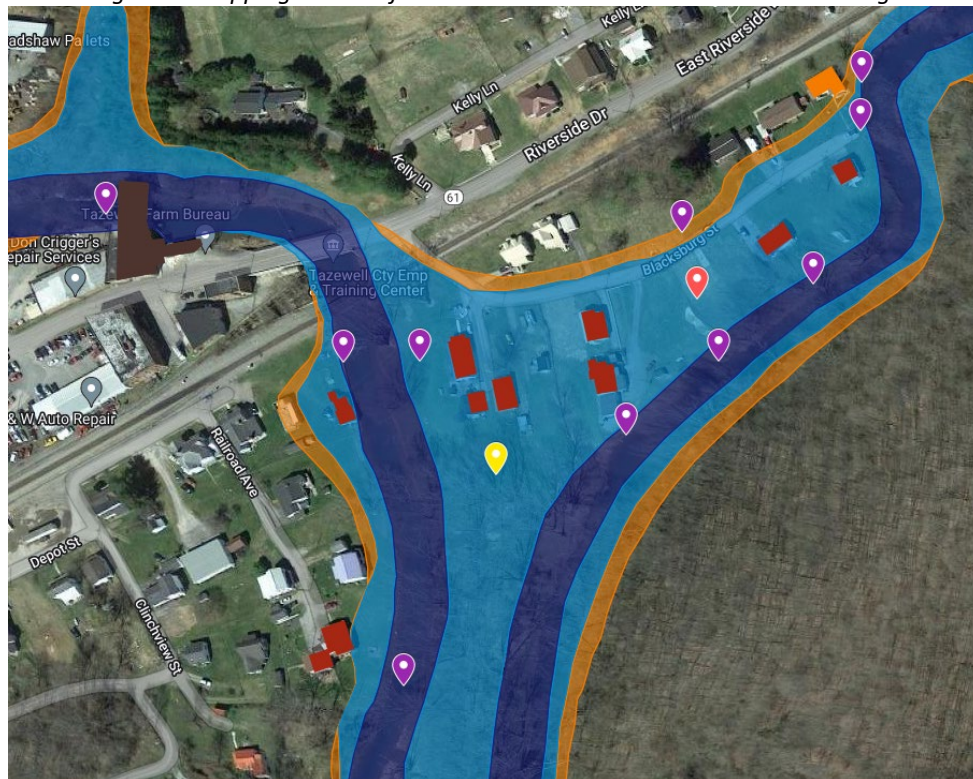
Blacksburg Street, a **historically black community** in North Tazewell, is currently home to around **ten to twelve residential homes**. All homes sit **within the 100-year floodplain** and because this, **flooding has become a recurring issue** for community members which **impedes their health and safety, disrupts their daily lives, and causes significant damage to property**. The neighborhood is comprised of renters and older, long-time residents who have made substantial investments in their homes over the years but say that the flooding is getting worse. As a **low-income geographic area**, many homeowners **do not have flood insurance** to cover costs and are concerned about their ability to pass down intergenerational wealth.

During past flood events, floodwaters have overtopped the bank of the Clinch River at the east end of Blacksburg Street and traveled up the road to the west. **All residential homes located along the south side of the street are impacted by flooding**. In a public meeting with Blacksburg Street community members for the development of the **2023 Tazewell County Flood Resilience Plan**, many individuals voiced concerns about these impacts. It was noted that residents must move their vehicles out of the area when heavy rainfall is predicted to reduce the risk of property damage. **Many fear that their homes will continue to be seriously damaged in future flood events**. Feedback during the meeting was mapped in an exercise as shown in **Figure 3**.

Figure 2: Abandoned Farm Bureau Building capturing debris.



Figure 3: Mapping Exercise from Tazewell Risk Assessment Public Meeting.



The **community will be engaged** throughout the study process with **consideration given to historic context and equity**. The Blacksburg Street Community will be regularly and purposefully engaged for the County to understand the goals of the residents and help prioritize mitigation alternatives. **Several different meetings and/or engagement methods will be used** to introduce the options, give residents time to consider, and move forward with a formalized study of preferred alternatives. The County may need to engage stakeholders individually or in smaller groups to ensure everyone is given a chance to weigh in.

As of 2020, Tazewell County had a population of approximately 40,429 residents, with a population density of 78 people per square mile. Since 2010, Tazewell County's population changed drastically with a decline of approximately 4,600 residents. This number is a significantly larger decrease in population from previous decades. Population statistics for Tazewell County and the incorporated areas within from the U.S. Census Bureau for 1990, 2000, 2010, and 2020 are presented below.

Based on the **2020 Census**, the median age of residents is 45 years old. **Table 1** presents the county's racial characteristics from the 2020 Census. 92.8% of residents identify as White, 2.4% as Black, and 1.1% as Hispanic.

Table 1: US Census Population Counts

	1990	2000	2010	2020	Percent Change 1990 - 2020
Town of Tazewell	4,273	4,113	4,627	4,486	+5%
Tazewell County	45,968	44,598	45,078	40,429	-12%

The County has a median household income of \$42,937. This is not greater than 80% of \$80,615, the median household income in Virginia. Therefore, Tazewell County meets the definition of a **low-income geographic area**.

The area has a **moderate-high social vulnerability index score** according to the VIMS Vulnerability Viewer available in AdaptVA and VFRIS (**Figure 4**). In addition, the CDC Social Vulnerability Index future rates the themes of **socioeconomic status as high; household characteristics as high-moderate; housing type/transportation as high-moderate**; and racial and ethnic minority status as low.

Past flooding issues are shown in **Figure 5**. A photo of the Blacksburg Street flooding is shown in **Figure 6**. Most of the neighborhood is in the 100-year floodplain. Residents report that they have not received recovery aid following previous floods and they clean up their properties without any assistance. Residents are growing increasingly concerned due to worsening flooding. Residents are concerned about losing their homes and the equity they have built in their homes, being unable to evacuate, and being unable to recover when they are impacted by the next flood. Most residents in the neighborhood do not have flood insurance due to the high cost of and because they own their homes free and clear and thus are not required to keep flood insurance.

Figure 4: Social Vulnerability Index.

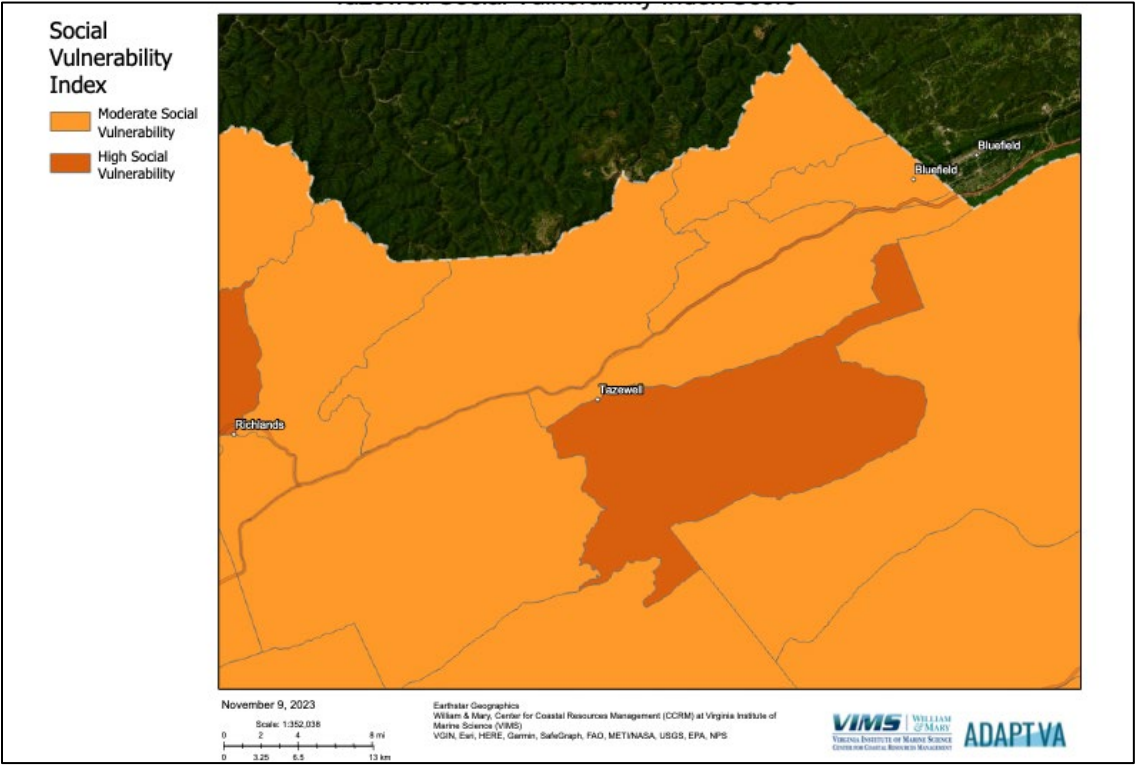


Figure 5: Blacksburg Street Flooding Issues.

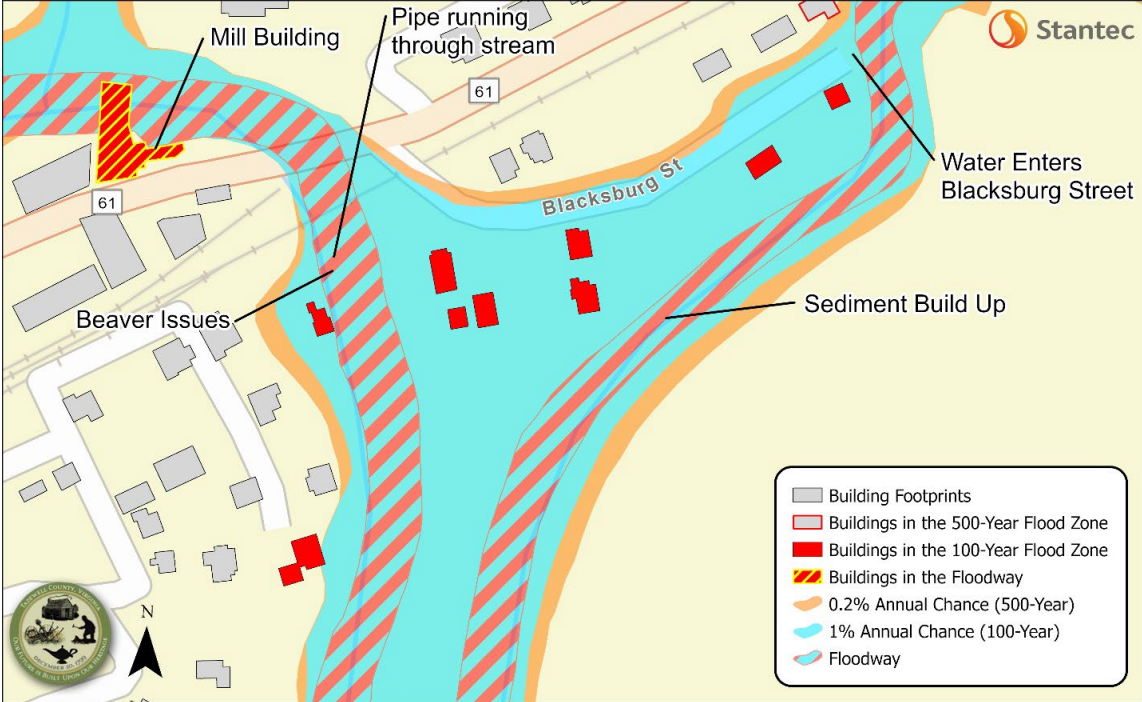
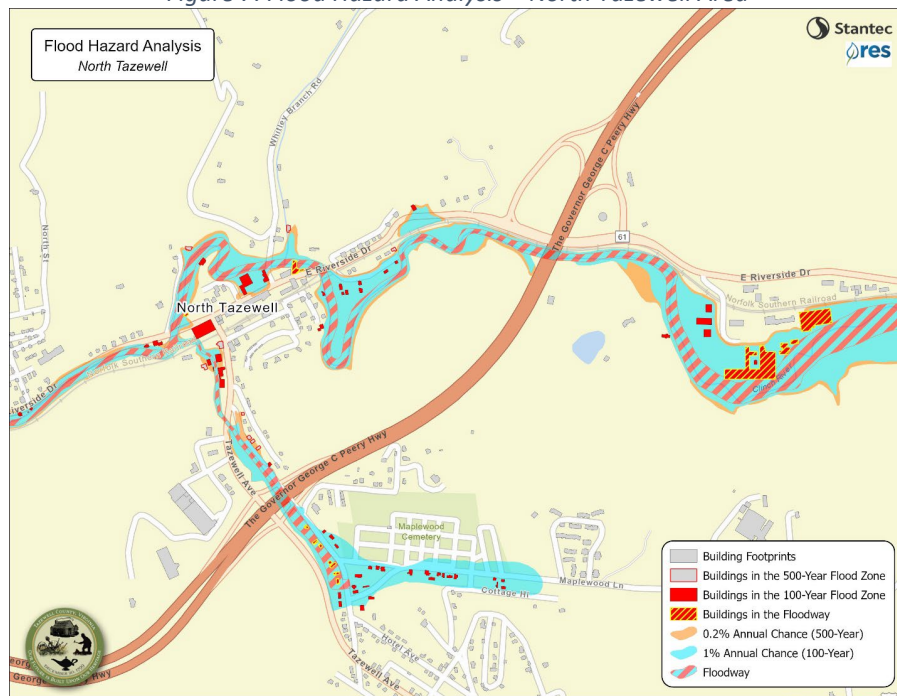


Figure 6: Flooding of Blacksburg Street.



Figure 7 shows the National Flood Hazard areas throughout Tazewell County and Blacksburg Street where there are clusters of buildings located in the FEMA flood zones.

Figure 7: Flood Hazard Analysis – North Tazewell Area

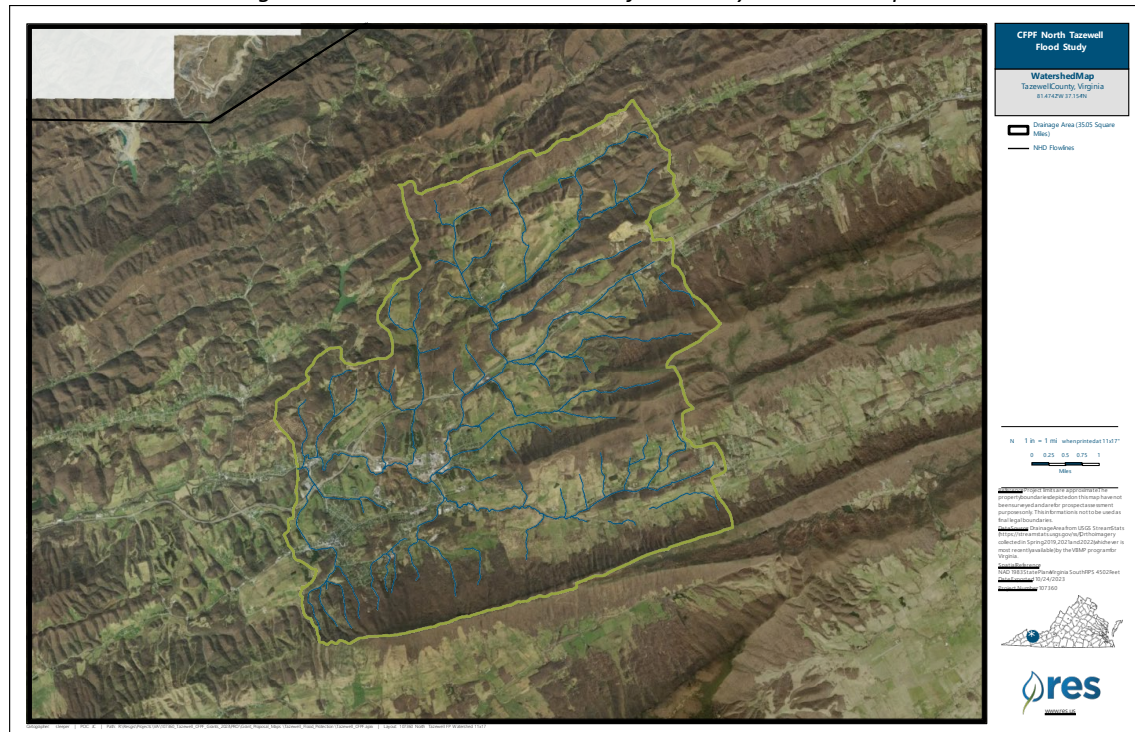


Figures 8 and 9 display the North Tazewell Blacksburg Street Dam and Mill building flood and watershed study overview maps.

Figure 8: North Tazewell flood study overview map.



Figure 9: North Tazewell watershed flood study overview map.



According to DCR's ConserveVirginia 3.0 Land Conservation Strategy, the project area:

- Has karst topography (Figure 10),
- Has a medium cultural resource preservation index (Figure 11),
- Has Class IV (near moderate) development vulnerability (Figure 12),
- Has a high land-based recreation need (Figure 13),
- Has a high water-based recreation need (Figure 14), and
- Is surrounded by areas with a medium to high watershed impact (Figure 15)

Figure 10: Karst Bedrock.

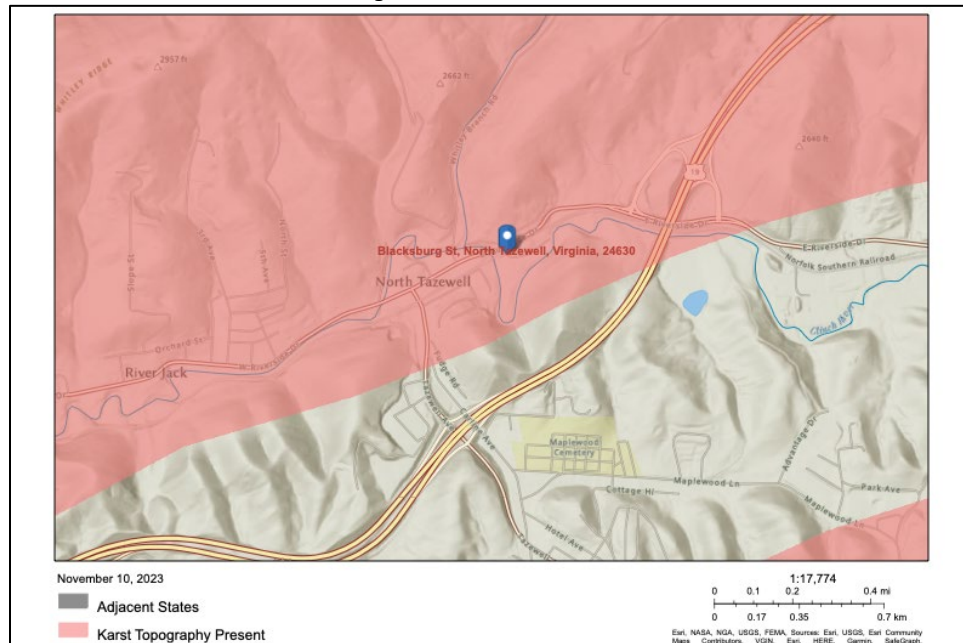


Figure 11: Cultural Resource Preservation Index.

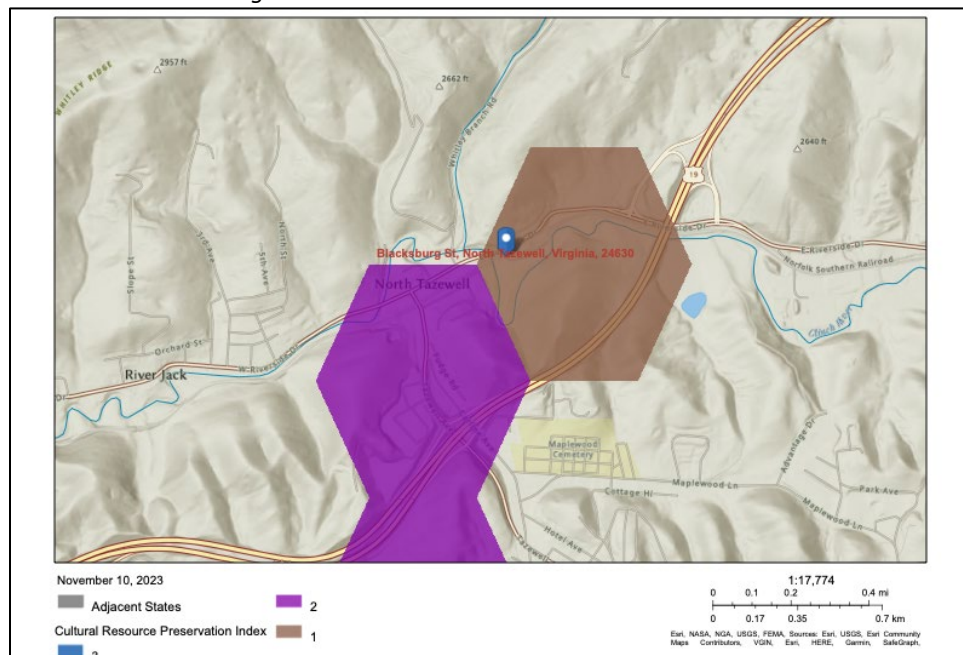


Figure 12: Development Vulnerability.

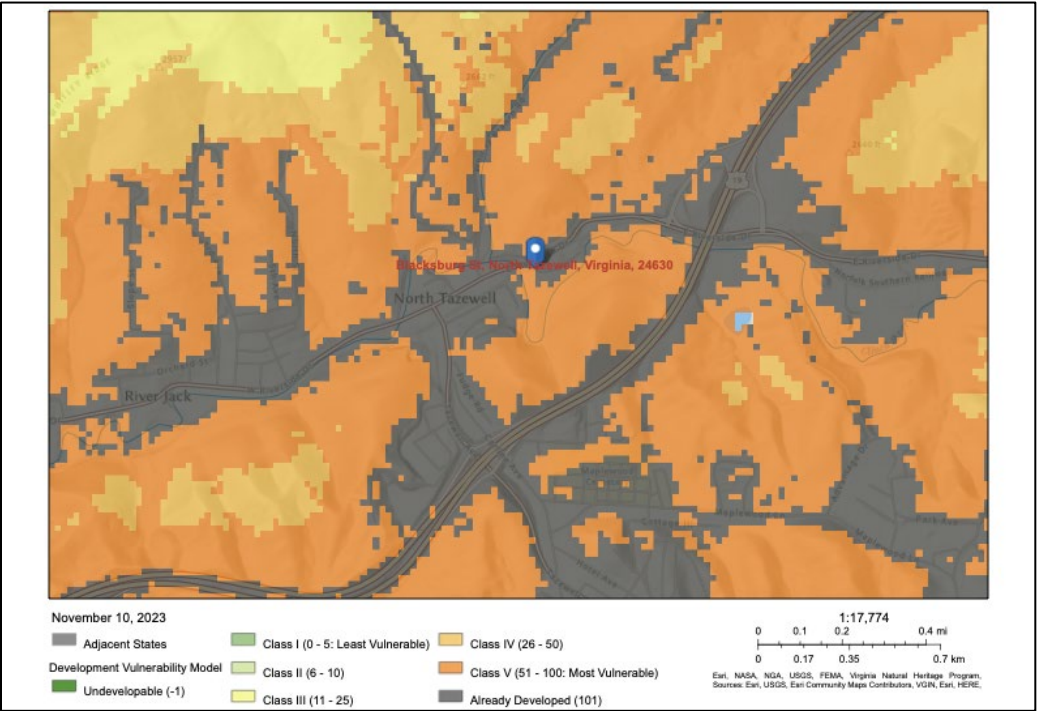


Figure 13: High Land-Based Recreation Need

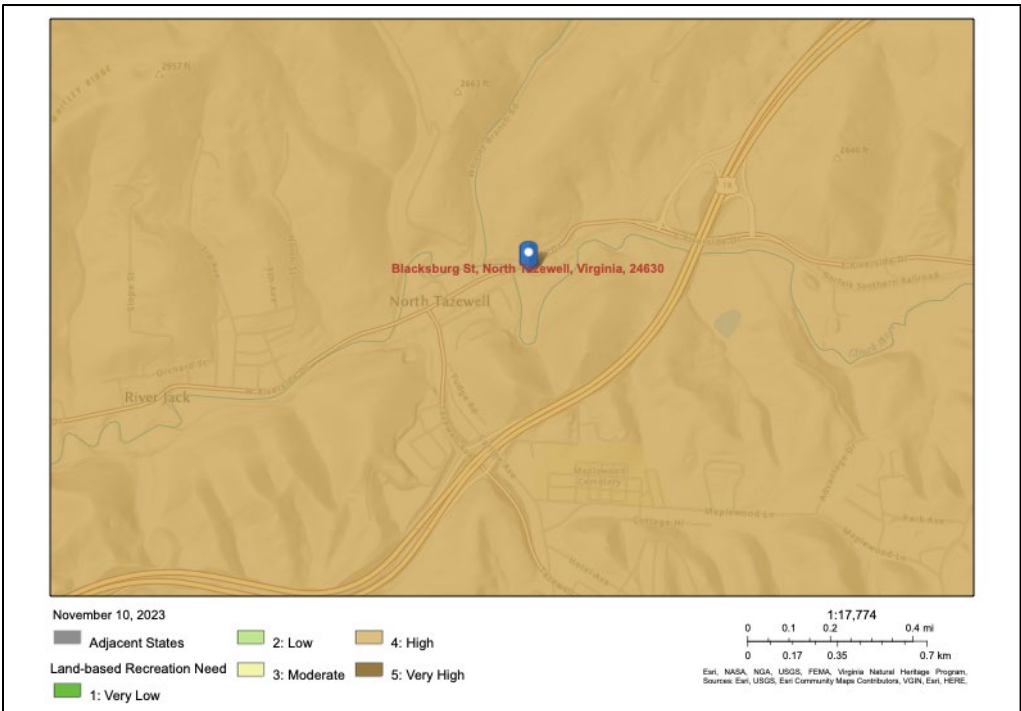


Figure 14: Water-Based Recreation Need

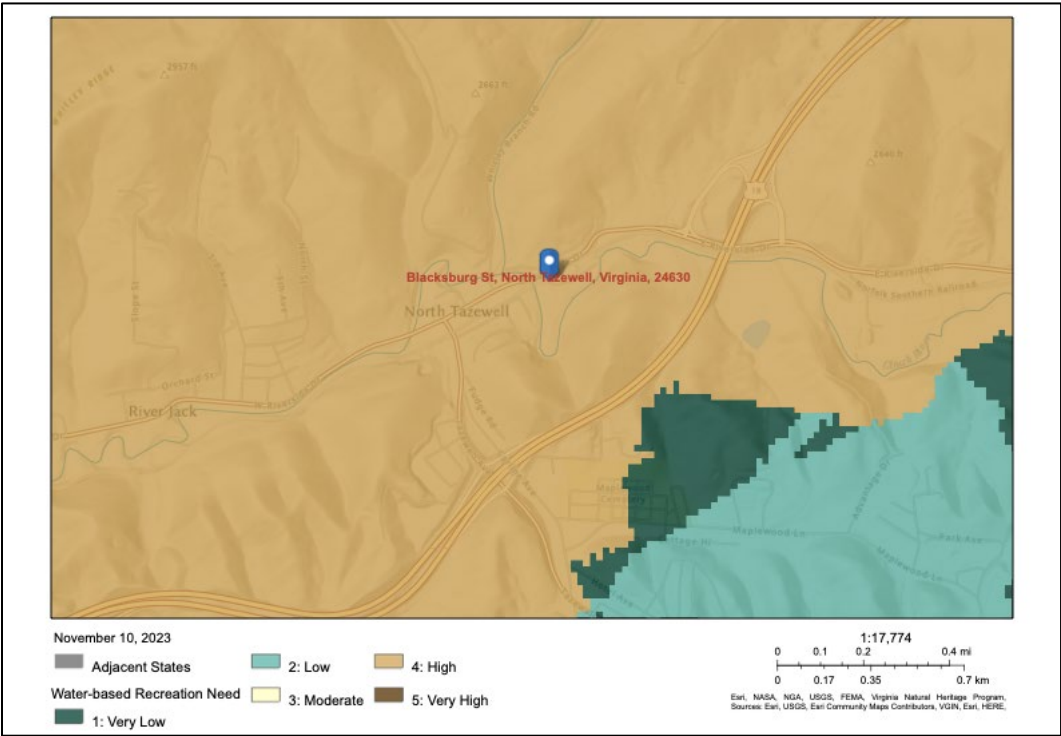
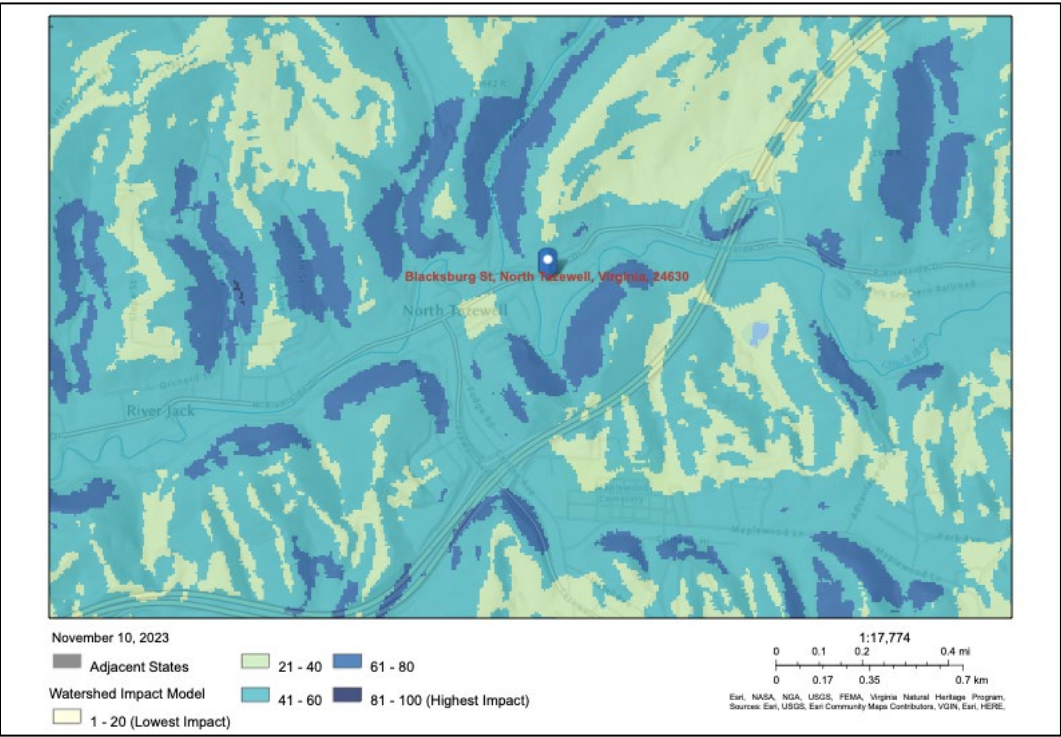


Figure 15: Watershed Impact



These natural features and needs describe the operating context for the flooding issues and any potential mitigation strategies. The study will account for these when evaluating options and potential co-benefits.

GOALS AND OBJECTIVES

The main goals and associated objectives for the Blacksburg Street and Mill Dam Removal Study are as follows:

Goal 1: Understand the root causes of recurrent flooding in the Blacksburg Street community and how the abandoned mill building and associated dam impact these issues.

Objective 1a: Conduct a comprehensive hydrologic study to analyze the specific factors contributing to flooding in the Blacksburg Street community, including the abandoned mill building and associated dam.

Objective 1b: Implement Baseline Base Level Engineering (BLE) and 2D Hydraulic Modeling to accurately visualize and understand the complex nature of flooding in the study area.

Objective 1c: Analyze all findings and present them in an existing conditions document and include the review of the structural integrity of the abandoned mill and associated dam.

Goal 2: Enhance awareness surrounding the impacts of flooding through thoughtful community engagement practices with **transparency that allows for public input**.

Objective 2a: Engage with locality staff, stakeholders, and community members through **public meetings, workshops, and outreach efforts** with a **targeted focus on reaching low-income, socially vulnerable, and other disadvantaged or previously unengaged groups** to address **socioeconomic inequities** and **enhance equity**.

Goal 3: Develop effective flood mitigation strategies and highlight the feasibility of the removal of the abandoned mill building and associated dam.

Objective 3a: Identify a set of at least three mitigation strategies that are tailored to the Blacksburg Street Community in accordance with the **best available science** and **future climate change projections**

Objective 3b: Assess the feasibility and effectiveness of the removal of the abandoned mill building and associated dam.

Objective 3c: Integrate sustainable and **nature-based solutions**, such as green infrastructure, into the proposed flood mitigation strategies.

WORK PLAN

The study is scheduled to be completed within 27 months from the commencement date. This includes the phases of planning, analysis, community engagement, and evaluation. The following outlines the proposed tasks, activities, and responsible parties as well as the anticipated timeframe for completion and deliverables:

TASK 1: TOWN PLANNING AND COMMUNICATION

Estimated Time: 6 Months

Tazewell County will procure a design consultant team with qualifications to successfully complete the work, including **engineering (PE) and floodplain management (CFM) credentials**. The consultant will engage with Town of Tazewell staff to determine **roles and responsibilities** for planning and managing the proposed study. Part of this task is determining what the town needs and setting clear goals and timelines. The consultant will schedule necessary coordination with town staff to ensure all planning and project management **activities** are clearly defined. The consultant will support engagement with the Blacksburg Street Community throughout the duration of the study to understand residents' concerns and needs and to assist with prioritizing mitigation alternatives.

Deliverables: Consultant contract, project management plan, list of stakeholders, and engagement plan

TASK 2: DAM REMOVAL PLANNING

Estimated Time: 6 Months

The consultant will support data collection by providing expertise on stormwater management and flood mitigation. All relevant data pertaining to the project, such as existing plans, utility surveys, and watershed information will be collected. Additional data on existing drainage systems, water flow rates, and historical flooding events will be collected as well. The consultant will conduct topographic and utility surveys of the area to understand how water flows across the landscape and the underground infrastructure impacting stormwater management. The property owner and community will be engaged early and often throughout the process. Given the presence of several endangered species of mussel in the Clinch River, U.S. Fish and Wildlife Services should be engaged throughout the project to ensure all environmental regulations are met. To meet environmental regulations, actions may need to be taken throughout the project to protect mussels such as mussel surveys and mussel relocation.

Deliverables: Summary of Data

TASK 3: BASELINE 2D BLE MODEL

Estimated Time: 4 Months

The consultant will complete a Baseline Base Level Engineering (BLE) two-dimensional (2D) hydraulic modeling to better understand the existing flooding and effectiveness of potential nature-based solutions. 2D BLE hydraulic modeling is an emerging type of modeling that has many benefits. 2D BLE models are developed using lidar data to visualize the entire area for a community-wide perspective and solution. The use of lidar data allows for better integration of both overland and underground structures, multi-directional water flow, and velocity visualization. 2D BLE models show the interaction of the modeled area with both riverine flooding and stormwater flooding. For areas with complicated flooding issues, 2D BLE models allow for a more detailed understanding of the flooding occurring and the factors influencing it.

Deliverables: Models and Modeling Results

TASK 4: STUDY EXISTING CONDITIONS

Estimated Time: 3 Months

The consultant will perform a comprehensive study of existing floodplain conditions and the level of threat to residents, critical infrastructure, and the environment. All data collected will be summarized into an existing conditions assessment. The assessment will allow the consultant to better understand topography of the area, locate the source of flooding concerns, and determine potential nature-based stormwater solutions for implementation including a review of the structural integrity of the abandoned mill building and associated dam to determine feasibility of removal.

Deliverables: Existing Conditions Assessment Documentation

TASK 5: SELECT PREFERRED ALTERNATIVE

Estimated Time: 3 Months

The consultant will engage the Blacksburg Street Community regularly and purposefully to understand the goals of the residents and help prioritize mitigation alternatives. Several meetings and/or engagement methods are warranted to introduce the options, give residents time to consider, and move forward with a formalized study of preferred alternatives. The community will be engaged throughout the study process with consideration given to historic context and equity. Prior to implementing other mitigation actions that could impact the Blacksburg Street Community, the County should study the benefits and impacts to the Blacksburg Street Community. The County may need to engage stakeholders individually or in smaller groups to ensure everyone is given a chance to weigh in. The consultant, including the Certified Floodplain Manager, will work with the community to identify three alternatives to reach the target reduction volume. The consultant will assess the viability of each option and provide a comparison of the alternatives to assist with selection. The consultant will work with the County and community to select the preferred alternative based on the best available science.

Deliverables: Alternatives Comparison Summary

TASK 6: STUDY PREFERRED ALTERNATIVE

Estimated Time: 3 Months

After a preferred alternative is selected, the consultant will design the identified solution. Additional surveys or data may be needed to complete the design. Completed plans will allow the County to hire or issue a request for bids for a contractor and will be used to secure required permits.

Deliverables: Study Report

TASK 7: COMMUNICATE AND DOCUMENT RESULTS

Estimated Times: 2 Months

The consultant will identify potential projects for flood reduction to be designed, permitted, and constructed. Target possible mining company lands or Dominion Aquacultural Company property for

possible nature-based solutions projects. Community members will be engaged throughout the study process with consideration given to historic context and equity. Prior to implementing other mitigation actions that could impact the Blacksburg Street Community, the County will study the benefits and impacts to the Blacksburg Street Community. Given the presence of several endangered species of mussel in the Clinch River, U.S. Fish and Wildlife Services should be engaged throughout the project to ensure all environmental regulations are met. To meet environmental regulations, actions, such as mussel surveys and mussel relocation, may need to be taken throughout the project to protect mussels. This action should be pursued in conjunction with other actions to mitigate flooding of the Blacksburg Street Community such as:

- Acquisition of undeveloped parcels for flood storage.
- Acquisition of properties to return to natural recreation areas.
- Assess flood risk reduction options for Blacksburg Street Community.

Deliverables: Final Report

EVALUATION

The indicators of success for the Blacksburg Street and Mill Dam Removal Study are as follows:

- **Improved Community Engagement:** The successful implementation of this study involves consistent community engagement with the Blacksburg Street Community to ensure they are engaged throughout the study process and their input is considered during the identification of the potential solution.
- **Completion of Preliminary Hydrologic Study:** The successful completion of the preliminary hydrologic study to identify target reduction volume is important to determine the appropriate solutions.
- **Development of BLE and 2D Hydrology Model:** The successful development of a BLE and 2D Hydrology Model is essential to assess the existing flood risk and determine a list of potential solutions.
- **Evaluation of Alternative Solutions:** The successful evaluation of at least three alternatives for reaching the target reduction volume, with a detailed assessment of the feasibility of each option will assist with selecting the most effective solution to mitigating flood risk for the area.
- **Identification of Potential Project and Flood Reduction:** The successful identification of potential projects for flood reduction that can be designed, permitted, and constructed will help to ensure that flooding impacts are reduced in the Blacksburg Street Community.
- **Compliance with Project Timeline and Budget:** Success can be measured by assessing the project's adherence to the outlined timeline and budget. This can be determined by monitoring the completing of various tasks within the stipulated timeframes and comparing the actual project costs with the budget allocated for each task.

The following data points will be collected and used to measure success:

- **Hydrological Data:** Collecting data on water levels, flow rates, and precipitation patterns in the area will allow the engineer to determine the existing conditions and impact of the abandoned mill building and associated dam on flooding levels.
- **Geospatial Data:** Information on the topography and elevation of the area will allow the engineer to determine how water flows and accumulates during flooding events, as well as how the changes in the landscape affect flood risk.
- **Structural Data:** Documenting the structural integrity and conditions of the abandoned mill building and associated dam will help to assess the impact of the removal on flood risk and the natural flow of the creek.
- **Community Engagement Data:** Collecting data on feedback, input, and concerns from the Blacksburg Street Community throughout the planning and implementation process is important to ensure their needs and priorities are considered and addressed. This data will also help to measure the success of the study.
- **Flood Incidents Data:** A record of previous and future flooding incidents in the Blacksburg Street Community will help to evaluate the effectiveness of the potential implemented flood risk reduction measures.
- **Project Timeline and Budget Data:** Monitoring the timeline and expenses associated with the study will help to ensure the study stays on schedule and within budget.

Cost-effectiveness will be ensured by the County's use of competitive procurement and the project partners' experience and knowledge of market costs for nature-based projects such as the proposed. This will be measured through calculations of actual costs compared to similar projects in the region.

Potential products, services, meetings, and outreach efforts that may be conducted to ensure the success of the study include but are not limited to, **public meetings and workshops, information materials, stakeholder engagement**, engineering services, and progress reports and updates. These efforts will help to evaluate the effectiveness of the study and ensure that all tasks are completed, and the needs of the Blacksburg Street Community are addressed appropriately.

To ensure that the proposed study meets the requirements of the agreement and is delivered on time the following can be used to monitor its progress:

- Timeline and milestones to ensure all deliverables are met within the agreed-upon timeframe,
- Regular progress meetings with project team to review the status of the study,
- Communication plan with all project team members, locality staff, and other stakeholders to ensure effective communication and clear understanding of roles and responsibilities,
- Quality control measures to ensure all deliverables meet the required standards and specifications,

- Contingency planning to prepare for any unforeseen delays or findings that may affect the progress of the study,
- Stakeholder feedback to ensure the Blacksburg Street Community members can provide input and express concerns.

When these elements are incorporated into the project monitoring plan, any potential delays or challenges that arise can be addressed and utilized to modify or improve the outcomes and deliverables. Regular assessment of progress will ensure that project objectives are being met.

ATTACHMENTS

As required, in addition to this Scope of Work, the funding application package includes information provided in the online submittal form and the following attachments:

- Budget Narrative
- Detailed map of the project area
- FIRMette of the project area
- Historic Flooding data and Hydrologic Studies
- Social Vulnerability Index
- Hazard Mitigation Plan
- Comprehensive Plan
- Floodplain Ordinance
- Resilience Plan
- Authorization to request funding and Ability to Provide Share of Cost
- Letter of Support