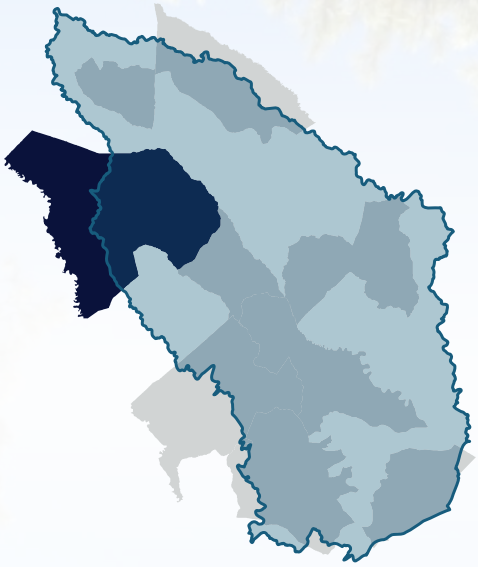
South Carolina
Resilient Coastal Communities Collaborative Program:

# Salkehatchie Watershed Plan



## Resilience Portfolio for the Communities of

# Allendale, Fairfax, & Brunson

SCOR South Carolina Office of Resilience

NOAA

National Fish and Wildlife Foundation NFWF

Sea Grant S.C. SEA GRANT CONSORTIUM

McCORMICK TAYLOR

Weston & Sampson

Biohabitats

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# 1. Executive Summary

Planning at the watershed level has been recommended by both the South Carolina Floodwater Commission and the ***Strategic Statewide Resilience and Risk Reduction Plan*** to reduce impacts from flooding and enable communities, economies, and ecosystems to recover more quickly from disasters. Watershed planning was piloted in the Salkehatchie Watershed between January 2024-March 2026 through the ***South Carolina Resilient Coastal Communities Collaborative Program*** (SCRCCCP). The South Carolina Office of Resilience (SCOR) received funding from the National Fish and Wildlife Foundation (NFWF) National Coastal Resilience Fund (NCRF) in December 2022 to provide technical assistance to ten communities in the Salkehatchie Watershed to assess risk and vulnerability, mitigate flooding, and increase resilience. SCOR partnered with S.C. Sea Grant Consortium and S.C. Beach Advocates to engage with communities throughout the watershed to identify locations of and impacts from flooding. Three engineering consultant firms, Weston & Sampson, McCormick Taylor, and Biohabitats, worked with SCOR and S.C. Sea Grant to synthesize community input and develop risk and vulnerability assessments and portfolios of flood reduction strategies that are included in the Community Reports section of this Salkehatchie Watershed Plan.

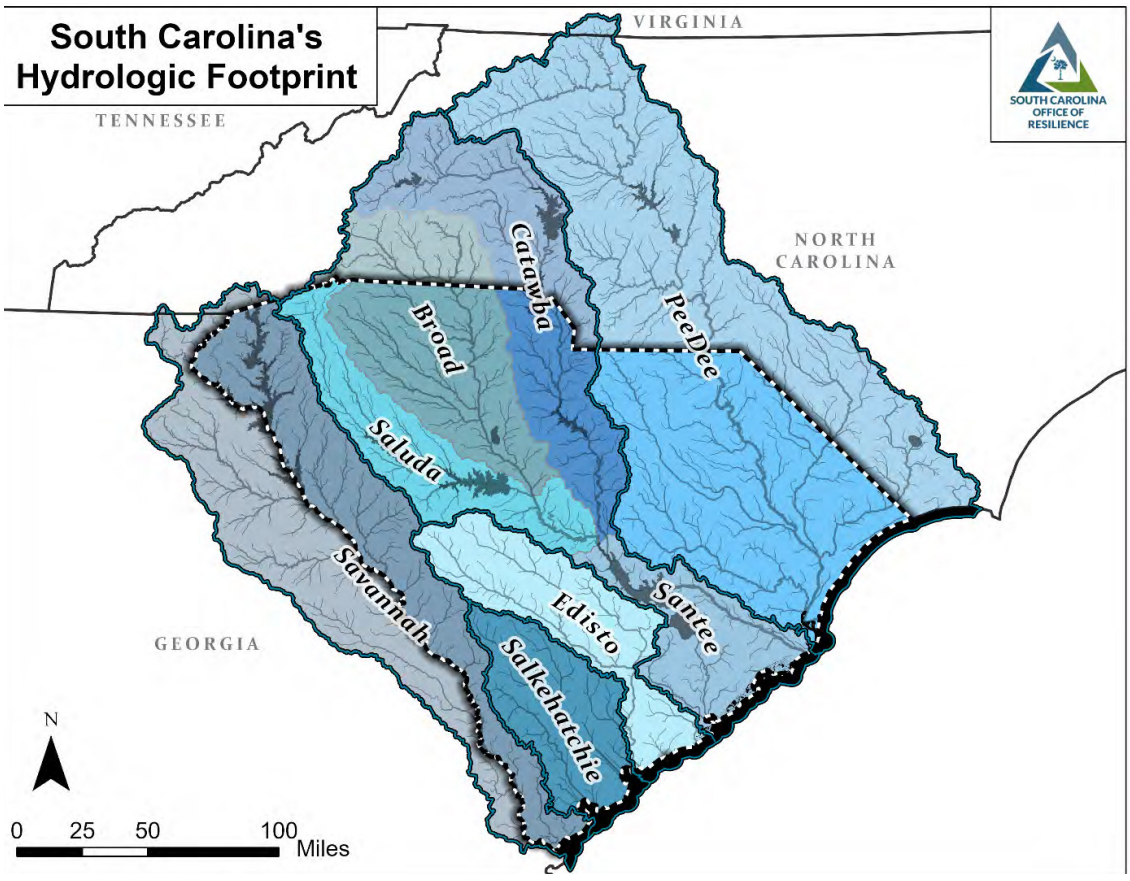



*Figure 1: Salkehatchie River Basin*

# 1a. The Salkehatchie River Basin

**The Salkehatchie River Basin** is located between the Lower Savannah and Edisto River Basins in the Southwestern Coastal Plain region of South Carolina. "The basin is the 7th largest in the State, encompassing approximately 653,606 acres and approximately 1,012 stream miles and 2,928 acres of lake waters" (SCDNR). The tributaries of the Salkehatchie Basin are predominantly shallow, blackwater bottomland swamps, and the rivers in the south of the basin are tidally influenced and brackish. The basin extends 95 miles inland from the Atlantic Ocean and contains eighteen HUC 10 watersheds spanning all or parts of seven counties (Allendale, Bamberg, Barnwell, Beaufort, Colleton, Hampton, and Jasper), thirty-four municipalities, and three military installations.

This Basin originates in the Upper Coastal Plain with the headwaters of the Salkehatchie and Little Salkehatchie in Barnwell and Bamberg, South Carolina and continues through the Lower Coastal Plain and Coastal Zone regions, merging to form the Combahee River just south of Horse Bay and just north of Yemassee in between Hampton and Colleton counties. The basin also contains the Coosawhatchie River which originates in Allendale and Fairfax, SC and flows through Allendale,

**3**

The Salkehatchie River Basin includes **three military installations**

**7**

The basin covers all or parts of **seven counties** (Allendale, Bamberg, Barnwell, Beaufort, Colleton, Hampton, Jasper)

**7th**

It is the **seventh largest basin** in the state

**18**

The basin spans across **eighteen HUC 10 watersheds**

**34**

It includes **thirty-four municipalities**

**95**

It extends **95 miles inland** from the Atlantic Ocean

**1,012**

The Salkehatchie River Basin includes **1,012 stream miles** (***SCDNR***)

**315,000**

Approximately **315,000 people** reside across the seven counties of the Salkehatchie River Basin

**653,606**

The basin encompasses approximately **653,606 acres**



Hampton, Jasper, and Beaufort Counties before merging with the Pocotaligo River to form the Broad River which then flows into Port Royal Sound and the Atlantic Ocean. The renowned ACE Basin is in the southeastern part of the Salkehatchie Basin and is comprised of the Ashepoo, Combahee, and Edisto Rivers. "The coastal area of this basin contains the most extensive estuarine water bodies in the State. These coastal water bodies are dominated by St. Helena Sound and Port Royal Sound and include numerous, often interconnecting, tidal creeks and rivers" (SCDNR). This basin also contains hundreds of thousands of acres of saltmarsh and is bounded by numerous barrier sea islands.

**POPULATION:** Aproximately 315,000 people reside in the seven counties located in the Salkehatchie River Basin. Beaufort County has the largest population center in the watershed (187,117), followed by Colleton, (38,604), Jasper (28,791), Barnwell (20,589), Hampton (18,561), Bamberg (13,311), and Allendale (8,039) Counties (2020 US Census). Rapid growth is occurring in Jasper and Colleton Counties, and development pressure is high in coastal areas. Populations in the communities in the middle and upper parts of the watershed have been decreasing in recent years, as people relocate to more urban areas and young adults move away after graduating from school. The coastal region of the Salkehatchie Watershed is home to Gullah Geechee communities represented by several organizations, including the Gullah Geechee Cultural Heritage Corridor Commission, the Gullah/Geechee Nation, and the Gullah Geechee Chamber of Commerce. The majority of the Gullah Geechee population resides on the sea islands in the basin.

**DEVELOPMENT PRESSURE:** While the upper part of the Salkehatchie Watershed is primarily rural and agricultural, there is a high level of developmental pressure in the coastal region, specifically in Beaufort, Jasper, Colleton, and Hampton Counties. Forested and Agricultural land cover in the basin has decreased over the past two decades and impervious surfaces have increased, especially in coastal communities. Community members in the coastal counties expressed concerns about clearcutting, deforestation, and development in floodplains. Many

voiced support for conservation and more stringent zoning and environmental policies. They also expressed the need for education for developers, homebuyers, and foresters related to flood risk and the benefits of nature-based solutions for flood control and heat reduction.

**HAZARDS & IMPACTS:** The Salkehatchie Watershed is impacted by a variety of natural hazards and environmental changes, including flooding, hurricanes, tropical storms, lightning, tornados, extreme heat, drought, wildfire, and winter weather. Over the course of the SC Resilient Coastal Communities Collaborative Program (2024-2026), the most frequent hazards of concern mentioned in surveys, interviews, and at community meetings were flooding, extreme heat, high winds, and drought. Community members from sea islands and coastal areas also reported significant impacts from erosion, saltwater intrusion, and flooding due to sea level rise in addition to flooding from rain events and tropical storms/hurricanes. Community members throughout the basin reported impacts from these hazards to roads, buildings, cultural sites, and agriculture. There is concern throughout the watershed that ditches are not being cleaned and are often contributing to flooding and mosquito proliferation. As impacts from flooding were the primary focus of the SCRCCCP, the team focused on identifying locations in the Watershed that are prone to flooding, with a focus on roadway and parking lot flooding that is impacting access to services and ability to evacuate. Locations were reported and documented through interviews, surveys, and paper and electronic mapping exercises at 4 community meetings.

**PLANNING CONDITIONS:** There are a variety of planning efforts and projects being implemented in the Salkehatchie Watershed in addition to the SC Resilient Coastal Communities Collaborative Program. Two Council of Governments, the Lowcountry COG and the Lower Savannah COG, serve the region and assist communities with planning efforts, including Hazard Mitigation Plans, Transportation Plans, and Comprehensive Plans. Together, the two COGs support the seven counties and thirty-five municipalities located within the Salkehatchie River Basin. Major plans that are currently being updated or created include the Lowcountry Hazard Mitigation Plan , the Lower Savannah Hazard Mitigation Plan, the Lowcountry Transportation Resilience Improvement Plan, the Beaufort-Jasper Water and Sewer Authority Master Plan, and the Town of Hilton Head Island's Resilience Planning Initiative. Additionally, Hampton County, Jasper County, the City of Hardeeville, and the Towns of Yemassee, Allendale, Varnville, and Ridgeland are in the process of updating their comprehensive plans. Several regional planning collaborations, the South Carolina Lowcountry Sentinel Landscape Partnership, the Southern Lowcountry Resilience Collaborative, and the Southern Lowcountry Regional Board (SoLoCo), are also actively working to increase coordination of resilience initiatives in the region.



**ECONOMIC DRIVERS & COMMUNITY RESOURCES:** The primary economic drivers in the region are agriculture, education, research, industry, and tourism. Clemson Extension and SCDNR Soil and Water Conservation Districts offer community education and assistance and both have offices in all seven counties. The Watershed hosts a variety of academic institutions, including USC Salkehatchie West (Allendale), USC Salkehatchie East (Walterboro), USC Beaufort, Technical College of the Lowcountry, Denmark Technical College, Voorhees University, and Barnwell County Career Center. Additionally, there are a number of non-profit and community-based organizations that operate in the region, offering resources and strengthening local communities. Some of the organizations that are most active in the river basin include Habitat for Humanity of the Lowcountry, Port Royal Sound Foundation, Open Land Trust, Southern Palmetto Regional Chamber, Keep Bamberg County Beautiful, Keep Allendale County Beautiful County, Coastal Conservation League, Audubon SC, and The Nature Conservancy-South Carolina.

# 1b. Project Approach

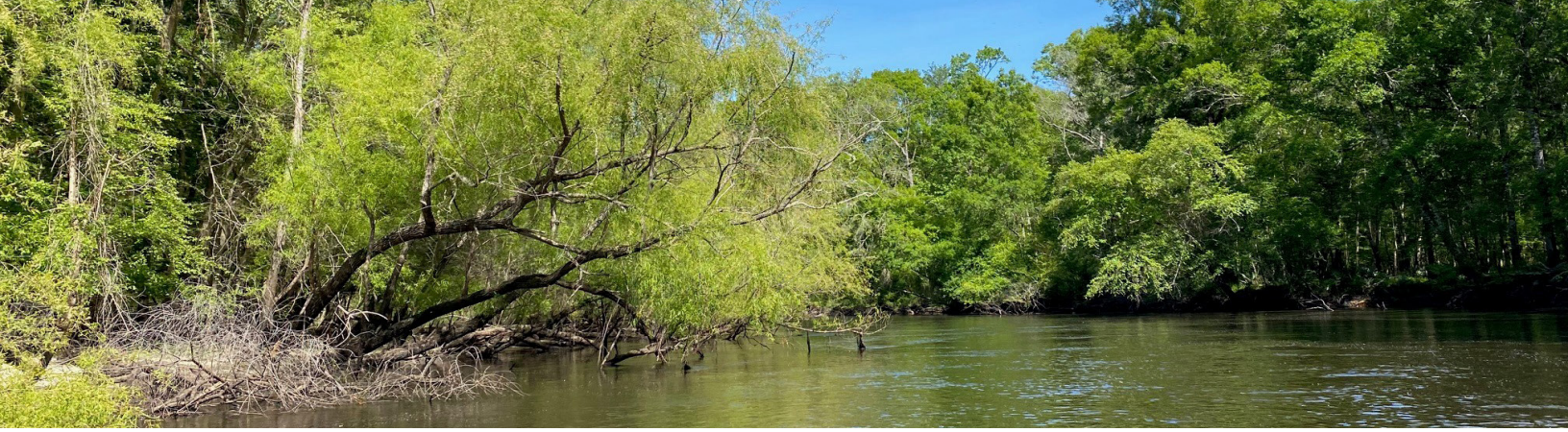
As a foundational step, **SCOR and SCSG reviewed local planning efforts** to better understand existing conditions and identify opportunities to leverage planned efforts.

The Project Team then conducted **multi-scale vulnerability assessments** at the watershed, community, and parcel levels to assess the natural hazards. This technical analysis was paired with **robust community engagement** through Community Action Team meetings, public surveys, field site visits, and consultant assessments to ensure that the vulnerability assessment results and proposed strategies were **grounded in local knowledge and priorities.**




## *Community Engagement*

**SCOR and SCSG worked together to identify local community members to form 9 Community Action Teams**, which represent the 10 communities of focus. These Community Action Teams were involved with community outreach, input, and decision-making throughout the project. During the first Community Action Team meeting (Fall 2024-Winter 2025), team members shared concerns related to impacts from flooding and environmental changes. At the second Community Action Team meetings (Spring 2025), community members identified and mapped flood-prone areas directly on maps at public events, capturing localized issues often missing in broader state models. The third Community Action Team meetings (August 2025)



included Community Action Team members and was also advertised for the public to attend, to gain broader perspectives. The purpose of the third Community Action Team meetings was to provide an overview of the results of the vulnerability assessments, review potential strategies, and obtain community feedback regarding strategies and priorities to guide strategy siting. The fourth and final Community Action Team meetings took the form of two larger regional meetings in December 2025. A 6-hour regional gathering was held in the Town of Yemassee for the 5 Community Action Teams in the lower half of the watershed on December 4th and a second 6-hour regional gathering was held in the Town of Fairfax for the 4 Community Action Teams in the upper half of the watershed on December 5th. These meetings were designed to foster networking, collaboration, and coordination of regional efforts and to enhance collaborative opportunities for future implementation. The participants in these fourth Community Action team meetings were still divided into their smaller community-specific teams during part of the meeting to review proposed project ideas which contained information and photos from field visits. Participants were encouraged to evaluate each project idea using a visual grid, scoring them on two vital factors:

1. **Impact** (How much will this help the community?)
2. **Feasibility** (How realistic is it to build and maintain?)

## *Vulnerability Assessment*

In July 2025, the Project Team completed a multi-scale vulnerability assessment. The assessment was conducted at three scales: 1) watershed-scale, 2) community-scale, and 3) parcel-level. The assessment was aimed at identifying the most vulnerable areas to flooding, extreme heat, wind, and wildfires.

The project team used First Street Foundation datasets to identify the most vulnerable areas across the Salkehatchie River Basin. For the community-scale assessment, modeling efforts focused on the 34 census tracts that encompass the ten communities of focus. The parcel level assessment focused on both near term (present day) and future (2055) conditions within the five most vulnerable areas identified in the community-scale analysis.

## *Strategy Siting*

Strategy siting was conducted at the community level using community-specific data, feedback from the third Community Action Team meetings, and the results of the multi-scale vulnerability assessment. Following the desktop analysis, the Project Team conducted targeted site visits across the ten communities of focus in the Salkehatchie Watershed. At each location, the Project Team used a standardized field data sheet to evaluate the feasibility of the identified projects, **documenting conditions relevant to design and permitting, including:**

- land ownership
- structures on site
- paved surfaces
- drainage information
- vegetation cover
- site photos

## *Prioritization*

Prioritization criteria were developed with SCOR and SCSG to identify projects that were both feasible to implement and capable of delivering the greatest benefits to each community. **Criteria were divided into three categories:**

**1**

**Flood reduction benefit**

Informed by project drainage areas and runoff reduction rates.

**2**

**Feasibility**

Considered factors such as land ownership, anticipated permitting effort, and maintenance costs.

**3**

**Co-benefits**

Accounted for water quality improvements, heat reduction, and wildlife habitat creation.

The prioritization matrix was used to **identify the top two projects in each community**, which then received a rough order of magnitude opinion (high-level cost estimate) which included project planning, design, and construction.

# *Results*

**Building resilience in the Salkehatchie River Basin is a continuous and adaptive process.** This document is one of **nine (9)** Community Portfolios that are combined into the comprehensive, basin-wide Salkehatchie Watershed Resilience Plan. **Over fifty (50)** adaptative strategies and proposed projects were identified through this SCRCCCP process. Each portfolio provides specific information on community vulnerabilities and unique concerns as well as opportunities to reduce impacts from flooding and enhance community resilience.

The communities of the Salkehatchie River Basin have demonstrated commitment and capacity to continue to lead this work. By maintaining momentum, strengthening collaboration across the watershed, and staying engaged through regional partnerships such as the Salkehatchie Watershed Advisory Group and the Southern Lowcountry Resilience Collaborative, these communities can continue to identify sustained pathways to implementation, ensuring a **vibrant, safe, and resilient future for generations to come**.

The Communities of Allendale, Fairfax, and Brunson are defined by their agricultural heritage and vital regional services but experience persistent and recurring inundation driven by aging and undersized stormwater infrastructure. During the analysis, community-preferred practices were prioritized such as rain gardens and land conservation areas, and areas with known flooding were of focus. **For cost estimation, the prioritization matrix highlighted the Conservation Area at USC Salkehatchie which had the highest overall score, while the 3rd-ranked project, a bioswale running parallel to Barton Road, was elevated because it aligned more directly with community feedback and provided a clear implementation pathway for the proposed project.**

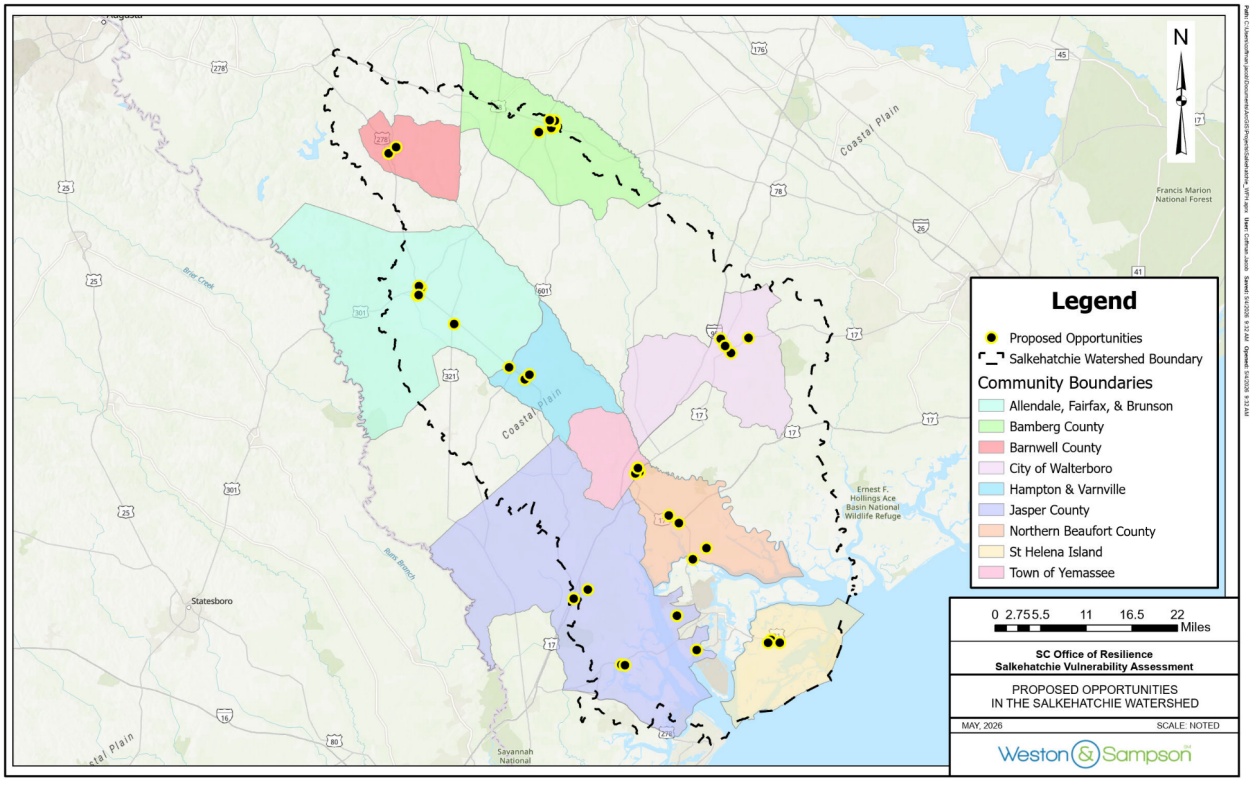



*Figure 2: SCRCCCP Study Communities and Proposed Opportunities*

# 2. Introduction

## 2a. Project Objectives

The goal of the South Carolina Resilient Coastal Communities Collaborative Program (SCRCCCP) is to **support communities in the Salkehatchie River Basin** by developing locally informed and locally prioritized strategies and plans that **reduce impacts from flooding and improve resilience** to natural hazards and environmental changes. This process included working with community partners to co-produce **nine (9) Community Portfolios** for ten(10) areas of focus which are combined into a basin-wide Salkehatchie Watershed Resilience Plan. Each community portfolio is intended to accomplish the following objectives.

**1**

Explain the community's **vulnerability and risk** through a comprehensive assessment

**2**

Document **community concerns** about infrastructure and vulnerabilities to natural hazards and environmental changes

**3**

Document input on **flooding impacts** and locations of flood-prone **vulnerable areas** within the community

**4**

Provide a suite of flood reduction and resilience **strategies,** that are ready for funding and implementation

**5**

Highlight **community preferred** resilience strategies

**6**

Strengthen **collaboration and partnerships** within the watershed

## 2b. Community Background

The Communities of Allendale, Fairfax, and Brunson are located in Allendale and Hampton Counties in the Upper Coosawhatchie region of the Coastal Plain of South Carolina. The region is bounded by the Savannah River border with Georgia to the west, Barnwell County to the north,



# Allendale, Fairfax & Brunson

the Salkehatchie River and Bamberg County to the northeast, and Hampton County to the south. The area is drained by the Coosawhatchie River and much of the area is covered by agriculture, forest, and inland wetlands and swamps, which provide habitat for a variety of wildlife. This rural inland corridor is defined by its agricultural heritage and vital regional services. The Allendale County Hospital serves as a critical rural medical hub, making the uninterrupted operation of the local hospital and emergency access routes a matter of public health importance. The University of South Carolina (USC) Salkehatchie West, located in Allendale, offers associate and bachelor's degrees and has a Leadership Institute which oversees programs in three areas of emphasis: Leadership Development, Community and Economic Development, and Business and Workforce Development. US Hwy 278, also called Augusta Highway and Allendale-Fairfax Highway, bisects all three towns and is a major evacuation route for the coastal region. All three communities have a rich history as "railroad towns" and rail lines still run through them, all the way to the Town of Yemassee, parallel to this vital highway. The town of Fairfax sits at the crossroads of two sets of well-traveled rail lines, the east-west lines and the north-south lines and is home to the historic Fairfax Train Depot, which now serves as a community center for seniors.

Historic flooding experienced by the communities of Allendale, Faifax, and Brunson includes persistent and recurring inundation driven by aging and undersized stormwater infrastructure, clogged and poorly maintained ditches, and inadequate overall drainage capacity. These chronic flood issues have repeatedly affected key locations such as Memorial Avenue in Allendale, Mill Street in Brunson, and several neighborhoods throughout the Town of Fairfax.

# 2c. Plan Review

SCOR and S.C. Sea Grant reviewed local planning efforts to better understand existing conditions and to identify opportunities to leverage planned efforts. The plans reviewed for the Communities of Allendale, Fairfax, and Brunson are listed in Table 1.

***Table 1: Plans reviewed for the Allendale, Fairfax, and Brunson Communities***

| Plan Name | Year |
|---|---|
| ***Allendale County Hazard Mitigation Plan*** | 2021 |
| ***Allendale County Comprehensive Plan*** | 2010 |
| ***Allendale County Housing Needs Assessment*** | 2021 |
| ***District 6 Housing Needs Assessment 2020*** | 2019 |
| ***Comprehensive Economic Development Strategy 2022-2027 Lower Savannah Region*** | 2022 |
| ***2020 Lowcountry Natural Hazard Mitigation Plan-Updated 2026*** | 2020 |
| ***Lowcountry Transportation Resilience Improvement Plan (TRIP)*** | 2026 |

The Project Team conducted a review of existing vulnerabilities and future threats for the Communities of Allendale, Fairfax, and Brunson. **The vulnerabilities that were identified by the Project Team include:**



Continued **impacts** from natural hazards



Vulnerable **evacuation routes**



The need for more robust **hazard-mitigation measures,** such as updated development policies, land-use planning tools, and community-level preparedness strategies, that are necessary to reduce risk and support future resilience efforts



Heavy reliance on **individual septic systems** significantly increases the risk of sanitary failures during flooding and limits the region's long-term resilience

# 2d. Community Engagement

The SC Office of Resilience (SCOR) and SC Sea Grant Consortium (SCSG) worked together to identify local community members to form a **Community Action Team**. The Community Action Team was involved with community outreach, input, and decision-making throughout the project, specifically during the four Community Action Team meetings which took place in November 2024, May 2025, August 2025, and December 2025. The members identified for the Communities of Allendale, Fairfax, and Brunson Community Action Team are listed in the table below.

***Table 2: Team Members of the Communities of Allendale, Fairfax, & Brunson Community Action Team***

| Team Members Name | Team Members Title |
|---|---|
| **Mayor Albert Sauls** | Mayor of Fairfax |
| **Cindy Deer** | Keep Allendale County Beautiful Chairwoman, Board Member, and volunteer |
| **Mayor Patricia Williams** | Mayor of Brunson |
| **Karl Mydral** | Citizen of Allendale |
| **Rachael Sharp** | Citizen and Farmer (Sharp & Sharp Certified Seed) |
| **Sophia Truempi** | Coastal Community Engagement Specialist, S.C. Sea Grant Consortium |
| **Karen Hardison** | Watershed Coordinator-Salkehatchie & Lower Savannah, SC Office of Resilience |

During the **first Community Action Team meeting** (November 2024), team members were invited to share concerns related to impacts from flooding and environmental changes they have experienced within their community. Two of the primary issues noted by members were flooding of roads and failing infrastructure. Community Action Team team members experience persistent flooding and drainage problems caused by aging infrastructure, clogged ditches, debris buildup, and limited stormwater capacity. Repeated flooding affects Memorial Avenue, Mill Street, and several Fairfax neighborhoods, where a lack of detention ponds and storage capacity results in

damage to homes and apartments. Transportation and emergency access routes in Fairfax are frequently blocked by localized storm drain flooding, making it difficult for residents to reach the hospital.  Climate fluctuations, such as severe drought followed by intense rainfall, impacts agricultural operations, stressing crops, eroding sandy soils, damaging irrigation systems, and creating gullies and pond dam failures. These combined impacts highlight the need for updated planning and more resilient infrastructure.

Future threats identified by the community members and stakeholders will continue to increase the region's vulnerability. In unincorporated areas, rapid siting of manufactured and modular homes near existing site-built housing, without the guidance of zoning or land-development regulations, has led to growing land-use conflicts. Furthermore, regional flood risk is heightened by the presence of numerous water bodies identified on FEMA Flood Insurance Rate Maps, including Lower Three Runs Creek, the Savannah River, Jackson Branch, Log Branch, Miller Swamp, the Salkehatchie River, Coosawhatchie River, and Duck Branch. With each municipality containing at least two designated Special Flood Hazard Areas, this complex hydrology, combined with the area's susceptibility to flash flooding from intense rainfall and occasional agricultural dam failures, contributes to significant and recurring flood hazards.

At the **second Community Action Team meeting** (May 2025), community members identified flood-prone areas directly on maps at a public event held at the Green Corn Unity Festival in Allendale. The community reported widespread issues with old and failing sewer and stormwater infrastructure. Residents described persistent drainage problems, such as clogged ditches at the Dale Street–Razor Road intersection, where water ponds for days due to grading issues.



*Figure 3: Images from the third Community Action Team meetings*

Flooding affects the Garden Apartments in Fairfax during heavy rains, and many noted the need for infrastructure funding and expanded workforce opportunities. Several roads across the region, including sections of Hwy 278 near Allendale-Fairfax High School, Harter Road, State Road S3470, River Road/3, Bo Peep Road, Ashe Road, Furman Googe Road, and Grass Hill Road, were also identified as areas susceptible to overtopping, flooding, or storm-related damage.

The **third Community Action Team meeting** took place in August 2025. Community Action Team members attended, and the meeting was advertised to the public to gain broader perspectives. The purpose of the third Community Action Team meeting was to provide an overview of the vulnerability assessments, review potential strategies, and obtain community feedback regarding strategies and priorities to guide strategy siting and typology criteria. A total of eight meetings were held including a combined meeting for the Town of Yemassee and the Communities of Northern Beaufort County and one for each of the seven other communities in the Program. Participants were encouraged to talk with members from the Team and physically add feedback to displays with focus on adaptation strategies, benefits prioritization, existing conditions, and a map showing the most vulnerable areas in each community. Participants provided feedback on the adaptation strategies and benefits prioritization boards by placing color-coded dots to indicate preference for specific adaptation strategies (i.e. bioswale, tree planting, permeable pavement) or rank the importance of certain strategy benefits (i.e. aesthetics, cost, flood reduction, ecological value, and recreation value). The existing conditions and vulnerable area boards contributed important place-based information through conversational notes and location-specific pins. Community members were asked to provide locations of chronic flooding, known community assets, and identifiable landmarks. After the meetings, SCOR and SCSG provided an online survey to community members to provide feedback if they were unable to attend the third Community Action Team meeting in person.

The community-specific data gained from the third Community Action Team meeting and the survey informed the type of strategies selected, the strategy siting, and prioritization matrix. Specifically, for the Communities of Allendale, Fairfax, & Brunson, community members rated "Rain Garden," "Land Conservation," and "Tree Planting" as the best practices, and "Permeable Paving" was rated as the least desirable practice. Also for the Communities of Allendale, Fairfax, & Brunson, community members rated "Cost" and "Flood Reduction" as the top two priorities, whereas "Aesthetics" and "Recreation Value" were the lowest rated priorities.

The **fourth Community Action Team meeting** took place in December 2025. A six-hour regional gathering was held in the Town of Yemassee for the five Community Action Teams in the Lower half of the Salkehatchie Watershed on December 4th, 2025 and a second six-hour regional gathering was held in the Town of Fairfax for the four Community Action Teams in the Upper half of the Salkehatchie Watershed on December 5th, 2025. These meetings were designed to foster networking, collaboration, and coordination of regional efforts. The fourth Community Action Team meetings began by reviewing the vulnerability assessments and possible strategies for implementation. Representatives from partnering agencies and organizations provided information on their respective efforts, which provided an opportunity to connect community members with potential project funding and resources.

In small, community-specific groups, participants reviewed and discussed project-level details for proposed projects with project team members. Members of the project team provided community members with project sheets that contained information gained from field site visits, including photos and conceptual renderings of the proposed projects. Participants were asked to evaluate each proposed project on two vital factors: Impact (How much will this help the community?) and Feasibility (How realistic is it to build and maintain this?). Participants scored each project using a visual grid, helping identify projects that deliver high community benefits without facing construction or permitting hurdles. Participants also provided additional valuable information to help inform the final project recommendations.






*Figure 4: Participants at the fourth Community Action Team meeting reviewed project sheets (See Appendices) to discuss which projects are the most feasible and provide the greatest benefit to the community.*

Following the fourth Community Action Team meetings, all community feedback, including the impact and feasibility scores, was compiled for further analysis. To translate the visual grids into quantitative data, the impact and feasibility axis were scaled from 1 to 10, and each project was assigned a standardized score for both metrics. These two scores were summed to generate a composite community preference score. Additionally, project sheets were updated to incorporate a "Community Action Team 4 Feedback / Notes" section to capture qualitative community input, such as proposed land uses, local observations, and potential funding sources.

After the fourth Community Action Team meetings, the project team met to discuss the proposed projects. The project team evaluated each project and assigned consultant opinion scores based on professional judgement informed by the break-out sessions during the fourth Community Action Team meeting, field observations, drainage patterns, and potential funding opportunities. Community preference and consultant opinion scores were considered during project prioritization.

# 3. Vulnerability Assessment

In July 2025, the Project Team completed a multi-scale vulnerability assessment for the Salkehatchie Watershed. **The vulnerability assessment was conducted at three scales:**

**1**

**WATERSHED-SCALE**

Utilizing the Salkehatchie Watershed Boundary

**2**

**COMMUNITY-SCALE**

Based on Census Tracts

**3**

**PARCEL-LEVEL**

Incoporating Building Point Data from First Street Foundation

Following discussions with SCOR and S.C. Sea Grant, as well as stakeholder input from the first two Community Action Team meetings, which indicated that **flooding, extreme heat, high winds, and wildfire were top concerns**, the following raster datasets from First Street Foundation were selected for inclusion in the watershed scale and community scale vulnerability assessments:

- **Flood 2055** – 500 Year Storm Event
- **Heat Max Temperature** – 2055
- **Wind Speed 2055** – Shared Socioeconomic Pathway 2-4.5 r3000
- **Burn Probability 2055** – Shared Socioeconomic Pathway 5-8.5

*i*

**Note:** Shared Socioeconomic Pathway is a set of narratives that help describe future developments in society based on the use of fossil fuels and the social and economic factors that drive fuel consumption.

## 3a. Watershed Scale

The Project Team used the four datasets; Flood 2055, Heat Max Temperature 2055, Wind Speed 2055, and Burn Probability 2055, to **identify the most vulnerable areas across the Salkehatchie Watershed.**

Figure 5 shows the results of the vulnerability modeling used to identify vulnerable areas across the Salkehatchie Watershed. The vulnerability scores range from 4.75 (lowest vulnerability) to 41.15 (highest vulnerability) and the final dataset provides complete coverage for the Salkehatchie Watershed. Conducting the assessment at the watershed scale allows the project team to **identify areas most at risk** based on the First Street Foundation data.

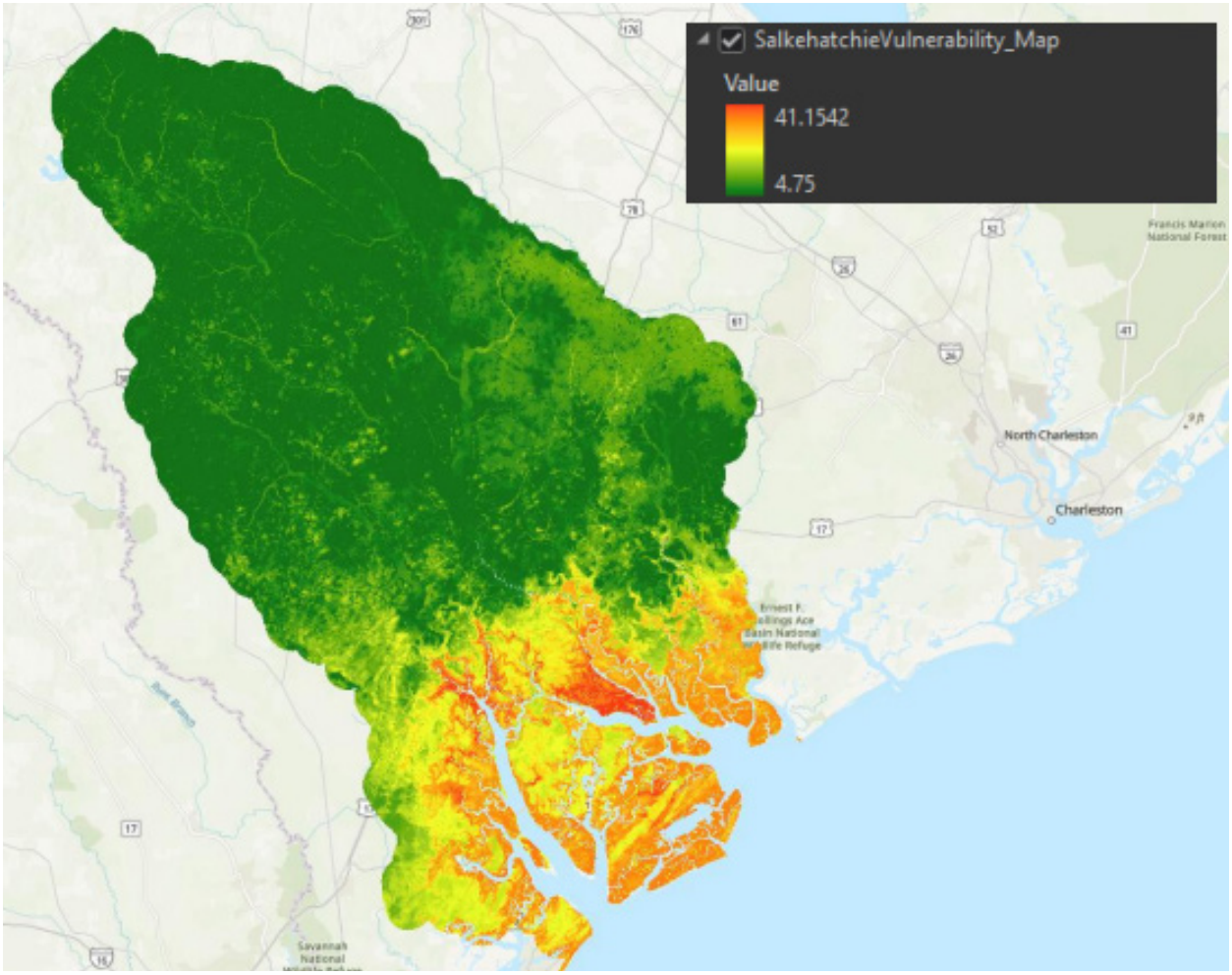



*Figure 5: Salkehatchie Vulnerability Model Results*

# 3b. Community Scale

For the community-scale component of the vulnerability assessment, modeling efforts focused on census tracts that encompass the previously identified communities of focus for the South Carolina Resilient Coastal Communities Collaborative Program (SCRCCCP). A total of **34 census tracts were selected** using maps provided by SCOR to ensure accurate representation of the Community Action Teams. Census tracts were grouped according to the communities of focus including Communities of Barnwell County, Communities of Bamberg County, Communities of Allendale, Fairfax & Brunson, Communities of Hampton & Varnville, Communities of Northern Beaufort County, Communities of Jasper County, Town of Yemassee, City of Walterboro, and St. Helena Island (Figure 6).

**A spatial vulnerability assessment was conducted** for each of the community-scale census tract areas shown in Figure 6. The methodology for the community-scale vulnerability assessment closely follows the approach used in the watershed-scale assessment, including the selection of data layers, scoring procedures, and weighting criteria, ensuring consistency across scales while providing a more granular understanding of vulnerability within each community.

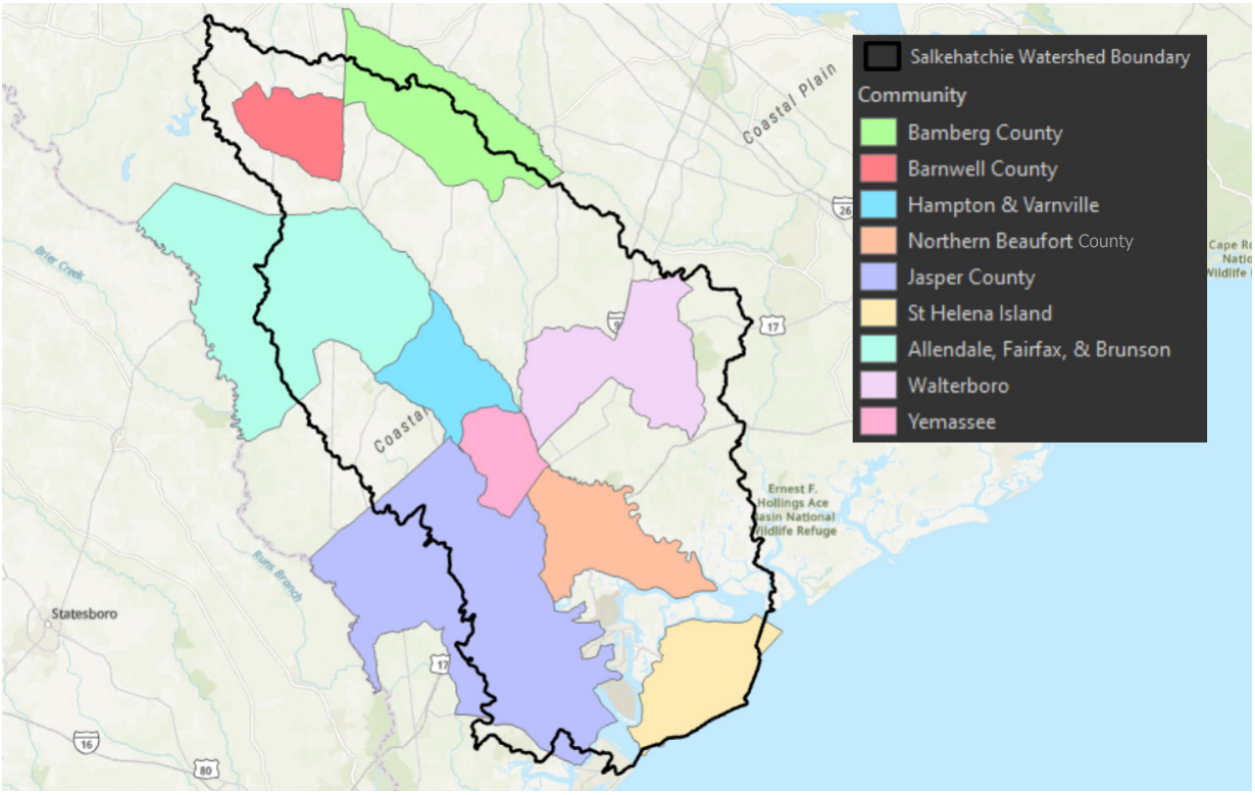



*Figure 6: Salkehatchie Watershed and SCRCCCP Study Communities Census Tracts*

## The community-scale analysis helped:

1. Identify specific **vulnerable areas**
2. Validate **flood concerns** raised during Community Action Team meetings
3. Inform the siting of potential **adaptation recommendations**
4. Determine the **top five most vulnerable areas** in each community where parcel-level analysis was performed.

Figure 7 represents the results of the Vulnerability Assessment for the Communities of Allendale, Fairfax, & Brunson along with the locations of the highest average vulnerability scores within the Allendale, Fairfax & Brunson census tracts. The most vulnerable areas are along Augusta Highway/US Highway 278. These areas highlight the areas of Allendale and Fairfax and areas around waterways such as Furse Mill Creek and Jackson Branch. The results were consistent with information collected from stakeholders during the second Community Action Team meetings.

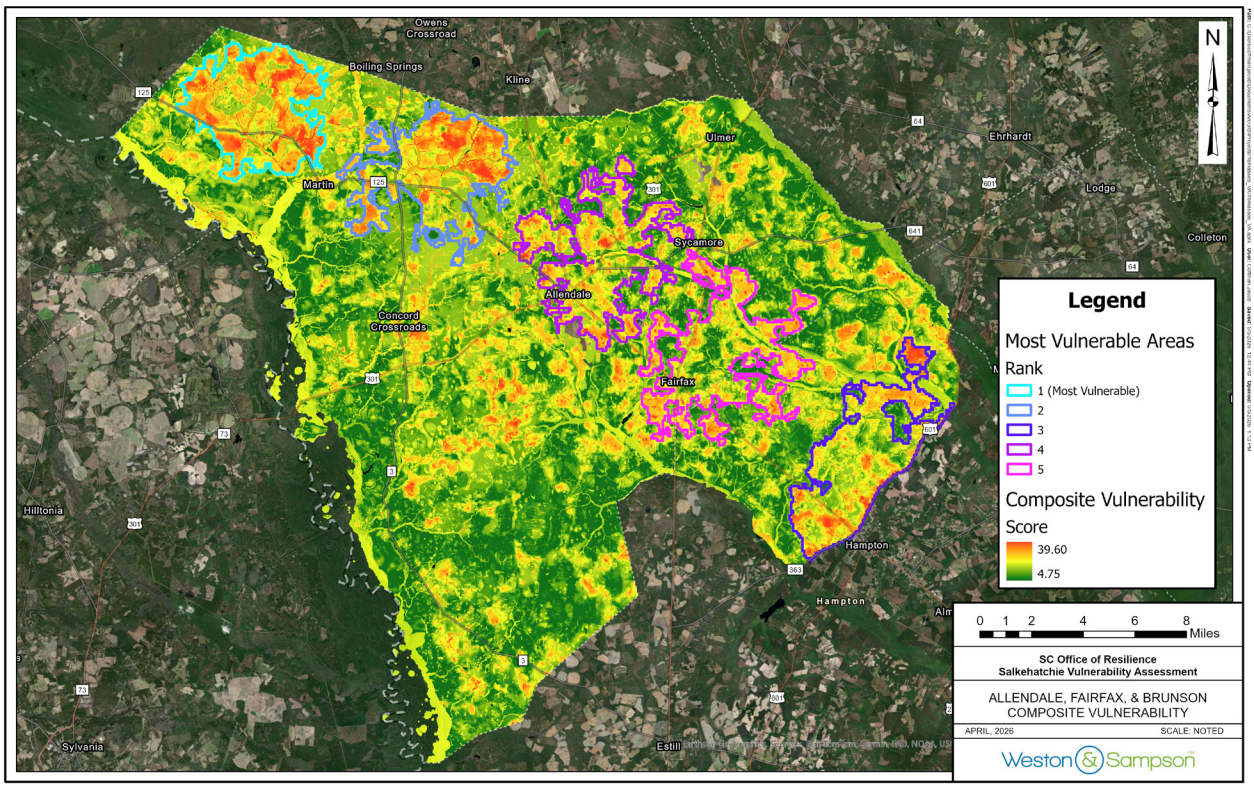



*Figure 7: Allendale, Fairfax, & Brunson Vulnerability Model – Most Vulnerable Areas*

# 3c. Parcel Scale

**The parcel-level vulnerability assessment was conducted for the five most vulnerable areas** identified in each community. Parcel-level vulnerability results are not provided in this report to protect the privacy of property owners.

The assessment focused on both near-term (present-day) and future (2055) conditions. By evaluating both present and future conditions, existing vulnerabilities are identified and an understanding is gained of how risks may evolve. To understand parcel level vulnerability, the project team applied a standardized methodology that examined both exposure and sensitivity. When exposure and sensitivity are combined, these two components provide a comprehensive understanding of vulnerability for each parcel within the study communities' most vulnerable areas. Figure 8 defines exposure and sensitivity as it relates to the applied vulnerability scoring formula.

| **Exposure** | **X** | **Sensitivity** |
|---|---|---|
| whether an asset is in an area that will **experience** a given hazard | | whether an asset or its functionality will be **damaged** or **disrupted** from exposure to a hazard |

*Figure 8: Vulnerability Scoring Formula*



# 4. Strategy Siting

## 4a. Desktop Analysis

**Strategy siting was conducted through a desktop analysis at the community level, utilizing community-specific data, feedback from the third Community Action Team meeting, and the community-scale and parcel-scale vulnerability assessments.** All data layers referenced were compiled and clipped to each community's study boundary to create a standardized spatial dataset for the analysis. Figure 10 describes the data layers used in the strategy siting analysis.

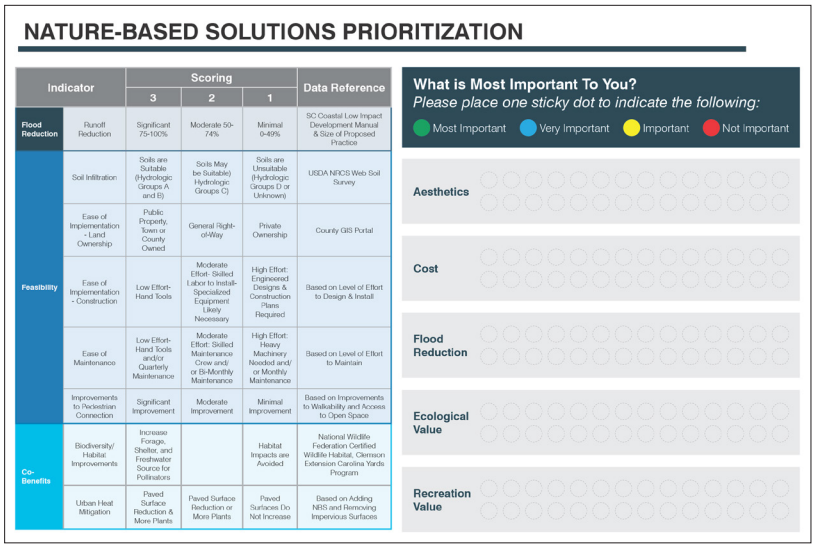



*Figure 9: Strategy Prioritization Board Utilized in Community Action Team Meeting Three to Better Understand Community Preference.*

**The siting process was guided by community-specific strategy preferences and benefit priorities** derived from the third Community Action Team meeting feedback and survey results. For the Communities of Allendale, Fairfax, & Brunson, community-preferred practices were prioritized including rain gardens and land conservation areas. **Because flood reduction was identified as one of the community's highest priorities, areas with known flooding were of focus during the desktop analysis.**

| Data Layer | Description | Data Source |
|---|---|---|
| **Soil Drainage Class** | Soil Hydrologic Group (A, B, C, D, A/D, B/D, C/D) | USDA NRCS Web Soil Survey, SSURGO Data |
| **Digital Elevation Model (DEM)** | Community specific elevation data | NOAA: Digital Coast LiDAR |
| **Surface Streams** (1 acre and 10 acre) | Surface streams derived from community DEM | Community DEM |
| **Parcels** | Community specific land ownership data | Beaufort County, Hampton County, Colleton County, Jasper County, Allendale County, Bamberg County, Barnwell County |
| **SCOR Conservation Priorities** | Displays SCOR's priority lands for conservation, developed land, water, and already conserved land | South Carolina Office of Resilience (SCOR) |
| **Historic Structures** | National Register of Historic Places | SC SHPO |
| **LMI % Block Groups** | Displays low-to-moderate income % by block group | HUD |
| **20-year Flood 2025** | Present-day flood depth and extent | First Street Foundation |
| **20-year Flood 2055** | Future conditions flood depth and extent | First Street Foundation |
| **Locations of Known Flooding** | Community point locations derived from Community Action Team meetings | Community Action Team Meetings Two and Three |
| **Top 5 Vulnerable Areas** | ~5000 acre polygons of the most vulnerable areas in each community | Community-Scale Vulnerability Assessments |

*Figure 10: Data Layers Used in Strategy Siting During the Desktop Analysis*

# 4b. Site Visits

Following the completion of the strategy siting, the project team conducted **forty-one targeted site visits across the nine study communities** to evaluate the feasibility and implementation of projects identified through the desktop analysis. At each site location, the consultants filled out a standardized field data sheet to document conditions relevant to design, permitting, and implementation of the proposed strategy. The field data sheet captured information pertaining to land ownership, structures on site, paved surfaces, drainage information, vegetation cover, feasibility comments, and site photos.



*Figure 12: Site visits to potential project locations provided an opportunity to identify barriers to implementation, property conditions, opportunities, and co-benefits.*

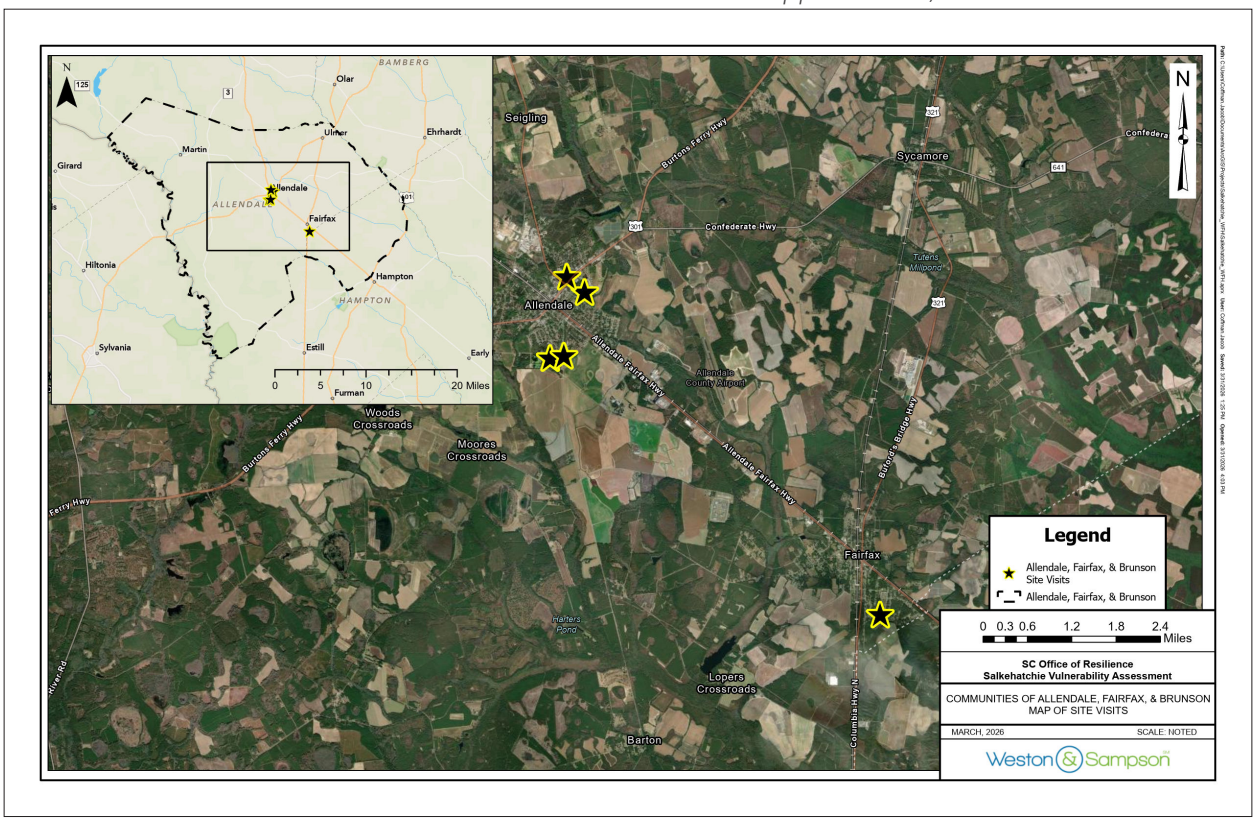



*Figure 11: Site Visits Conducted by the Project Team in the Communities of Allendale, Fairfax, and Brunson*

# 5. Prioritization Matrix

## 5a. Prioritization Criteria

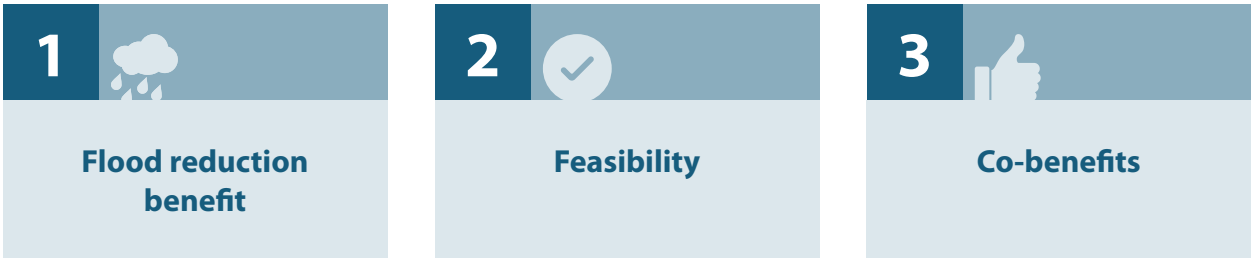
Prioritization criteria were developed to identify projects that were both feasible to implement and capable of delivering the greatest benefits to each community. A table of the prioritization criteria can be found in the appendices. Criteria were divided into three categories:

**Flood Reduction Benefit:** This was evaluated using the project's drainage area combined with the runoff reduction rate for each specific strategy, as outlined in the "Low Impact Development in Coastal South Carolina: A Planning and Design Guide."

**Feasibility:** This category evaluated practical implementation factors, such as land ownership and anticipated maintenance costs.

**Co-Benefits:** This accounted for the additional advantages a strategy might provide, such as water quality improvements and enhanced wildlife habitat.

**Each criterion was scored on a scale from 1 to 3,** where 1 represents lower benefit or greater implementation challenges and 3 represents higher benefit or greater ease of implementation. To emphasize the importance of reducing flood risk, the criteria representing flood-reduction benefit and flood exposure (present-day and future) were each weighted by 15. To ensure that both community feedback and consultant field observations were appropriately considered, Community Action Team 4 feedback and consultant opinion scores were each weighted at 10. All remaining criteria were assigned a weight of 5. This weighting structure ensures that **projects advancing flood resilience and reflecting community priorities received the highest consideration.**



# 5b. Prioritization Results

The prioritization matrix results helped identify the **top two projects in each community.** The top two projects for each community received an order of magnitude cost (high-level cost estimate) that considers all phases of implementation from design to construction. This information is intended to help with grant writing and future capital improvement planning. This order of magnitude cost informaiton is included in the appendices section.

For the Communities of Allendale, Fairfax, & Brunson, the prioritization matrix highlighted two projects that consistently performed well across all criteria. **The Conservation Area at USC Salkehatchie** had the highest overall score. This project has the potential for high flood-reduction benefits and for multiple co-benefits including water quality improvements and wildlife habitat benefits. **The Stormwater Park at the Town of Allendale Baseball Fields** had the second highest score in the community. This project received a high flood-reduction benefit score and was located within areas of current and future flooding extents.

While the prioritization matrix served as a critical tool in comparing projects across flood-reduction, feasibility, and co-benefits, the final selection of projects for cost estimation also incorporated several contextual considerations that the matrix could not fully capture. For Allendale, Fairfax, & Brunson, the proposed Stormwater Park was replaced by the 3rd-ranked project, a **bioswale running parallel to Barton Road**. The bioswale project was elevated as it aligned more directly with feedback from the fourth Community Action Team meeting. Community members were supportive of this strategy as flooding issues exist in this area. Residents also noted that their Department of Transportation (DOT) representative is responsive, providing a clear implantation pathway for the proposed project.






*Figure 13: Participants in Community Action Team meeting four reviewed project sheets to help prioritize projects.* The top two projects for each community received an order of magnitude cost estimate.

# 6. Recommendations Per Community



## *Opportunity Sheets*

# Navigating the Project Pages

To guide the development and implementation of resilience actions within the Salkehatchie watershed, a portfolio of potential projects, referred to as strategies, have been summarized in the following pages. Each strategy has been evaluated and presented with a standard set of criteria. These categories provide transparency, enable comparison among strategies, and offer a starting point for conversation with stakeholders who may be involved in advancing the strategy toward implementation. The sections below explain each element and its role in providing key information to support informed decision making.

**Type of Strategy** The Type of Strategy section simply identifies what project or practice is being described in detail on the sheet.

## Strategy Description

The Strategy Description section provides a standard definition of what kind of solution is being proposed. This allows for a shared understanding in case some of the terms are unfamiliar.

## Location Description

The Location Description section provides additional information to help identify the site when a specific address is not available. This may include descriptions such as the site being located between two streets or references to names commonly used by the community, such as "the old high school football field." This description helps readers clearly understand the location being referenced.

## Narrative

The Narrative section provides a more detailed summary of the proposed project or study including background, scope, and key features. This overview offers a concise snapshot of what the project entails and includes additional context or information that may not fit in with other sections.

## Photos

The Photos section includes on-the-ground photos of existing site conditions. Additionally, some sites have renderings or visualizations that illustrate what the site could look like after proposed improvements are implemented. The photos help provide context for those who have not visited the site, while the proposed conditions visuals help those unfamiliar with the strategy better envision how it would appear once installed.

## Strategy Location and Map

Location identifies the specific area where the project will be carried out. This could be a site address, neighborhood, corridor, watershed, or broadly county-wide project. Understanding where a project takes place is essential for evaluating its vulnerability context, affected populations, and potential to address locally specific hazards.

## Type of Solution

- ☐ Plans, Policies, and Ordinances
- ☑ Nature-based Solutions
- ☐ Infrastructure/Facility Retrofit

The Type of Solution section allows the reader to quickly understand the nature of the proposed approach. This may include a physical project, such as a nature-based solution; a modification to existing infrastructure through a facility or infrastructure retrofit; or a plan or policy intended to guide and support future solutions. Each type of solution plays an important role in supporting overall community resilience.

## Supporting Function

- ☐ Flood Mitigation
- ☑ Stormwater Management
- ☐ Conservation Opportunity
- ☐ General Resiliency Advancement
- ☐ Biodiversity Enhancement
- ☐ Floodplain Management
- ☐ Water Quality Improvement
- ☐ Urban Heat Reduction

The Supporting Function section identifies the primary purpose of the strategy by selecting from a defined list of intended outcomes. These selections indicate the benefits the strategy is expected to provide. Categories include flood mitigation, stormwater management, conservation, general resilience, biodiversity, floodplain management, water quality, and urban benefits.

## Flood Vulnerability of Location




The Flood Vulnerability of Location section uses flooding data from First Street Foundation (Foundation) to determine how susceptible a site is to flooding. The Foundation's modeling incorporates terrain data, climate projections, historical flood events, and hydraulic simulations to estimate flood elevations for a range of storm events and future time periods. For this analysis, both current (2025) and future (2055) flooding conditions were evaluated using the 20-year storm event (5% annual chance of occurrence). Locations not projected to flood under either scenario were classified as "Low". Sites projected to flood under the future scenario only were classified as "Medium". Locations that were projected to flood under both current and future conditions were classified as "High". An understanding of the flooding conditions at the site can indicate both the need for the strategy and the anticipated success of the strategy.

## Anticipated Flood Reduction Benefit




The Anticipated Flood Reduction section estimates the potential reduction in stormwater runoff volume expected from implementing the strategy. The ranges used for these estimates are based off guidance from the "Low Impact Development in Coastal South Carolina: A Planning and Design Guide," which provides typical runoff reduction values for common nature-based solutions. Flood reduction is a key focus of increasing community resilience in the Salkehatchie watershed.

## Ease of Implementation




The Ease of Implementation section reflects key factors that may influence how easily a strategy can be carried out, including land ownership and permitting requirements. Strategies rated with a "Low Ease" of implementation generally require multiple permits and are located on private property. In contrast, strategies rated with a "High Ease" of implementation typically require no permits and are located on publicly owned property. Understanding the feasibility of implementation helps set expectations up front and identify potential challenges to address early in the implementation process.

## Priority Rating




The Priority Rating section is categorized in "Low," "Medium," and "High" priority rating tiers based on a combination of variety of factors already discussed (flood reduction, cost, permitting) as well as additional factors such as the community's preference, consultant opinion, and co-benefits anticipated (water quality, cultural, habitat). The priority rating category helps decision-makers allocate limited resources efficiently.

## Estimated Cost




The Estimated Cost section provides a preliminary projection of the financial investment required to implement. Strategies anticipated to be installed with basic or volunteer labor or consisted of modifications to an existing practice were classified as "Low" while strategies that require engineered designs were classified as "High". Understanding cost early in the process helps assess feasibility, plan budgets, and prioritize investments with fiscal constraints.

# Allendale, Fairfax, & Brunson Conservation
## Adjacent to USC Salkehatchie West Library

### Type of Strategy
Conservation

### Strategy Description
Land Conservation protects natural areas to ensure they remain healthy and productive for future generations, as well as safeguarding the ecosystem from development.

Conservation easements are a tool that is regularly used in land conservation in which the property owner voluntarily enters into an agreement in which certain uses of the land are forever limited. Conservation easements work to protect the natural resource values of the land such as wildlife habitat, water quality protection, scenic beauty, farming, and working forest.

### Narrative
This parcel, located at University of South Carolina Salkehatchie, is predominantly flat. A channelized ditch runs through the property, showing minor signs of erosion. This site is well suited for conservation efforts and offers strong potential for community uses. By preserving the natural habitat and incorporating features such as walking trails, the property could serve as a valuable space for recreation, education, and community engagement.

### Location Description
USC Salkehatchie (1830 James Brandt Blvd, Allendale, SC) This location has an administrative building on site and an asphalt parking lot. This project location also has existing woods and shrubs. There is an estimated 75% canopy cover. In addition, there is also a grass ditch.

### Photos
Existing Conditions



Forested area next to admin building



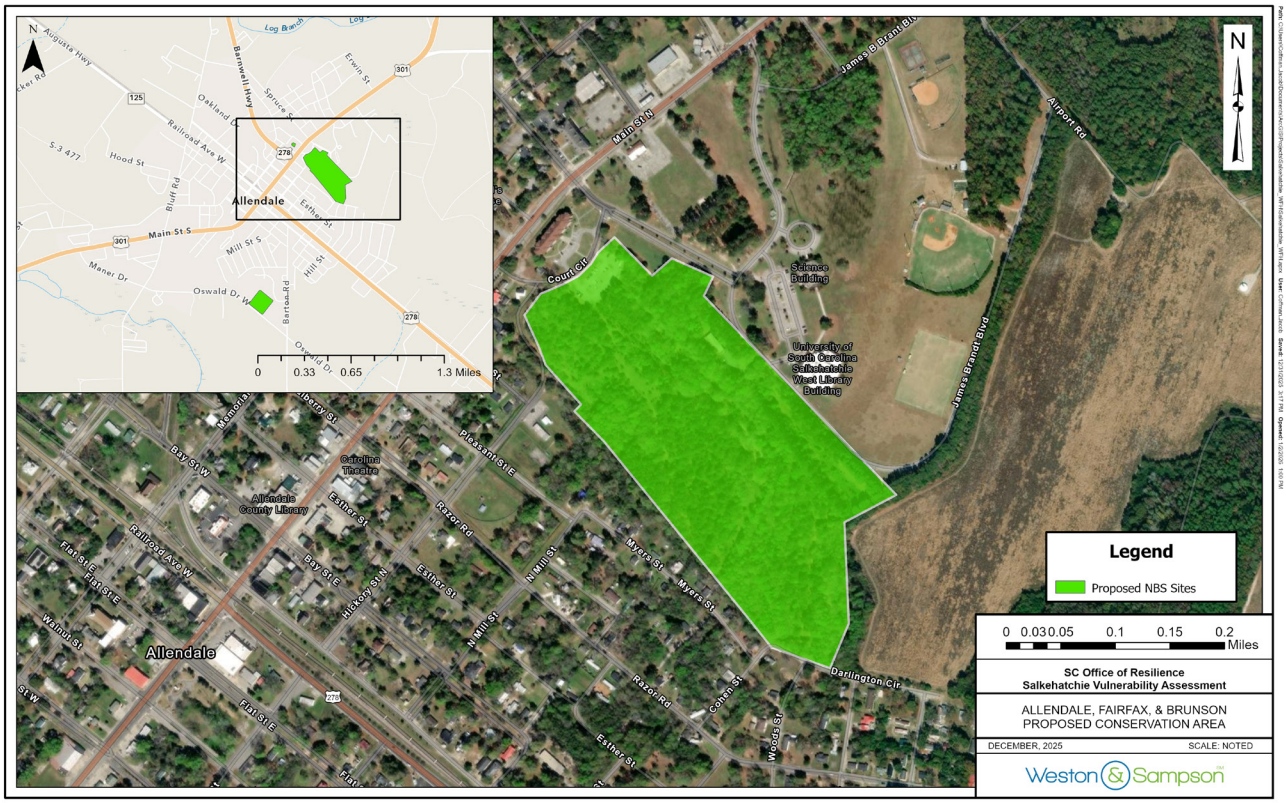
Channel running through forested property



Forested area within parcel

## Strategy Location and Map

USC Salkehatchie (1830 James Brandt Blvd, Allendale, SC)




## Type of Solution

- ☐ Plans, Policies, and Ordinances
- ☑ Nature-based Solutions
- ☐ Infrastructure/Facility Retrofit

## Supporting Function

- ☐ Flood Mitigation
- ☐ Stormwater Management
- ☑ Conservation Opportunity
- ☐ General Resiliency Advancement
- ☐ Biodiversity Enhancement
- ☐ Floodplain Management
- ☐ Water Quality Improvement
- ☐ Urban Heat Reduction

## Flood Vulnerability of Location

Low




## Anticipated Flood Reduction Benefit

Low | Medium | High

## Ease of Implementation

Low Ease | Moderate Ease | High Ease

## Estimated Cost

Low | Medium | High

## Priority Rating

Low | Medium | High

# Allendale, Fairfax, & Brunson Stream Restoration

## Open Channel within Flood Location in Fairfax

### Type of Strategy

Stream Restoration

### Strategy Description

Stream restoration is the practice of repairing damaged streams often due to former channelization or an increasing in water quantity caused by an increase in impervious surfaces in the surrounding area. Stream restoration incorporates intentional design interventions to that the stream may function more like a natural systems, improve water quality, aquatic habitat, and stabilize the stream banks.

### Narrative

A stream restoration or bank stabilization and channel maintenance would likely provide a large drainage benefit for this community. The channel flows south along Amelia Street, turns southeast crossing under Evie Street (Pippin Street) through a culvert and continues to flow southeast towards the intersection of Calvin McTeer Street and Byrd Street. The channel passes through multiple private properties and eventually discharges to another channel along Calvin McTeer Street. There are multiple aerial utility crossings present in the channel as well as trash and debris build up and signs of erosion. Downstream, there is a convoluted network of drainage ditches and pipes which have been identified as contributing to drainage issues in the area. Several homes appear to be located very close to the channel, which may present unsafe conditions along the project boundary. Given the proximity of private properties and existing utilities, focusing on upstream restoration and bank stabilization would be a good opportunity for flood reduction and resiliency benefits in this location.

### Location Description

This project location has multiple homes immediately adjacent to the project area. There is existing woods, grass, and trees line the banks of the channel. Tree canopy cover is estimated as 20%. The channel crosses under Evie Street (Pippin Street), which is a gravel/dirt road.

### Photos

Existing Conditions



Culvert crossing under Evie St. (Pippin St.) Photo facing upstream. Trash and debris present which may occlude flow.



Channel facing downstream from Marion F Riley St. Exposed water and sewer pipes and erosion present along sides of channel.



Bank erosion and exposed water pipe along channel

## Strategy Location and Map

Amelia Street, Evie Street (Pippin Street), Byrd Street, Calvin McTeer Street




## Type of Solution

- ☐ Plans, Policies, and Ordinances
- ☑ Nature-based Solutions
- ☐ Infrastructure/Facility Retrofit

## Supporting Function

- ☑ Flood Mitigation
- ☑ Stormwater Management
- ☐ Conservation Opportunity
- ☑ General Resiliency Advancement
- ☑ Biodiversity Enhancement
- ☐ Floodplain Management
- ☑ Water Quality Improvement
- ☐ Urban Heat Reduction

## Flood Vulnerability of Location

Low




## Anticipated Flood Reduction Benefit

Low | Medium | High

## Ease of Implementation

Low Ease | Moderate Ease | High Ease

## Estimated Cost

Low | Medium | High

## Priority Rating

Low | Medium | High

# Allendale, Fairfax, & Brunson Stormwater Park

## Town of Allendale Baseball Fields

### Type of Strategy

Stormwater Park

### Strategy Description

A stormwater park is a public park intentionally designed to collect, capture, store, treat, and manage stormwater runoff, then slowly release it, while also serving as recreational open space.

### Narrative

This site offers a good opportunity to implement several nature based solutions to address ponding and provide some relief to the adjacent wastewater treatment plant. The overall site, including the drainage ditches, is relatively flat, limiting available stormwater storage capacity and positive outflow. Standing water is present in the ditches that border the site, and there is also a grass swale that collects runoff from the parking area. In this proposed strategy, infiltration based practices would be incorporated as retrofits to the baseball fields. The parking lot would include permeable pavement at parking stalls. Drainage ditches could be improved with either routine maintenance or conversion to bioswales by adding slope and vegetation. One constraint of the park is that the community noted that the park is not popular amongst the community as it is out of the way and near the treatment plant.

### Location Description

The location of this project is on the corner of Oswald Drive W and Dix Street. It is a public park that hosts two pavilions, a park building, and bleachers. It has existing woods and grass that has 10% canopy cover. There is also an asphalt parking lot and basketball courts.

### Photos

Existing Conditions



Asphalt parking lot



Grass swale draining parking lot



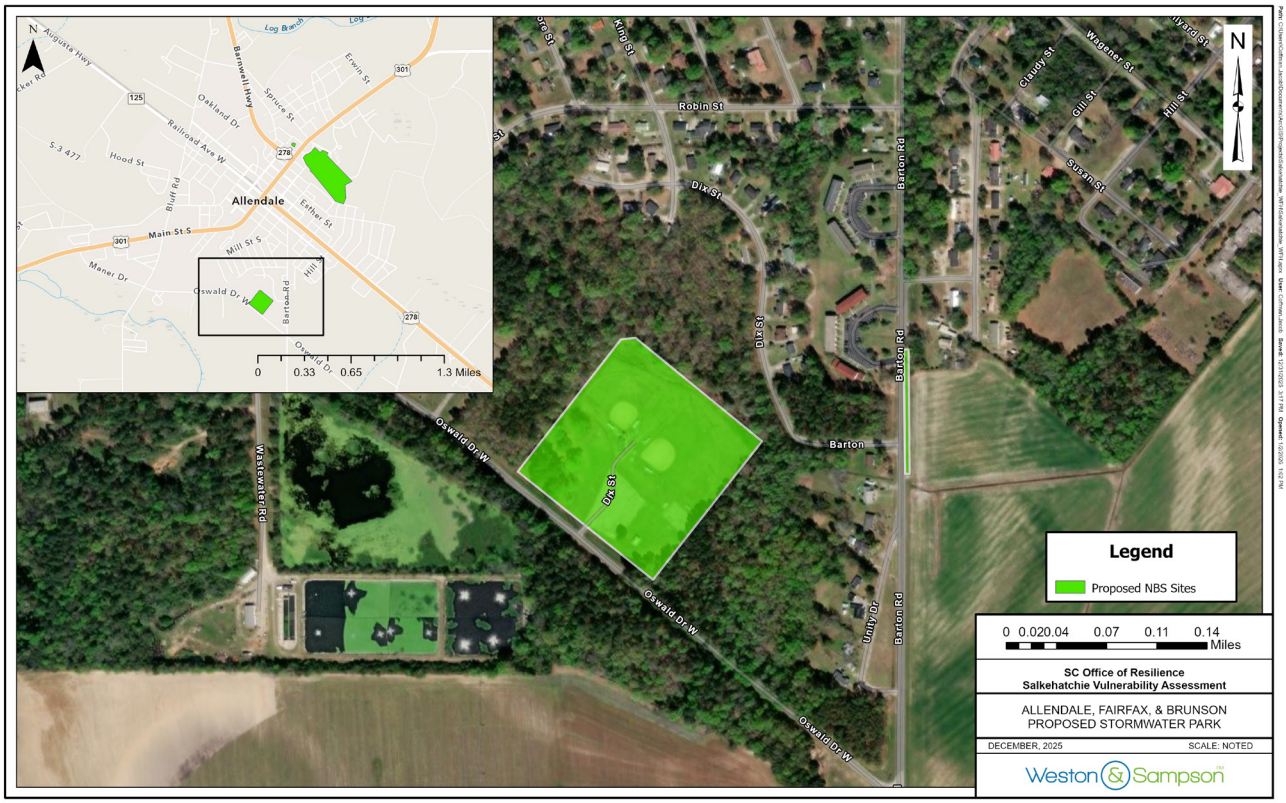
Basketball Courts



Ditch along western edge of parcel facing upstream

## Strategy Location and Map

Oswald Drive W and Dix Street




## Type of Solution

- ☐ Plans, Policies, and Ordinances
- ☑ Nature-based Solutions
- ☑ Infrastructure/Facility Retrofit

## Supporting Function

- ☐ Flood Mitigation
- ☑ Stormwater Management
- ☐ Conservation Opportunity
- ☑ General Resiliency Advancement
- ☑ Biodiversity Enhancement
- ☑ Floodplain Management
- ☑ Water Quality Improvement
- ☐ Urban Heat Reduction

## Flood Vulnerability of Location

High




## Anticipated Flood Reduction Benefit

Low | Medium | High

## Ease of Implementation

Low Ease | Moderate Ease | High Ease

## Estimated Cost

Low | Medium | High

## Priority Rating

Low | Medium | High

# Allendale, Fairfax, & Brunson Bioretention
## Behind Allendale County Courthouse

### Type of Strategy
Bioretention

### Strategy Description
A bioretention cell is a landscaped depression that is designed with engineered soils and vegetation to capture, store, and treat stormwater runoff. Bioretention cells are designed to infiltrate within 72 hours after a storm event to prevent standing water and mosquito breeding.

### Narrative
This site offers a good opportunity for implementing additional infiltration practices to address downstream flooding concerns near the railroad. Two dry detention basins exists on site and appear to be in good condition. The two dry detention basins could be connected with a bioswale to provide multiple opportunities for runoff to slow down and infiltrate in what is called a "treatment train" approach.

### Location Description
This project site is located behind the Allendale County Courthouse.

### Photos
Existing Conditions



Dry detention basin



Trees next to detention basin



Discharge point for pipe into detention basin clogged with vegetation



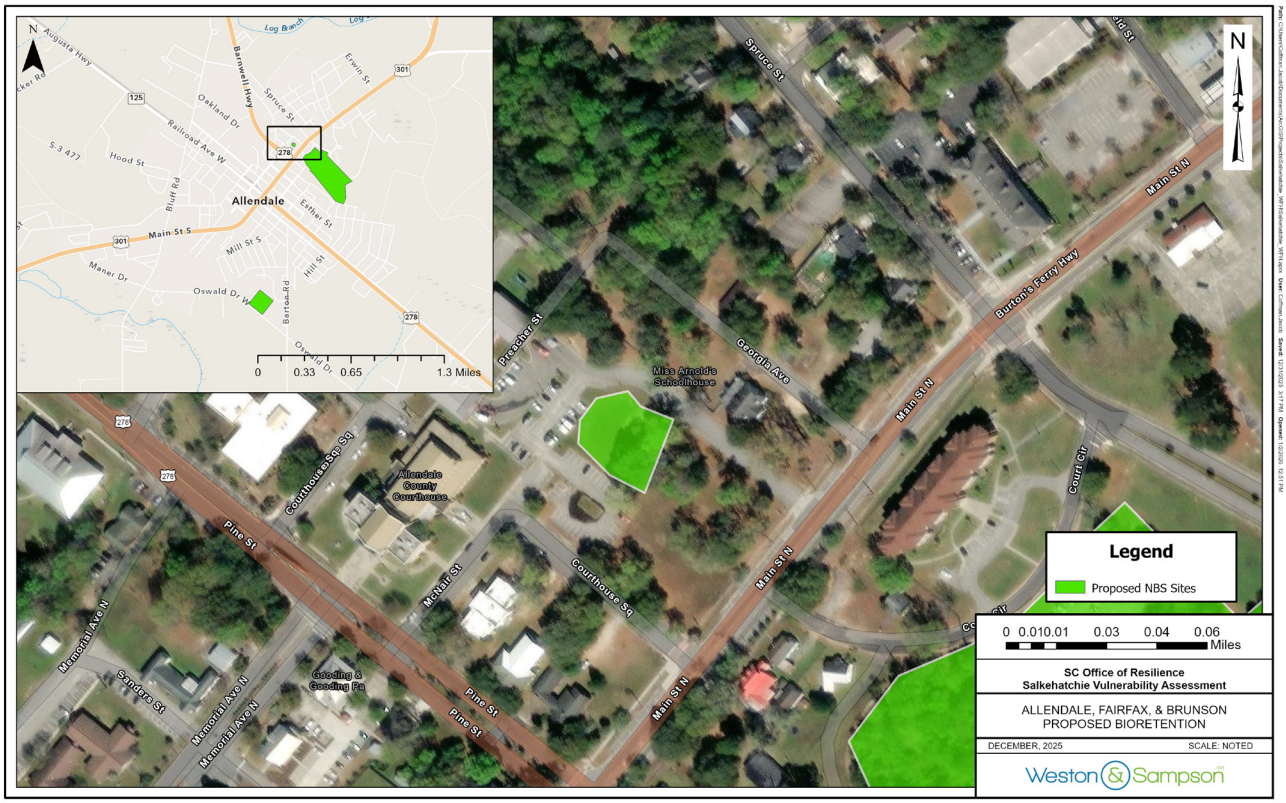
Riser structure in pond



Detention basin to the south of the dry detention pond. Possibility for treatment train if these areas are connected

## Strategy Location and Map

Allendale Courthouse (145 Georgia Ave, Allendale, SC)




## Type of Solution

- ☐ Plans, Policies, and Ordinances
- ☑ Nature-based Solutions
- ☑ Infrastructure/Facility Retrofit

## Supporting Function

- ☐ Flood Mitigation
- ☑ Stormwater Management
- ☐ Conservation Opportunity
- ☑ General Resiliency Advancement
- ☑ Biodiversity Enhancement
- ☐ Floodplain Management
- ☑ Water Quality Improvement
- ☐ Urban Heat Reduction

## Flood Vulnerability of Location

Low




## Anticipated Flood Reduction Benefit

Low | Medium | High

## Ease of Implementation

Low Ease | Moderate Ease | High Ease

## Estimated Cost

Low | Medium | High

## Priority Rating

Low | Medium | High

# Allendale, Fairfax, & Brunson Bioswale
## Parallel to Barton Road

### Type of Strategy
Bioswale

### Strategy Description
A bioswale is a vegetated channel that slows and treats stormwater runoff, often along parking lots or property edges. A bioswale is similar to a bioretention cell in that the design includes engineered soils and vegetation, but different as bioswales focus on conveyance of stormwater runoff typically as part of a centralized drainage system.

### Narrative
The project area appears to lack adequate drainage infrastructure, implementation of a bioswale would address flooding concerns and improve drainage for the community. The ditch along Barton Road is not connected to the existing drainage system, and no culverts are visible. Implementation of a culvert under the driveway of the agricultural field would improve conveyance of the existing drainage features. Similarly, the ditch on the opposite side of Barton Road near the apartment complex appears to have been recently excavated but is not connected at either end. The recently excavated ditch on the apartment complex side of the road could be extended, regraded, and planted as a bioswale. The bioswale can then be connected to the existing drainage system that discharges to the channel perpendicular to Barton Road. It was noted that the local DOT representative is very responsive, suggesting the improvements would be feasible and relatively easy to implement.

### Location Description
The location of this project site runs parallel to Barton Rd. There is grass present and trees/forest at the edge of the right-a-way of the ditch.

### Photos

#### Existing Conditions


Ditch along Barton Rd. flattens out and no culvert present

#### Existing Conditions

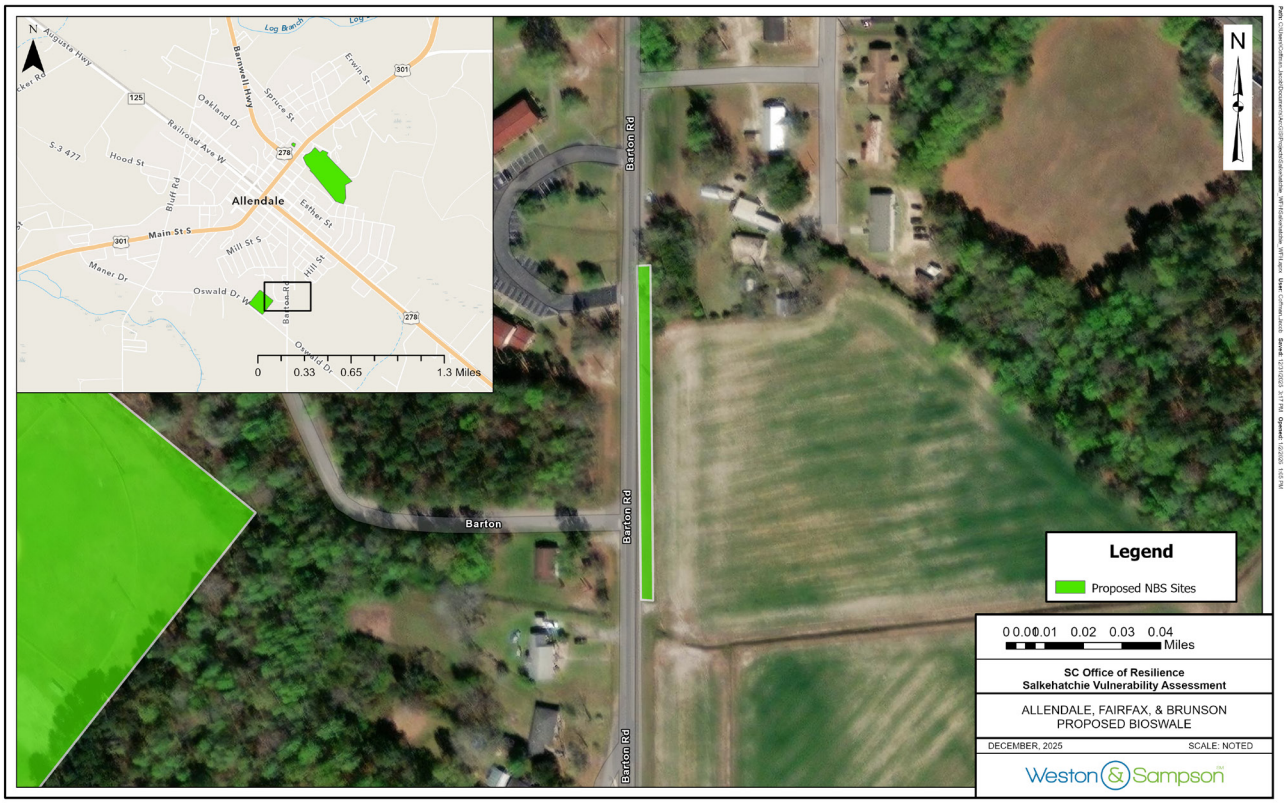

Ditch adjacent to the apartment complex entrance

#### Proposed Improvements


Rendering to show ditch retrofit to a bioswale

## Strategy Location and Map

13909 Barton Rd, Allendale, SC




## Type of Solution

- ☐ Plans, Policies, and Ordinances
- ☑ Nature-based Solutions
- ☑ Infrastructure/Facility Retrofit

## Supporting Function

- ☑ Flood Mitigation
- ☑ Stormwater Management
- ☐ Conservation Opportunity
- ☐ General Resiliency Advancement
- ☑ Biodiversity Enhancement
- ☐ Floodplain Management
- ☑ Water Quality Improvement
- ☐ Urban Heat Reduction

## Flood Vulnerability of Location

Low




## Anticipated Flood Reduction Benefit

Low | Medium | High

## Ease of Implementation

Low Ease | Moderate Ease | High Ease

## Estimated Cost

Low | Medium | High

## Priority Rating

Low | Medium | High

# Conservation and Riparian Buffer Mapping
## Salkehatchie Watershed-Scale

### Type of Strategy
Conservation Mapping

### Strategy Description
A Conservation and Riparian Buffer Mapping Plan is a planning level effort that uses spatial analysis and stakeholder input to identify, evaluate, and prioritize undeveloped lands and riparian corridors that are suitable for conservation. The plan relies on existing data sources and mapping tools to understand current land use, ecological value, floodplain function, and connectivity across the watershed. The resulting maps and datasets seek to provide a watershed-wide framework to guide future conservation priorities, support funding decisions, and inform local planning.

### Narrative
This strategy proposes the development of a Conservation and Riparian Buffer Mapping Plan to identify and prioritize land conservation opportunities throughout the Salkehatchie Watershed. The project could establish a Salkehatchie Conservation Committee (SCC) and engage local governments, conservation professionals, non-profit organizations, and community members to guide the development of a watershed-wide conservation and riparian buffer mapping plan, ensuring that criteria and resulting maps reflect local knowledge and community-defined values. Using available state and regional data, a series of spatial analyses can be completed to inventory existing open space, evaluate undeveloped and available parcels, and identify priority riparian buffer areas that support flood resilience and watershed health. A complementary funding analysis can evaluate conservation funding programs and realistic funding strategies to support conservation goals identified through the mapping effort. The final Land Protection Vision Plan can synthesize these findings into a 25 year blueprint, providing communities and state partners with clear, data driven guidance to support future conservation planning and investment.

### Location Description
Watershed-scale.

### Photos

#### Existing Conditions



A few habitat types of the Salkehatchie Watershed: Bottomland Hardwoods



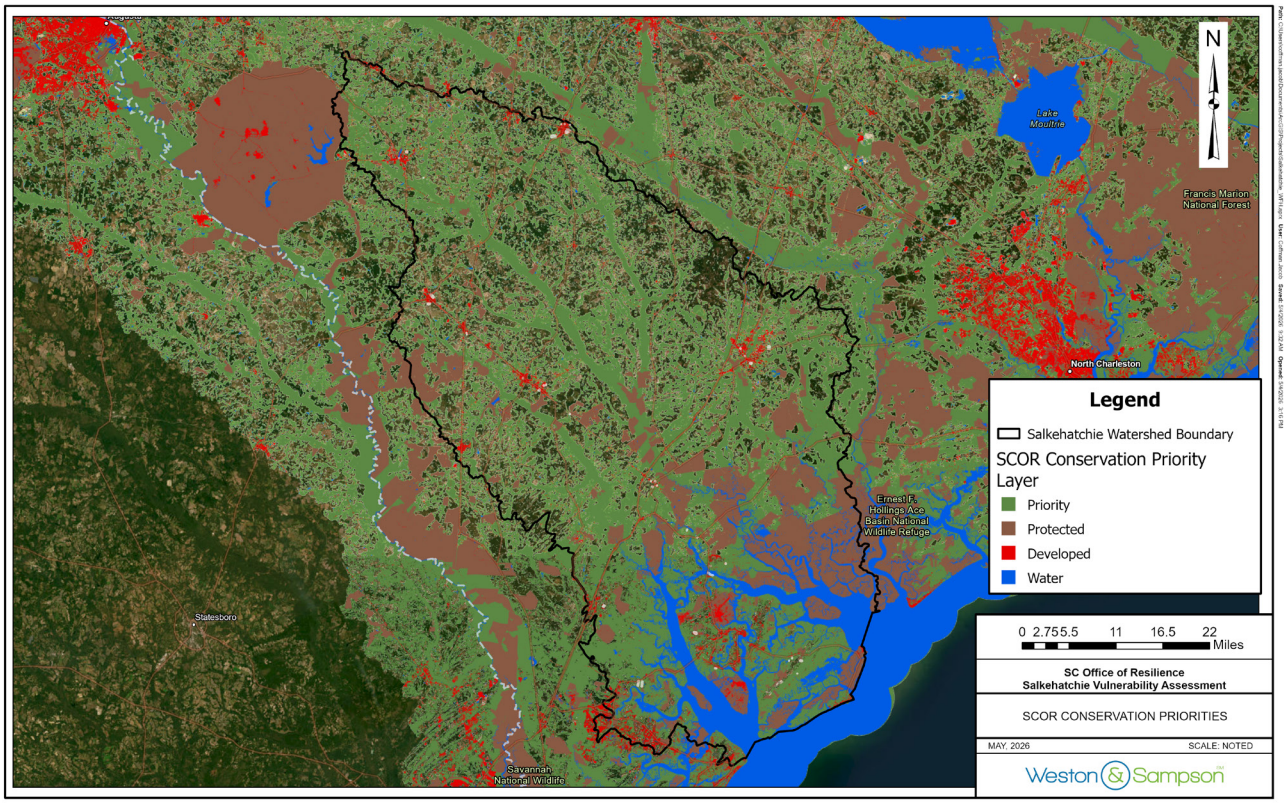
Longleaf Pine Savannas



Tidal Wetlands

## Strategy Location and Map

Salkehatchie Watershed




## Type of Solution

- ☐ Nature-based Solutions
- ☑ Plans, Policies, and Ordinances
- ☐ Infrastructure/Facility Retrofit

## Supporting Function

- ☑ Flood Mitigation
- ☑ Stormwater Management
- ☑ Conservation Opportunity
- ☑ General Resiliency Advancement
- ☑ Biodiversity Enhancement
- ☑ Floodplain Management
- ☑ Water Quality Improvement
- ☑ Urban Heat Reduction

## Flood Vulnerability of Location

High




## Anticipated Flood Reduction Benefit

Low | Medium | High

## Ease of Implementation

Low Ease | Moderate Ease | High Ease

## Estimated Cost

Low | Medium | High

## Priority Rating

Low | Medium | High

# Hydrologic & Hydraulic (H&H) Study
## Salkehatchie Watershed-Scale

### Type of Strategy
H&H Study

### Strategy Description
A watershed-wide stormwater model, also referred to as a hydrologic and hydraulic (H&H) study, is a comprehensive analysis of how rainfall, runoff, and floodwaters move through an entire watershed system. This type of study evaluates surface and sub-surface drainage, streams, rivers, bridges, culverts, and other infrastructure to understand how the watershed currently functions and how it may respond to future conditions such as increased development or more intense rainfall. The resulting model serves as a planning and decision-making tool to identify flood risks, prioritize infrastructure improvements, support future detailed H&H analyses, and coordinate stormwater management across multiple jurisdictions.

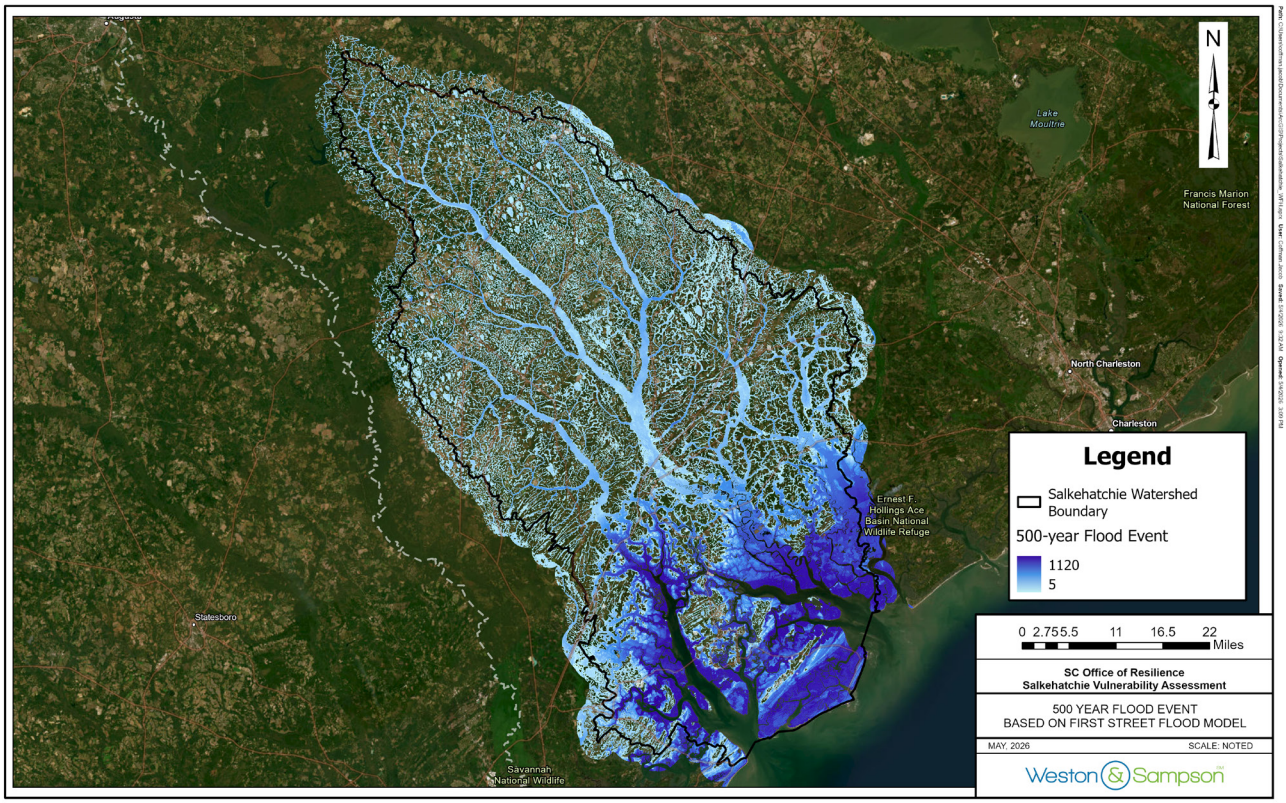
### Narrative
This strategy proposes a 1D watershed-wide stormwater model for the Salkehatchie Watershed to improve understanding of hydrologic and hydraulic conditions at a watershed scale. The study will develop a comprehensive watershed model that evaluates current and future flood risks and identifies vulnerable infrastructure such as roadways, bridges, culverts, and evacuation routes. The initial model can be calibrated using existing FEMA H&H models and refined through stakeholder engagement and information gathered during the Salkehatchie Watershed Vulnerability Assessment.

The model is intended to serve as a flexible, long-term planning tool that can be updated over time as communities inventory drainage systems or complete their own stormwater or H&H studies. As local investments are made, higher-resolution 2D modeling can be incorporated in areas where additional detail is needed, allowing communities to evaluate localized flooding while understanding watershed-scale impacts. Ultimately, this effort will support coordinated decision-making and help prioritize flood mitigation and infrastructure improvements at the state, county, and local levels throughout the watershed.

### Location Description
Watershed-scale.

## Strategy Location and Map

Salkehatchie Watershed




## Type of Solution

- ☐ Nature-based Solutions
- ☑ Plans, Policies, and Ordinances
- ☑ Infrastructure/Facility Retrofit

## Supporting Function

- ☑ Flood Mitigation
- ☑ Stormwater Management
- ☐ Conservation Opportunity
- ☑ General Resiliency Advancement
- ☐ Biodiversity Enhancement
- ☑ Floodplain Management
- ☐ Water Quality Improvement
- ☐ Urban Heat Reduction

## Anticipated Flood Reduction Benefit

Low | Medium | High

## Ease of Implementation

Low Ease | Moderate Ease | High Ease

## Estimated Cost

Low | Medium | High

## Flood Vulnerability of Location

High




## Priority Rating

Low | Medium | High

# 7. Next Steps

## 7a. Grant Opportunities & Funding

The vulnerability analysis and community engagement process for the Communities of Allendale, Fairfax, and Brunson identified several critical resilience challenges. To transition these identified strategies into projects, the following grant funding opportunities could be considered.

### *Wastewater Utility Expansion & Repair*

**SC Rural Infrastructure Authority (RIA) Grants:**
RIA provides critical funding for public wastewater utilities. The County and municipalities could target RIA Basic Infrastructure grants to overhaul the failing sewer and stormwater lines in Allendale and Fairfax. Furthermore, Regional Planning Grants should be utilized to study the feasibility of establishing municipal sewer collection and treatment systems for the Towns of Ulmer and Sycamore.

**USDA SEARCH Grant (Special Evaluation Assistance for Rural Communities and Households):**

Because these communities include rural, economically vulnerable areas, this USDA program can fully fund (with no local match requirement) the preliminary engineering and environmental reports necessary to plan the transition from individual septic leaching fields to decentralized or municipal wastewater systems.

### *Critical Infrastructure*

**FEMA Hazard Mitigation Grant Program (HMGP):**

Administered through the SC Emergency Management Division (SCEMD), these funds are specifically designated for hazard mitigation infrastructure. HMGP is a funding mechanism that could be used to upsize failing culverts, re-grade poorly draining intersections (such as the Dale Street–Razor Road intersection), and elevate critical evacuation and hospital access routes.

### *Agricultural Resilience*

**USDA NRCS Environmental Quality Incentives Program (EQIP):**

Local agricultural extensions could assist farmers in accessing EQIP funds, which provide direct financial assistance to implement on-farm adaptation strategies (cover crops and reinforced irrigation infrastructure) to mitigate the impacts of flash flooding and soil erosion.

# 7b. Resilience Hubs

Resilience Hubs are facilities designed to support residents of a community before, during, and after natural disasters and emergenciies. These facilities provide back-up power, air conditioning, and shelter, but also give the opportunity for community networks to **collaborate and bolster local resilience.** Resilience Hubs can be established community gathering areas such as schools, libraries, or community centers. These facilities can also be scalable, starting as a community center that evolves to include elements such as back-up solar power, dry-floodproofing, overnight shelter, and staff trained in emergency response. Ideally, the locations of Resilience Hubs provide easy access for residents in the facility's service area during an event and are resilient to natural disasters (i.e. elevated, outside of the 100-Year flood plain, flood-proofed, etc.).

*i*

**Resilience Hubs** are facilities designed to support residents of a community before, during, and after natural disasters and emergencies.

## *Core Functions*

Resilience hubs have several core functions before, during, and after a natural disaster. **These functions include:**

- Information & Communications
- Community Services
- Emergency Support
- Recovery, and Coordination

Prior to a natural disaster, the Resilience Hub can function as a **reliable source of information** on the event, help residents find resources for emergency alert systems and recovery resources, provide internet access to residents to communicate with family members and, provide refuge prior to evacuation before the natural disaster occurs. Additionally, the Resilience Hub provides **community services** throughout the year including workforce training, workshops, and space for gathering and organizing community groups. This provides a deeper connection within the community and can help residents find information on disaster preparedness and climate awareness.

During an event, the Resilience Hub will provide **emergency support for residents.** This includes safe shelter during extreme weather conditions like hurricanes, heat waves, or flooding. The facility should have back-up power to support charging devices or powering medical equipment. Finally, the facility provides food, water, first-aid, and other critical supplies during natural disasters for those affected.

In support of recovery efforts, the Resilience Hub can function as a **central point of distribution for supplies post-disaster.** These facilities can also help connect residents to resources for insurance, housing, and financial assistance in partnership with local, state, and federal agencies.

The Urban Sustainability Directors Network (USDN, 2019) provides further guidance on developing Resilience Hubs, which informs the development of these facilities. This is referred to as a living document that will be updated as new information becomes available. Additional resources such as the Spokane Community Resilience Hub Network and Gonzaga University Institute for Climate, Water, and Environment provide further information on Resilience Hubs and the different levels of Resilience Hubs based on the services they provide (Figure 14).

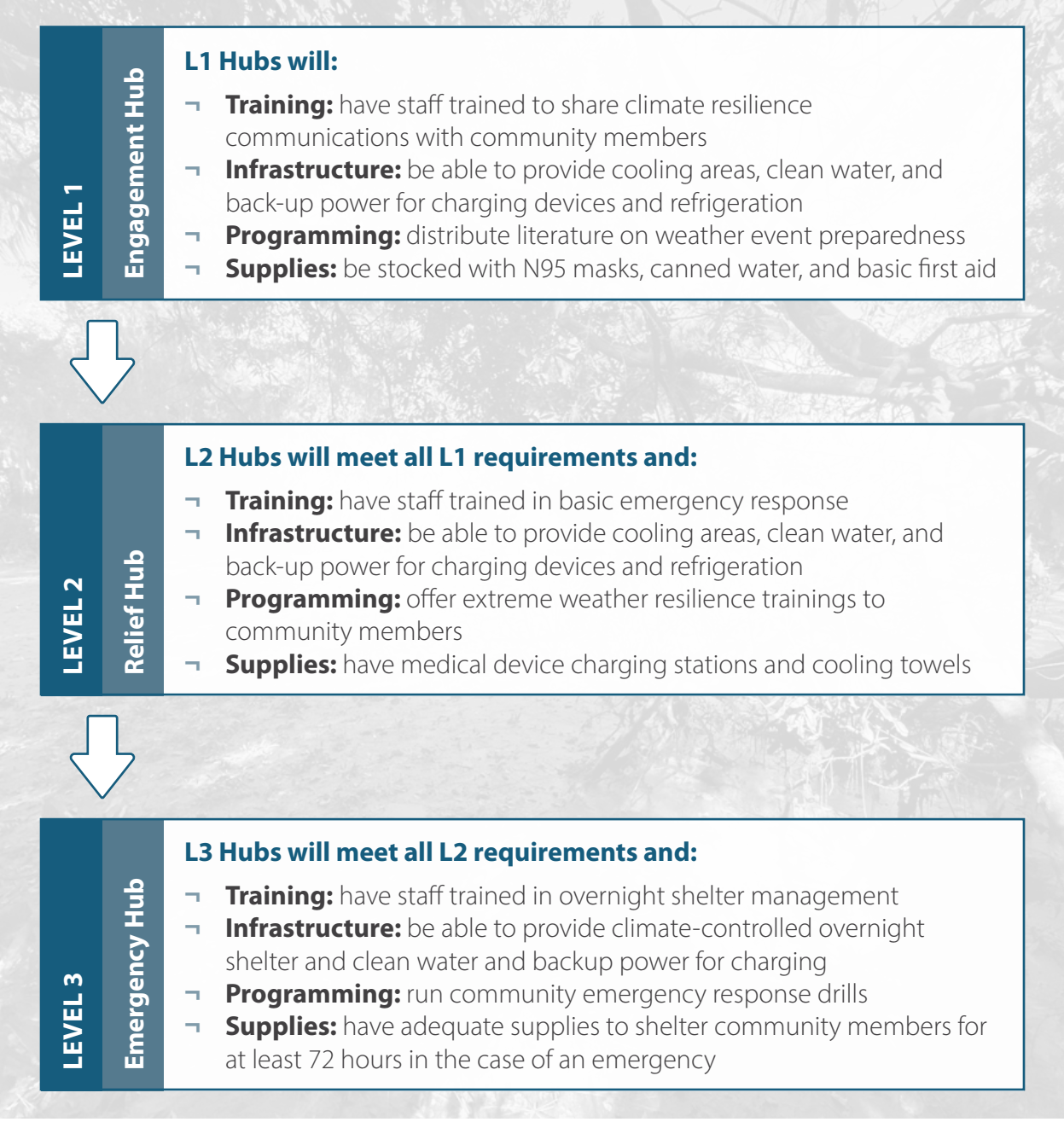



*Figure 14: Diagram depicting the three levels of the resilience hub model (Gonzaga University Institute of Climate, Water, and the Environment, 2025). Graphic inspired by the Spokane Community Resilience Hub Network and the Institute for Climate, Water, and the Environment*



## *Implementation*

As one of the recommendations for the communities within the Salkehatchie Watershed, establishing Resilience Hubs comes from a few important considerations for implementation. One key aspect of identifying appropriate locations for Resilience Hubs is a **Vulnerability Assessment within the community** to identify areas with the most extreme exposure to climate hazards such as extreme heat, flooding, and high wind. At the same time, social vulnerability and adaptive capacity of neighborhoods should also be considered in siting these facilities to provide support where it is needed. With the information generated by the Salkehatchie SCRCCCP Watershed Plan, the parcel-level and community-level vulnerability assessment already conducted provides ample information to begin working with communities to identify locations for Resilience Hubs

After identifying potential locations within the communities, it will be critical to **establish a project team** to engage community members in the design and implementation of these facilities. This will help to integrate the Resilience Hub in local emergency management plans and to establish partnerships with local government, non-profit organizations, and utility providers.

*i*

**Resilience Hubs are practical solutions** that turn existing community gathering locations into trusted sources of information, programs and training before natural disasters, lifelines during natural disasters, and support networks post-disaster. By identifying existing community centers, libraries, places of worship, or community gathering locations, communities in the Salkehatchie watershed can begin to identify locations to establish their own Resilience Hubs.

Starting with basic services, the **hubs can be retrofitted to increase their resilience to natural disasters and provide additional services over time** as new sources of funding become available and the community identifies key services for their respective Resilience Hub. Over time, these various Community Resilience Hubs may form a network to share resources, develop partnerships, and collaborate with neighboring communities with a shared goal of increasing resilience to natural disasters.

# 7c. Participation in Salkehatchie Working Group

Community Action Team members and stakeholders from state, regional and local entities with knowledge and expertise related to flooding, natural hazard mitigation, planning, and resilience were invited to be part of a **Watershed Advisory Group** to give input on watershed scale strategies and review the Salkehatchie Watershed Plan. A virtual meeting was held on February 12, 2026 and a survey was sent out to gather input.

Group members will determine goals and future meeting frequency. This group may decide to form subcommittees for the upper half of the Watershed and the lower half of the Watershed. **There are several working groups** currently working on resilience, stormwater policy, and flood reduction strategies in Beaufort County and the Lowcountry Council of Governments (COG) region including the Southern Lowcountry Regional Board (SoLoCo) and the Southern Lowcountry Resilience Collaborative (SLRC).

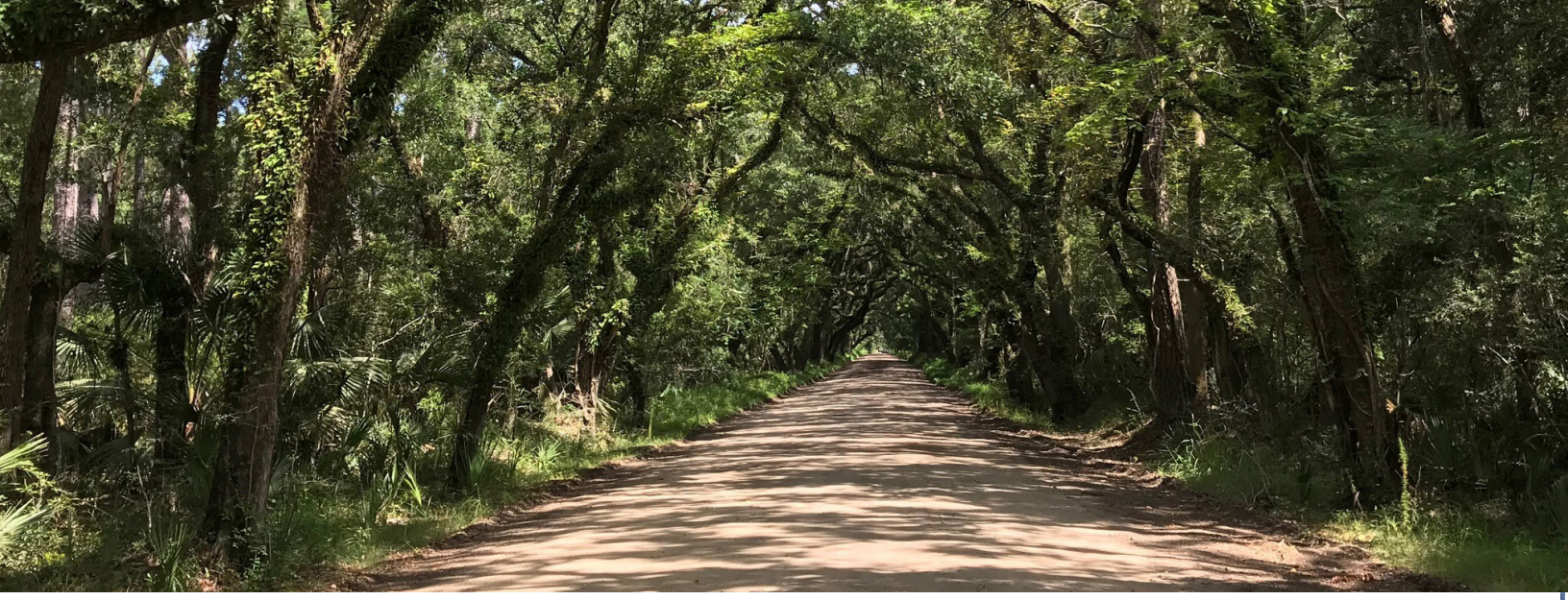
# 7d. Conclusion

**The creation of this Community Portfolio represents a comprehensive, community-driven effort** developed under the South Carolina Resilient Coastal Communities Collaborative Program (SCRCCCP). The SCRCCCP was designed to support communities across the Salkehatchie River Basin in developing locally informed and prioritized strategies and projects that are anticipated to reduce flooding impacts and improve resilience to natural hazards and environmental change. To accomplish this, the Project Team conducted multi-scale vulnerability assessments at the watershed, community, and parcel levels to clearly identify specific vulnerabilities and risks from natural hazards facing the community. The vulnerability analysis was also informed by robust community engagement through Community Action Team meetings, public surveys, field site visits and consultant assessments ensuring that each proposed project was supported by the community it is meant to serve. By actively listening to residents and thoroughly documenting their concerns about infrastructure, natural hazards, and flood-prone







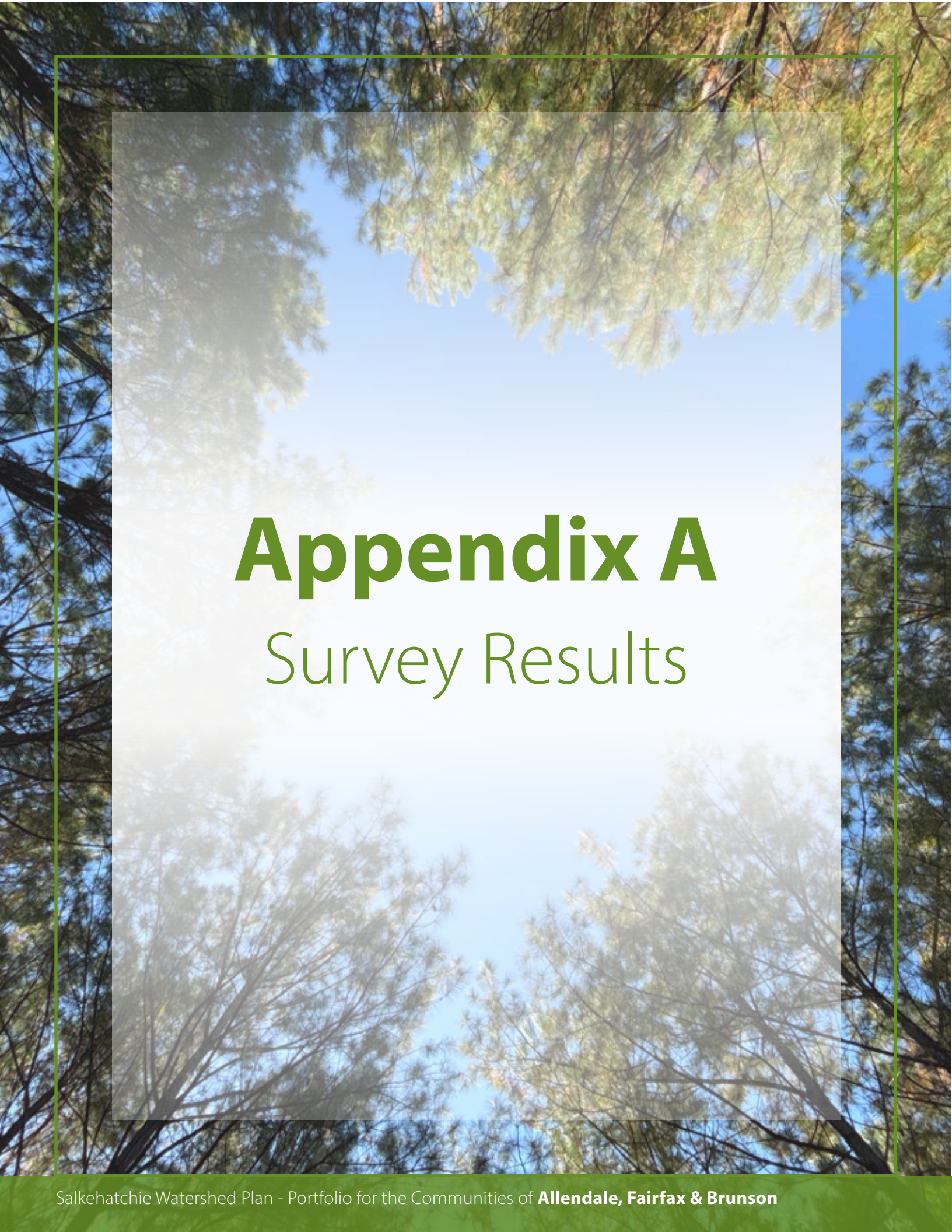
areas, the Project Team has produced **results that are both technically sound and relevant locally.**

**The result of this effort is a practical roadmap for action.** Detailed individual opportunity sheets outline a suite of targeted, flood-reduction and resilience projects that reflect community-preferred strategies and are ready for funding and implementation. Rough order-of-magnitude cost estimates for the highest-ranked projects provide the specific information needed to pursue competitive grant opportunities and inform municipal capital improvement planning.

*i*

This community-driven process would not have been possible without the **dedication, time, and deep local expertise of the Community Action Team members** as their insights and consistent participation were integral at every step of this project. While this portfolio outlines immediate next steps, building resilience is a continuous and adaptive process.

**This document is one of nine Community Portfolios** that have been combined into a comprehensive, basin-wide Salkehatchie Watershed Resilience Plan. By maintaining the momentum established from this planning effort and by continuing to strengthen collaboration and partnerships within the watershed, the community can continue to identify pathways towards implementation, ensuring a vibrant, safe, and resilient future for generations to come



# Appendix A

## Survey Results

**This Salkehatchie Community Survey was distributed in paper form and virtually through flyers and email to communities throughout the Salkehatchie Watershed with the help of Community Action Team members and local libraries. 166 responses were returned to SCOR.**

# Salkehatchie Community Survey

**Thank you for taking time to answer the 10 questions below. The South Carolina Office of Resilience and S.C. Sea Grant Consortium are seeking input from government officials and community members in the Salkehatchie Watershed about their experiences with flooding and other hazards to learn more about the risks, vulnerabilities, and needs of the communities in the region to be able to assist with connection to resources to build more resilient communities. The Salkehatchie River Basin includes all or portions of 7 counties: Allendale, Bamberg, Barnwell, Beaufort, Colleton, Hampton, and Jasper. We appreciate your input.**

Please email **Salkehatchie@scor.sc.gov** with any questions.

*Disclaimer: This survey will be used for general analytical purposes to identify and assess potential risks from future disasters in your area and to implement flood mitigation and resilience measures across South Carolina's watershed basins. Your responses are voluntary and will be identified by area only and shall not be identified by individual; the responses will be compiled together and analyzed as a whole.*

When you submit this form, it will not automatically collect your details like name and email address unless you provide it yourself.

## Community Questions

### 1. Which Community do you live/work in?

### 2. What are your roles in the community? (Citizen, Farmer, Government Official, Community Organization Leader, Business Owner, Retiree, Volunteer)?

**3. Which natural hazards are of greatest concern to your community & how often? (frequently, occasionally, rarely, never)? Examples: flood, wind, drought, heat, severe thunderstorm, tropical storm/hurricane impacts (other than flooding or flooding as a result of), tornados, wildfire, winter weather, earthquake, other:**

| | Frequently | Occasionally | Rarely | Never |
|---|---|---|---|---|
| **Flooding** | ◯ | ◯ | ◯ | ◯ |
| **Wind** | ◯ | ◯ | ◯ | ◯ |
| **Drought** | ◯ | ◯ | ◯ | ◯ |
| **Heat** | ◯ | ◯ | ◯ | ◯ |
| **Thunderstorm** | ◯ | ◯ | ◯ | ◯ |
| **Hurricane/Tropical Storm** | ◯ | ◯ | ◯ | ◯ |
| **Tornado** | ◯ | ◯ | ◯ | ◯ |
| **Wildfire** | ◯ | ◯ | ◯ | ◯ |
| **Winter Weather** | ◯ | ◯ | ◯ | ◯ |
| **Earthquake** | ◯ | ◯ | ◯ | ◯ |
| **Other** | ◯ | ◯ | ◯ | ◯ |

**4. Which types of flooding do you experience in your community? Check all that occur:**

| | Frequently | Occasionally | Rarely | Never |
|---|---|---|---|---|
| **Flash: intense/long rain events** | ◯ | ◯ | ◯ | ◯ |
| **Stormwater: lack of drainage** | ◯ | ◯ | ◯ | ◯ |
| **Coastal: Storm Surge** | ◯ | ◯ | ◯ | ◯ |
| **Coastal: High Tide** | ◯ | ◯ | ◯ | ◯ |
| **Riverine: river/pond overflow** | ◯ | ◯ | ◯ | ◯ |
| **Hurricane/ Tropical Storm** | ◯ | ◯ | ◯ | ◯ |
| **Dam Breach: failure** | ◯ | ◯ | ◯ | ◯ |
| **Compound: multiple factors** | ◯ | ◯ | ◯ | ◯ |
| **Other** | ◯ | ◯ | ◯ | ◯ |

**5. Where does flooding occur in your community?**

**6. What is impacted and/or damaged by flooding in your community?**

- [ ] Homes
- [ ] Agriculture
- [ ] Businesses
- [ ] Roads
- [ ] Emergency/Evacuation Routes
- [ ] Hospitals
- [ ] Vehicles
- [ ] Equipment
- [ ] Solid Waste Sites
- [ ] Industrial Sites
- [ ] Cultural Sites
- [ ] Habitat
- [ ] Septic Systems
- [ ] Other

**7. Are there other concerns or long-term environmental changes/issues that your community has or is experiencing? Examples: Water quality, higher temperatures, land use change, population change, habitat loss, tree health, invasive species, mosquitos, etc.**

**8. What are your community's top priorities and biggest needs related to natural hazards and building resilience?**

**9. What kind of assistance would be most helpful to your community?**

**10. Is there anything else that you would like to share related to resilience, flooding, and other hazards in your community?**

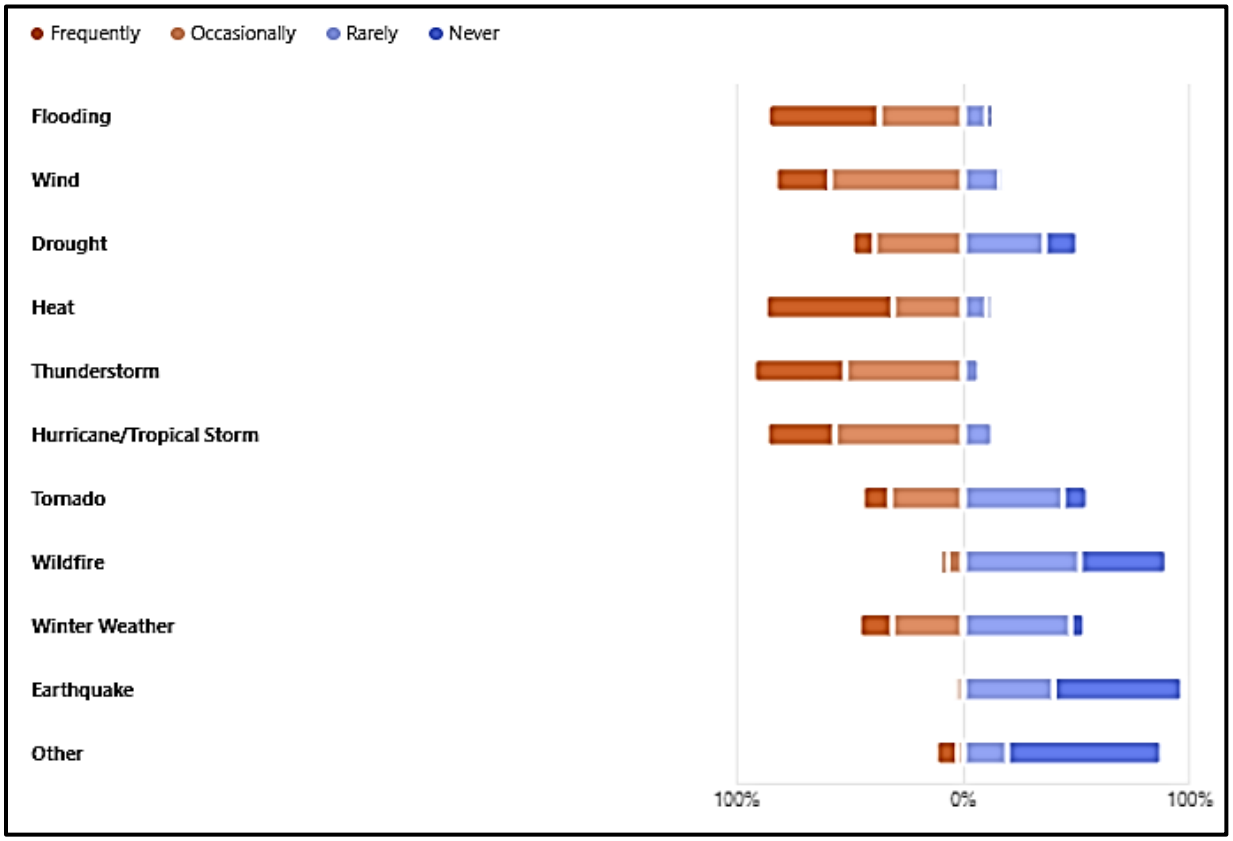
**11. If you would like someone with the South Carolina Office of Resilience's Watershed-Based Planning Program to reach out to you to discuss assistance with resilience planning, community needs, identifying funding opportunities, and more, please provide your email here:**

**You may also complete this optional Statewide flooding survey to share details about specific locations of flooding your community. View the dashboard to see a live report of survey responses collected so far.**

**SCOR Flooding Experience Survey**
**https://survey123.arcgis.com/share/58d1be8df8004aaaae917395d2a9a2a3**

**SCOR Public Flooding Survey Response Dashboard**
**https://www.arcgis.com/apps/dashboards/6972b4799d7542fbb755adf9a9330cd4#**

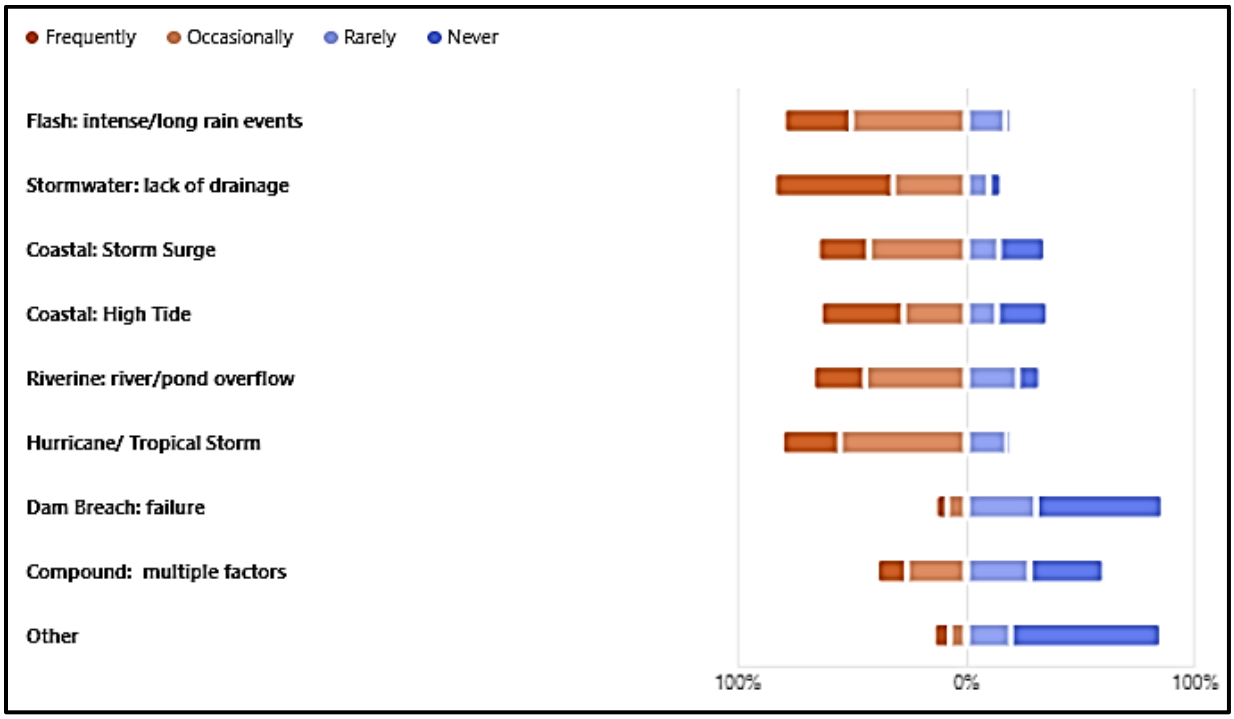
## The natural hazards reported by respondents to be of greatest concern were: Heat, Flooding, Thunderstorm, Hurricane, and Wind




| Heat | | Flooding | | Wind | |
|---|---|---|---|---|---|
| Frequently | 56.6% | Frequently | 49.7% | Frequently | 24.3% |
| Occasionally | 30.9% | Occasionally | 36.9% | Occasionally | 58.8% |
| Rarely | 10.3% | Rarely | 10.2% | Rarely | 16.2% |
| Never | 2.2% | Never | 3.2% | Never | 0.7% |

| Thunderstorm | | Hurricane/Tropical Storm | |
|---|---|---|---|
| Frequently | 40.7% | Frequently | 30.3% |
| Occasionally | 52% | Occasionally | 56.6% |
| Rarely | 7.3% | Rarely | 13.2% |

**Flooding from "Stormwater: lack of drainage" was reported to be the most frequent type of flooding followed by "Coastal: High Tide", "Flash: intense/long rain events", Hurricane/Tropical Storm", and "Coastal: Storm Surge".**




| Stormwater: lack of drainage | |
|---|---|
| Frequently | 52.3% |
| Occasionally | 32% |
| Rarely | 9.8% |
| Never | 5.9% |

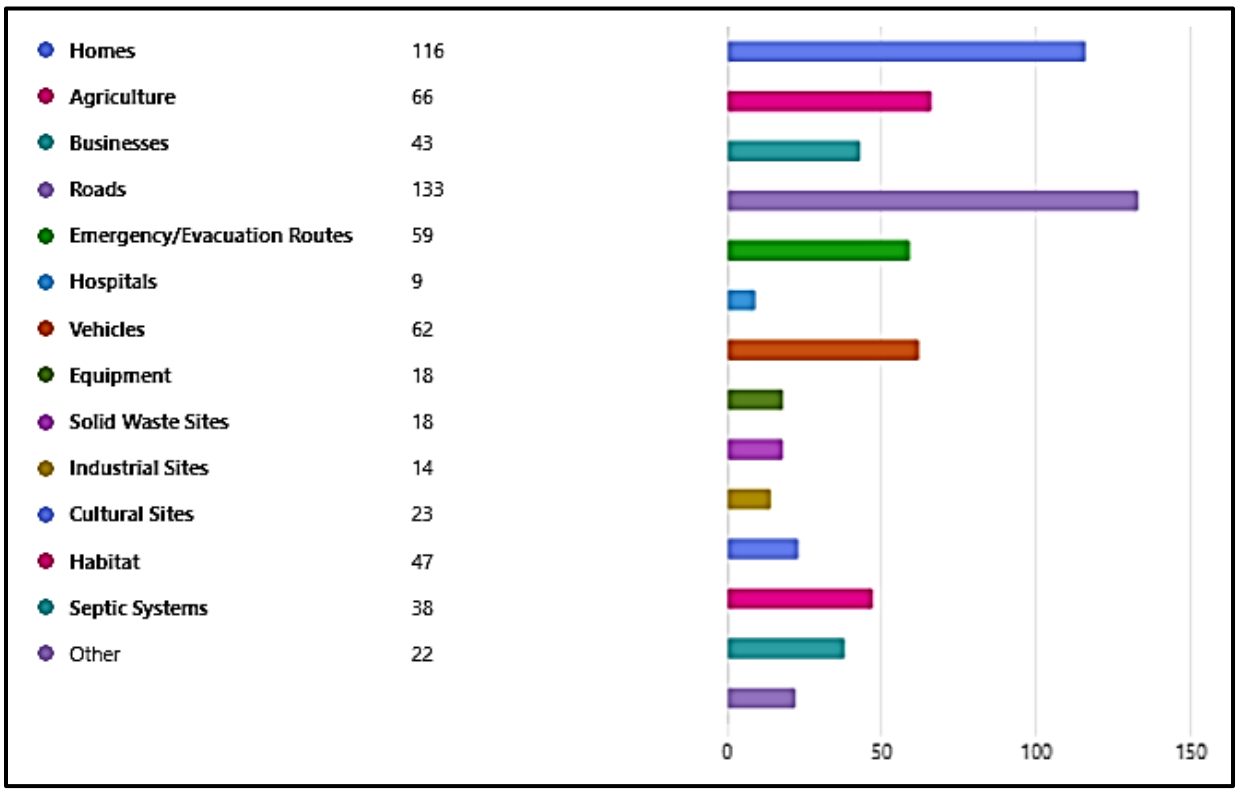
| Coastal: High Tide | |
|---|---|
| Frequently | 36.6% |
| Occasionally | 27.5% |
| Rarely | 13.4% |
| Never | 22.5% |

| Flash: intense rain events | |
|---|---|
| Frequently | 29.8% |
| Occasionally | 50.4% |
| Rarely | 17% |
| Never | 2.8% |

| Hurricane/Tropical Storm | |
|---|---|
| Frequently | 25.7% |
| Occasionally | 55.3% |
| Rarely | 17.8% |
| Never | 1.3% |

| Coastal: Storm Surge | |
|---|---|
| Frequently | 22.7% |
| Occasionally | 42.6% |
| Rarely | 14.2% |
| Never | 20.6% |

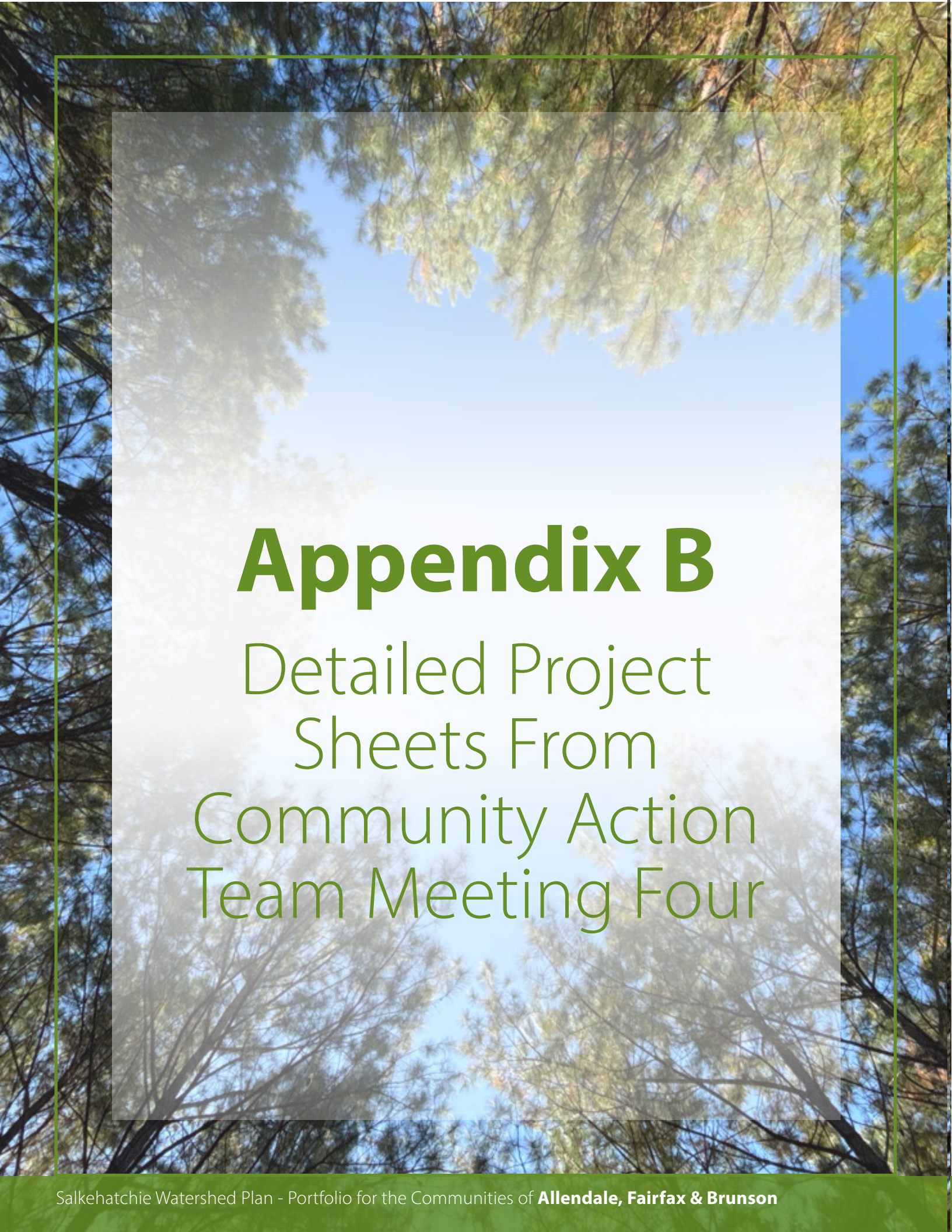
**Survey respondents reported many impacts from flooding. Roads, Homes, Agriculture, Vehicles, and Evacuation routes topped the list.**




**Other concerns and long-term environmental changes that were shared include:**

- **Land use change**
- **Rapid development**
- **Habitat loss**
- **Tree health**
- **Higher temperatures**
- **Water quality**
- **High intensity rain events**
- **Sea level rise**
- **Pollution**
- **Mosquitos**

**Assistance community members responded would be helpful includes funding, infrastructure repair, better stormwater management, flood mitigation, ditch cleaning/maintenance, drainage, septic repair and replacement, road and bridge repair, and replacement of old pipes.**



# Appendix B

## Detailed Project Sheets From Community Action Team Meeting Four

**Salkehatchie Project Sheet**

**Community:** Communities of Allendale, Fairfax, & Brunson

**Potential Adaptation Strategy:** Bioretention

**Address:** Preacher Street / Main Street N next to Allendale Courthouse

**Parcel ownership**: ☐Private ☒Public (Town/City, County, State) ☐Other:

**Rainfall in past 24 hrs (CoCoRaHS):** No rain.

**Structure(s) on site:** ☐ Yes ☒ No

**Describe structure(s):** No structures within the project boundary, but the courthouse and associated buildings are directly adjacent.

**Description of paved surfaces on site:** No paved surfaces within the immediate project boundary, but the site is surrounded by an asphalt parking lot.

**Existing vegetation (all that apply):** ☒Woods ☐Shrubs ☐Dirt ☒Grass

**Estimated tree canopy cover:** ~10% trees on the far side of the detention basin.

**Presence of standing water:** ☐ Yes ☒No

**Drainage on site (all that apply):** ☐Grassed Ditches ☒ Stormwater Pipes/Culverts ☒Stormwater Ponds ☒Inlets ☒Curbs ☐Other:

**Drainage infrastructure notes (diameter, dimension, condition):** Two pipes discharge to the existing dry pond within the project boundary. One of the pipes has vegetation blocking the discharge point. The outfall structure for the dry pond is a riser. The outfall pipe discharges to a combo inlet on the opposite side of the driveway/entrance road. There is a small riprap emergency spillway located next to riser (although not maintained). There is another dry detention basin closer to Main St. N.

**Comments/Observations:** The current dry detention basin and associated inlets and pipes appear to be in good condition. It could be a good location to retrofit the existing dry pond into a bioretention area. There is also the possibility of a treatment train approach if the existing detention basin is connected to the smaller detention basin located closer to Main St. N (see figure).

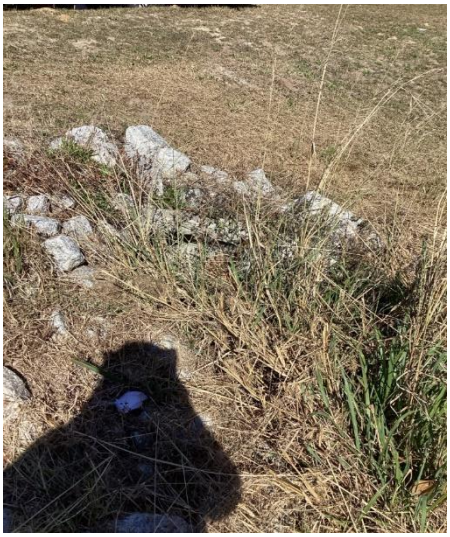
**Photos (structures, paved surfaces, standing water, vegetation, drainage):**



*1. Dry detention basin*



*2. Trees next to detention basin*



*3. Discharge point for pipe into detention basin clogged with vegetation*



*1. Riser structure in pond*



*2. Detention basin to the south of the dry detention pond. Possibility for treatment train if these areas are connected*

**Salkehatchie Project Sheet**

**Community:** Communities of Allendale, Fairfax, & Brunson

**Potential Adaption Strategy:** Bioswale

**Address:** Barton Road

**Parcel ownership**: ☐Private ☒Public (Town/City, County, State) ☐Other:

**Rainfall in past 24 hrs (CoCoRaHS):** No rain.

**Structure(s) on site:** ☐ Yes ☒ No

**Describe structure(s):** No structures within the project boundary.

**Description of paved surfaces on site:** Project area is next to Barton Rd (asphalt).

**Existing vegetation (all that apply):** ☐Woods ☐Shrubs ☒Dirt ☒Grass

**Estimated tree canopy cover:** Trees/forest at edge of right of way ditch, but not within proposed project boundary.

**Presence of standing water:** ☐ Yes ☒No

**Drainage on site (all that apply):** ☒Grassed Ditches ☐ Stormwater Pipes/Culverts

☐Stormwater Ponds ☐Inlets ☐Curbs ☐Other: Click or tap here to enter text.

**Drainage infrastructure notes (diameter, dimension, condition):** Project area appears to be lacking drainage infrastructure. The ditch along Barton Road has no visible culvert connecting it to an existing ditch. The ditch on the other side of Barton Road (near the apartment complex) appears to have been dug out recently however there is also no culvert on either end of the ditch connecting it to the rest of the drainage system.

**Comments/Observations:** This is a good spot to improve overall drainage. A culvert should be added under the driveway in the agricultural field so the ditch along Barton Road can connect to the existing drainage system. On the opposite side of the road, near the apartment complex, the ditch should be extended, regraded, and tied into the same drainage system, which ultimately flows into the channel that runs perpendicular to Barton Road.

**Photos (structures, paved surfaces, standing water, vegetation, drainage):**



*1.Ditch along Barton Rd across from apartment complex entrance. Ditch flattens out with no culvert present*



*2. Ditch adjacent to Barton Rd crossing (by apartment complex entrance), facing south. No culvert under driveway, water likely pooling here. Sediment exposed*



*1. Ditch on other side of Barton Road. Draining through agricultural field through a culvert.*

**Salkehatchie Project Sheet Community:** Communities of Allendale, Fairfax, & Brunson

**Potential Adaptation Strategy:** Conservation

**Address:** Birch Street & Rhoad Park Street

**Parcel ownership**: ☒Private ☐ Public (Town/City, County, State)☐Other:

**Rainfall in past 24 hrs (CoCoRaHS):** No rain.

**Structure(s) on site:** ☒ Yes ☐ No

**Describe structure(s):** Administration building.

**Description of paved surfaces on site:** Asphalt parking lot next to the administration building. Asphalt parking lot in Northwest corner of parcel.

**Existing vegetation (all that apply):**☒Woods ☐Shrubs ☐Dirt ☒Grass

**Estimated tree canopy cover:** 75%

**Presence of standing water:** ☒ Yes ☐No

**Drainage on site (all that apply):** ☒Grassed Ditches☐ Stormwater Pipes/Culverts

☐Stormwater Ponds ☐Inlets ☐Curbs ☐Other: Click or tap here to enter text.

**Drainage infrastructure notes (diameter, dimension, condition):** There is a channelized ditch that runs through the parcel, flowing southeast, turning southwest in the middle of the parcel, eventually flowing offsite. There is standing water in ditch and minor evidence of erosion.

**Comments/Observations:** This parcel is relatively flat. The stream that runs through parcel shows minor evidence of erosion. This appears to be an ideal location for conservation.

**Photos (structures, paved surfaces, standing water, vegetation, drainage):**



*1. Forested area next to admin building*



*1. Channel running through forested property*



*3. Forested area within parcel*

**Salkehatchie Project**

**Sheet Community:** Allendale, Fairfax, Brunson

**Potential adaptation strategy:** Stormwater Park

**Address:** Oswald Drive W / Dix Street

**Parcel ownership**: ☐Private ☒Public (Town/City, County, State) ☐Other:

**Rainfall in past 24 hrs (CoCoRaHS):** No rain.

**Structure(s) on site:** ☒ Yes ☐ No

**Describe structure(s):** Two pavilions, park building, bleachers

**Description of paved surfaces on site:** Asphalt parking lot, asphalt basketball courts, park building, pavilions with concrete base.

**Existing vegetation (all that apply):** ☒Woods ☐Shrubs ☒Dirt ☒Grass

**Estimated tree canopy cover:** 10%, woods along edge of parcel/right outside project boundary.

**Presence of standing water:** ☒ Yes ☐No

**Drainage on site (all that apply):** ☒Grassed Ditches ☒ Stormwater Pipes/Culverts

☐Stormwater Ponds ☐Inlets ☐Curbs ☐Other:

**Drainage infrastructure notes (diameter, dimension, condition):** A ditch system runs along the perimeter of the project boundary. The ditches are vegetated and most have standing water. There is also a grass swale/culvert that collects runoff from the parking area.

**Comments/Observations:** There is standing water in the ditches across the property, and the ditches are very overgrown. The whole site—including the ditches—is mostly flat, which limits how much water it can hold and how well it can drain. This location could potentially be developed into a stormwater park, but the available space appears to be limited.

**Photos (structures, paved surfaces, standing water, vegetation, drainage):**



*1.Asphalt parking lot*



*2. Grass swale draining parking lot*



*3. Ditch along western edge of parcel. facing upstream*



*4. Basketball Court*



*5.Culvert crossing under grass walkway (Dix St.)*

**Salkehatchie Project Sheet**

**Community:** Allendale, Fairfax, Brunson

**Potential Adaption Strategy:** Stream Restoration

**Address:** Amelia Street, Evie Street (Pippin Street), Byrd Street, Calvin McTeer Street

**Parcel ownership**: ☒Private ☐Public (Town/City, County, State) ☐Other:

**Rainfall in past 24 hrs (CoCoRaHS):** No rain.

**Structure(s) on site:** ☒ Yes ☐ No

**Describe structure(s):** Multiple homes immediately adjacent to the project area.

**Description of paved surfaces on site:** The channel crosses under Evie Street (Pippin Street), which is a gravel/dirt road.

**Existing vegetation (all that apply):** ☒Woods ☐Shrubs ☐Dirt ☒Grass

**Estimated tree canopy cover:** Trees line the banks of the channel. Tree canopy cover is estimated as 20%.

**Presence of standing water:** ☒ Yes ☐No

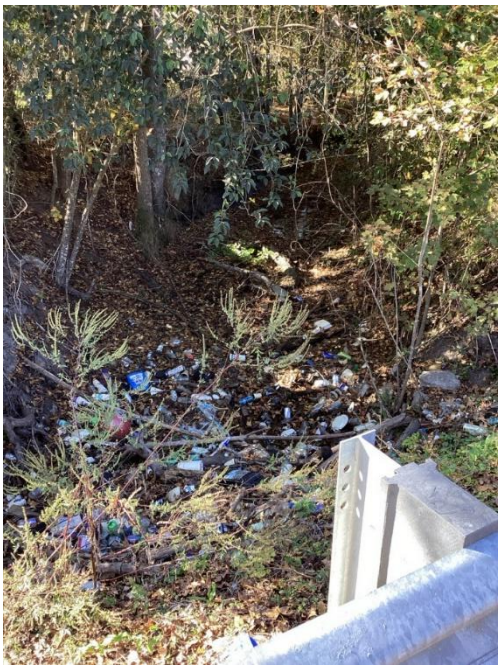
**Drainage on site (all that apply):** ☒Grassed Ditches ☒ Stormwater Pipes/Culverts

☐Stormwater Ponds ☐Inlets ☐Curbs ☐Other: Click or tap here to enter text.

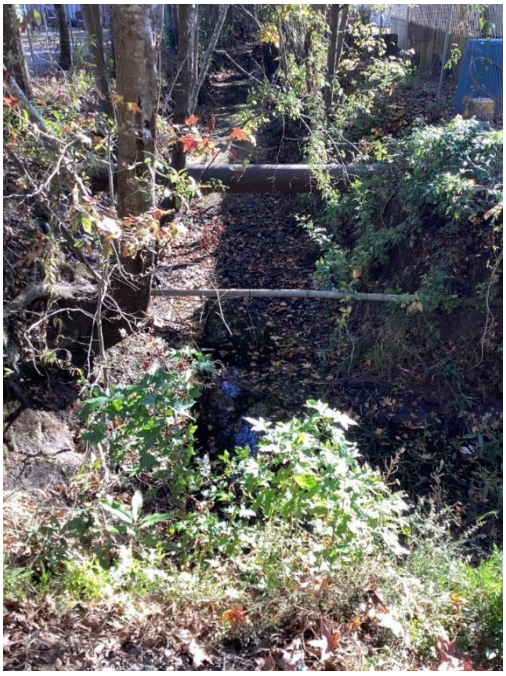
**Drainage infrastructure notes (diameter, dimension, condition):** The channel flows South along Amelia Street, and turns southeast, crossing under Evie Street (Pippin Street) through a culvert. The channel continues to flow southeast towards the intersection of Calvin McTeer Street and Byrd Street, crossing under the road and discharging to a channel running parallel along Calvin McTeer Street.

**Comments/Observations:** The site is mostly flat, and the channel shows signs of erosion in several places. Water and sewer pipes cross the channel near Marion F Riley Street and Amelia Street. The ditch is filled with trash and debris. Homes near the channel may be at risk because they're very close to it. Because there isn't much space, it might be better to focus on stabilizing the banks using methods like boulders, brush, gabion baskets, or planted soil lifts, rather than trying to fully restore the stream.

**Photos (structures, paved surfaces, standing water, vegetation, drainage):**



*1.Culvert crossing under Evie St. (Pippin St.) Photo facing upstream*



*2. Channel facing downstream from Marion F Riley St. Exposed water and sewer pipes and erosion present along sides of channel.*



*3. Upstream end of culvert crossing*



*1. Culvert under Amelia St.*



*5. Bank erosion and exposed water pipe along ditch*

**Salkehatchie Project**

**Sheet Community:** Allendale Fairfax Brunson

**Potential Adaptation Strategy**: Tree Canopy Analysis

**Address:** Community-wide

**Parcel ownership**: ☐Private ☒Public (Town/City, County, State) ☐Other: Click or tap here to enter text.

**Rainfall in past 24 hrs (CoCoRaHS):** NA

**Structure(s) on site:** ☐ Yes ☒ No

**Describe structure(s):** Open fields and other areas that lack canopy cover.

**Description of paved surfaces on site:** Places for recommended tree plantings may be adjacent to paved surfaces such as roadways or parking lots.

**Existing vegetation (all that apply):** ☐Woods ☐Shrubs ☐Dirt ☐Open Fields

**Estimated tree canopy cover:** 0 to 15%

**Presence of standing water:** ☒ Possible ☐No

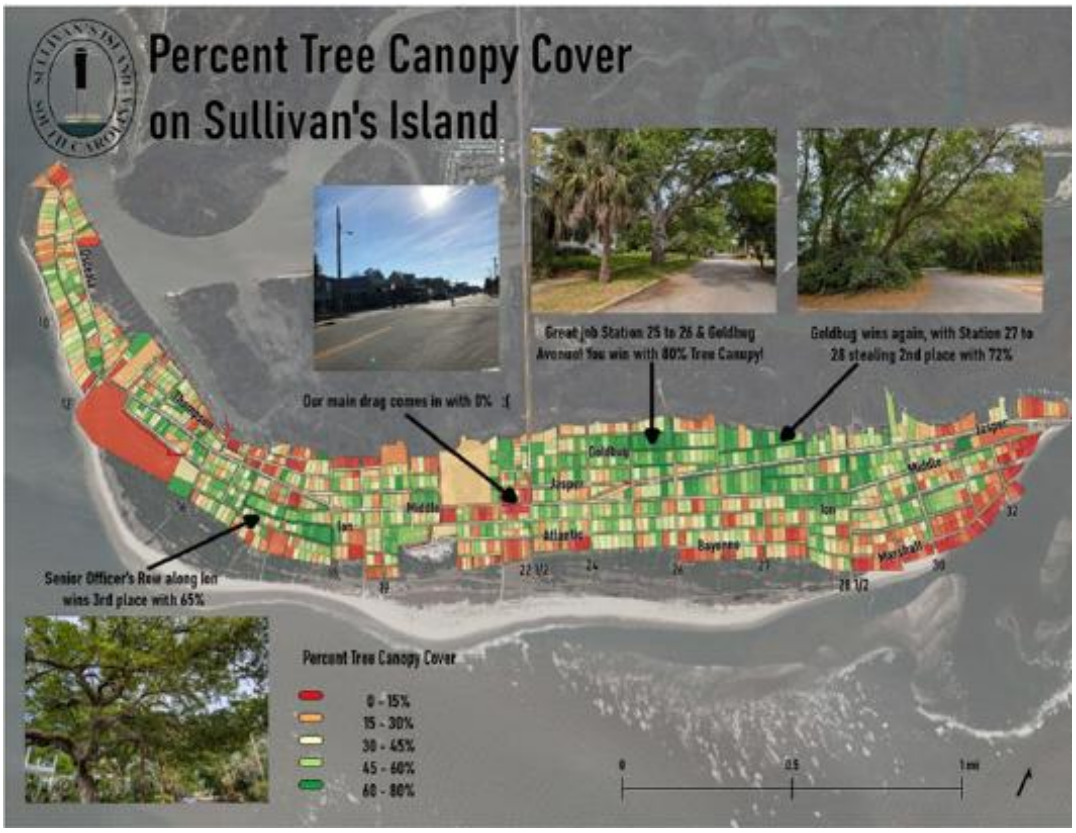
**Drainage on site (all that apply):** ☐Grassed Ditches ☐ Stormwater Pipes/Culverts ☐Stormwater Ponds ☐Inlets ☐Curbs ☒Other: Forested areas can assist with drainage.

**Drainage infrastructure notes (diameter, dimension, material, condition):** NA

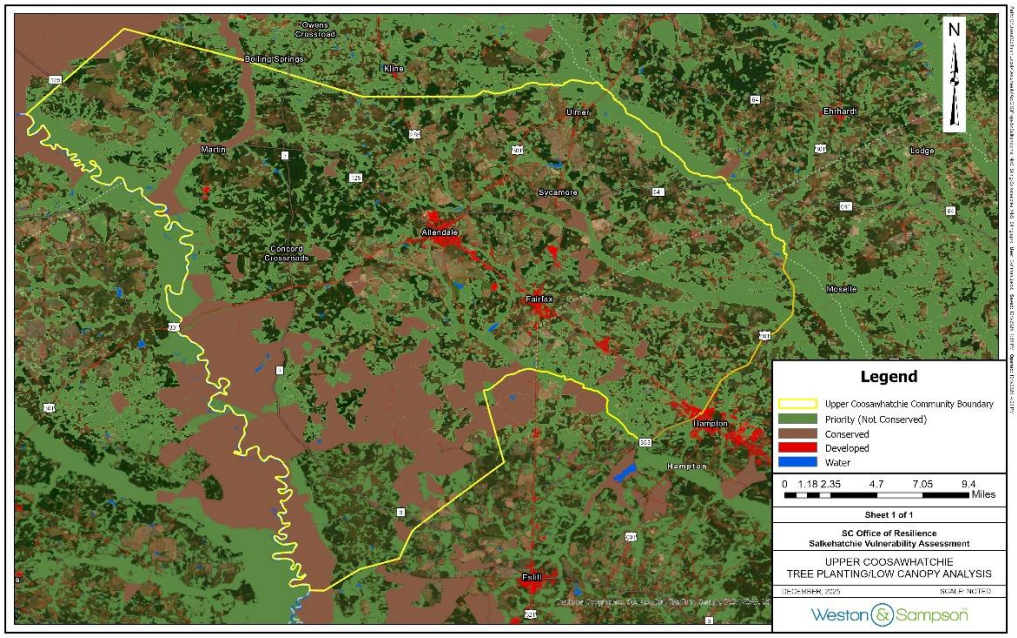
**Comments/Observations:**

A healthy tree canopy offers abundant benefits including cooling effects, beautification, water management, pollution remediation, and wildlife habitat. A tree canopy analysis, in coordination with the South Carolina Forestry Commission and other organizations, can offer guidance to increase tree plantings on public and private property and recommend strategies for long-term forest success. Open fields that may lay fallow from former agricultural use can be converted to forested areas to assist with water management and more. A tree canopy analysis will help to identify areas with low to no tree canopy cover and prioritize areas for tree planting.

**Supportive Graphics:**




**Source: Town of Sullivan's Island Tree Canopy Mapping**




**Source: SC Office of Resilience Conservation Priority Data**



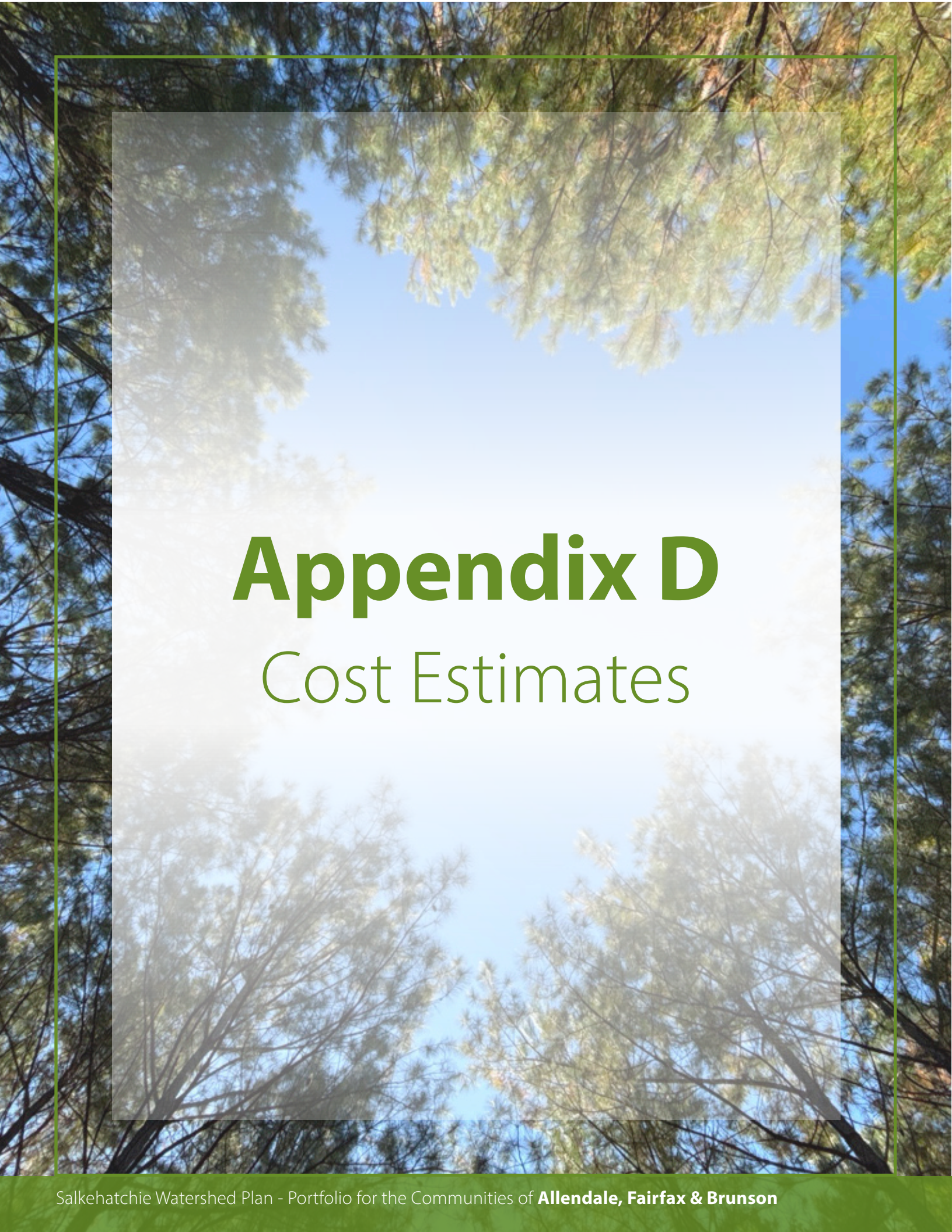
# Appendix C

## Prioritization Criteria

## Prioritization Criteria for Ranking Adaptation Strategies

| Indicator | | Scoring | | | Weight | Data Reference |
|---|---|---|---|---|---|---|
| | | **3** (Best) | **2** | **1** (Least) | | |
| **Flood Reduction** | Function of Area of Practice and Runoff Reduction Rates* | **Top 1/3** calculated flood reduction | **Middle 1/3** calculated flood reduction | **Bottom 1/3** calculated flood reduction | 15 | SC Coastal Low Impact Development Manual |
| **Feasibility** | Flooding – Current (2025) and Future (2055) | Located in **both** the 2025 and 2055 5% (20 yr) Flood | Located in **either** 2025 or 2055 5% (20 yr) Flood | Located in **neither** the 2025 or 2055 5% (20 yr) Flood | 15 | 2025 and 2055 5% (20 yr) Flood (First Street Foundation) |
| | CAT 4 Project Preference | **Top 1/3** Composite Impact and Feasibility Scores | **Middle 1/3** Composite Impact and Feasibility Scores | **Bottom 1/3** Composite Impact and Feasibility Scores | 10 | CAT 4 Meetings |
| | Consultant Opinion | High Feasibility and Impact (**No foreseen hurdles**) | | Low Feasibility or Impact (**Significant hurdles identified**) | 10 | Consultant Team Meeting |
| | Cost (see Table below) | **Low Effort:** Existing Practice or Unskilled/ Volunteer Labor | **Moderate Effort:** Skilled Labor to Install- Specialized Equipment Likely Necessary | **High Effort:** Engineered Designs and Construction Plans Required | 5 | Based on Level of Effort to Design and Install |
| | Permitting | **No Land Disturbance** Permitting or **Outside of SCDOT ROW** | **SCDOT ROW** | Section **401/404, CZC** Authorization, **Conservation** Areas | 5 | GIS Parcels |
| | Land Ownership | **Public Property:** Town or County Owned | | **Private Property** | 5 | GIS Parcels |

| Indicator | | Scoring | | | Weight | Data Reference |
|---|---|---|---|---|---|---|
| | | **3** (Best) | **2** | **1** (Least) | | |
| **Feasibility** | Operations and Maintenance (see Table below) | **Low Effort:** Hand Tools and/or Quarterly Maintenance | **Moderate Effort:** Skilled Maintenance Crew and/or Bi-Monthly Maintenance | **High Effort:** Heavy Machinery Needed and/or Monthly Maintenance | 5 | Based on Level of Effort to Maintain |
| | Soil Infiltration Rate | Soils are **Suitable** (Hydrologic Group A) | Soils **may be Suitable** (Hydrologic Groups B and C) | Soils are **Unsuitable** (Hydrologic Groups A/D, B/D, C/D, D, or Unknown) | 5 | USDA NRCS, Web Soil Survey |
| **Co-Benefits** | Priority Populations Benefitted (LMI%) | LMI: > 51% | | LMI: < 51% | 5 | HUD LMI Block Groups |
| | Urban Heat Mitigation/ Pedestrian | Paved Surface Reduction **and** Increased Plantings | Paved Surface Reduction **or** Increased Plantings | Paved Surfaces are not Reduced **Nor** are Plantings Increased | 5 | Based on Adding NBS and Removing Paved Surfaces |
| | Cultural | **Located** at Nationally Registered Historic Place | | **Not Located** Nationally Registered Historic Place | 5 | SC SHPO |
| | Water Quality (see table below) | 95 – 100 % of Total Suspended Solids Removed | 80 – 94 % of Total Suspended Solids Removed | 0 – 79 % of Total Suspended Solids Removed | 5 | SC Coastal Low Impact Development Manual |
| | Biodiversity/ Habitat (see table below) | **Increases** forage, shelter, **and** freshwater source for pollinators | **Either** increases forage, shelter, **or** freshwater source for pollinators | Habitat **not improved** during NBS project | 5 | NWF's Certified Wildlife Habitat |
| | | | | **TOTAL** | **100** | |



# Appendix D

## Cost Estimates

**Order of Magnitude Cost (High-Level Cost Estimate) for:**

## Allendale, Fairfax, & Brunson Bioswale

**Community:** Communities of Allendale, Fairfax, and Brunson

**Strategy Address/Location:** Parallel to Barton Rd near 13909 Barton Rd, Allendale, SC

**Date of Estimate:** 03/27/2026

**Planning and Design**

- Project Management:
    - Description- Coordinate with the Owner on project schedule, deliverables, and budget throughout the duration of the project. Recurring meetings will be held to provide progress updates, review budget status, and address Owner feedback and needs. Monthly invoices will include estimated percent complete and percent spent.
    - Assumptions- Project management is billed as lump sum.
- Surveying:
    - Two surveys are needed and include a pre-construction survey and as-built survey that are provided as PDF and CAD files.
    - Pre-construction survey must include:
        - Property corners and property lines for subject parcels
        - Edge of pavement, centerline, curb and gutter, and edge of DOT right-of-way for Barton Road. Include paths and edge of pavement for intersecting streets for project extents
        - Existing structures (buildings, fencing, signs, etc.)
        - Existing utilities
        - Utility easements or rights of ways
        - Drainage infrastructure (including inlets, outfalls, catch basins)
        - Topography of low-lying ditch areas
        - Wetland delineation
    - As-built survey will document the placement, grading, and dimensions of the bioswales. Locations, elevations, and dimensions of all new inlets, outlets, and pipes shall be included in as-built survey.
    - Assumptions – 811 shall be called prior to survey.
- Permitting:
    - Description- Estimate based on SCDES Notice of Intent and a SCDOT right-of-way encroachment permit. Includes permit package prep and agency coordination. Also includes any necessary permits from the Town/County.

    - Assumptions- One round of permitting and comments with resubmission to both SCDES and SCDOT.
- Modeling:
    - Existing conditions PCSWMM model to identify flooded areas on site.
    - Proposed conditions PCSWMM model to analyze BMP effectiveness.
    - Assumptions – modeling cost estimate is incidental to engineering line item.
- Engineering:
    - Conduct desktop analysis and one site visit to collect information necessary to produce 30% design.
    - Conduct one additional site visit to collect additional information necessary to produce 90% design. The owner will have the opportunity to provide feedback and revisions at 30% and 90% design.
    - Produce 90% stamped designs for submittal to SCDES for proposed improvements. The 90% design will need to include all information required for permitting to include but is not limited to:
        - Site plans to include plan and profile of bioswales, limits of disturbance, property boundaries, existing wetlands and streams, structures on site, trees, connecting existing drainage infrastructure.
        - Details and notes for bioswales including a grading plan, soil layers, and planting plans.
        - Details and notes for the installation of the new culverts including cross sections, size, slope, and inverts.
        - Include considerations for construction staging and sequence.
        - Include specifications for sediment and erosion control measures during construction.
    - Assumptions- The engineered drawings will provide sufficient detail, including dimensions of proposed practices, and necessary materials to develop specifications for project construction.

*Table 1. Planning and Design Costs*

| Item | Unit | Quantity | Unit Cost ($) | Total ($) |
|---|---|---|---|---|
| Project Management | *LS* | *1* | 4,500 | 4,500 |
| Surveying | *LS* | *2* | 3,500 | 7,000 |

| | | | | |
|---|---|---|---|---|
| Permitting | *LS* | *1* | 5,000 | 5,000 |
| Engineering | *LS* | *1* | 30,000 | 30,000 |
| **Subtotal Planning and Design** | | | | **46,500** |

**Construction and Implementation**

- Site Preparation:
  - Description-
    - Bioswale: Excavation for 12.5' top width, 0.5' bottom width with 2' depth at a 3:1 side slope for 785 LF total.
    - Culverts:
      - Driveway milling for culvert installation.
      - Trench excavation: Excavate 4' wide and 5' depth along total proposed pipe length for installation of four culvert pipes.
  - Assumptions- 811 shall be called to locate existing utilities ahead of digging.
- Soil Amendments:
  - Description-
    - Bioswale: 4" depth along bottom width and side slopes. 4" depth along bottom width and side slopes for mulch.
  - Assumptions- Costs include delivery.
- Planting:
  - All disturbed areas besides bioretention, bioswale, and areas to be repaved to be seeded with turf grass and provided with temporary irrigation.
  - Bioswale:
    - Plantings installed by hand per planting plan. Plants shall be native species.
    - Temporary irrigation for bioswale until plants are established.
    - Assumptions- plants are available and purchased from a local nursery. Costs include delivery.
- Structural Elements:
  - Bioswale
    - Assumptions: underdrain not included in cost but could potentially be needed based on soil infiltration capabilities.
  - Culverts:
    - Paving: repaving road area or driveways where culverts were installed
    - RCP culvert: included to route flow from one bioswale to the next
    - End section included for culvert under Dix Street.

- Riprap: for channel protection at outlet of cross line culvert under Dix Street.
- Assumptions- assumed 20' culvert underneath private driveway on east side of Barton St. Assumed 20' culvert under paved apartment complex driveway on west side of Barton Street, 20' culvert underneath dirt driveway on south side of apartment complex, 40' culvert under Dix Street. Costs include all materials as well as installation costs.

- Additional General Items:
  - Description: Includes mobilization, utility staking, traffic control, clearing and grubbing, utility relocation, erosion and sediment control, and materials testing.

*Table 2. Construction and Implementation Costs*

| Item | Unit | Quantity | Unit Cost ($) | Total ($) |
|---|---|---|---|---|
| **Bioswale ~785 LF** | | | | |
| Site Preparation (excavation and grading) | *CY* | *380* | 50 | 19,000 |
| Plantings | *SF* | *9,800* | 3 | 29,400 |
| Mulch | *CY* | *110* | 100 | 11,000 |
| Soil Amendments | *CY* | *110* | 150 | 16,500 |
| | | | **Subtotal Bioswale** | **75,900** |
| **Culverts** | | | | |
| Site Preparation (road milling) | *SF* | *800* | 4 | 3,200 |
| Site Preparation (excavation and grading) | *CY* | *295* | 50 | 14,750 |
| Road re-paving | *SF* | *800* | 8 | 6,400 |
| <24” RCP Pipe | *LF* | *20* | 90 | 1,800 |
| >=24” RCP Pipe | *LF* | *80* | 150 | 12,000 |
| Pipe end section | *EA* | *1* | 2,000 | 2,000 |
| Class 1 riprap for channel protection | *SY* | *3* | 75 | 225 |
| | | | **Subtotal Culverts** | **40,375** |
| **Landscaping** | | | | |
| Turf grass seed (all disturbed areas besides bioretention) | *SY* | 2,450 | 1 | 2,450 |
| Temporary irrigation | *SF* | 22,200 | 0.75 | 16,650 |
| | | | **Subtotal Landscaping** | **19,100** |
| | | | **Subtotal Construction and Implementation** | **135,375** |
| | | | **Construction Oversight (20%)** | **27,075** |
| | | | **Contingency (30%)*** | **54,563** |
| | | | **GRAND TOTAL Planning, Design, Construction, and Implementation** | **263,513** |

*Contingency allows for budget to address any unforeseen risks or uncertainties with the project that may arise.

*Additional general items not included in this estimate include mobilization, utility staking, traffic control, clearing and grubbing, utility relocation, erosion and sediment control, and materials testing.*

**Maintenance**

- Replanting:
    - Description- Bioretention plants will need to watered 1 time per day after planting for two weeks. Irrigate 1 time per week during the heat of summer or drought conditions. Plants will need to be monitored and dead or dying vegetation removed in winter. Remove vegetation due to overcrowding in late summer. Weeding should occur 1 time per month or 4 times per year minimum in the bioswale area.
    - Assumptions- Town or City staff/landscapers will oversee maintenance
- Stormwater infrastructure maintenance:
    - Description- RCP pipes to be cleaned every 10 years for sediment/debris accumulation
    - Assumptions- Town or City staff/landscapers will oversee maintenance

*Table 3. Maintenance Effort Per Year*

| **Item** | **Unit** | **Quantity** |
|---|---|---|
| Bioswale<br>*Removing debris/sediment, weeding, spot mulching, removing dead vegetation* | *Hrs* | 48 (4 staff hours per month) |
| RCP pipe<br>*Debris clearing* | *Hrs* | 4 |

**Order of Magnitude Cost (High-Level Cost Estimate) for:**

## Allendale, Fairfax, & Brunson Conservation

**Type of Strategy:** Conservation Easement Acquisition

**Community:** Communities of Allendale, Fairfax, and Brunson

**Strategy Address/Location:** Adjacent to USC Salkehatchie West Library; 465 James Brandt Blvd, Allendale, SC 29810

**Date of Estimate:** 3/27/2026

- Project Management/Coordination:
    - Description- Coordinate with the Owner (USC Salkehatchie) and local land trust to facilitate the transaction. Assist in developing a management plan for the property to ensure landowners goals align with the protection of the property.
    - Assumptions- A local land trust will design and execute the conservation easement. Project management is billed as lump sum.
- Surveying and appraisal:
    - One property survey and appraisal are needed.
    - The survey must include:
        - Property corners and property lines for subject parcels
        - Existing structures (buildings, fencing, signs, etc.)
        - Existing utilities
        - Topography
        - Utility easements or rights of ways
        - Drainage infrastructure
        - Wetland delineation
        - Trees
    - Assumptions – 811 shall be called prior to survey. Landowner will pay for the survey and appraisal.
- Legal Fees:
    - Costs associated with the easement acquisition including a title search/title insurance, attorney fees, and closing costs.
    - Assumptions- landowners attorney will review the easement documents.
- Easement Acquisition:
    - Assumptions – cost estimated from the Conservation Bank for 31 acres.
- Walking Trail and Education Signage Permitting:

    - Description- Estimate based on SCDES less than 1 acre of land disturbance notification. Includes notification submission and any additional agency coordination. Also includes any necessary permits from the Town/County.
    - Assumptions- One submission to SCDES.
- Walking Trail and Education Signage Engineering:
    - Conduct desktop analysis and one site visit to collect information necessary to produce design.
    - Produce stamped designs for submittal to SCDES. The design will need to include all information required for permitting to include but is not limited to:
        - Site plans to include plan and profile of walking trail, limits of disturbance, property boundaries, existing wetlands/streams, trees to be removed, tree protection for remaining trees.
        - Include considerations for construction staging and sequence.
        - Include specifications for sediment and erosion control measures during construction.
    - Assumptions- The engineered drawings will provide sufficient detail, including dimensions of proposed practices, and necessary materials to develop specifications for project construction.

**Tax Deductions**

- Federal Tax benefit
    - Description- This tax benefit is a percentage of the total easement value and can be claimed all in one year or taken as 50% of adjusted gross income annually.
    - Assumptions- Assuming landowner is in a 32% tax bracket and the deduction would be all used in one year as opposed to 50% of adjusted gross income annually. Estimated easement value = $50,000. 32% of the easement value is this number.
- SC State Tax Credit
    - Description- SC state offers the smaller of two "caps" as tax credit for a conservation easement. Either 25% of the easement value ($12,500) or $250 per acre ($7,750).

Assumptions- Note that a larger tract of land placed under conservation easement carries more tax incentive and with a large enough tract of land the tax benefits can outweigh the costs.

*Table 4. Planning and Design Costs*

| Item | Unit | Quantity | Unit Cost ($) | Total ($) |
|---|---|---|---|---|
| Project Management | *LS* | *1* | 4,500 | 4,500 |
| Surveying & Appraisal | *LS* | *1* | 5,000 | 5,000 |
| Legal Fees | *LS* | *1* | 7,500 | 7,500 |
| Easement Acquisition | *AC* | *31* | 500 | 15,500 |
| Permitting | *LS* | *1* | 2,000 | 2,000 |
| Engineering | *LS* | *1* | 4,500 | 4,500 |
| **Subtotal Planning and Design** | | | | **39,000** |
| Federal Tax Benefit | *LS* | *1* | -16,000 | -16,000 |
| SC State Tax Benefit | *LS* | *1* | -7,750 | -7,750 |
| **Planning and Design with Tax Benefits** | | | | **15,250** |

**Construction and Implementation**

- Site Preparation:
  - Description- Clearing, grubbing, and grading to remove the minimum number of trees/shrubs necessary and prep the surface for installation of walking path.
  - Assumptions- 811 shall be called to locate existing utilities ahead of digging.
- Walking path:
  - Description- 2640 LF (0.5-mile) walking trail 4' wide. Mulch added at 4" thickness.
  - Assumptions- Costs include delivery.
- Structural Elements:
  - Educational signage: included along the walking path and next to path entrance

*Table 5. Construction and Implementation Costs*

| Item | Unit | Quantity | Unit Cost ($) | Total ($) |
|---|---|---|---|---|
| **Walking path** | | | | |
| Site Preparation (clearing, grubbing, and grading) | *LS* | *1* | 10,000 | 10,000 |
| Mulch | *CY* | *100* | 54 | 5,400 |
| Educational signage | *EA* | *4* | 750 | 3,000 |
| Additional Items | *LS* | *1* | 5,000 | 5,000 |
| **Subtotal Construction and Implementation** | | | | **23,400** |
| **Construction Oversight (20%)** | | | | **4,680** |
| **Contingency (30%) *** | | | | **18,720** |

| | |
|---|---|
| **GRAND TOTAL Planning, Design, Construction, and Implementation** | **54,925** |

*Contingency allows for budget to address any unforeseen risks or uncertainties with the project that may arise.

**Maintenance**

- Walking path:
    - Description- Annual maintenance for walking path as needed, remove limbs and replace mulch.
    - Assumptions- University staff/landscapers will oversee maintenance

*Table 6. Maintenance Effort Per Year*

| Item | Unit | Quantity |
|---|---|---|
| Walking Path<br>*Basic upkeep, replenish mulch as needed, clearing encroaching vegetation* | *Hrs* | 40 |

**Order of Magnitude Cost (High-Level Cost Estimate) for:**

## Salkehatchie Watershed Conservation/Riparian Buffer Mapping

**Community:** Salkehatchie Watershed-Scale

**Date of Estimate:** 3/31/2026

**Planning and Design**

- Project Coordination and Stakeholder Engagement:
    - Description- project coordination, creation of the Salkehatchie Conservation Committee (SCC), engagement with the SCC, stakeholder engagement
    - Assumptions-
        - 1 kickoff meeting with the client, 12 internal team coordination meetings, budget management, scope and schedule oversight
        - SCC will include relevant, qualified stakeholders such as representatives from local government staff and local land conservation professionals to guide and inform the process. Coordination, material development, and facilitation of up to four meetings with the SCC to collect input on key milestones. At least two SCC engagement sessions will be held in-person.
        - Coordination, material development, and facilitation of up to ten in-person public engagement sessions at each community within the Salkehatchie watershed. Creation of one digital survey to be distributed to the public. Synthesized analysis of public survey data
        - Staff involved: project manager and technical/design professionals
- Spatial Analysis
    - Description- Data collection from sources deemed necessary to assist in identification and prioritization of undeveloped and available parcels, Inventory of existing open space and analysis to identify open space suitable for protection, Development of prioritization criteria to evaluate open space opportunities, geospatial analysis of land conservation opportunities though incorporation of prioritization criteria and production of maps to demonstrate areas of focus for land conservation efforts and aid in parcel selection
    - Assumptions –

        - Data sources are available and accessible from sources such as the South Carolina conservation bank, South Carolina Office of Resilience, etc.
        - A series of maps will be produced at each step of the spatial analysis that will guide discussion among SCC, input from SCC will be incorporated in each step of the analysis
        - ESRI ArcGIS geodatabase will be created to produce the spatial analysis
        - Staff involved: project manager, senior technical/design professional, technical/design professional, junior technical/design professional, GIS professional
- Funding Analysis
    - Description – comprehensive review of similar land protection funding programs in the southeast and the associated administrative frameworks, Funding recommendations will be produced that estimate the cost of meeting the conservation goals as established by the SCC. The analysis will identify and assess the potential for a range of funding strategies that are realistic and that would substantially increase public funding to address parks, recreation, and conservation needs. Presentation to the client of key research findings
    - Assumptions-
        - Funding resource recommendations will include grants, loans, and options from federal, state, local, and private sources
        - Funding review will include examining the revenue-raising capacity, the fiscal impact to government budgets, and/or taxpayers of the local property tax needed to back general obligation bonds
        - Staff involved: project manager, senior technical/regulatory professional, technical/regulatory professional, junior technical/regulatory professional
- Land Protection Vision Plan –
    - Description - Draft plan development based on information gained from previous tasks to develop a comprehensive plan that will identify land protection opportunities, a forecast of land protection needs, and an analysis of the funding pathways necessary to meet the land conservation goals as defined by the SCC, final plan development with input from the SCC and client on the draft comprehensive plan, presentations to the SCC of final land protection vision plan
    - Assumptions –

- Land protection goals of the final land protection vision plan will be on a 25 year future timeline
- Staff involved: project manager and technical/design professionals

*Table 1. Estimate of Cost*

| Item | Unit | Quantity | Total ($) |
|---|---|---|---|
| Project Coordination and Stakeholder Engagement | *LS* | *1* | 45,000 |
| Spatial Analysis | *LS* | *1* | 30,000 |
| Funding Analysis | *LS* | *1* | 30,000 |
| Land Conservation Vision Plan | *LS* | *1* | 30,000 |
| **Contingency (30%) *** | | | **40,500** |
| **GRAND TOTAL** | | | **175,500** |

*Contingency allows for budget to address any unforeseen risks or uncertainties with the project that may arise.

**Order of Magnitude Cost (High-Level Cost Estimate) for:**

## Salkehatchie Watershed Hydrologic & Hydraulic (H&H) Study

**Community:** Salkehatchie Watershed-scale

**Date of Estimate:** 3/31/2026

**Overarching Assumptions**

The goal of this study is to develop a better understanding of the hydrologic conditions within the Salkehatchie Watershed. The study's aim is to develop a model that can be used as a tool to evaluate present and future flood risks at the watershed-scale while also forming the basis of a master model, which can later be updated to include detailed 2D models of communities within the watershed. This initial model will be calibrated using existing available HEC-RAS models in the watershed and will be validated through stakeholder engagement and information collected through the Salkehatchie Watershed Vulnerability Assessment.

This watershed-wide model will identify critical infrastructure (roadways, evacuation routes, bridges, culverts, etc.) that are vulnerable to flooding in the present day and in the future, which will help the SC Office of Resilience and the communities within the Salkehatchie watershed to prioritize projects at the state and County level. Additionally, this model is intended to be updated as communities within the watershed begin inventorying their own drainage systems and developing their own H&H studies or stormwater master plans. As communities begin investing in stormwater infrastructure solutions, they can be added to this model as high-resolution 2D zones to provide additional detail around communities where it is needed. This model can serve as a resource to communities in their own H&H modeling efforts to help with model calibration and validation as well.

Ultimately, the development of this model will help provide a better understanding of Hydraulic & Hydrologic conditions in the watershed and will immediately inform potential projects at the State and County level within the watershed by identifying undersized culverts and bridge crossings. As funding becomes available and other communities begin inventorying and/or developing their own stormwater models, this model can be used as a master watershed model to house the model of each community and help determine upstream and downstream impacts for larger-scale projects.

**Model Development**

- Project Management:
    - Description- Project Management, Kick-off Meeting with Client and Project Team and Public Meetings & Engagement
    - Assumptions-
        - Quarterly Report Meetings (6 virtual meetings)
        - Kick-off Meeting with client (1 virtual meeting)
        - Stakeholder Engagement Meeting Materials and Planning
        - Staff involved- project manager, senior technical/design professional, technical/design professional, junior technical/design professional, and GIS professional
- Field Investigation and Survey:
    - Description- Spot elevations for critical infrastructure (bridges, culverts, roads, etc.)
    - Assumptions-
        - Only State and County stormwater infrastructure assets will be modeled as part of this project
        - Survey will be limited to spot elevations on critical assets, as needed
        - Staff involved- senior technical/design professional, technical/design professional, junior technical/design professional, and GIS professional
- Data Collection:
    - Description – Review of Existing Reports, FEMA Hydraulic Models, FEMA Flood Insurance Studies and Claims, SCDOT As-builts, Water Level Sensors, and Riverine Gauges. The team will also compile existing data for landcover, soils, drainage complaints, and topography.
    - Assumptions –
        - Hydraulic models (i.e. FEMA HEC-RAS) are available and accessible throughout the watershed
        - 1 virtual meeting with client to review data collection
        - *1 site visit which includes installation of a riverine gauge on the upstream side of the culvert crossing (optional)*
        - *$1,250 for riverine gauge equipment (assuming level logger and supplies to construct well) (optional)*
        - Staff involved- project manager, senior technical/design professional, technical/design professional, junior technical/design professional, and GIS professional

- Model Development:

    - Description- Gather stakeholder information (Survey123/ArcGIS StoryMap); Review of base mapping to use for hydrology & hydraulic design (soils, topography, drainage areas, etc.) and select appropriate design storms for model scenarios; Develop Existing and Future Conditions (2050) H&H Models
    - Assumptions –
        - 1 meeting with client to review stakeholder information, basemaps of model elements, and to select appropriate design storm events for existing and future conditions scenarios
        - Scenarios will include one existing conditions model and one future conditions model
        - Technical report will be produced
        - 1 virtual meeting with client to review model results
        - Staff involved- project manager, senior technical/design professional, technical/design professional, junior technical/design professional, and GIS professional
- Model Calibration/Validation:
    - Description- Stakeholder engagement to ground truth model results; Capture additional areas prone to flooding and inconsistencies in model results; Identify up to ten (10) recommended strategies for flood mitigation.
    - Assumptions-
        - Model validation will include comparison of results to at locations where existing H&H Models are present (i.e. HEC-RAS)
        - 1 engagement event in each community (10 total) to identify additional areas of concern and validate model results
        - Staff involved: project manager, senior technical/design professional, technical/design professional, and junior technical/design professional
- Proposed Conditions Model:
    - Description- Model ten (10) recommended strategies to determine potential for flood mitigation; Conduct Benefit-Cost Analysis (BCA) on 10 recommended strategies
    - Assumptions-
        - 10 recommended strategies will be assessed using the existing and future conditions models
        - A formal BCA will be conducted for each of the ten (10) projects

- Final Report:

- Description- Development of final report consisting of project goals and objectives, summarization of field investigations, and literature review; Assessment of results of BCA and ranking of ten (10) improvement projects.
- Assumptions-
  - Recommendations will be made for 10 improvement projects
  - Projects will be ranked by BCA score

*Table 2. Cost Estimates*

| Item | Unit | Quantity | Total ($) |
|---|---|---|---|
| Project Management | *LS* | *1* | 20,000 |
| Field Investigation and Survey | *LS* | *1* | 40,000 |
| Data Collection | *LS* | *1* | 55,000 |
| Model Development | *LS* | *1* | 110,000 |
| Model Calibration/Validation | *LS* | *1* | 40,000 |
| Proposed Conditions Model | *LS* | *1* | 65,000 |
| Final Report | *LS* | *1* | 45,000 |
| **Contingency (30%) *** | | | **112,500** |
| **GRAND TOTAL** | | | **487,500** |

*Contingency allows for budget to address any unforeseen risks or uncertainties with the project that may arise.