

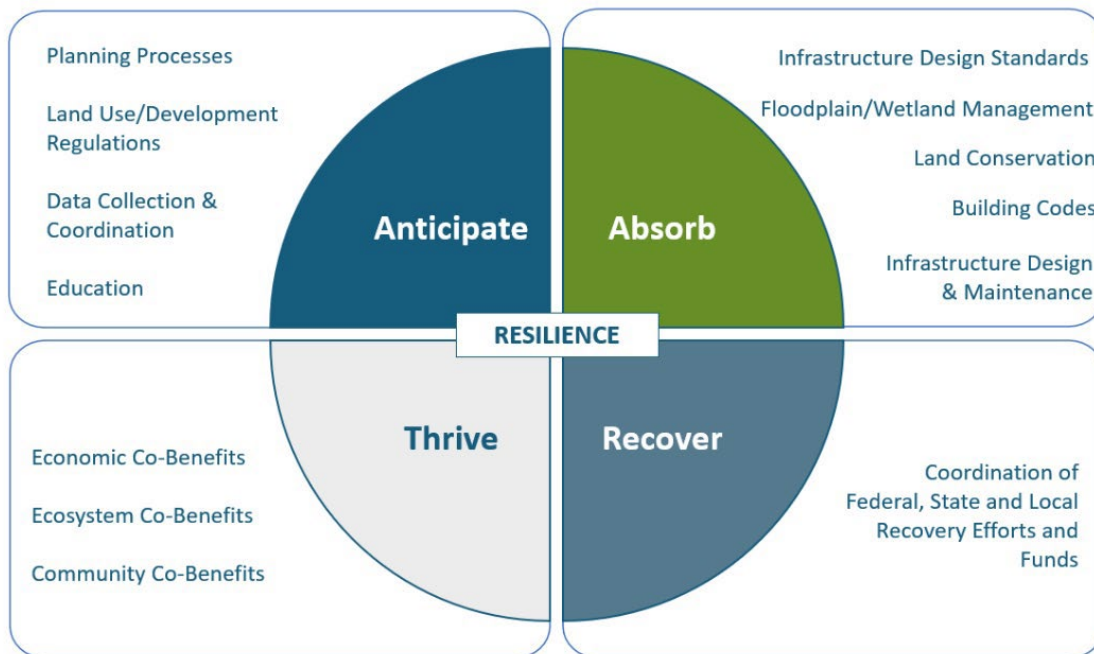
CHAPTER 6

Resilience

Resilience is the ability to survive, adapt, and grow despite acute shocks and chronic stresses that individuals, organizations, economies, communities and ecosystems may face. Resilience depends on the ability to anticipate, absorb, recover and thrive in the face of environmental change and natural hazards.

In 2020, the South Carolina General Assembly passed the Disaster Relief and Resilience Act (DRRA), which amended the state’s planning enabling act to add Resilience as a required element of local Comprehensive Plans. The DRRA also created a South Carolina Office of Resilience, which is charged with implementing the Act and developing and maintaining a state Resilience Plan; the state’s first Strategic Statewide Resilience and Risk Reduction Plan (State Resilience Plan) was approved in March 2023. Data and maps from the state plan are used in this chapter.

This chapter relies on the State Resilience Plan, the Calhoun County Hazard Mitigation Plan (Calhoun HMP), various plans and documents from the South Carolina Emergency Management Division, and issues identified in other sections of this Comprehensive Plan to focus on the highest priority threats to the county and to identify appropriate goals, objectives and strategies to advance resilience of natural systems, the economy, infrastructure, individuals and the community. The illustration below, taken from the State Resilience Plan, presents the four elements of community resilience: Anticipate, Absorb, Recover, and Thrive.



Source: S.C. Office of Resilience

Existing Resilience Conditions

Resilience can be viewed as a function of the types and severity of natural hazards, the effectiveness of existing plans and programs, available resources to aid recovery, the vulnerability of the area’s population to natural hazards, and economic resilience.

Natural Hazards

Existing natural hazards – flooding, severe weather, earthquakes and wildfires -- and plans for responding to disaster events resulting from those hazards are well documented in the Calhoun HMP, the State Resilience Plan, and SCEMD plans. This section will review the most important hazards and strategies identified in those plans and suggest additional actions that the County can take to prepare, respond, recover and mitigate those events.

The Calhoun HMP identifies the most important natural hazards for the county and scores them based on probability, vulnerability of the community to the hazard, severity of impact, and history of occurrences. Tornado, Hurricane, Hail, Drought, Earthquake, Wildfire, Flood, and Winter Storms are the eight natural hazards of most concern for Calhoun County. Table 6.1 below is reproduced from the 2020 Calhoun HMP, but has been adapted to list the hazards from highest to lowest score.



Source: Calhoun County HMP

Table 6.1
Calhoun County Hazards

| Type of Hazard | Probability | Vulnerability | Impact | History | Total Score |
|-----------------|-------------|---------------|--------|---------|-------------|
| Wildfire | High | High | High | High | |
| Priority Score: | 70 | 50 | 100 | 20 | 240 |
| Drought | Medium | High | High | Medium | |
| Priority Score: | 70 | 50 | 100 | 10 | 230 |
| Hail | High | Medium | Medium | High | |
| Priority Score: | 70 | 25 | 50 | 20 | 165 |
| Hurricane | Low | Low | High | Medium | |
| Priority Score: | 7 | 5 | 100 | 10 | 122 |
| Winter Storms | Low | Medium | Medium | Low | |
| Priority Score: | 7 | 25 | 50 | 2 | 84 |
| Tornado | Low | Low | Medium | Medium | |
| Priority Score: | 7 | 5 | 50 | 10 | 72 |
| Flood | Low | Low | Medium | Low | |
| Priority Score: | 7 | 5 | 50 | 2 | 64 |
| Earthquake | Low | Low | Low | Low | |
| Priority Score: | 7 | 5 | 10 | 2 | 24 |

Source: Calhoun County Hazard Mitigation Plan

Discussion of Natural Hazards

Four natural hazards – wildfire, drought, hurricane and flooding -- are expected to become more severe as the climate continues to warm.

Wildfires are frequent but generally well-managed in the county. Wildfire risk is closely associated with drought conditions, and most wildfires are the result of debris burning. Public education about the importance of notifying local fire officials of plans for outdoor burning may be the most effective tool to reduce wildfire risk.

Calhoun County's reliance on groundwater for large scale agricultural irrigation and public drinking water creates potential risk of supply interruptions in severe drought conditions, as has been documented in SCDNR's Edisto River Basin Plan. Groundwater models show future potential for low water levels in the Crouch Branch aquifer, which could impact some of the public water supply wells and large farm irrigation wells. Further cooperation and consultation with SCDNR and DHEC should be undertaken to prepare for such future threats and to consider redundancy and conservation options.

Severe winter storms are a concern for the county's Emergency Management Agency director, primarily due to power loss and emergency vehicle response capabilities. Because winter storms are uncommon, local resources for snow and ice removal are limited. SCDOT focuses on clearing major roads, but state secondary routes and local streets can be impacted for days by icy conditions. Especially for elderly and low-income populations, emergency shelters are an important resource. For electric utilities, clearing of power line rights of way is a key element of preparedness, and continued coordination with Dominion Energy, Tri-County Electric Co-Op, and Aiken Electric Co-Op is an important part of preparedness.

The county's distance from the coast moderates the impact of hurricanes. Flooding is a significant outcome when storms track near or through the county.

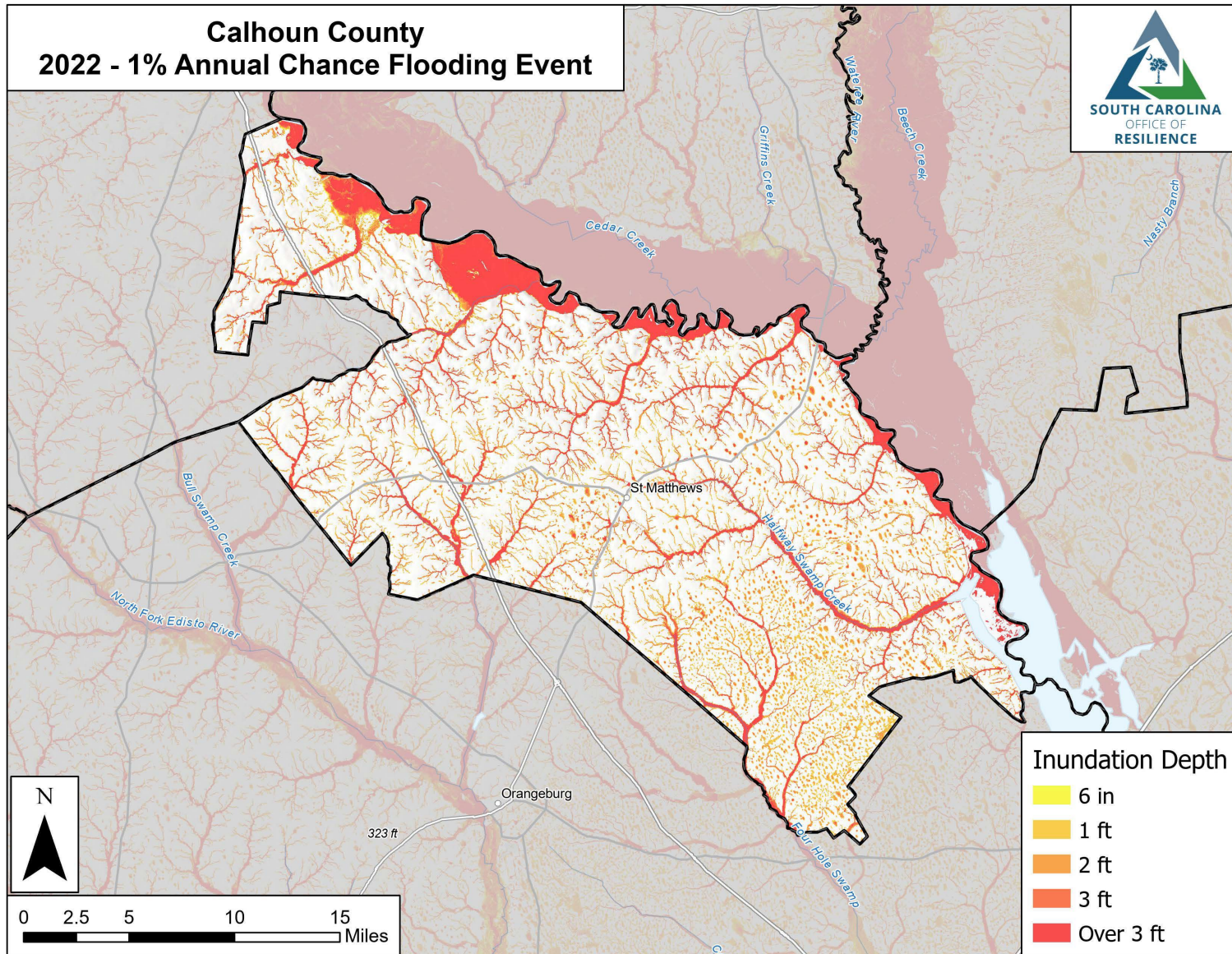
Flooding in Calhoun County is an issue along all creeks and in the large flood plain of the Congaree River. A number of riverfront houses are frequently impacted by flooding but have been elevated above flood levels; residents have adapted by using boats to access properties during high water conditions. However, the county does not have any repetitive homes or businesses that have been impacted by repetitive flood loss, according to the HMP. Potential blockage of the two hurricane evacuation routes through the county – US 176 and the SC 267/US 601 -- by flood waters at creek crossings is a threat that should be more closely evaluated in cooperation with SCDOT. Map 6-1 below, from the State Resilience Plan, depicts flooding associated with a 100-year storm in the county.

SCDHEC has identified 20 High Hazard Potential Dams (HHPD) in Calhoun County, where failure of the dam would have substantial life safety and property damage impacts. Funding is available for repairs or removal of dams in some cases, and the County should pursue opportunities through coordination with SCDHEC.

For all natural hazards, preparation by individuals, families, organizations and businesses is among the most important determinants of disaster recovery. Citizens can sign up for emergency text messages through the "Code Red" alert system on the SCEMD website, where a free download of the Code Red application is available.

Earthquakes have been rare and of very low magnitude in Calhoun County, and rank lowest in the scoring in the HMP.

Map 6-1



Existing Plans, Programs and Resources

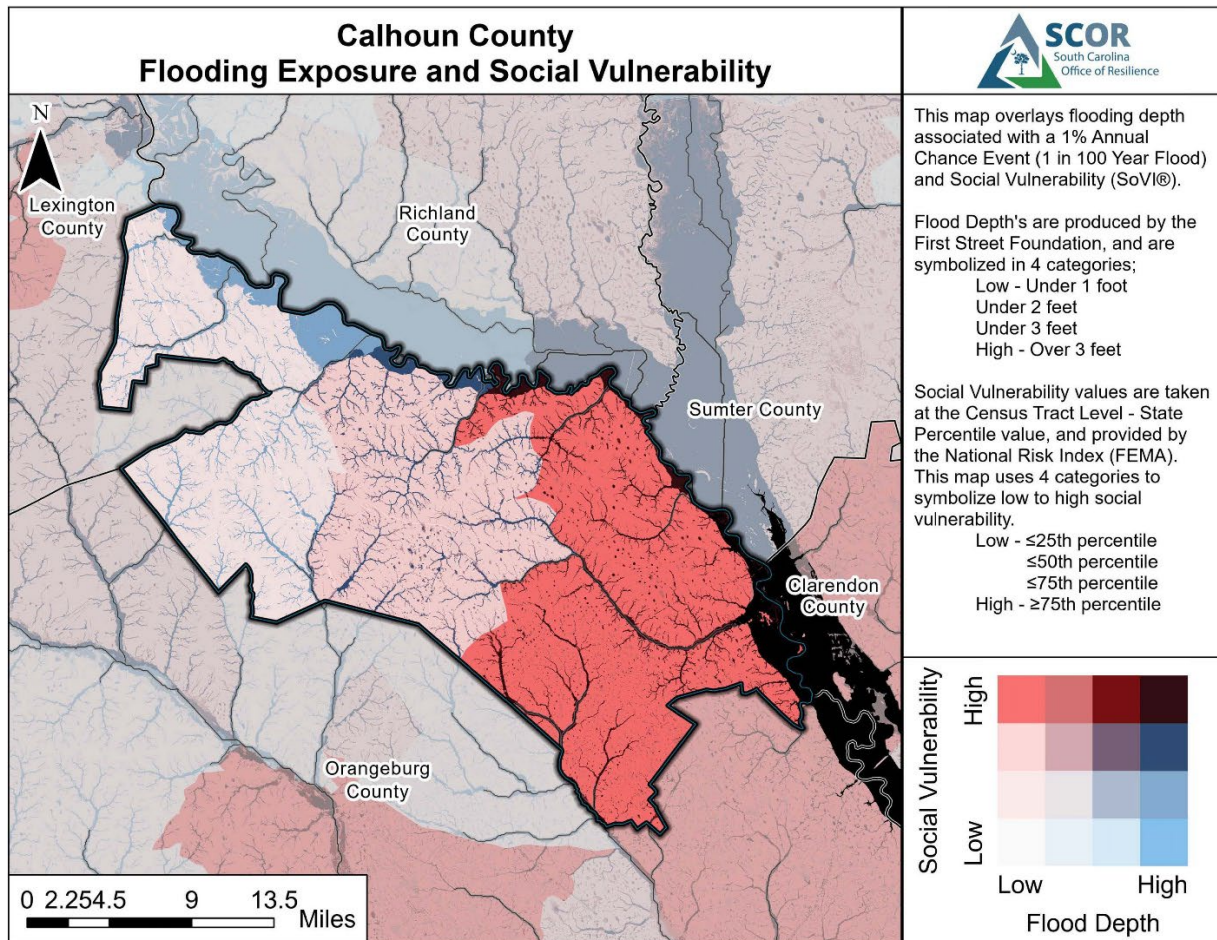
South Carolina has emphasized disaster planning and response in recent years, primarily due to the impacts of hurricanes and coastal flooding. Relatively robust plans are in place for disaster preparedness, response, recovery and mitigation at the local and state level. Plans reviewed and referenced here include the following:

- Calhoun County Hazard Mitigation Plan (Lower Savannah Council of Governments, 2020)
- South Carolina Emergency Response Plan (SCEMD, 2023)
- State Resilience Plan (SCOR, 2023)
- South Carolina Forest Action Plan (SC Forestry Commission, 2020)
- Edisto River Basin Plan (SCDNR, 2023)

Social Vulnerability

The vulnerability of places to environmental hazards is dependent on a number of demographic characteristics. In general, income, race, age, ethnicity, economic base characteristics, and gender are important determinants of resilience and capacity for recovery.

Map 6-2



The Hazard Vulnerability & Resilience Institute (HRVI) at the University of South Carolina has developed a Social Vulnerability Index (SoVI) that evaluates every county in the U.S. based on the characteristics listed above. Overall, Calhoun County falls in the middle of the vulnerability rankings nationwide. However, southern Calhoun County – including St. Matthews and Cameron – are in the higher end of vulnerability based on demographics, predominantly related to income, age, and race. Map 6-1 overlays the SoVI with flood levels associated with a 100-year rain event, and illustrates where population is most vulnerable to natural hazards and will likely have the greatest challenges with recovery.

Economic Resilience

Local history illustrates the importance of economic resilience. Calhoun County developed a thriving agricultural economy built around cotton in the early 1900s; that economy was shattered in the 1920s by the destructive impact of the boll weevil on cotton yields and a lack of diversification in crops among most farmers at the time. Similarly, the decline of manufacturing, especially textile manufacturing, took a heavy toll on many parts of the state in the 1970s through the 1990s as jobs shifted to lower-wage countries, and many manufacturing workers could not find jobs at the wages previously earned.

Farmers who survived the boll weevil's decimation of the cotton economy did so by diversifying the crops they produced. Counties that have thrived in the wake of textile industry job losses anticipated the shift to overseas textile production, recruited a more diverse mix of industries, and continue to build a robust and diverse economic base.

Calhoun County's economy remains highly reliant on agriculture, but there is more diversification of crops, and livestock is an important agricultural component. Forestry also is an important component of the economy, is less impacted by drought than crop production, and a robust response capability exists in the state's Forestry Commission to address wildfire.

The county has worked aggressively to recruit new industry to the county, and to expand existing industry, and recent and ongoing development in the county's Calhoun County Industrial Park and the private Sandy Run Industrial Park bear testament to increasing success in economic diversification.

An adaptable, skilled workforce is a critical element of economic resilience. As described in Chapter 1 of this plan, the county's population has become increasingly skewed toward older age groups in the past half century, which continues to pose workforce challenges. Continued efforts to attract and retain younger residents in the county and to provide desirable housing, leisure and recreational options for younger residents is an important component of economic resilience. Continued workforce training and development initiatives by the county also will be an important factor to bolster the skills of existing workers; many skilled jobs at newly-recruited industries are being filled by out-of-county work

Intergovernmental Coordination

As required by the DRRA, written notification of will be provided to adjacent jurisdictions of proposed projects related to natural hazard resilience, recovery, response and mitigation projects. These agencies are listed below.

Local Governments

Richland County Emergency Management Agency
Lexington County Emergency Management Agency
Orangeburg County Emergency Management Agency
Sumter County Emergency Management Agency
Clarendon County Emergency Management Agency
Town of St. Matthews
Town of Cameron
City of Orangeburg
Town of Elloree
Calhoun County School District
City of Cayce (wastewater treatment provider)

State and Regional Partners

SC Office of Resilience
SC Disaster Recovery Office
SC Emergency Management Division
SC DNR Flood Mitigation Program
SC DNR Climatology Office
SC Department of Public Safety
SC Department of Transportation
Lower Savannah Council of Governments

Issues and Opportunities

The intent of the resilience requirement for comprehensive plans is to address resilience throughout the elements of the plan, wherever applicable. Key elements that integrate resilience are Natural Resources, Community Facilities, Transportation, Priority Investment, and Economic Development.

- In the Natural Resources element, recommendations for riparian buffers and forest management relate to resilience by reducing runoff and mitigating wildfire risk.
- In the Community Facilities element of this plan, existing and proposed community facilities will be evaluated based on flood risk and access, accessibility in winter storms, and high wind risks. One issue arose in the 2015 flood, when floodwaters surrounded Sandy Run School, which can be used for emergency shelter. Mitigation of this issue is difficult or impossible due to proximity of Old Swamp Road to the Congaree River flood plain and associated wetlands.
- The Transportation element will evaluate major roads and evacuation routes for flood vulnerability, if possible, in conjunction with SCDOT.
- Promoting the Code Red alert system to all county residents and organizations should be a priority, as well as encouraging and training residents, especially vulnerable populations, to make basic preparations for natural hazard events.
- Natural Flood Mitigation – riparian buffer restoration and protection, floodplain management, restoration of native grasslands where possible in conjunction with willing landowners – should be a priority.
- Open Space preservation efforts in cooperation with Congaree Land Trust, SCDNR, and other partners can help mitigate flooding and reduce wildfire risks to development.
- The SC Office of Resilience has funded a Comprehensive Stormwater Study for Calhoun County that will help inform investment in flood mitigation in the county.
- The county has received a FEMA grant for an Emergency Operations Center that will improve the county's Emergency Management Agency's ability to manage emergency response and recovery.

Goals, Objectives and Strategies

Final goals, objectives and strategies related Resilience will be developed based on input from the County Planning Commission and from comments received in public meetings that will be held during the development of the comprehensive plan. Below are draft Goals and Objectives based on analysis of the data in this chapter and the input received to date.

Goal R1. Continue to support and improve the county's natural hazard preparedness and enhance existing response and recovery capacity.

Objective R1.1 **Site, design, and construct an Emergency Operations Center (EOC).**

Strategy: efficiently use FEMA grant funds to produce the most effective EOC attainable within the available budget.

Objective R1.2 **Ensure adequate access to emergency shelters for vulnerable populations, especially in the southern part of the county and in the municipalities.**

Strategy: evaluate existing shelter capability and, if necessary, seek funding for additional equipment and facilities, in coordination with municipalities, school district, Red Cross, SCEMD, and FEMA.

Goal R2. Prioritize flood mitigation and floodplain management.

Objective R2.1 **Improve existing protections for riparian zones.**

Strategy: strengthen zoning requirements for riparian buffers.

Strategy: seek funding from SCDNR and other agencies to restore impaired riparian zones.

Strategy: work with Calhoun Soil and Water Conservation district to educate landowners about the importance and value of riparian buffers.

Objective R2.2 **Identify opportunities to better manage floodplain, in collaboration with large landowners, Congaree Land Trust, SCDNR, SCOR, and other conservation agencies.**

Strategy: consult with key partners to identify needs and sources of funding.

Goal R3. Protect water resources and water supply in the county and region.

Objective R3.1 **Actively participate in SCDNR’s River Basin planning efforts.**

Strategy: county staff will actively monitor and participate in the Santee River Basin Plan when SCDNR launches that plan.

Objective R3.2 **Work with SCDNR to identify risks to groundwater supply and aquifer water levels, especially future risks to the Crouch Branch Aquifer, and identify water conservation strategies and any potential for developing redundancy in water supply for the county.**

Strategy: Consult and collaborate with SCDNR water planning staff.

Goal R4. Expand public information efforts to help citizens, businesses, and organizations stay informed and prepare for natural hazards.

Objective R4.1 **Expand participation in the Code Red system by county residents, businesses and organizations.**

Strategy: Promote Code Red at county events, facilities and meetings; provide links to download the Code Red application on County websites.

Objective R4.2 **Provide information on natural disaster preparedness to county residents, with special emphasis on reaching vulnerable populations and communities.**

Strategy: Seek grant funding through SCOR, SCEMD, FEMA and other agencies to develop, implement and distribute public information materials.