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### Commonly Used Abbreviations

BCD Region – Berkeley, Charleston, and  
Dorchester Counties

ACS – American Community Survey

MHHI – Median Household Income

MHV – Median Home Value

MMR – Median Monthly Rent

NAICS – North American Industry  
Classification System

SOC – Standard Occupational Classification

BLS – Bureau of Labor Statistics

LQ – Location Quotient

FHWA – Federal Highway Administration

SCDOT – South Carolina Department of  
Transportation

CHATS – Charleston Area Transportation  
Study

BCDCOG – Berkeley-Charleston-Dorchester  
Council of Governments

LOS – Level of Service

CARTA – Charleston Area Regional  
Transportation Authority

BCSD – Berkeley County School District

BCHMP – Berkeley County Hazard Mitigation  
Plan

CWS – Charleston Water System

WWTP – Wastewater Treatment Plant

BCWSA – Berkeley County Water and  
Sanitation Authority

PSC – Public Service Commission

MS4 – Municipal Separate Storm Sewer  
Systems

DHEC – Department of Health and  
Environmental Control

SCDNR – South Carolina Department of  
Natural Resources

NOAA – National Oceanic and Atmospheric  
Administration

NHC – National Hurricane Center

FEMA – Federal Emergency Management  
Agency

SLR – Sea Level Rise

BMP – Best Management Practices

EPA – Environmental Protection Agency

VSQG – Very Small Quantity Generator

SQG – Small Quantity Generator

LQG – Large Quantity Generator

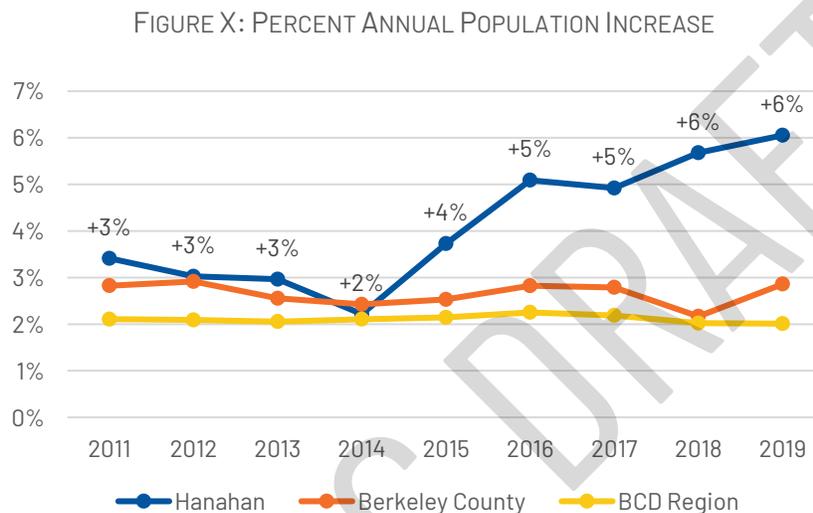
VLQG – Very Large Quantity Generator

CTAR – Charleston Trident Association of  
Realtors

# Population Element

## Historic Trends and Projections

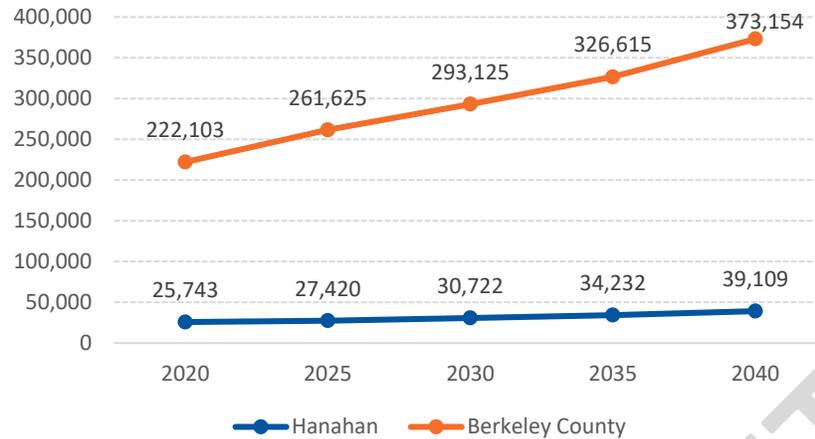
The City of Hanahan has maintained a positive population and growth rate since its incorporation in 1973. As shown in Figure X, between 2010 and 2019, Hanahan has steadily increased in population and is expected to continue growing. The BCD region as a whole has experienced a steady increase in population since 2010, growing approximately 2% annually. The growth rate in Hanahan, however, has exceeded regional growth during that same period, with the lowest annual growth rate of 2% in 2014, and the highest of over 6% in 2019.



In March 2022, the U.S. Census Bureau released the 2020 American Community Survey (ACS) data for most geographies in the U.S., including Hanahan. It is important to note the difference between decennial Census data, which is intended to provide a universal count of people, versus 1- and 5-year ACS estimates, which are estimates of changing social and economic characteristics of the population, such as education, income, housing occupancy and tenure, etc.

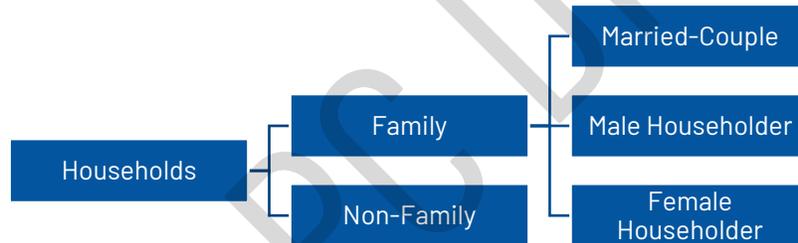
Comparing the projections made in the 2012 Comprehensive Plan for Hanahan’s 2020 population and the ACS 2019 population estimates, the estimates are above the projected population, therefore, it can be assumed that the 2020 decennial census will also be above the previous projections. As shown in Figure X, Hanahan is expected to double in population in the next 20 years. Even with this increase in population, Hanahan will continue to account for about 10-11% of the total population of Berkeley County.

FIGURE X: HANAHAN POPULATION PROJECTIONS



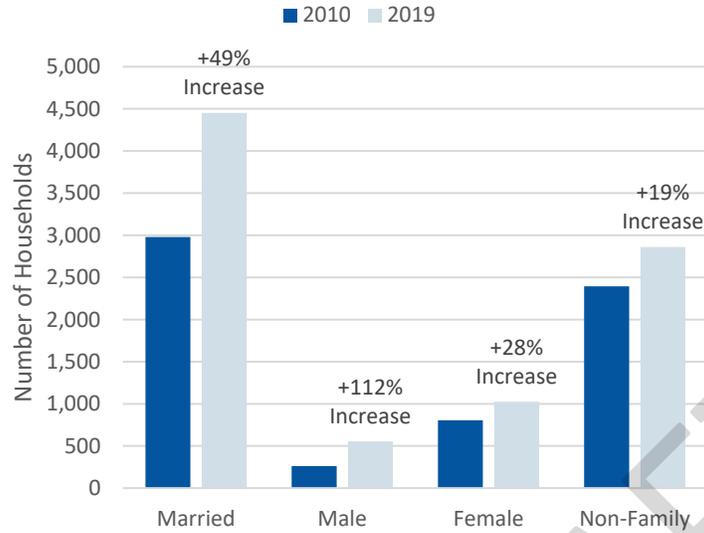
## Number, Size and Characteristics of Households

The characteristics of households in Hanahan are very similar to that of Berkeley County and other similarly sized municipalities in the region. In order to better understand the demographic make-up of households, the Population Element analyzes households as either family or non-family households. Family households are then further classified by family type, including: married couple (married), male householder, and female householder.



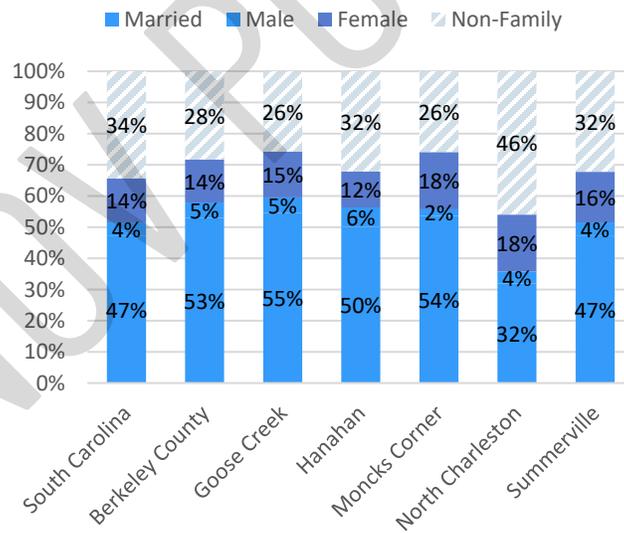
As of 2019, the total household count in Hanahan was estimated at 8,891. This is an increase of about 38% since 2010 when Hanahan had an estimated 6,439 households. Most of this increase has been in households with married couples; however, as seen in Figure X, the number of male households increased by 112% while the other household and family types increased by less than 50%. It is also worth pointing out that in 2019, the number of female households (approx. 1,000) is still about double that of male households (approx. 550) despite the significant increase.

FIGURE X: CHANGE IN HOUSEHOLDS BY FAMILY TYPE



Family versus non-family type households are an important distinction to identify as they can greatly impact the remaining trends discussed in this Element. Hanahan has a ratio of approximately 68:32 of family to non-family type households. As seen in Figure X, this is similar to South Carolina but quite different than other similarly sized municipalities in the region and in Berkeley County itself. This has only changed slightly since 2010's 63:37 ratio of family to non-family type households.

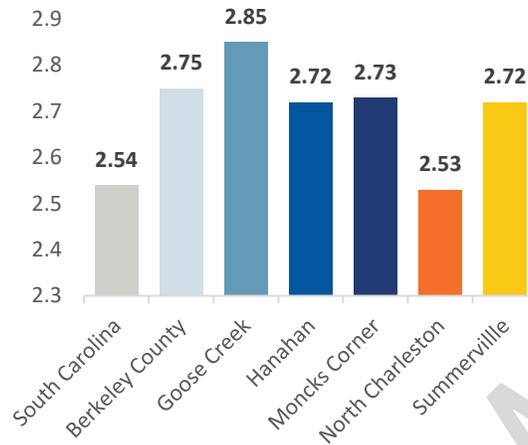
FIGURE X: PERCENT OF HOUSEHOLDS BY TYPE



Hanahan has an average household size of 2.72 in 2019. As seen in Figure X, the average household size of similarly sized municipalities in the region varies from 2.53 persons per household in North Charleston at the lowest to 2.85 persons per household in Goose Creek at the highest. Hanahan, Moncks Corner and Summerville each had a comparable average household size of approximately

2.72 persons per household. This is supported by the ratio of family vs non-family type households and, as non-family households typically have fewer persons per household than family households.

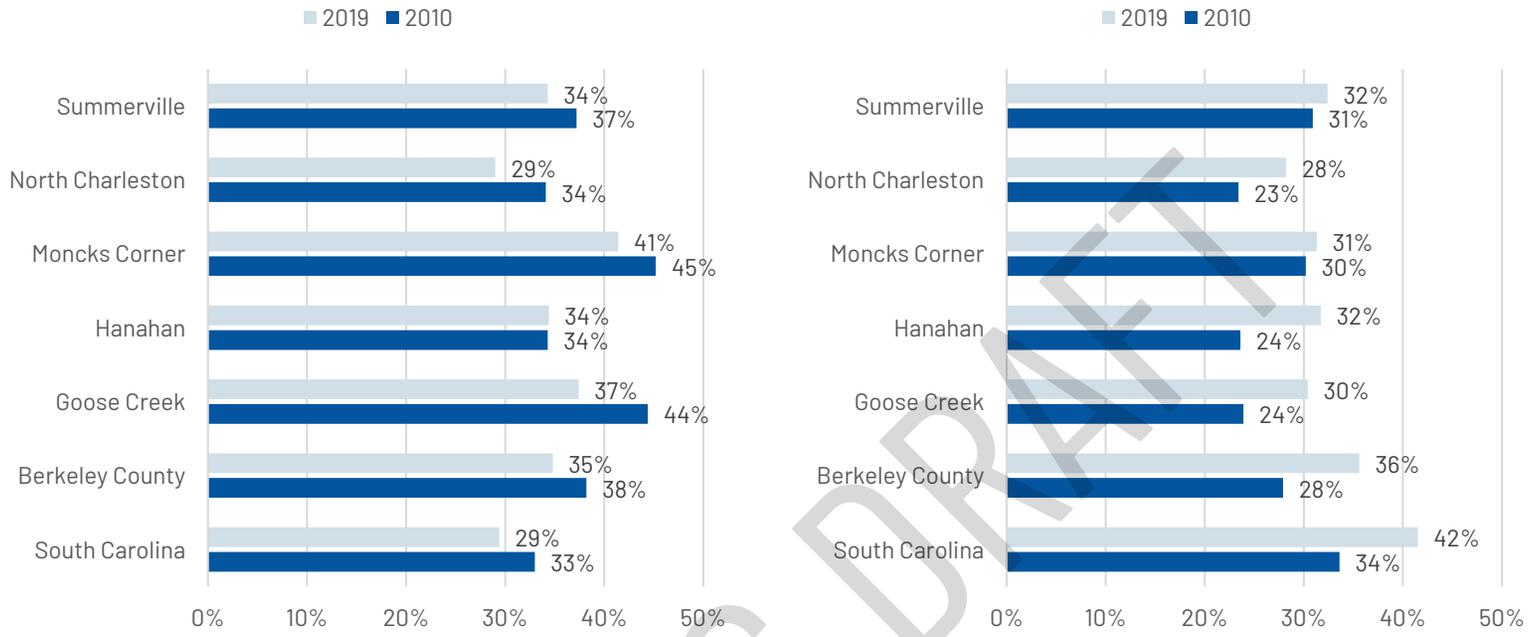
FIGURE X: AVERAGE HOUSEHOLD SIZE COMPARISON, 2019



The future of a community is often reliant on the age of the current residents, specifically the percent of children and elderly. A sustainable community recognizes trends in residents age, addresses their current needs and services, and then proactively plans for future generations and residents. These trends can impact school enrollment, median household income, affordability and poverty status among other things. As seen in Figure X, Hanahan had slightly more households with children under the age of 18 years old (34.4% in 2019) than the state of South Carolina as a whole (29.4% in 2019), indicating that over a third of the total population in Hanahan are children. This would support the results from the public participation survey indicating that Hanahan is a safe and family-friendly community to raise children.

On the flip side, Hanahan has far fewer households with residents over the age of 60 years (7.3% of households) compared to the state's 11.3% of households. In 2019, Berkeley County and the municipalities therein generally did not have a comparable percentage of residents aged 60+ as the state, likely indicating that the county is not viewed as favorably among retirees or empty nesters as other places in the state, but is favorable among families with children. These demographics highlight the importance of planning for families and children and expanding public infrastructure, services and amenities as needed to support this growing demographic.

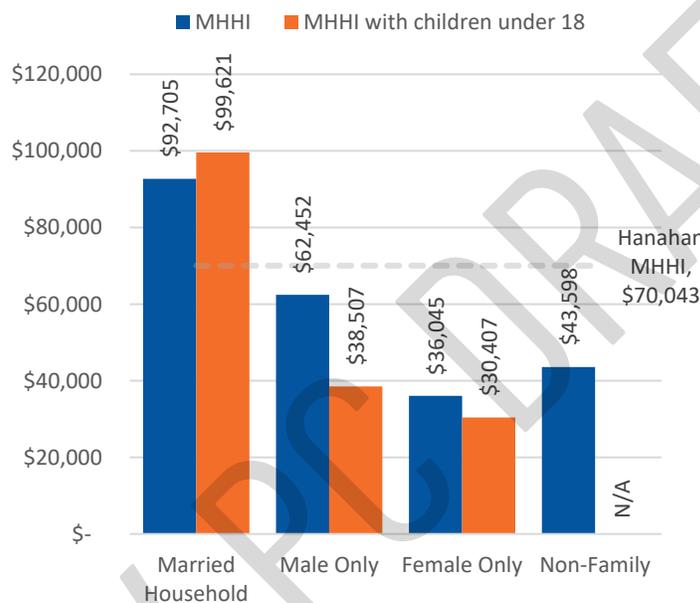
FIGURE X: HOUSEHOLDS WITH CHILDREN UNDER 18 AND FIGURE Y: HOUSEHOLDS WITH PEOPLE 60 AND OVER



## Income by Household Type

Household income trends provide insight into a community’s economic vitality and the typical disposable income and purchasing power of residents. As seen in Figure X, the median household income (MHHI) of Hanahan in 2019 was approximately \$70,043. Considered further by household and family type, the MHHI of married households (\$92,705) was significantly higher than that of the city as a whole. All other household and family types were lower than the city median with female head of household and non-family type household earning between \$30-40,000 less than the city’s MHHI.

FIGURE X: COMPARISON OF MEDIAN HOUSEHOLD INCOME BY HOUSEHOLD AND FAMILY TYPE WITH AND WITHOUT CHILDREN

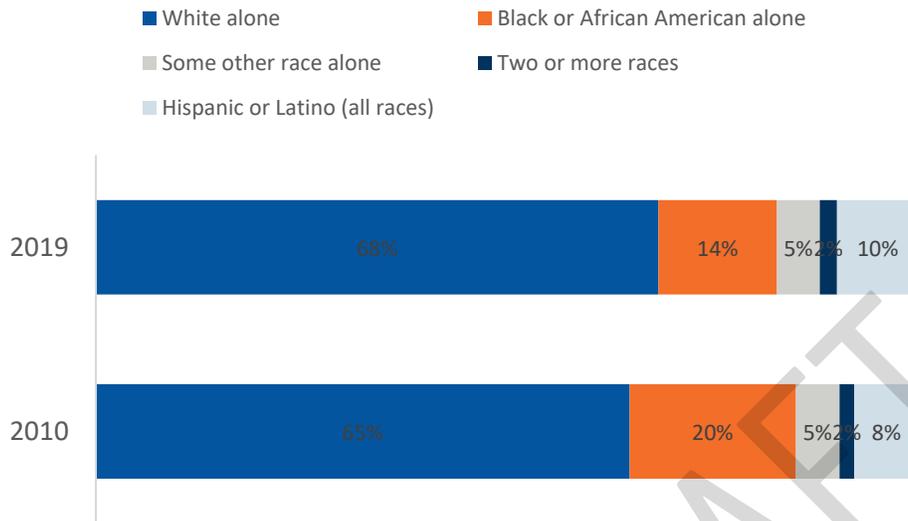


Male householders with children under 18 had a considerably lower MHHI ( $\approx$  \$24,000) compared to those without children. Female householders with children earned approximately \$8,000 less than their male counterparts with children. Male householders without children earned about \$30,000 more than their female counterparts. An interesting find is the higher level of MHHI among married households with children under 18 (+\$7,000) as compared to married households without children, as it differs from the male and female householder groups.

## Race

According to the 2019 5-year ACS, Hanahan had a predominantly Caucasian population with 68% of residents identifying as being “white alone” and the second largest group, at 14%, identified as “Black or African American alone.” The ‘White alone’ and ‘Black or African American alone’ population have had some fluctuations in population since 2010 while all other races remained relatively constant, as seen in Figure X. The Hispanic/Latino ethnic population of all races increased from 8% in 2010 to 10% in 2019. The remaining racial and ethnic groups combined have consistently comprised less than 10% of Hanahan’s population in 2010 and 2019.

FIGURE X; RACIAL AND ETHNIC BACKGROUND



## Age and Sex

The median age of Berkeley County and South Carolina have increased between 2010 and 2019, however, as seen in Figure X, Hanahan’s median age has remained relatively the same. In 2019, the median age in Hanahan was estimated at about 34 years old. Naturally, the dominant age groups are between the ages of 25 and 54, as shown in Figure X. Given the high percentage of households with children under the age of 18 and low percentage of households with residents over the age of 60, which skews residents’ age toward a generally younger overall population, likely explains the city’s median age being lower than the county and the state.

FIGURE X: CHANGE IN MEDIAN AGE BY YEAR

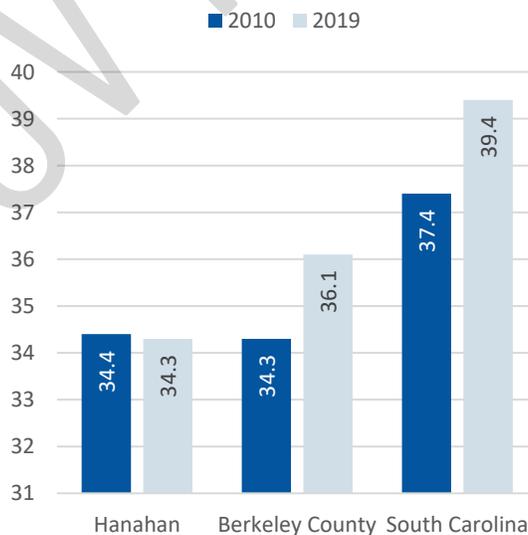
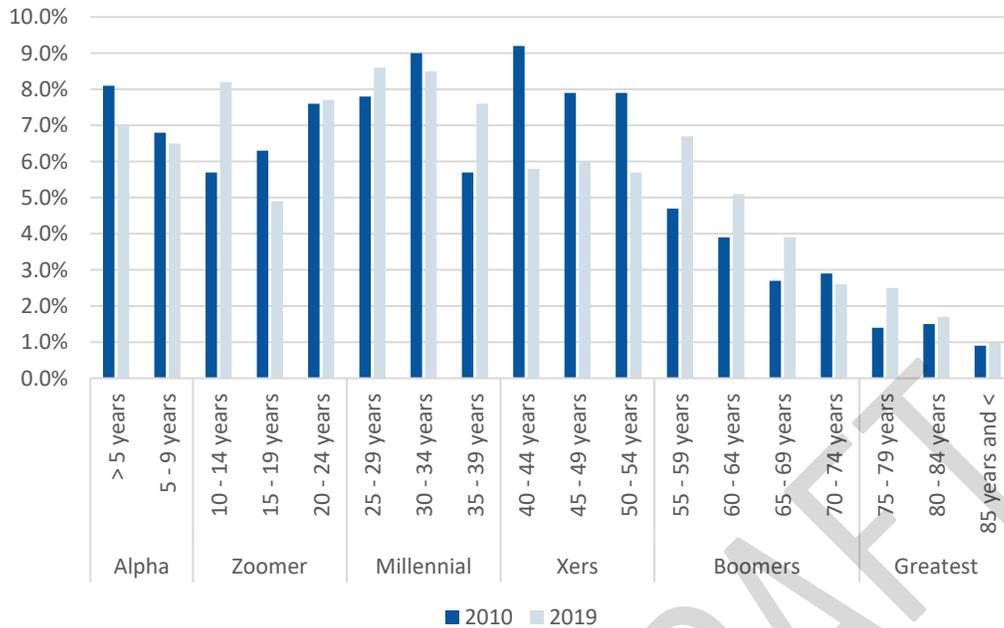


FIGURE X: AGE DISTRIBUTION BY GENERATION

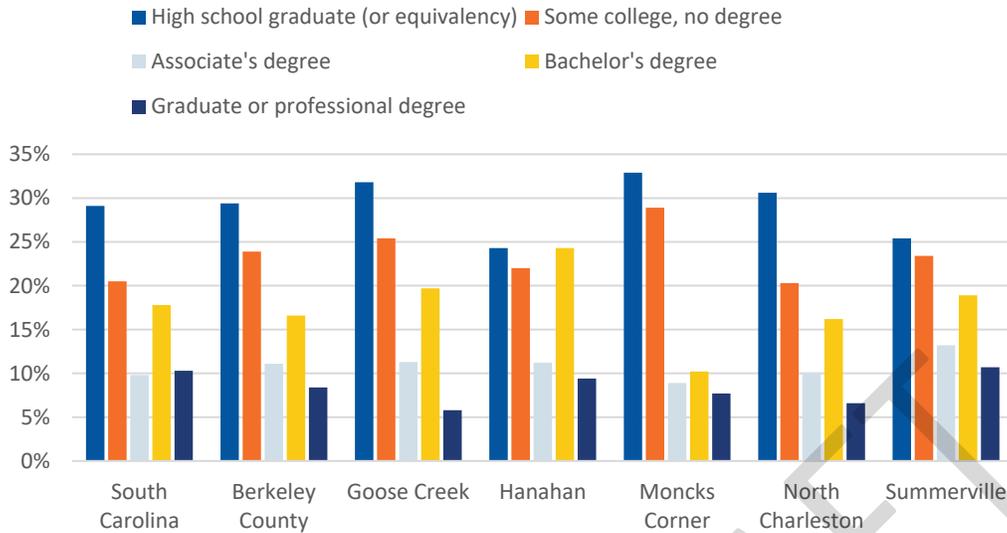


The ratio of males to females in Hanahan, in 2019, was about 51:49, or 104.7 males per 100 females. Most communities in the United States have a similar ratio with the norm typically ranging from 48-52% of either sex. Like Hanahan, all other geographies studied fell within this range, however, most had a female majority population rather than male majority.

## Education Levels and Trends

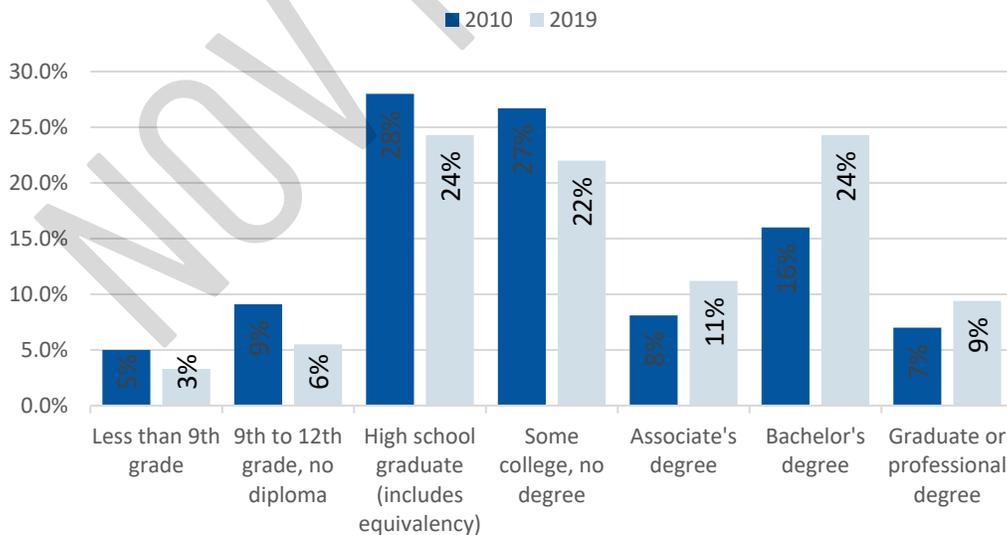
Educational Attainment refers to the highest level of education that residents (25+ years) have obtained. Hanahan residents have the highest combined educational attainment when compared to other similarly sized municipalities in the region with over 33% having earned at least a bachelor's degree. As seen in Figure X, Hanahan also has the lowest percentage (less than 25%) of people stopping their educational endeavors upon earning a high school diploma or equivalent.

FIGURE X: COMPARISON OF EDUCATIONAL ATTAINMENT



When comparing educational attainment levels in Hanahan between 2010 and 2019, it can be observed that the overall educational attainment levels in Hanahan have increased with the greatest change occurring in residents holding a bachelor's degree (+8%). As seen in Figure X, it is also important to note the large drop in high school or equivalent (-4%) and some college (-5%), which likely contributes to the increase in bachelor's degrees earned. The percentage of residents completing less than 9th grade and 9th to 12th grade without a diploma has decreased in the past decade and are some of the lowest percentages in the County. Goose Creek and Summerville have a lower combined percentage; however, their combined percentages have not been in continuous decline and have fluctuated in the past decade.

FIGURE X: EDUCATIONAL ATTAINMENT OF PEOPLE 25 AND OVER



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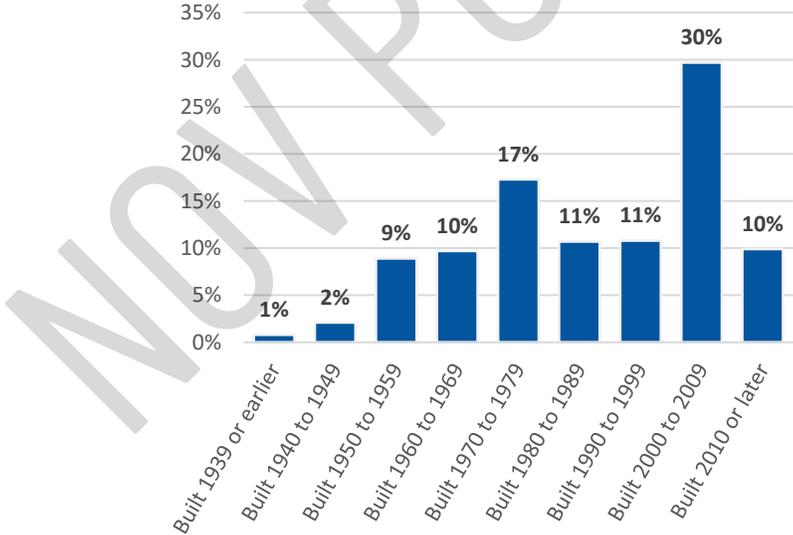
# Housing Element

## Housing Stock Characteristics

Monitoring the changes and patterns in the regional housing market, including the number and type of new structures built and the characteristics of those units, provides a glimpse into a community's economic health, values, and influence. As of 2019, Hanahan had an estimated total of 9,410 housing units. This is an increase of over 2,000 housing units since 2010 (an average of 200 new units per year) or approximately a 30% increase in this 10-year period. This growth trend is projected to continue and signifies the recovery that Hanahan and the County experienced after the crash of the housing market bubble and Great Recession that began in 2008.

Hanahan's housing market has likely benefitted from the city's proximity to major areas of employment like North Charleston, Charleston and Mount Pleasant, making Hanahan a prime location for housing due to its ease of access to regional employers, interstate road networks, as well as other amenities. As seen in Figure X, it is evident that Hanahan experienced growth in its housing market during some of the largest housing booms that occurred across the nation in the post WWII era in the 1950s, again in the 1970s following changes in federal policies, and in the housing bubble of the early 2000s. Nearly 30% of Hanahan's housing stock was built in the early 2000's. Less than 1% of houses were constructed before 1940, which considering the population at the time (estimated between 2-3,000 people in the Hanahan area), would suggest that many of the older homes were torn down and eventually replaced. The year of construction of housing units in Hanahan mirrors the regional trend of the year built (or age) of housing units in Berkeley County and South Carolina over this same period of time.

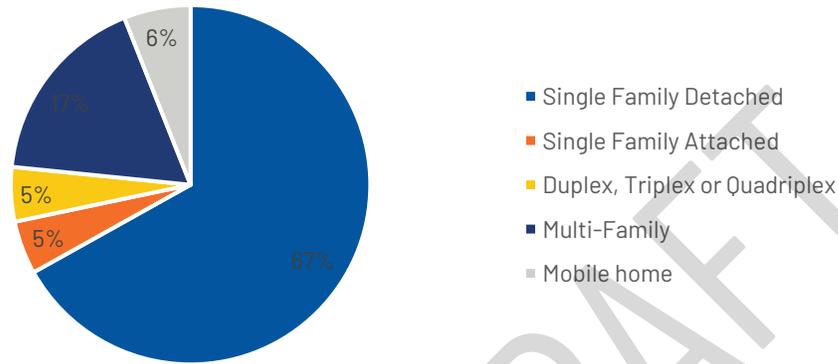
FIGURE X: AGE OF HOUSING STOCK IN YEARS, 2019



Single Family detached structures have been the most commonly constructed unit type in every decade since the 1930s. Nearly half (~45%) of the total multi-family structures in the city were constructed during the 20-year time span between 1960 and 1979, likely as a result of the Housing and Urban Development Act of 1965, which provided federal funding for subsidized public housing. The remainder of multi-family structures were mostly built between 1980-99 and after 2010. As

shown in Figure X, single family units (attached and detached) comprised nearly three-quarters (~72%) of all housing units in Hanahan in 2019. Approximately 6% of housing units were mobile homes, another 5% of units were duplexes, triplexes or quadruplexes, and the remaining 17% were multi-family units.

FIGURE X: HANAHAN HOUSING TYPES, 2019

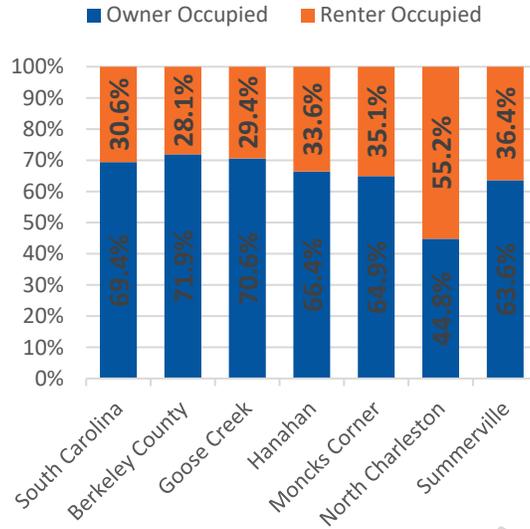


### Owner/Renter Tenure

Housing tenure describes the financial arrangement under which a person(s) or family occupy a housing unit. Units are typically either owner-occupied or renter-occupied, wherein a tenant pays a landlord rent for use of the unit. Housing affordability of an area has a large impact on the ratio of owner-occupied versus renter-occupied housing. Additional factors that influence the tenancy ratio include: the demographic make-up of a community, as young adults, young families and seniors often either prefer to rent or cannot afford or maintain a home; the proximity to colleges, universities, or other seasonally affected markets, as these communities often rely and thrive on the rental market; and the density of an area, as more urban locations tend to have a higher percentage of renters.

As seen in Figure X, more urbanized places like North Charleston have a comparable ratio of owner- versus renter-occupied housing as compared to more rural places like Moncks Corner. Suburban areas, such as Hanahan and Goose Creek, tend to fall somewhere in the middle but often lean toward higher levels of owner-occupancy due to the relative affordability of the suburbs combined with the zoning restrictions implemented in these areas, which effectively 'zone-out' the typical multi-family type units for renters.

FIGURE X: TENURE OF HOUSING UNITS, 2019

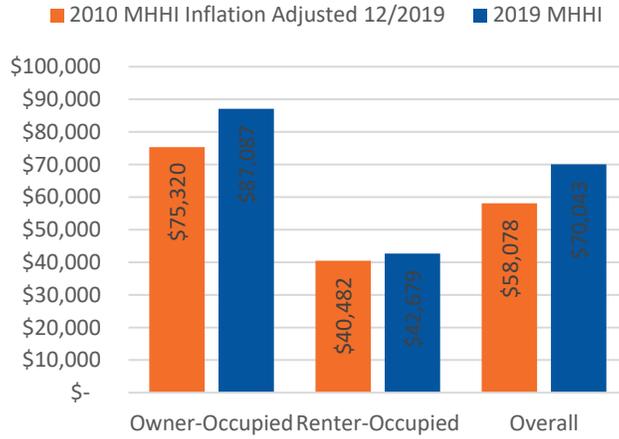


## Income by Housing Tenure

In 2019, Hanahan had an estimated median household income (MHHI) of \$70,043, which is an increase of about 21% from 2010 (\$58,078). There is frequently a clear correlation between housing tenure and median household income levels, where owner-occupied units tend to have higher household incomes and renter-occupied units tend to have lower household incomes. As seen in Figure X, in 2019, owner-occupied MHHI (\$87,087) was over double that of renter-occupied MHHI (\$42,679). Between 2010 and 2019, owner-occupied MHHI increased by about 16% while renter-occupied MHHI increased by only about 5%. The percent changes in median household income by tenure is an important percentage when discussing the change in affordability of owner-occupied and renter-occupied housing over a period of time, which will be discussed later in the Element.

The difference in percent change between owner- and renter-occupied income can be explained by the significant difference in MHHI by household type. As discussed in the Population Element, the MHHI for married households in 2019 was \$92,705, while single householders (male or female) and non-family households did not surpass the city's MHHI of \$70,043. Over 80% of married households are homeowners while the other household types are roughly split evenly between owner- and renter-occupied, likely contributing to the dramatic difference in median household income by tenure.

FIGURE X: MEDIAN HOUSEHOLD INCOME BY TENURE

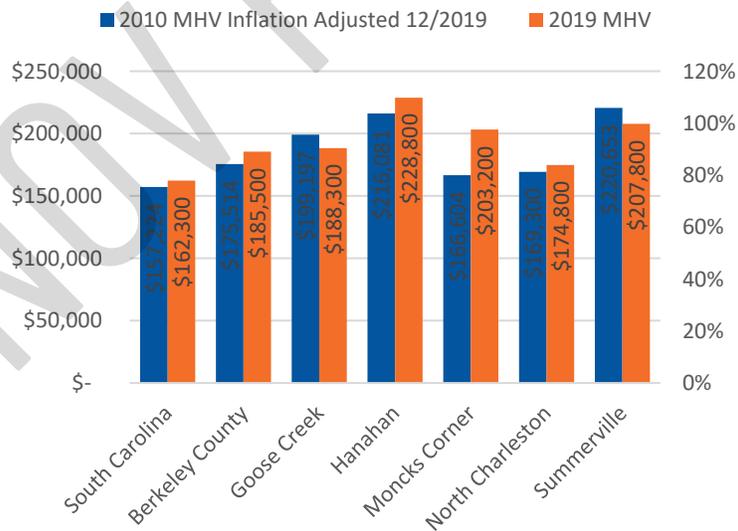


## Median Home Value, Rent, and Sales

Like most other analyses conducted in this Element, the median home value (MHV) and median monthly rent (MMR) are also based on tenure. According to the US Census, the MHV calculates owner-occupied units only (excluding mobile homes, houses with businesses or offices, houses on 10 or more acres and housing unity in multi-unit structures),<sup>1</sup> while the MMR calculates renter-occupied units only.<sup>2</sup> The median home value (MHV) and median monthly rent (MMR) in Hanahan has steadily increased between 2010 and 2019.

In 2019, the MHV in Hanahan was estimated at \$228,800. As seen in Figure X, this was an increase of about 6% since 2010 (\$216,081). While not the largest percent increase when compared to other similarly sized municipalities in the region, Hanahan now has the highest median home value.

FIGURE X: COMPARISON OF REGIONAL MEDIAN HOME VALUES (MHV)

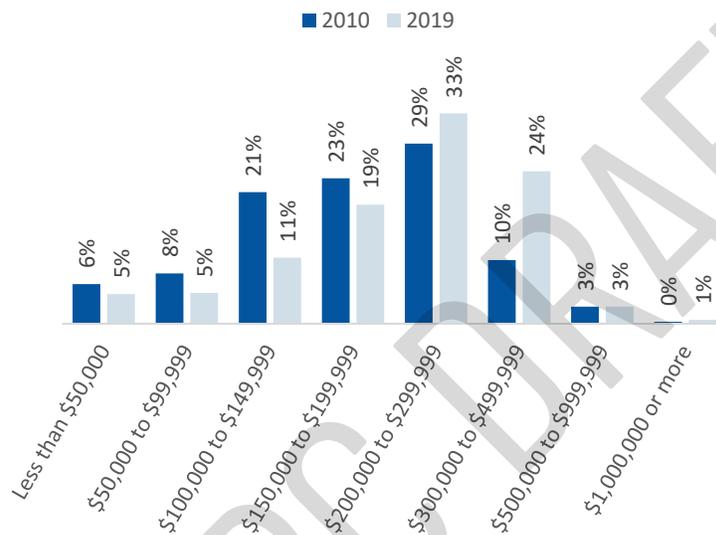


<sup>1</sup> Source: [US Census Median Value of Owner-Occupied Housing Units](#)

<sup>2</sup> Source: [US Census Median Gross Rent](#)

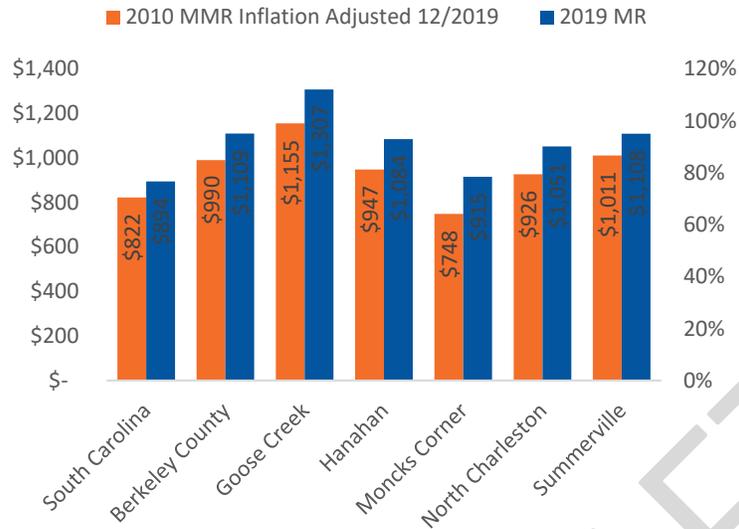
The change in median home values can be explained by analyzing fluctuations in the individual home value brackets. Homes in Hanahan ranged significantly in value in 2019, some exceeding \$1,000,000 while others were under \$50,000. As seen in Figure X, in 2010, about 73% of homes were valued between \$100,000 to \$300,000 and by 2019, this shifted downward to about 63% of homes in this valuation range. That 10% change shifted towards more valuable homes, as those in the \$300,000 to \$500,000 range rose 14 points from 2010 to 2019. There is also a noticeable decline in the total percentage of homes in the lower value brackets (less than \$200,000) between 2010 and 2019. » Need conclusion sentence(s) «

FIGURE X: CHANGE IN HANAHAN'S MEDIAN HOME VALUES



Unlike median home value, median monthly rent in Hanahan has been comparable to that of Berkeley County. As seen in Figure X, the percent change in median monthly rent in Hanahan (+14%) between 2010 and 2019 was similar to the county and most other studied geographies, the one exception being Moncks Corner, which had a 22% increase. As the region continues to grow and attract people from across the nation, thereby driving demand, it is expected that the median rent will generally increase. The proximity to employment, services, amenities, and transportation are among the top factors that influence rental rates in a region.

FIGURE X: COMPARISON OF REGIONAL MEDIAN MONTHLY RENT



## Recent Housing Market Trends

The Charleston Trident Association of Realtors (CTAR) publishes local monthly market updates that report on the local housing trends such as the recent number of listings and the median sale price. The most recent annual report was released with 2017 - 2021 data. By comparing the MHV, reported by ACS, and the median sales price for single family detached homes, reported by CTAR, it reveals whether or not homes in the Hanahan area are being sold at or near the reported MHV. With that being said, it is important to note that 90% of owner-occupied housing units in Hanahan are single family detached units, so while the MHV is not fully representative of only single family detached units, it does represent the vast majority of units when calculated.

In 2019, the median home value in Hanahan was estimated at \$228,800, while the median home sale was estimated at \$265,000, which is about a 15% difference. Between 2010 and 2019, the average difference in median home value and median sales price in Hanahan was XX%, which is a (smaller/larger) margin than Berkeley County with an average difference of XX% during the same period. As seen in Figure X, between 2010 and 2019, the greatest difference between MHV and median sales price was around XX% in 201X.

There are several factors that can impact the housing market including inflation, interest rates, supply and demand, access to transportation, access to other services and amenities, and neighborhood disinvestment.

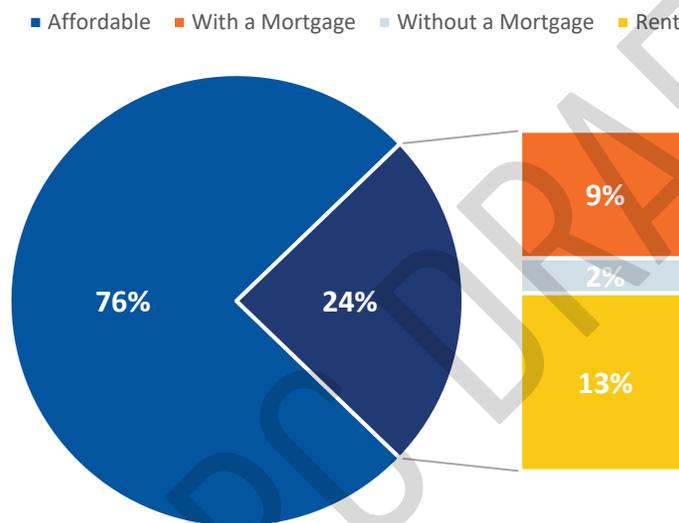
## Affordability

When determining the affordability of a house, a neighborhood or a community, the two main factors to consider are income and cost. People of any income level can live in affordable housing just as people of any income level can be cost-burdened or live in unaffordable housing situations. According to the Department of Housing and Urban Development (HUD), "affordable housing" refers to households where the total cost of living per month is less than 30% of the combined monthly household income. Common cost of living expenses could be but are not limited to a mortgage, rent, utilities, HOA fees, and maintenance. The term "affordable housing" is often

misinterpreted to be synonymous with “public housing,” which is federally subsidized housing for low-income individuals and families managed by local housing authorities.

Households are considered “cost-burdened” or unaffordable when the monthly housing costs exceed the 30% income threshold. These householders can experience serious challenges due to the financial burden that they face on a monthly basis, potentially leading to sacrifices on other necessities such as food, transportation, and medical care. As seen in Figure X, in 2019, approximately 24% of all households in Hanahan were cost-burdened, spending 30% or more of the combined monthly household income on the cost of living. Although the number of cost-burdened households typically differ based on housing tenure, it is never a determining factor.

FIGURE X: TOTAL AFFORDABLE AND COST-BURDENED HOUSEHOLDS IN 2019



Just as income can vary from household to household, so does the level of affordability. It is for that reason that having a range of housing types and tenures enhances the affordability of a community.

### Owner-Occupied Costs

As stated previously, the change in median home value between 2010 and 2019 was 6% whereas the owner-occupied median household income increased by 16%. Due to the income increasing faster than the costs, it can be assumed that the percent of cost burdened homeowners will decrease overtime.

Generally, there are two types of homeowners: homeowners with a mortgage and homeowners without a mortgage. As seen in Figure X, as expected, the number of homeowners with a mortgage spending over 25% decreased between 2010 and 2019 by a combined total of 15 points. Although, as seen in Figure X, the number of homeowners without a mortgage does not reflect the same trends, a significant majority of homeowners without a mortgage spend less than 20% of their household income on the cost of living.

As seen previously in Figure X, homeowners with a mortgage consist of about 9% of the total cost-burdened households, while homeowners without a mortgage consist of only about 2%. Due to

homeowners with a mortgage being the more typical homeownership type as opposed to homeowners without a mortgage, those percentages are very important to keep updating and observing for significant changes and trends.

FIGURE X: SELECTED MONTHLY OWNERS COST AS A PERCENTAGE OF INCOME, WITHOUT A MORTGAGE

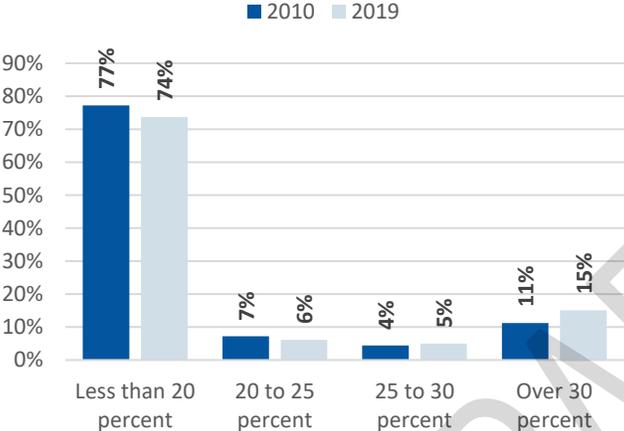
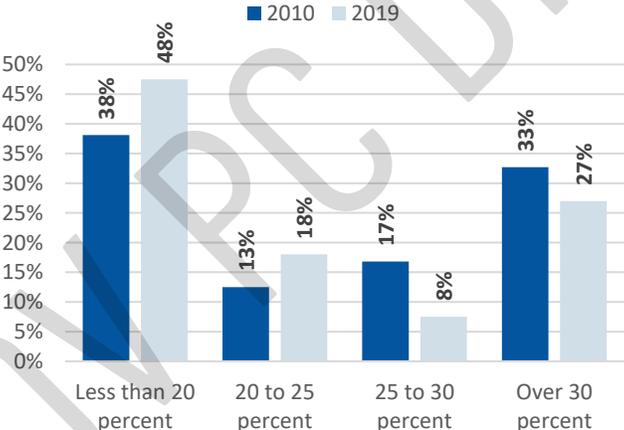


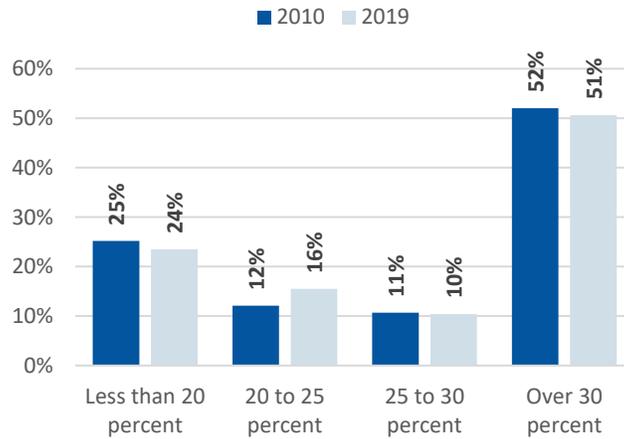
FIGURE X: SELECTED MONTHLY OWNERS COST AS A PERCENTAGE OF INCOME, WITH A MORTGAGE



**Renter-Occupied Costs**

The percent change in median rent (14%) was higher than the percent change in renter-occupied median household income (5%). This is not an encouraging trend as it indicates that the monthly cost of renting is growing faster than the income of renters. Despite this trend, as seen in Figure X, there were little fluctuations in the affordability of rental units between 2010 and 2019, however, over half of renters remain cost burdened. It is common to have a high number of cost burdened renters in urban areas, however, in order to maintain a sustainable and financially stable community, it is important to reduce the gap in the percent change of renter income and costs by providing a range of housing options and mitigating some cost-of-living expenses.

FIGURE X: GROSS RENT AS A PERCENTAGE OF INCOME



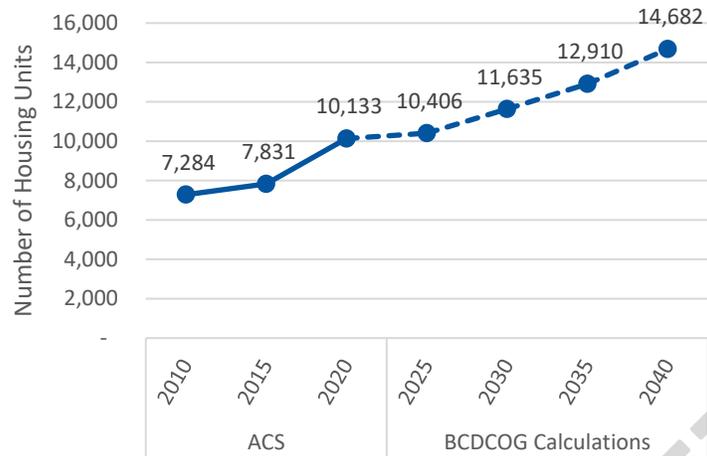
## Projections for Future Housing Needs

In order to meet the future housing needs, land, infrastructure and resources must be allocated towards the development of additional housing to accommodate Hanahan’s growing population. The Population Element outlined Hanahan’s projected population through 2040 based on the historical percentage of Hanahan’s population in comparison to the County (~10%). Projections for future housing needs can be estimated using these projections and dividing that by Hanahan’s 10-year average household size (~2.66).

### ***Projected Additional Housing Units = Population Projections ÷ 10-Year Average Household Size***

As seen in Figure X, in 2020, Hanahan had approximately 10,100 housing units. Based on these calculations, by the year 2040, Hanahan will need approximately an additional 4,500 housing units, or an increase of about 45%, to accommodate the projected population growth that is to occur. It is important to note that the population projection calculation does not take into account land availability as nearly all developable land in Hanahan is occupied, however, not all land is built out to the fullest extent that zoning will allow. Hanahan is surrounded by other municipalities and is essentially landlocked. Most of the buildable land inside city limits has been developed. The city should plan for future development opportunities inside its boundaries through the redevelopment of underutilized properties and infill development in existing neighborhoods. A Build-Out Analysis uses population, housing and employment trends, zoning, land uses, total land area and other factors to calculate a complete build-out scenario for a community. This analysis helps local governments identify areas that may be underutilized or can reveal any discrepancies in the municipal code, specifically the Zoning Ordinance.

FIGURE X: HISTORIC AND FUTURE HOUSING NEEDS



To further enhance the city’s ability to accommodate future growth, housing, economic and land use policies can be discussed to expand the capability of new or redevelopment to ensure an adequate supply of housing options are available for future residents. Some examples include adjusting housing densities, reducing parking space requirements, promoting mixed use developments, and incentivizing denser, walkable neighborhoods. The characteristics, trends and measures used in this Element provide insight on the state of the housing situation in Hanahan and can be used to support any future policy decisions.

## Economic Development Element

The economic health of a community can be impacted by several different factors. Population, transportation, and housing all have an impact on the economic vitality of an area. In this Element, characteristics of the Labor Force will be examined to better understand the makeup of the working people in Hanahan. A general overview of the economic sectors will be identified to see the strengths and areas of improvement that can be capitalized on. A strong and diverse economy can reap benefits that impact every household and of all age groups.

### Labor Force Historic Trends and Projections

Labor Force (LF) is one of the most important statistics that can provide insights on economic trends, projections, and sustainability of a city’s economic future. Labor Force is the participating population of an area over the age of 16, whether they are actively employed (employment rate), actively searching for employment (unemployment rate), or within the Armed Forces. In 2019, Hanahan had the second highest participation rate (70.8%) when compared to other similarly sized municipalities in the region, only slightly behind Goose Creek (71.3%). The population that is not participating in the Labor Force could be but is not limited to children, retirees, persons with a disability, students, etc.

$$\text{Labor Force Participation} = \text{Total Employed} + \text{Total Unemployed} + \text{Armed Forces}$$

In 2019, Hanahan has an estimated total of 13,367 people that are participating in the Labor Force, of these, 12,544 people are employed, 488 are unemployed and 335 are within the Armed Forces. Compared to 2010, the total Labor Force increased by approximately 42%. As seen in Table X, Hanahan received some major changes in not only the total Labor Force but a sizable decrease in

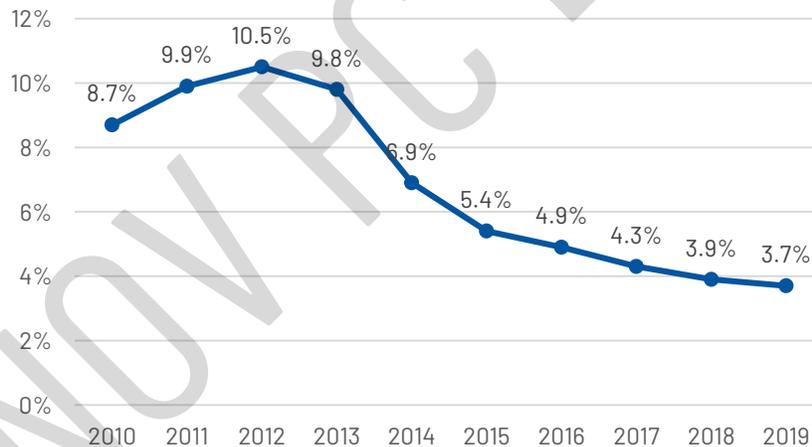
unemployment and a massive increase in people within the Armed Forces. Due to the proximity to several military facilities, this increase is not unfounded.

TABLE X: TOTAL POPULATION IN AND OUT OF THE LABOR FORCE AND ARMED FORCES

	2010	2019	% Change
Total Population ages 16 +	13,047	18,870	45%
Total Labor Force	9,445	13,367	42%
Employed	8,562	12,544	47%
Unemployed	818	488	-40%
Armed Forces	65	335	415%
Participation Rate	72.4%	70.8%	-
Population NOT in the Labor Force	3,602	5,503	53%

Following the aftermath of the 2008 recession, Hanahan’s unemployment rate peaked in 2012 at 10.5%. In comparison, Berkeley County and South Carolina’s unemployment rate peaked the following year in 2013 at 11.9% and 11.4% respectively. Since then, as seen in Figure X, Hanahan’s unemployment rate has been in a steady decline. As of 2019, the unemployment rate was estimated at 3.7%. The steady decline has led Hanahan, in 2019, to have the second lowest unemployment rate, only behind Moncks Corner (2.4%). This is well below the Berkeley County (5.0%) and South Carolina (5.8%) unemployment rates in 2019.

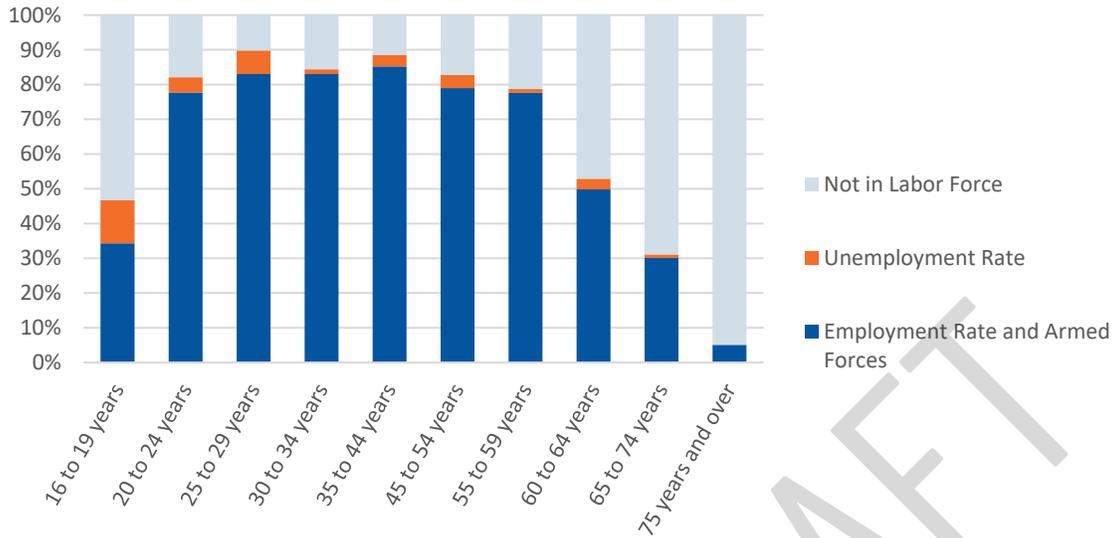
FIGURE X: CHANGE IN UNEMPLOYMENT RATE BETWEEN 2010 AND 2019



## Available Employment Characteristics and Trends

By focusing on the characteristics of the people participating in the Labor Force, additional trends can be observed that further identify any areas of improvement. The age groups with the highest employment rate are naturally between the age range of 20 and 59, which accounts for over two-thirds of Hanahan’s labor force. As seen in Figure X, there is a large spike in employment in the young adult age groups while a steady decline in the years close to and after retirement age. This is a typical trend, however, as young adults are staying in college longer, the percent of 20- to 24-year-olds in the labor force could decline in coming decades.

FIGURE X: LABOR FORCE CHARACTERISTICS BY AGE GROUP

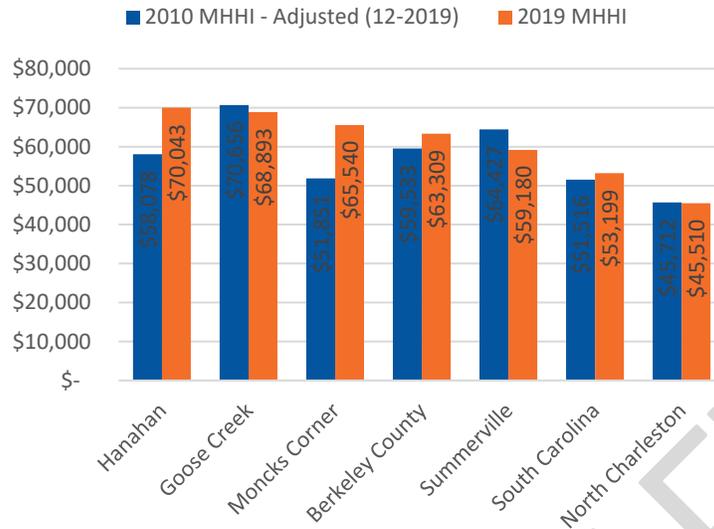


Also seen in Figure X, the unemployment rate varies between the different age groups. It's interesting to note the high unemployment in the young adult age groups (20-29 years old) as one would expect that to be at normal levels considering the expansive economy at the time. After the age of 30, the unemployment rate is more in line with the city unemployment rate. Young adults, potentially right out of college, are having difficulty finding jobs, remaining unemployed longer, and/or lack the education or skill set to fulfill local job listings.

## Income

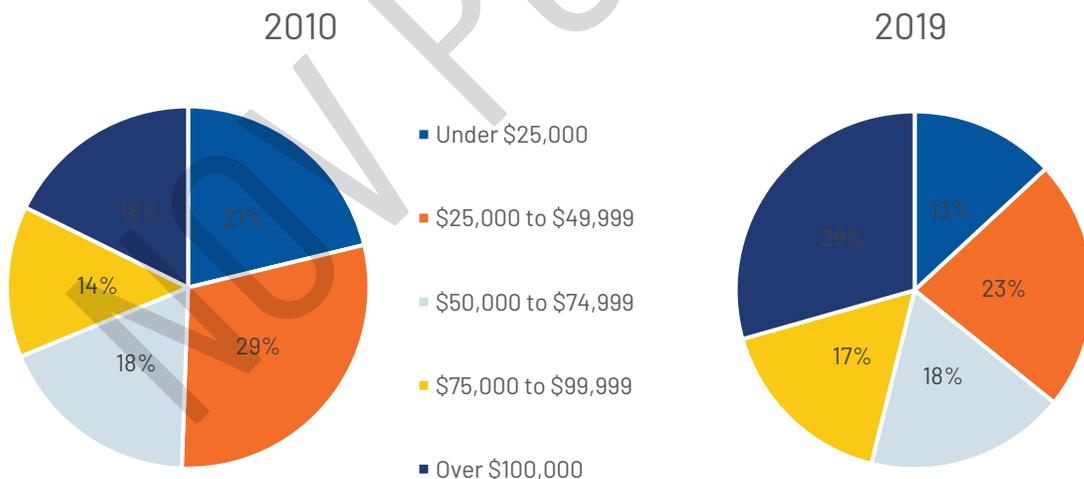
As mentioned in the Population Element, the median household income (MHHI) can help determine the economic vitality and possible spending power that a household has. As seen in Figure X, in 2019, the MHHI of Hanahan was estimated at \$70,043. In 2010, Hanahan had a similar MHHI to Berkeley County (~\$51,000), representing the middle income between the low of North Charleston (\$39,000) and the high of Goose Creek (\$60,000). Hanahan has since surpassed the average as the median household income of Hanahan has increased by 21%, or by about \$12,000\* between 2010 and 2019.

FIGURE X: CHANGE IN MEDIAN HOUSEHOLD INCOME (MHHI)



Household income trends in Hanahan can be further categorized into income brackets, as shown in Figure X, to better understand the more specific changes in income. In 2010, about 50% of households in Hanahan earned below \$50,000 annually and by 2019, this percentage was reduced by 14-points to a little over a third of residents. The number of households earning above \$100,000 increased significantly, approximately 12 points, from 2010 to 2019. Despite these changes, as mentioned in the Housing Element, the increase in cost of living off sets much of the income increases.

FIGURE X: HANAHAN RECENT HOUSEHOLD INCOME TRENDS



In 2010, about 3,200 households earned less than \$50,000 annually. Fast forward to 2019, and still, about 3,200 households are earning less than \$50,000 annually. This suggests that the increase in population between 2010 and 2019 has been predominantly middle and upper-middle class households.

## Poverty

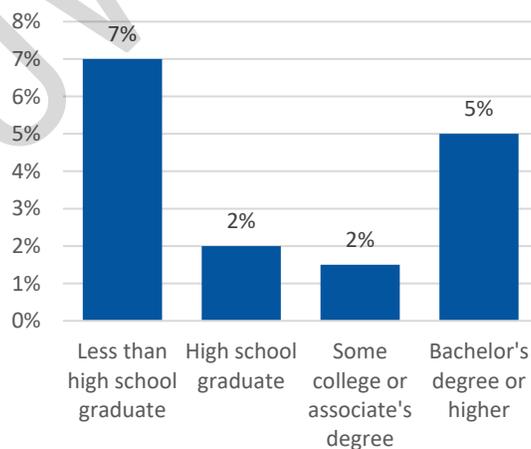
The ACS uses the Federal Poverty Level, which is set annually by the Department of Health and Human Services, when reporting on the number of people and households living in poverty. In 2010, about 9% of all families in Hanahan were living in poverty. Fortunately, this percentage decreased to about 7.6% by 2019. Still, approximately one thousand children under the age of 18 (16.5% of total) live in these disadvantaged situations. While income is a main factor that can place families into poverty, it is not the only determinant. Other influencing socioeconomic factors can include education, marital status, employment status, geographic location, and if they were born into poverty already.

Although the percentage of residents living in poverty decreased between 2010 and 2019, it is still important to continue to support community partners and outreach to families living in poverty. Supporting food banks, free community events, resource centers and safety net programs are just a few actions that can be taken to help reduce poverty and improve the quality of life for disadvantaged residents.

## Educational Attainment

The educational attainment of the residents can be an important economic catalyst to attract higher skilled and paid jobs, as well as provide insight into the potential income of the community. As mentioned in the Population Element, the percentage of residents who have at least earned a bachelor's degree has increased (+8%), likely contributing to the increase in income levels. However, experience, trade skills, and job demand can also impact wages and salaries (income). There are many trades training programs in the vicinity of Hanahan. They are offered through Berkeley County School District, Trident Technical College, other area technical schools, and manufacturers such as Boeing, Volvo, and Mercedes Benz. With that being said, high educational attainment does not correlate with employment either, as seen in Figure X. This reveals an opportunity for Hanahan to adopt and implement policies that will attract businesses that could fulfill the need of the people based on their education.

FIGURE X: UNEMPLOYMENT RATE BY EDUCATIONAL ATTAINMENT

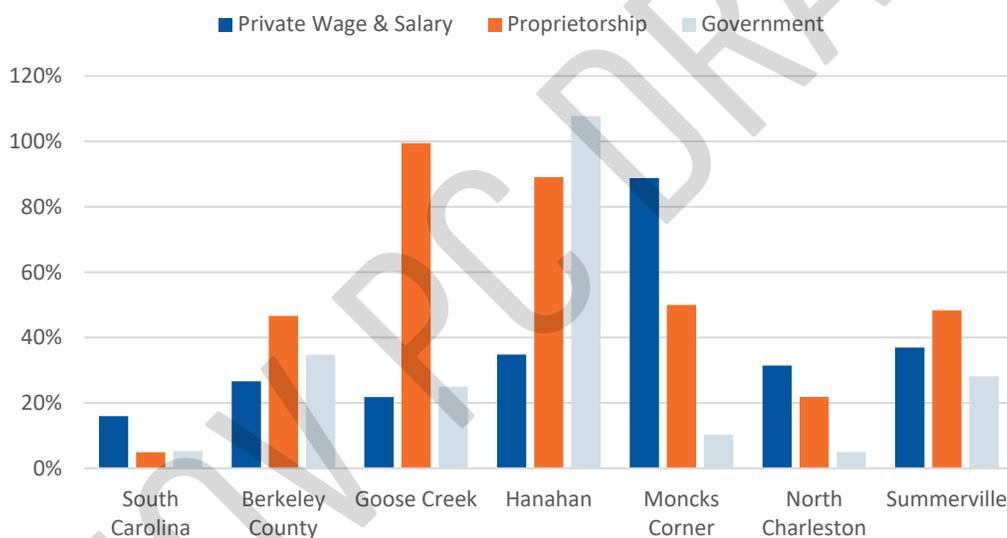


## Class of Worker

The class of worker categorizes workers based on the whether they belong to the private or public sector of the economy. According to the US Census, its estimated that 76.4% of employees are private wage and salary (private sector), 4.6% are private proprietors (self-employed), and 19.0% are government employees or the public sector. The balance of public to private sector in South Carolina is approximately 85:15, therefore, Hanahan has a slightly higher percentage of government employees than the State. This could be explained by the close proximity to several State, County and other municipal government agencies, Charleston International Airport, Port of Charleston, several state universities and/or Joint Base Charleston Air Force Base.

Between 2010 and 2019, there was significant economic growth that occurred in Hanahan. As seen in Figure X, the number of proprietorships in Hanahan nearly doubled in the past decade. This is a significant increase compared to the State and County percent change. The public sector of Hanahan's economy received the largest percent change with a total increase of 107.8%. The increases in these economic sectors will be evident throughout the next couple analyses.

FIGURE X: PERCENT CHANGE IN CLASS OF WORKER



## Occupation and Industry Analysis

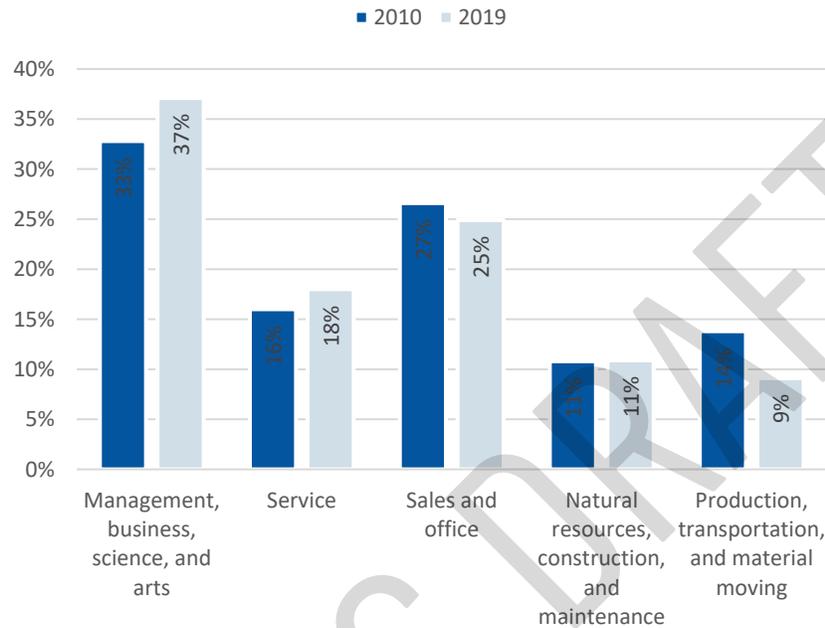
The US Census uses the North American Industry Classification System (NAICS) and the Standard Occupational Classification (SOC) Manual as a way to simplify the industry and occupation classes to make it more digestible for the average reader. According to the Bureau of Labor Statistics (BLS), the occupational classification reflects the type of job or work that the person does, while the industry classification reflects the business activity of their employer or company.

### Occupation Analysis

As previously mentioned,, an occupational analysis identifies the type of work that people do. This can be important when policy decisions are being formulated with the potential for workforce development workshops, attracting specific economic sectors and diversity of housing and amenities being added to an action plan for implementation in the future. The SOC has 11 major

occupation categories that summarizes the general occupations of the in-depth list. Census condenses these categories even further, simplifying the data and providing 5 categories. As seen in Figure X, Management, Business, Science, and Arts increased by 4% between 2010 and 2019, while Production, Transportation and Material Moving decreased by 4%.

FIGURE X: CHANGE IN RESIDENTS' OCCUPATION

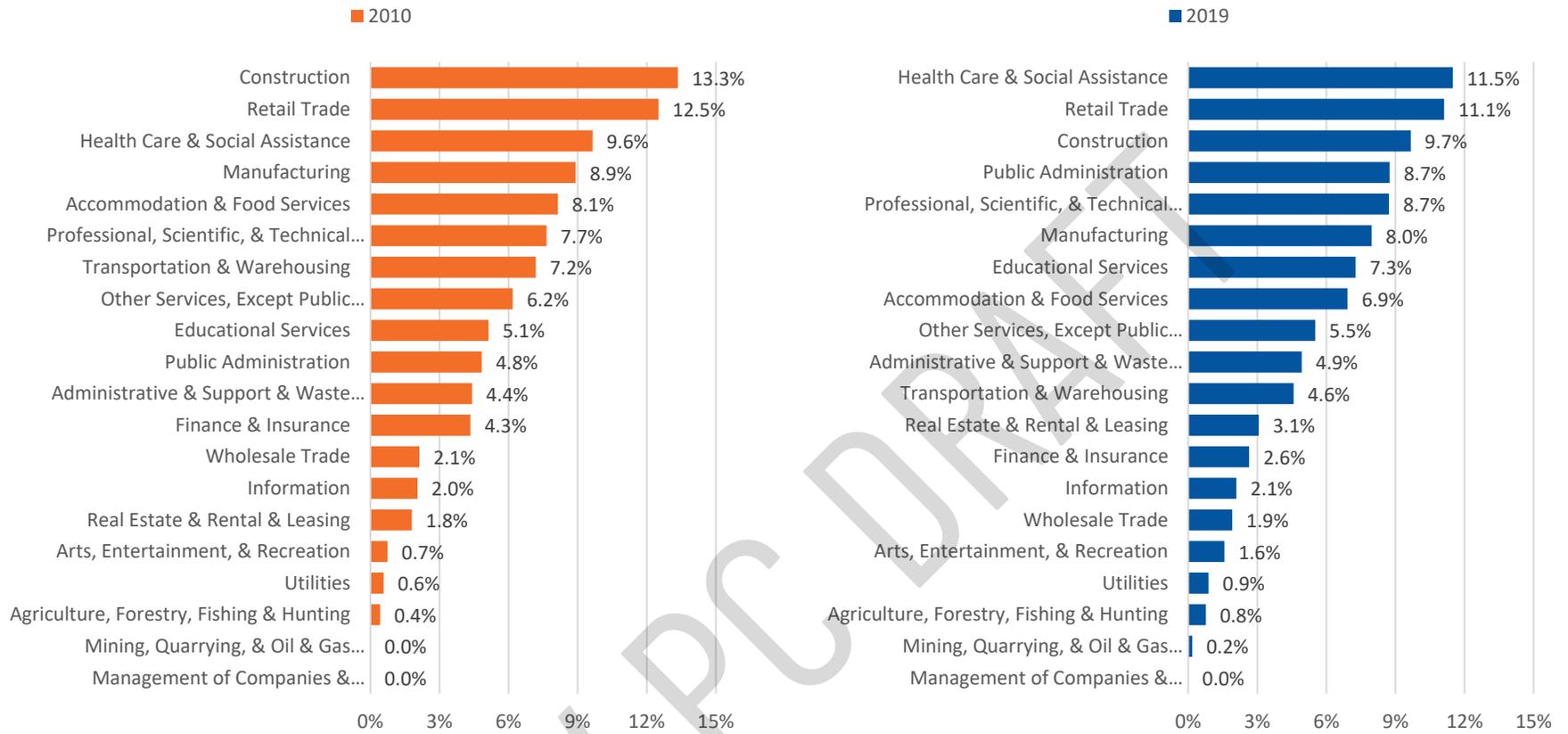


## Industry Analysis

An Industry Analysis categorizes all types of businesses in a community into one of the 20 NAICS classifications, with each class having dozens of subclassifications. This analysis helps communities, economic development commissions, investors, stakeholders and government agencies better understand the employment of the area; the strengths, weaknesses and areas for opportunity or investment.

As seen in Figure X, the top industries in Hanahan in 2019 were: 1. Health Care and Social Assistance; 2. Retail Trade; 3. Construction; 4. Public Administration; and 5. Professional, Scientific, and Technical Services, all of which have over one thousand employees each. This is a strength for Hanahan as no one industry overwhelmingly dominates the city's employment. Besides Construction and Public Administration, employees in these top industries are likely to be spread out through multiple businesses strengthening the resiliency of the local economy if a recession occurs. Having this diverse of an economy, is inherently a financial safety net as a decline in any one industry won't jeopardize the entire local economy unlike a community dominated by a single industry.

FIGURE X: INDUSTRIES OF EMPLOYMENT, 2019



The early 2010's was a volatile time with high unemployment and economic uncertainty due to the recession which impacted some industries more than others. Despite a sluggish recovery, public services type industries such as education, health and public administration have expanded, filling the gap left by the retail, construction and manufacturing industries. Between 2010 and 2019, the largest percentage changes in employment by industry in Hanahan were in Public Administration (+3.9%), Educational Services (+2.1%), Health Care and Social Assistance (+1.8%), Construction (-3.7%), Transportation and Warehousing (-2.6%), and Finance and Insurance (-1.7%). Despite these minor changes, employment by industry didn't shift tremendously which can be attributed to the diversity of economic industries and the ability to recover and continue to provide services and products to people even in the wake of a recession.

### Location Quotient Analysis

A location quotient (LQ) is an analysis that measures a community's industrial specialization relative to a larger geography, and in this case that would be Hanahan's parent geographies of Berkeley County, the BCD Region and South Carolina. Using the percent of employment by industry at the city level and then compared to that of the county, region and state level, industries with high concentrations are identified, potentially forming Hanahan's economic base. For this analysis, a ratio of 1.00 indicates an equivalent percent of employment by industry while a ratio above or below 1.00 indicates that the industry has a higher or lower concentration when compared to the larger parent geography.

As seen in Table X, the location quotient analysis for 2019 reveals that Hanahan has a high concentration of extraction-type industries such as Agriculture, Forestry, Fishing and Hunting, and Mining Quarrying, and Oil and Gas Extraction industries, especially when compared to Berkeley County and the BCD Region. Surprisingly, the top employment industries in Hanahan (Health care, Retail, Construction, etc.) were not overly specialized when compared to Berkeley County or the BCD Region. This is likely due to Charleston being a hub for health care, education, hospitality, and retail-related businesses and services. When compared to South Carolina, Hanahan has a higher concentration of specialized industries related to professional or specialized types of businesses and services such as real estate, information, and professional, scientific and technical services.

Although Hanahan has high concentrations in the aforementioned extraction-type businesses, both are among the lowest employment industry, as previously seen in Figure X. When identifying the industries that potentially form Hanahan's economic base, it is important to consider total employment and concentration of industry. Hanahan has a ratio of about 0.90 to 1.15 for over half of the industries when compared to Berkeley County, of which Hanahan's top three employment industries are at least as equally concentrated as Berkeley County. Therefore, based on total employment by industry and the ratios from the location quotient analysis, Hanahan's economic base would likely be in Construction, Public Administration, and Retail Trade.<sup>4</sup>

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<sup>4</sup> All were in the top five of employment industries and had at least a 1.00 when compared to Berkeley, which increased when compared to BCD Region.

TABLE X: HANAHAN LOCATION QUOTIENT WHEN COMPARED TO PARENT GEOGRAPHIES

<b>Berkeley</b>	<b>BCD</b>	<b>SC</b>	<b>NAICS Industry Categories</b>
1.68	1.55	1.07	Agriculture, Forestry, Fishing & Hunting
5.33	5.89	3.13	Mining, Quarrying, & Oil & Gas Extraction
1.15	1.22	1.50	Construction
0.66	0.83	0.56	Manufacturing
0.90	0.82	0.81	Wholesale Trade
1.00	1.07	0.94	Retail Trade
0.90	1.17	3.88	Transportation & Warehousing
0.61	0.95	0.22	Utilities
1.39	1.18	1.54	Information
1.05	0.89	0.67	Finance & Insurance
1.67	1.39	1.93	Real Estate & Rental & Leasing
1.23	0.96	1.70	Professional, Scientific, & Technical Services
0.00	0.00	0.00	Management of Companies & Enterprises
0.92	1.05	1.08	Administrative & Support & Waste Management Services
0.91	0.82	0.76	Educational Services
1.00	0.92	0.87	Health Care & Social Assistance
1.14	0.90	0.94	Arts, Entertainment, & Recreation
0.91	0.71	0.75	Accommodation & Food Services
1.01	1.13	1.24	Other Services, Except Public Administration
1.26	1.49	1.94	Public Administration
<b>100,320</b>	<b>386,133</b>	<b>2,227,013</b>	<b>Total Employment</b>

Just as a location quotient is ideal for identifying the economic base of an area, it also identifies the industries that are unspecialized, lacking or in need of. Unsurprisingly, Hanahan has a very low LQ ratio in the Manufacturing and Utilities industries, likely due to the limited space available for such businesses and the high concentration of these industries in the BCD Region. Based on a shift share analysis<sup>5</sup> conducted at the County level, it indicates that Berkeley County is highly competitive in the Retail Trade, Transportation and Warehousing, Professional, Scientific and Technical Services and Administrative and Support Services industries. Hanahan has an opportunity to attract these competitive industries, enhancing the diversity of industries and strengthening the local economy.

## Transportation Element

A community's transportation network influences the future direction that a community can embark on, impacting quality of life, economic development, public safety, the environment and so much more. Decisions made in the past have left communities dissected and inaccessible for households without access to an automobile. By focusing on connecting the different neighborhoods of Hanahan through a broader range of transportation modes, it may promote healthier lifestyles for its residents and reduce emissions.

Connectivity, accessibility, optionality, and affordability are four important factors in providing a safe and efficient transportation network for residents of Hanahan.

- Accessibility refers to the ability of people, goods and information to reach a desired destination. This can also include the coverage area from public transportation stops.
- Connectivity is the density of roadways, sidewalks, bikeways, paths, and transit routes that make up a transportation network and the directness of the routes between trip origins and destinations. A well-connected network usually has many short segments linked by intersections and usually has few dead-ends, reducing the overall travel distance while increasing the number of route options.
- Optionality describes the range of transportation options that are available to people in a transportation network, such as walkways, bikeways, pathways, public transit, driving a personal vehicle, and sharing a ride.
- Affordability is the household's ability to purchase basic modes of mobility within a specified budget (generally less than 10% of monthly income). These can be expensive and could include car payments, gas, electricity, transit passes, tolls, or ridesharing costs.

The main intention of an effective and productive transportation network is to safely and efficiently transport people and goods from one place to another via land, water or air. Using the four factors mentioned above as a guide for improvements in the transportation network, the City of Hanahan can continue to provide quality infrastructure and services for residents and visitors. This Element assesses the condition and capacity of the existing infrastructure and identifies the potential areas of improvement related to the connectivity, accessibility, optionality, and affordability of the local transportation network.

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<sup>5</sup> An analysis used to determine the competitiveness of an industry

## Existing Infrastructure

Hanahan currently has a wide variety of existing modes of transportation that are provided for residents. Most of the existing infrastructure is related to the road network; however, substantial efforts have been taken to improve the connectivity and accessibility of pedestrian and bicycle infrastructure. Regional transportation modes such as air, rail and water travel are all within close proximity to Hanahan, allowing for residents to also benefit from these services.

## Micromobility

The most localized form of transportation, pedestrian and bicycle infrastructure is oriented towards nonmotorized traffic such as walkers, runners, and bicyclists. Perhaps the healthiest and most beneficial modes of transportation, walking and bicycling can have personal, societal and environmental benefits such as:

- Personal Benefits: Cardiovascular fitness, overall health, and transportation cost savings;
- Societal Benefits: Enhances sense of community and reduces congestion on streets;
- Environmental Benefits: reduces greenhouse gas emissions, improves air quality, and promotes stormwater management in conjunction with greenways and bioswales.

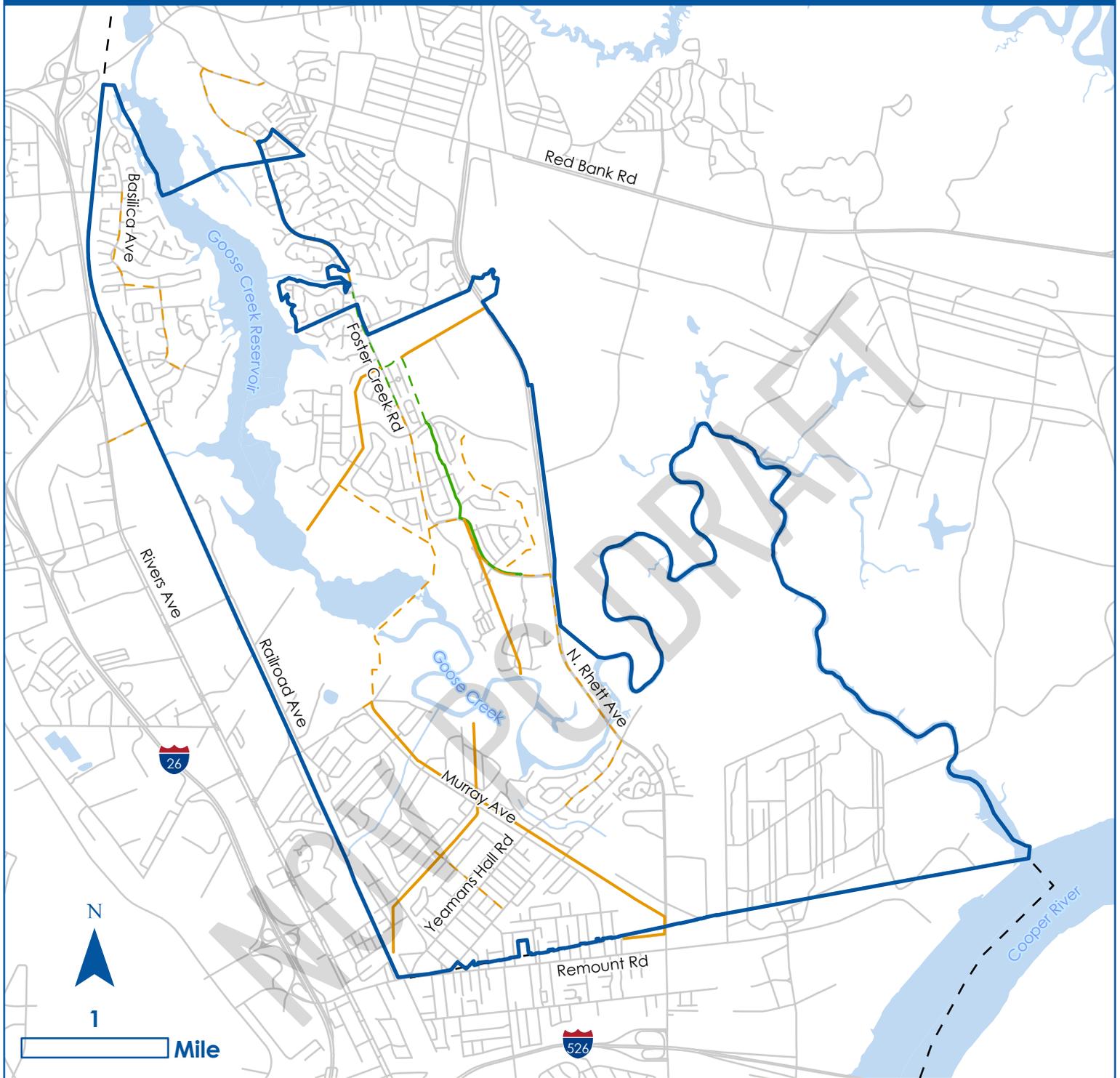
The separation between motorized and non-motorized traffic is important for safety, level of comfort and level of service purposes. Physical barriers such as curbs, landscaped buffers, and vertical separators (such as pylons) can all be effective methods for providing a greater perception of safety for pedestrians and bicyclists along busy and dangerous roadways. However, it is becoming more common for bicyclists to have specifically designated right-of-way alongside the road due to an increase in severe pedestrian- or bicyclist-related collisions. According to the public participation survey, additional pedestrian and bicycle infrastructure is needed to improve safety conditions for non-motorized traffic.

In the 2012 Comprehensive Plan, Hanahan identified the development of a citywide multi-use trail as a priority. Several grants and other funding sources were used to develop this multi-use trail for the residents of Hanahan to utilize. As seen on Map X, future phases include connecting Tanner Ford Boulevard to Main Ridge Boulevard and continuing to improve the connectivity, accessibility and optionality of the transportation network, especially for the youth, older adults and people with disabilities.

MAP X: EXISTING AND PLANNED MICROMOBILITY

# Existing and Planned Micromobility

Hanahan Comprehensive Plan 2020 Update: August 2022 Draft



## Micromobility Infrastructure

- Existing Multi-Use Paths
- Planned Multi-Use Paths
- Locally Proposed
- Proposed Recreational Corridor

## Political Boundaries

- Hanahan Boundary
- County Boundary

## Road Network

Regional roadways, like interstates and arterials, provide a valuable service of moving large quantities of vehicles quickly but can have a mixed impact on surrounding areas because of noise pollution, environmental pollution, decrease in land value and the separation of communities. Although there are no major roadways that traverse directly through Hanahan, I-26, I-526, US-52/US-78 (Rivers Ave) are all within close proximity to the south and west of the city.

An efficient and well-maintained road network is crucial for the day-to-day lives of people, i.e., getting to work, school, groceries, medical appointment, etc. Hanahan will continue to advocate for re-paving the roads and traffic calming measures. Despite being the most common method of travel for residents in Hanahan, not all residents have access to a vehicle or rely on a vehicle to commute. Therefore, a road network alone has limited accessibility and cannot serve everyone. There are initiatives and best management practices for retrofitting a roadway's capability to safely serve all users, including pedestrians, bicyclists, motorists, and transit users, such as Complete Streets.

## Complete Streets

Hanahan is a nearly built-out community, therefore, the retrofitting of streets with smart growth initiatives will expand the connectivity, accessibility and optionality of the transportation network in Hanahan. Complete Streets is a transportation planning paradigm that emphasizes the approach of planning and designing roadways to enable safe access to multiple transportation options for residents. The needs of a community are different in every case which is why there is no singular way and is determinant of the context and identity of the community. A complete street may include: sidewalks, bike lanes, special bus lanes, transit stops, safe crosswalks, medians, stormwater infrastructure and more. The location, usage, and functional classification of a street can impact how a street is retrofitted to accommodate more users and maximize efficiency.

## Functional Classification

The Federal Highway Administration (FHWA) established a functional classification system that groups roads and highways based on similar characteristics and the service they are meant to provide. Some of these characteristics include capacity, volume, land access, and travel time reliability (mobility). The classification categorizes these roads into three broad categories: local roads or streets, collector roads and arterial roads. FHWA further classifies arterial roads based on whether they have a principal or minor importance to the overall flow of traffic.

- **Local Street:** Small residential and commercial streets that connect to other local streets and feed into the collector system. Local streets serve short trips at lower speeds, as well as local travel for pedestrians and bicyclists. They have substantial land access to residential areas, businesses, and other local land uses. These make up the majority of roads in the system.
- **Collector:** This system generally gathers or collects traffic from local streets and channels it to the higher-order arterial network. Collectors provide less mobility than arterials, usually support lower speeds and are used to travel shorter distances. Collectors balance mobility with land access. The collector system provides connections between neighborhoods, from neighborhoods to minor business clusters and also provides supplemental connections between major traffic generators and regional job concentrations within the BCD Region.

- Minor Arterial: This system serves trips of moderate length and offers connectivity to the high arterial networks. Minor arterials link cities, towns and rural centers and other major destinations that are capable of generating travel over relatively long distances. This system forms an integrated network that provides interstate and inter-county service.
- Principal Arterial: This system supplements the higher order arterial/interstate system and links major centers of metropolitan areas together, provides a high degree of mobility and can provide mobility through rural areas. Interstate highways are the highest level of principal arterial roadways serving high-speed and high-volume regional traffic.



SOURCE: FHWA FUNCTIONAL CLASSIFICATION GUIDELINES

I two interstates that are near Hanahan are I-26 and I-526. As seen in Map X, Rivers Ave, Red Bank Rd, N.A.D Rd, and Remount Rd are the only other principal arterial roads close to Hanahan. Rivers Ave serves as the primary corridor for most of Hanahan including Otranto, Eagle Landing and Hanahan Proper. N. Rhett Ave serves as the primary corridor for the Tanner Plantation neighborhood and other residents east of the reservoir.

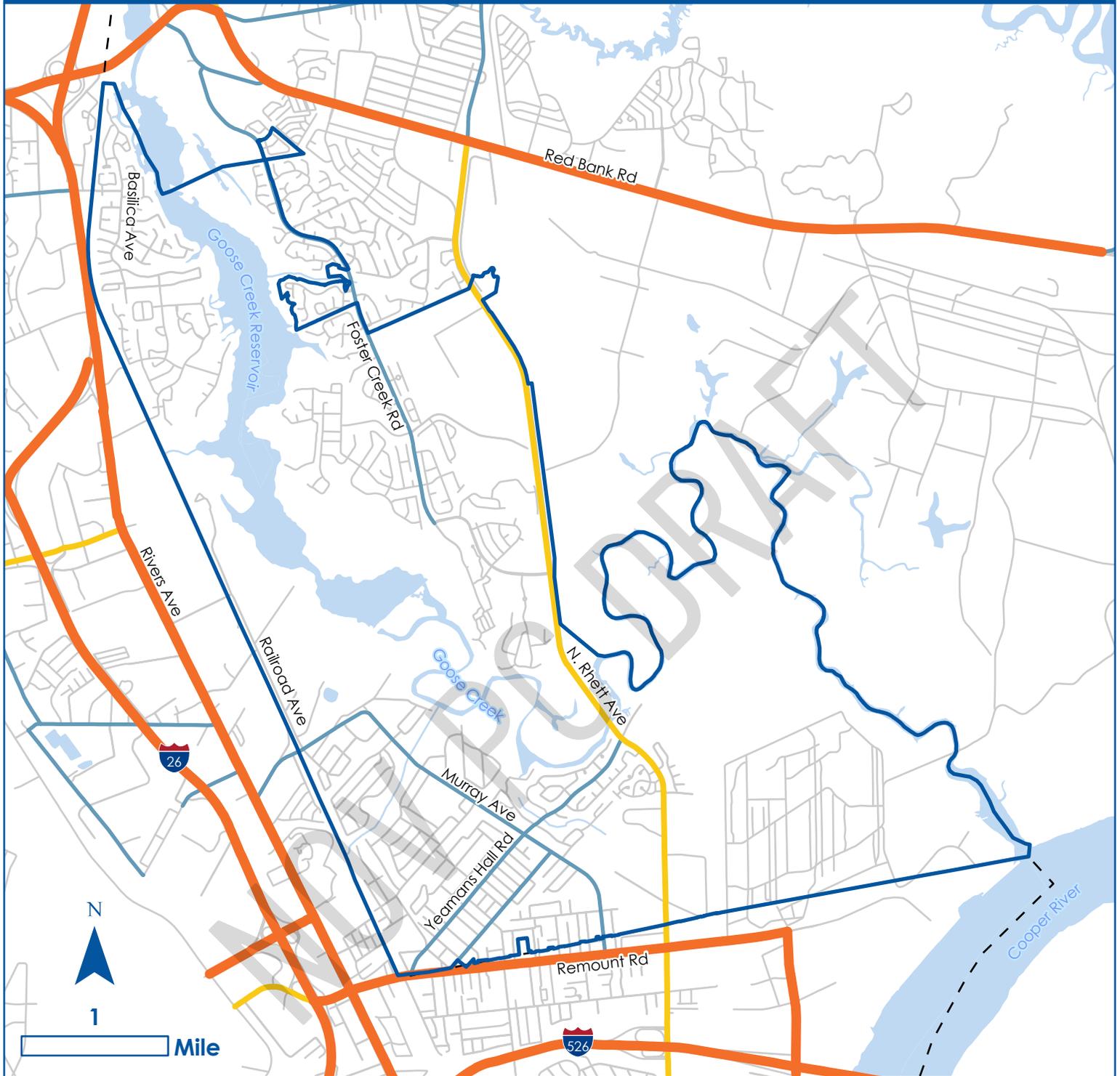
Remount Road, along with I-26 and parts of I-526, has been designated by the FHWA as part of the Primary Highway Freight System, likely causing Hanahan to experience higher volumes of heavier vehicles than other municipalities of comparable size in the region. With the economic importance of these roadways, regular and proper maintenance is crucial for the smooth and efficient transportation of people and goods.

The South Carolina Department of Transportation (SCDOT) and Berkeley County own and operate the majority of roads and streets within Hanahan, with the exception of a few privately owned and maintained streets.

MAP X: FUNCTIONAL CLASSIFICATION MAP

# Functional Classification

Hanahan Comprehensive Plan 2020 Update: August 2022 Draft



## Functional Classifications

- Principal Arterial
- Minor Arterial
- Collector Roads
- Local Roads/Streets

## Political Boundaries

- Hanahan Boundary
- County Boundary

All federal funds in the urban area of the BCD Region are administered through the Charleston Area Transportation Study (CHATS). This organization acts as the Metropolitan Planning Organization (MPO) for the urbanized area of the BCD Region and is staffed by the Berkeley-Charleston-Dorchester Council of Governments (BCDCOG). The CHATS Policy Committee is a policy-making body formed of elected officials from all three counties, to make decisions concerning transportation policies and to prioritize and allocate federal dollars to road projects in the entire Census-defined urbanized areas, as well as those areas expected to be urbanized over the next twenty years.

### Annual Average Daily Traffic Count

SCDOT publishes the annual average daily traffic (AADT) count data at specific traffic stations throughout the state. These reports allow for the tracking of traffic flow patterns and for determining when additional infrastructure might be necessary to alleviate congestion. According to the SCDOT 2020 report, there were a number of traffic stations that increased in AADT counts since 2010. As seen on Map X, the highest counts were along I-26 near Ashley Phosphate Rd with over 100,000 vehicles. Other high-volume locations were at I-526 near the N. Rhett Ave ramps with 78,000 vehicles, Rivers Ave near Midland Park Rd with 44,800 vehicles and N. Rhett Ave near Tanner Ford Blvd with 27,000 vehicles.

MAP X: ANNUAL AVERAGE DAILY TRAFFIC (AADT) COUNT

### Traffic Volume and Level of Service

The level of congestion on a roadway can be indicated by the volume/capacity ratio (V/C), which is also known as Level of Service (LOS) ratings. LOS is a measure that calculates the amount of traffic on a given roadway in relation to the intended amount of traffic when originally designed. A LOS rating of less than 0.8 indicates that the roadway is operating acceptably. As the roadway approaches a rating of 1.0, congestion increases with the potential for the roadway to be congested during peak periods of travel, like the morning and evening rush hours, for example. A rating of greater than 1.0 indicates that a roadway is experiencing more traffic than for which it was designed. These roads are typically very congested, sometimes throughout the entire day but especially at peak travel periods with stop-and-go conditions likely.

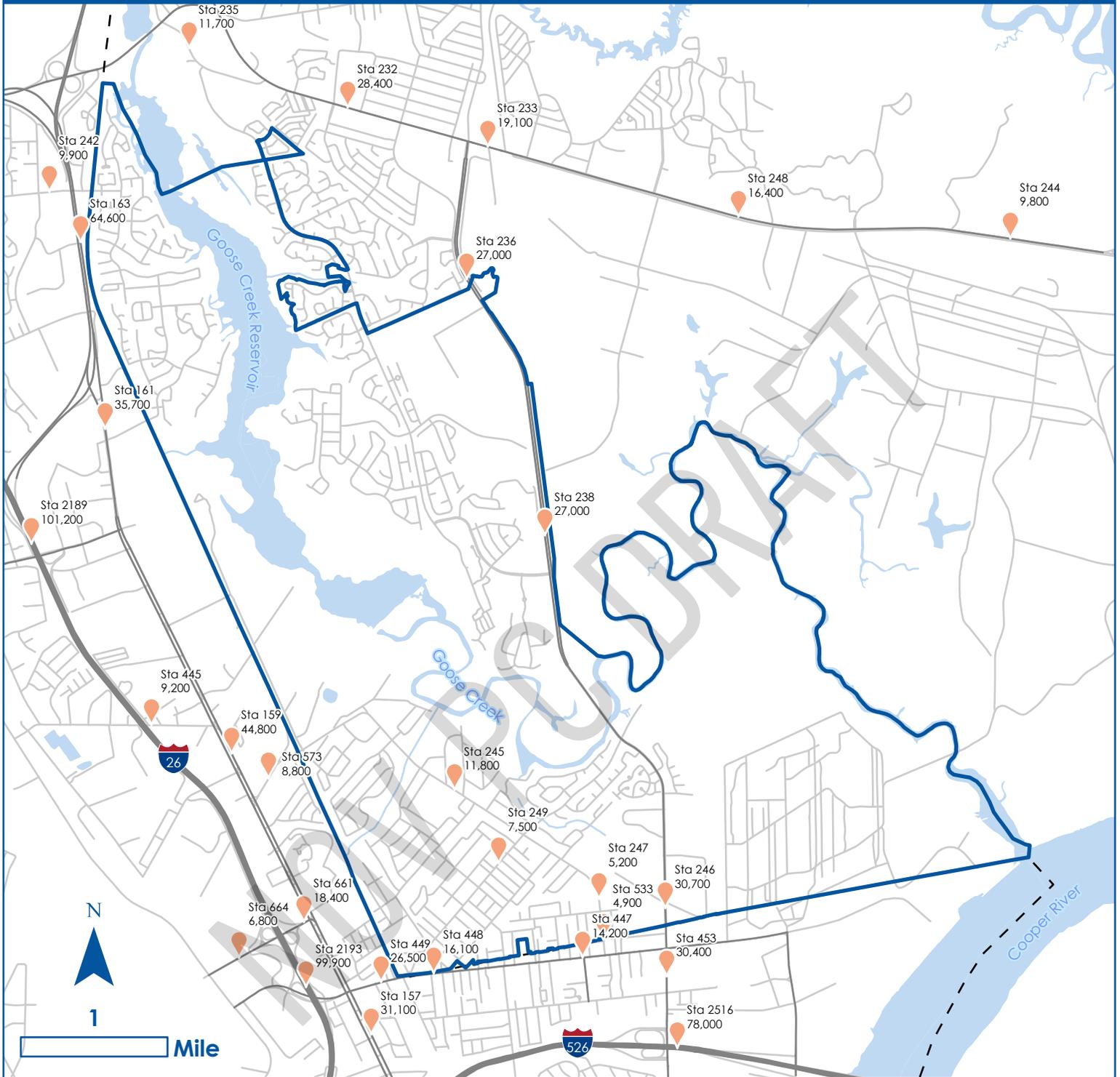
As seen in Map X, there are several roadways in and around Hanahan that experience high levels of congestion, some of which are Yeamans Hall Rd, N. Rhett Ave, Foster Creek Rd and portions of Rivers Ave. In 2010, N. Rhett Ave leading to the I-526 ramp was the only highly congested roadway in Hanahan. As the population of the Goose Creek-Hanahan Planning Area continues to increase, the collector and arterial roadways will only become more congested. According to the Level of Service Map in the Berkeley County 2020 Comprehensive Plan, Murray Ave and Remount Rd will become increasingly more congested while Yeamans Hall Rd, N. Rhett Ave, Foster Creek Rd and Rivers Ave will remain highly congested over the next decade.

MAP X: LEVEL OF SERVICE 2020

MAP X: LEVEL OF SERVICE 2040

# Traffic Counts

Hanahan Comprehensive Plan 2020 Update: August 2022 Draft



## 2020 Traffic Counts

📍 Traffic Count Locations

— Interstates

— Major Roads

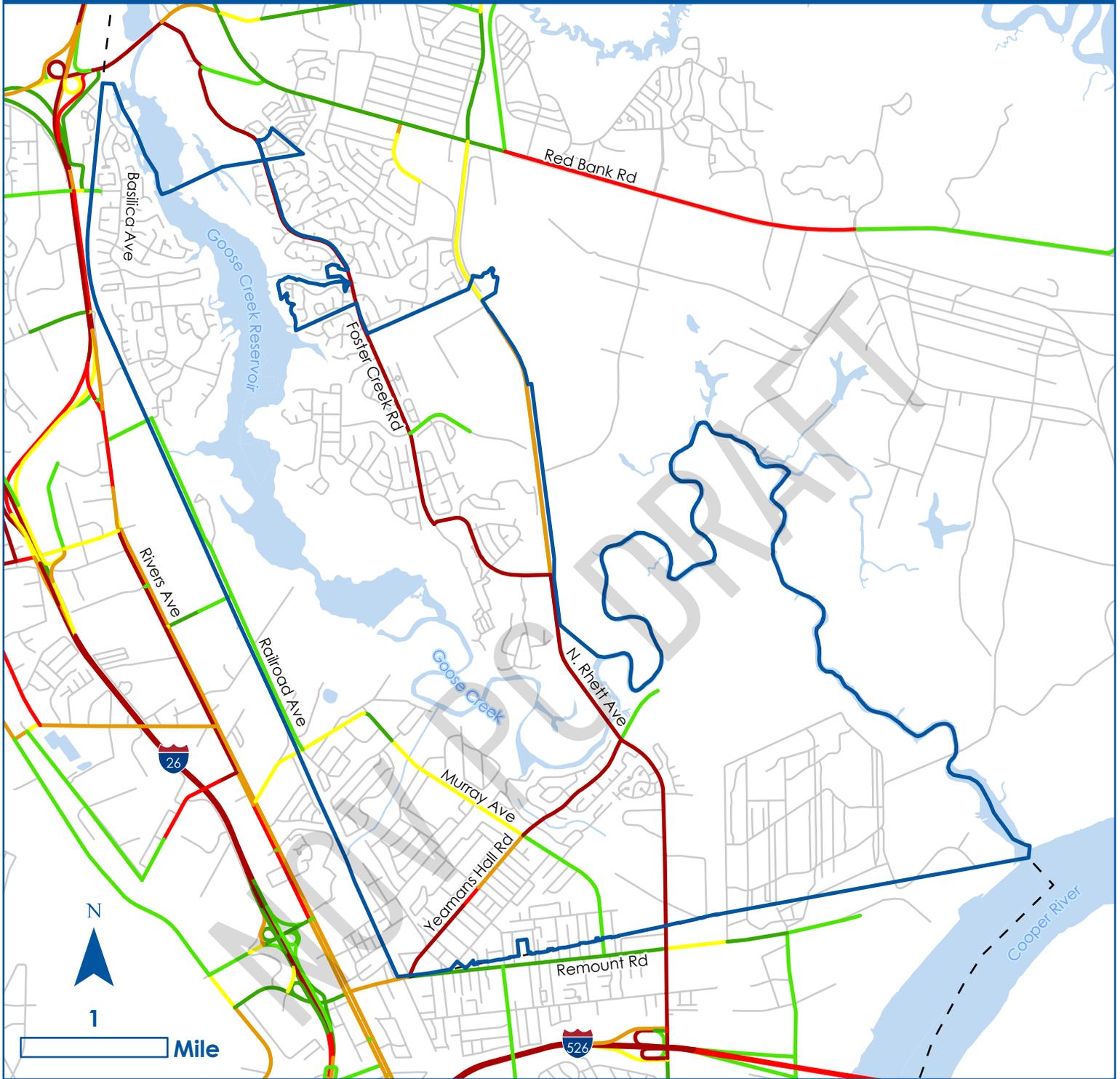
## Political Boundaries

📏 Hanahan Boundary

📏 County Boundary

# Level of Service 2020

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## Level of Service (LOS) Ratings

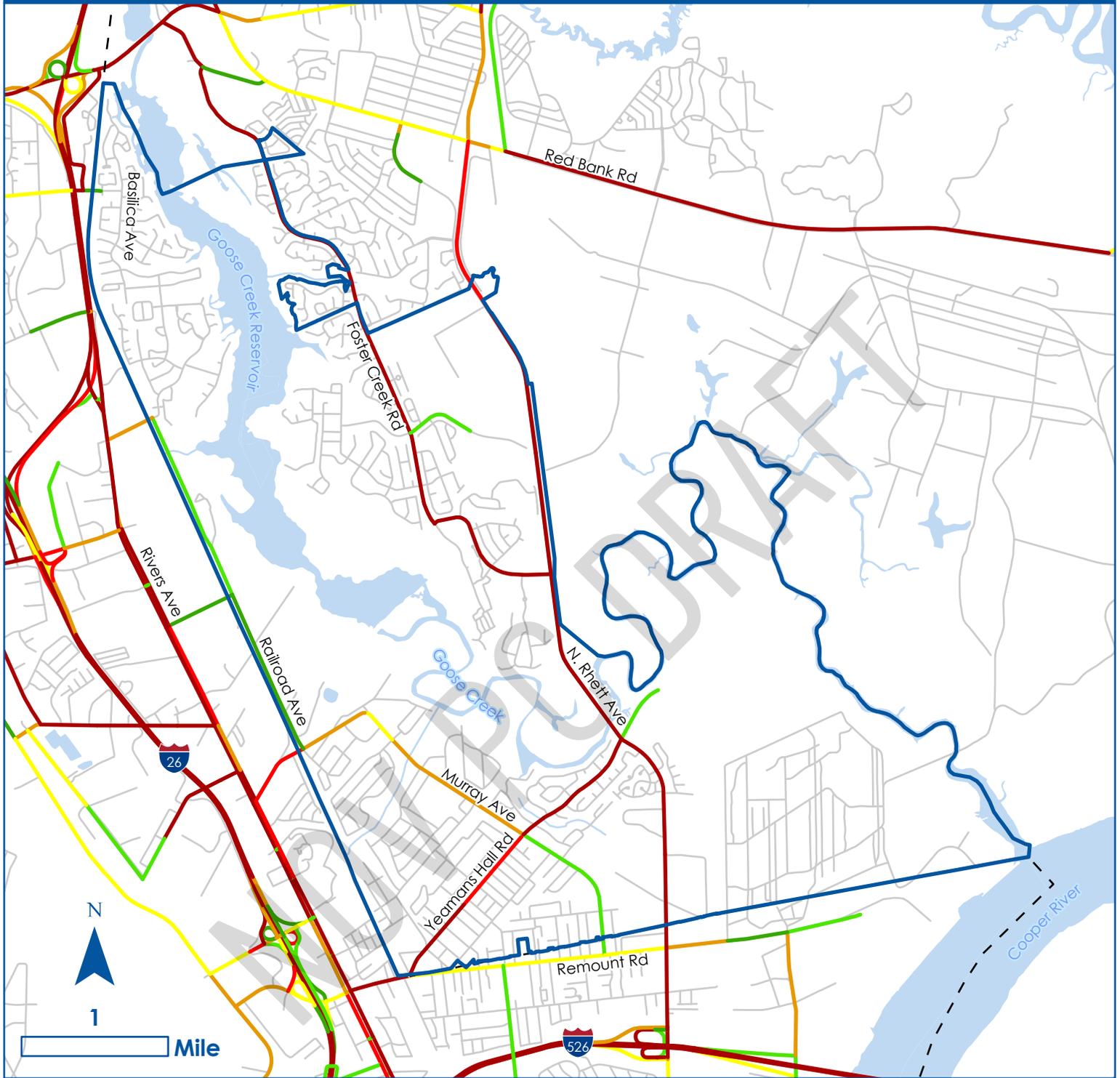
- LOS A
- LOS B
- LOS C
- LOS D
- LOS E
- LOS F

## Political Boundaries

- Hanahan Boundary
- County Boundary

# Level of Service 2040

Hanahan Comprehensive Plan 2020 Update: August 2022 Draft



## Level of Service (LOS) Ratings

- LOS A
- LOS B
- LOS C
- LOS D
- LOS E
- LOS F

## Political Boundaries

- Hanahan Boundary
- County Boundary

Overall, with the increase in roads designated as congested and the small fluctuations in traffic counts at certain stations between 2010 and 2020, Hanahan is experiencing a higher level of vehicular traffic. Having a variety of transportation options, especially public transportation, can help alleviate some of these traffic. Traffic congestion was a reoccurring topic among write-in responses in the public participation survey, indicating that this is a major area of opportunity for future improvements.

### Travel Demand Management / Mobility Management

The BCDCOG is the primary entity for regional transportation planning efforts and facilitates several different programs that encourage the usage of economical and sustainable modes of transportation. One of which, BCDCOG’s mobility management program, uses transportation demand management strategies to encourage a shift from single-occupancy vehicles to carpooling, vanpooling, walking, bicycling, transit, and teleworking, plus adopting flexible work schedules.

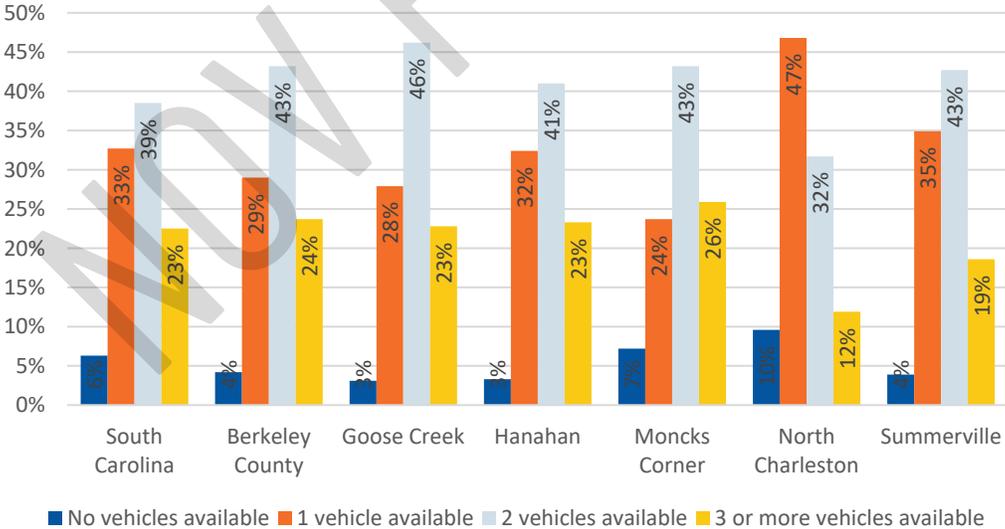
### Commuter Trends

In 2019, the overwhelming majority of people living and working in Hanahan commute to work via driving (89%). While various modes of transportation are important, less than five percent of residents walk, bicycle, ride transit, use rideshare services or other means to commute to work.<sup>6</sup>

### Number of Vehicles per Household

As seen in Figure X, only a small percent of households in Hanahan have no access to at least one vehicle. Household access to a motor vehicle in Hanahan is comparable to other municipalities in South Carolina. As discussed in the Population Element, the median household income is rather high in Hanahan, therefore, many people have access to at least one car.

FIGURE X: COMPARISON OF VEHICLE AVAILABILITY PER HOUSEHOLD, 2019



<sup>6</sup> Remaining percent Work from Home

## Mean Commute Time

Traffic congestion is an issue identified by the residents in Hanahan via the public participation survey. As the AADT count data suggests, traffic in and around Hanahan has increased quite significantly between 2010 and 2019. This is also reflected in the mean commute time to work, which increased by over two minutes between 2015 (21.5 minutes) and 2019 (23.8 minutes). While this may not seem like a significant change, this suggests that every commuter will spend an additional two minutes commuting, and will greatly increase the number of vehicles on the road, leading to an increase in traffic and the potential for accidents.

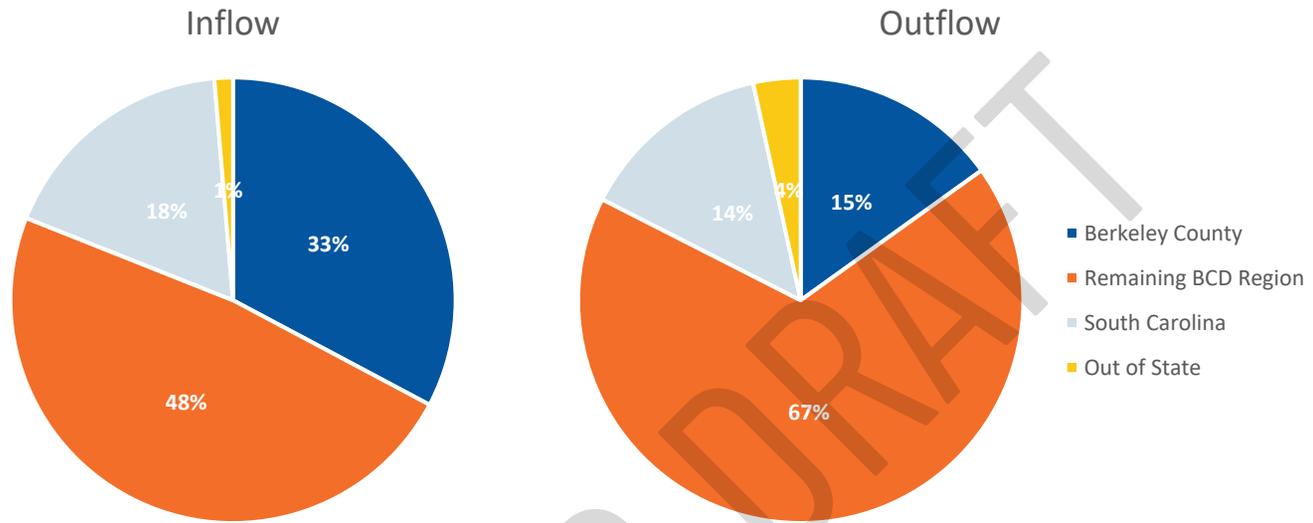
## Commuter Origins and Destinations

The US Census Bureau's Longitudinal Employer-Household Dynamics (LEHD) program produces local employment and economic data annually, which provides local governments access to detailed information about their local economies, including the demographic characteristics and commute patterns of workers. Analyzing the flow of commuters throughout a region helps in understanding the interconnectedness of communities and the manner in which persons move between home and work locations. This information is also very useful when planning for and making capital investment decisions for infrastructure such as roadways and public transportation.

In 2019, LEHD estimates that approximately 4,274 persons worked in Hanahan, of which 90% or 3,857 persons commuted into the city (jobs inflow) and 10% or 417 individuals were resident workers or persons who live and work within Hanahan. Conversely, of the 8,422 employed persons living in Hanahan, roughly 95% of residents commuted out of the city for employment (jobs outflow) and resident workers accounted for 5% of persons employed. When compared to 2010 LEHD flow data, Hanahan is retaining a larger percentage of resident workers as a proportion of commuter flows into and out of the city. In 2010 resident workers comprised 7.4% of persons who worked in Hanahan and roughly 4% of employed persons living in the city.

As seen in Figures X and Y, about a third of commuters who work in Hanahan reside in Berkeley County, while approximately half reside in either Charleston or Dorchester Counties. Alternatively, about two-thirds of commuters who reside in Hanahan work in either Charleston or Dorchester Counties, reinforcing the notion that Hanahan is a bedroom community for larger employment centers such as North Charleston (32% of outflow commuters), Charleston (18% of outflow commuters), and Mt. Pleasant (9% of outflow commuters). It is important to note that the number of people commuting to and from Hanahan is different is are based on employment (inflow) and population (outflow). These estimates emphasize the importance of principal and minor arterial roads, such as I-26, I-526 and US-52/US-78 (Rivers Ave), connecting Hanahan to the regional employment centers.

FIGURE X & Y: LONGITUDINAL EMPLOYER-HOUSEHOLD DYNAMICS INFLOW AND OUTFLOW ANALYSIS



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## Transit

A major component for an efficient and sustainable transportation network is the offering of public transportation or transit. Transit improves the accessibility and optionality of an area by providing options to a wide range of groups of people like commuters, persons of low-moderate income, older adults or seniors, and people with disabilities. Access to public transit helps enhance the quality of life by allowing the users to reduce vehicle-miles travelled, save money otherwise spent on rising gas costs, and can improve community relations among users. The City of Hanahan is served by two transit systems, the Charleston Area Regional Transportation Authority (CARTA) and the TriCounty Link.

CARTA offers fixed-route, express commute service, demand-response rideshare service, Park-&-Ride Lots and Tel-a-Ride paratransit service.<sup>7</sup> All CARTA buses are equipped with wheelchair lifts and are ADA accessible. Route 13 -Remount Rd is the primary CARTA route that serves Hanahan. As seen on Map X, there are several stops that have a service area covering much of Hanahan Proper. CARTA Route 10 - Rivers Avenue does not travel through the city limits but has a service area covering most of Eagles Landing and Otranto; however, the railroad crossing at Eagle Landing Boulevard and Otranto Boulevard, along with the intersections at Rivers Ave provide obstacles for riders in the first and/or last mile commute.

TriCounty Link operates rural bus services throughout the Tri-county region. As seen on Map X, most of Hanahan is within the service area of Route B102, which links between Hanahan, North Charleston, Goose Creek and Moncks Corner. All TriCounty Link buses are ADA-compliant and are equipped with lifts and spaces for wheelchairs and other similar equipment. This route, along with CARTA's Route 13-Remount Rd, provides residents of Hanahan with connectivity between both rural and urban areas of the region.

### MAP X: REGIONAL TRANSIT ROUTES

As seen in Figures X and Y the ridership over the past five years of CARTA and TriCounty Link show that the COVID-19 pandemic (started in March 2020) had a significant impact on the ridership of both transit routes. Route 13 received a 60% decrease in ridership between March 2020 and April 2020. Route B102 had no riders in the months of April and May 2020. CARTA has slowly gained ridership back, and is still a couple thousand less per month than pre-pandemic ridership.

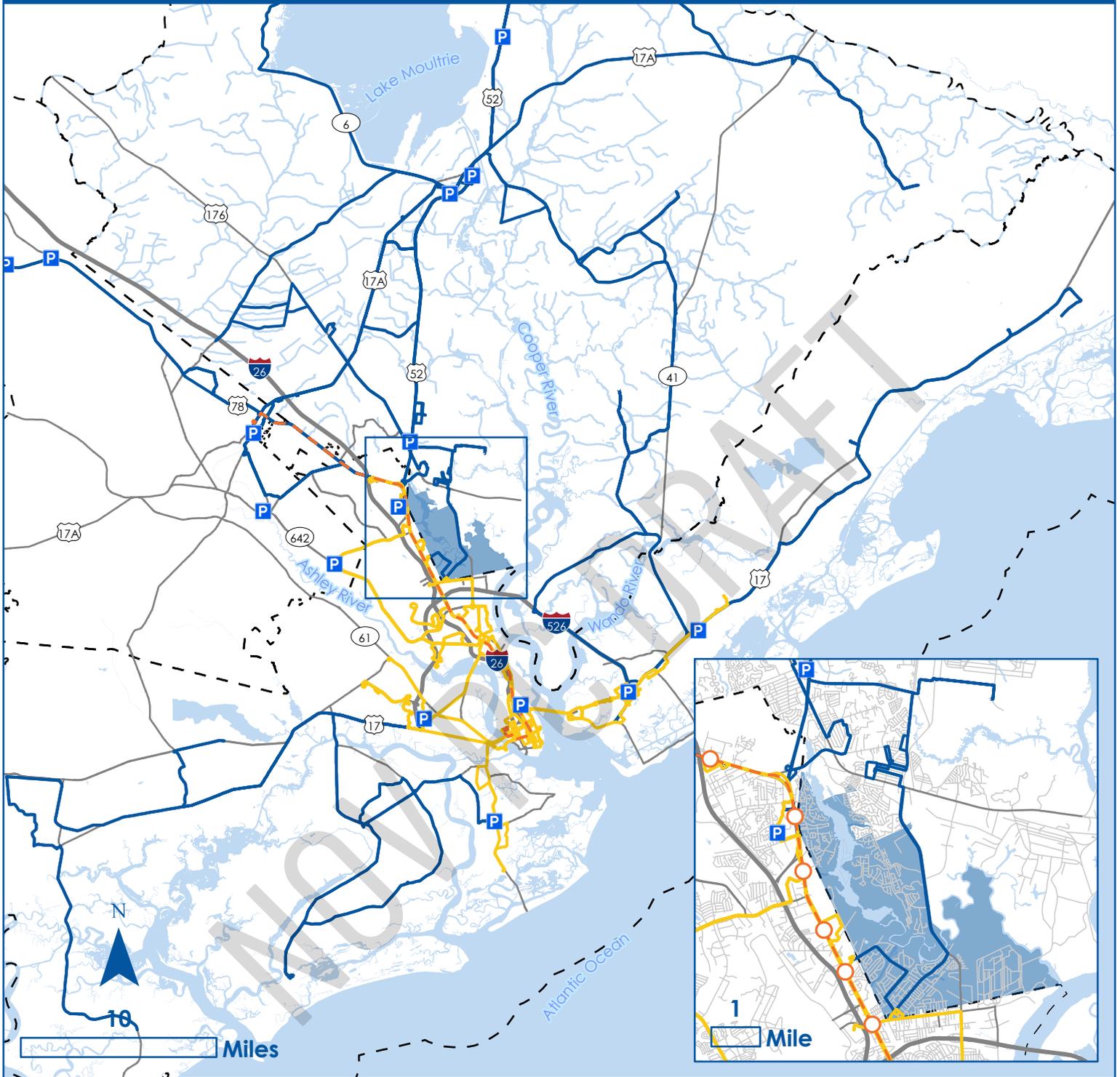
FIGURE X: CARTA ROUTE 13 - REMOUNT RD RIDERSHIP 2018-21

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<sup>7</sup> CARTA's transportation service for people with disabilities.

# Regional Transit Routes

Hanahan Comprehensive Plan 2020 Update: August 2022 Draft



## Transit Routes

- CARTA Routes
- TriCounty Link Routes
- Proposed Lowcountry Rapid Transit Route
- Proposed Lowcountry Rapid Transit Stations
- P Existing Park-and-Ride

— Interstates

— Major Roads

## Political Boundaries

- Hanahan Boundary
- County Boundary



FIGURE Y: TRICOUNTY LINK ROUTE B-102 RIDERSHIP 2018-21



## Rail Connections

Hanahan has a strong historical connection to the region’s rail network. As discussed in the Historic and Cultural Resources Element, the City of Hanahan was named after the historic train station in the city. Most of the railways are used for the transportation of freight as opposed to passenger services. Freight travel via railroad is an efficient and cost-effective method of transporting a large amount of goods, long and short distances, especially heavier goods such as coal, steel beams and machinery. This, in turn, alleviates the reliance on trucks on already congested roadways. Most of the rail lines are heavily dependent on the Port of Charleston for a majority of the goods to be transported. CSX Corporation owns and operates two lines, one of which establishes the western boundary of Hanahan.

Passenger services are available through Amtrak on their Palmetto and Silver Service trains, which run from New York to Miami. The Gaynor Ave Station in North Charleston is the local stop to board and get off these lines. Amtrak operates on the same rail lines owned by CSX through an agreement between companies. This requires close coordination to avoid any conflicts and prevent backups.

## Port Terminals

### Seaport Facilities

The South Carolina Ports Authority (SCPA) owns and operates the Port of Charleston, comprising several terminals along the Cooper and Wando Rivers such as: Columbus St, Hugh K Leatherman Sr, North Charleston, Veterans, Union Pier and Wando Welch. The North Charleston Terminal is the closest terminal to Hanahan, located directly south of the city, adjacent to the Naval Base and accessed by Remount Rd.

In 2020, the Port of Charleston ranked 6th in the nation in dollar value of goods handled, having imported and exported over \$72.7 billion of goods. In 2021, SCPA handled a record 2.75 million TEUs (twenty-foot equivalent units) of container traffic and in 2019 generated an annual economic impact of \$63.4 billion statewide. With over 27,000 people in the Lowcountry employed by the SCPA, the region received \$7.8 billion or 12.3% in total economic activity of the state's total economic impact.

### Airport Access

The Charleston International Airport (CHS) is the largest airport in the state and in 2021, served more than two million passengers annually. Hanahan is located just northeast of the airport. The airport is also adjacent to Joint Base Charleston. Using a joint-use agreement, the airport and air force base share several facilities and infrastructure, most importantly of which is the runway, which is owned by the U.S. Air Force.

The terminal complex is a 270,000 square-foot structure on three levels and includes two concourses: Concourse A (five gates) and Concourse B (10 gates). In 2016, CHS completed a \$200 million redevelopment project which added five gates and renovated the interior of the terminal. Served by eleven airlines (Alaska, Allegiant, American, Breeze, British, Delta, Frontier, JetBlue, Silver, Southwest and United), the airport has non-stop flights to over 40 different cities across the United States and England, including major airline hubs such as Dallas/Fort Worth, Chicago, Charlotte and Atlanta. American, Delta and Southwest airlines reportedly accounted for over two-thirds of enplanements in FY 2021.

Freight activity is a large contributor to the annual operations of CHS. According to the operations report in 2021, over 9 million pounds of freight were enplaned and almost 25 million pounds were deplaned at CHS. The busiest months were between February and June. This is a significant decrease from FY 2018 when CHS enplaned almost 34 million pounds and deplaned over 54 million pounds of freight.

## Community Facilities Element

Community Facilities encompass a wide range of public services and facilities for residents of the community including schools, public safety, fire protection, EMS, and parks and recreation. Availability and quality of these services and amenities play a critical role in a community's livability for current residents, and can be important factors for prospective residents. Typical proximity to amenities, quality of public schools, accessibility to open space, and access to open space are some of the particular community facilities discussed in this Element. Furthermore, assessing the

condition of these facilities and identifying opportunities to enhance Hanahan’s community facilities will be provided in a Needs Assessment and Priority Investments chapter.

#### MAP X: COMMUNITY FACILITIES

### Parks and Recreational Facilities

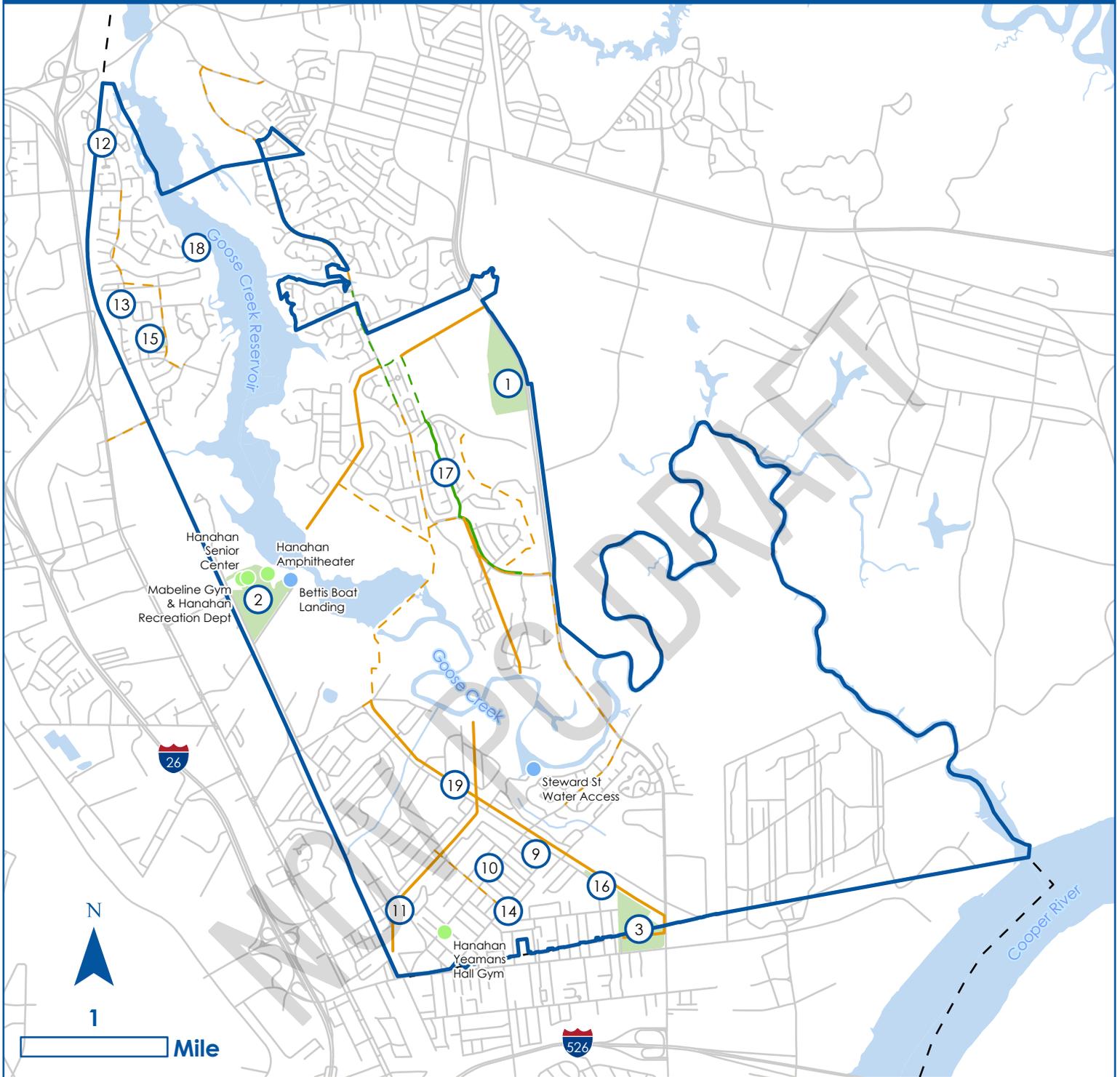
Parks and recreational facilities are important amenities that the City of Hanahan maintains for residents. With 19 facilities located throughout the city, the Hanahan Recreation and Parks Department provides both passive and active public recreation opportunities accessible to residents and visitors. Passive activities include fishing, yoga, walking, photography, and picnicking. Active activities include baseball/softball, basketball, soccer, tennis, and running and biking trails. The Department also coordinates recreation programming for all age groups, including youth athletic summer camps, senior programs, and indoor activities such as table tennis, pickleball, dance, and Lego robotics.

A list of the Parks and Recreation facilities can be found in Table X and illustrated on Map X. Along with the facility’s location, the table includes the Service Area and the Type of Activities. The Service Area classifies the facilities into Neighborhood, Municipal and Regional Parks. These classifications refer to the scale at which the park serves the community. The Types of Activities column identifies whether the park provides active or passive activities, as discussed above.



# Parks and Recreation

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## Micromobility Infrastructure

- Existing Multi-Use Paths
- - - Planned Multi-Use Paths
- - - Locally Proposed
- Proposed Recreational Corridor

## Parks and Recreation Facilities

- Water Access
- Recreation
- Parks and Open Space

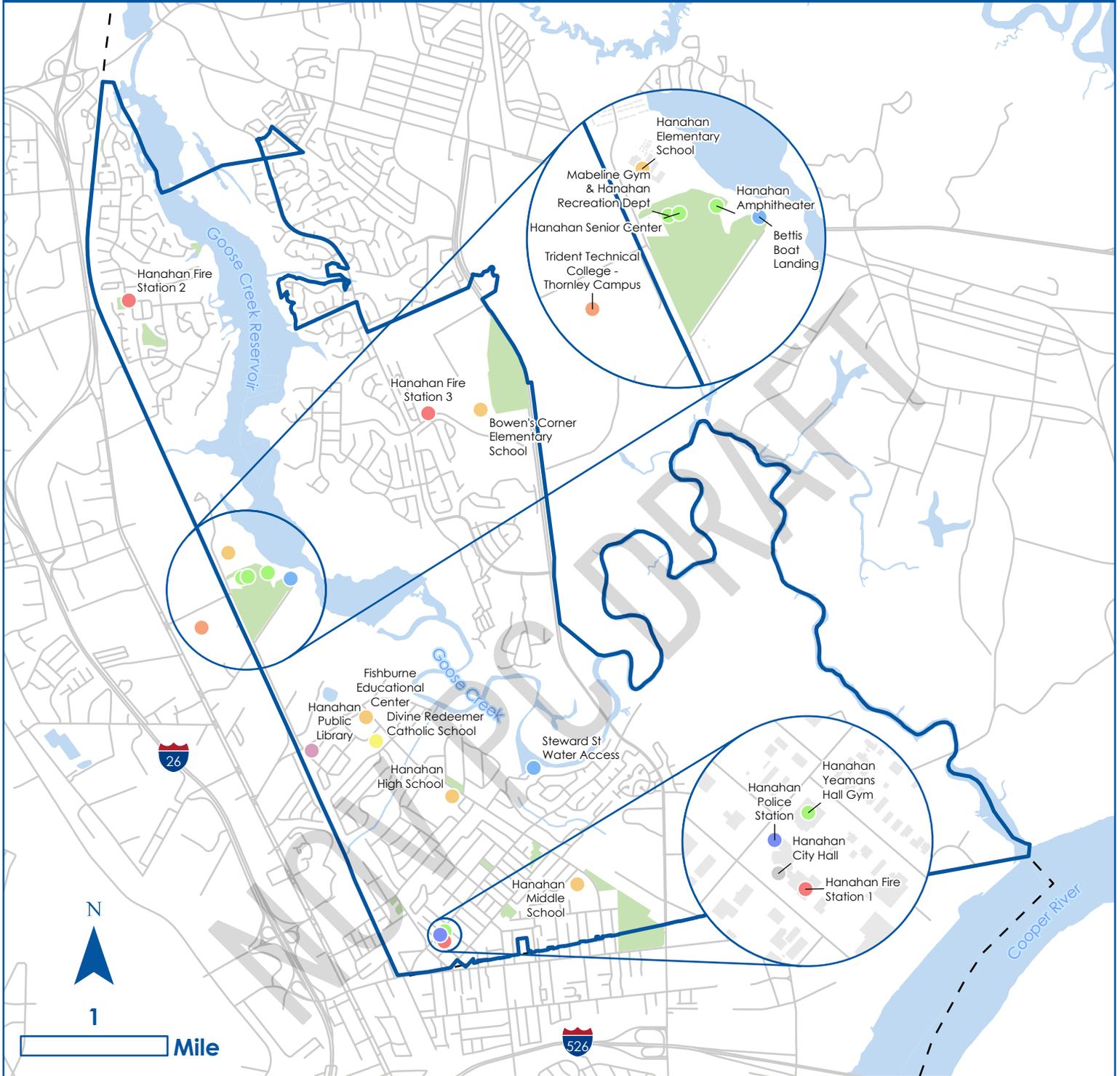
## Political Boundaries

- Hanahan Boundary
- County Boundary

Note: Parks and Open Space labels corresponds with Table X: List of Parks, Recreation & Community Facilities

# Community Facilities

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## Community Facilities

- Local Government
- Police Station
- Fire Station
- Library
- Religious School
- School

- Post-Secondary School
- Water Access
- Recreation
- Parks and Open Space

## Political Boundaries

- Hanahan Boundary
- ⋮ County Boundary

TABLE X: LIST OF HANAHAN PARKS, RECREATION AND COMMUNITY FACILITIES

	Park and Recreation Facility	Location	Service Area	Type of Activities
1	Hawk's Nest Park	Williams Ave	Regional	Active
2	Hanahan Recreation Complex	Railroad Ave	Regional	Active & Passive
3	WestRock Park <sup>8</sup>	North Rhett Ave & Remount Rd	Regional	Active
4	Bettis Boat Landing	Bettis Boat Landing Rd	Municipal	Passive
5	Hanahan Amphitheater	Mabeline Rd	Municipal	Passive
6	Hanahan Yeamans Hall Gym	Yeamans Hall Rd	Municipal	Active
7	Hanahan Senior and Recreation Center	Mabeline Rd	Municipal	Passive
8	Mabeline Gym and Hanahan Recreation Dept	Mabeline Rd	Municipal	Active
9	Steward St Water Access	Steward St	Municipal	Passive
10	Anna Knapp Park	Murray Dr	Neighborhood	Passive
11	Bessinger-Kelly Park	Yeamans Hall Rd	Neighborhood	Active & Passive
12	Loftis Field	Loftis Rd	Neighborhood	Active
13	Manor Park	Manor Blvd	Neighborhood	Active
14	Otranto Tennis Courts	Basilica Ave	Neighborhood	Active
15	Rhodes Pond	Dickson Ave	Neighborhood	Passive
16	Roma Park	Roma Rd	Neighborhood	Active
17	Spell Field	Murray Dr	Neighborhood	Active & Passive
18	Tanner Trail	Tanner Ford Blvd	Neighborhood	Passive
19	Venice Park	Venice Ave	Neighborhood	Passive
20	Woodland Trail	Murray Dr	Neighborhood	Passive

MAP X: PARKS AND RECREATION FACILITIES

<sup>8</sup> Facility shared with North Charleston: Hanahan Recreation and Parks Dept maintains two of the four fields and the common areas.

There are currently 145 acres of designated parkland or open space within Hanahan, including the new Hawk's Nest Park. An inventory of sports fields, courts and facilities includes: 11 baseball/softball fields, a full-size soccer field, a practice football field, four tennis courts, ten pickleball courts, three basketball courts, three volleyball courts, and two gymnasiums.<sup>9</sup> Other amenities include five children's playgrounds, four pavilions and picnic areas, the Bettis Boat Landing and the Hanahan City Amphitheater. The Hanahan Senior Center, located on Mabeline Road, is adjacent to the Mabeline Gym and the Hanahan Recreation and Parks Department. Several different activities are available in this facility for residents over the age of 50 including line dancing, bingo, billiards and various levels of exercise classes.

76% of voters in November 2020 approved \$13.9 million for new parks and improvements to existing parks. Plans for these additional parks and improvement are underway. Hawk's Nest Park, expected to open in Spring of 2023, will add a regional multi-use synthetic turf field as well as six tennis courts, three multi-use fields, a sand volleyball court, a basketball court, also a trail system, a dog park, a playground, a pavilion, fishing pond, and a recreation office with restrooms and meeting space. Other smaller park improvements, all of which have been completed, were planned for the Hanahan Recreation Complex, Spell Field, Loftis Field, Bettis Boat Landing, Roma Park and Manor Park. Berkeley County School District, in partnership with the city, is paying nearly one million dollars to install a multi-use synthetic court to be the home field for the Hanahan High School's soccer team and six lighted tennis courts for the high school's tennis team for home matches.



The fall 2021 Community Survey identified numerous areas of improvement specifically related to parks and recreation that Hanahan residents suggested for programming in upcoming years. Some of these findings include adding more public open space, maintaining existing parks and facilities, offering more recreational programs, and expanding facilities at existing parks. A more detailed summary of those findings can be found in the Public Participation chapter and identified opportunities are outlined in the Needs Assessment and Priority Investments chapter.

## Educational Facilities

The Berkeley County School District (BCSD) currently operates four public schools located in Hanahan. This includes two elementary schools, and a middle and high school, which serve the children of Hanahan. Additionally, one private school is located in the city, Divine Redeemer Catholic School, and several daycare and preschool institutions that provide services for the local community. The Fishburne Educational Facility also provides adult and community educational services for people in the area. It is paramount to city officials and residents alike that all Hanahan students attend schools in Hanahan.

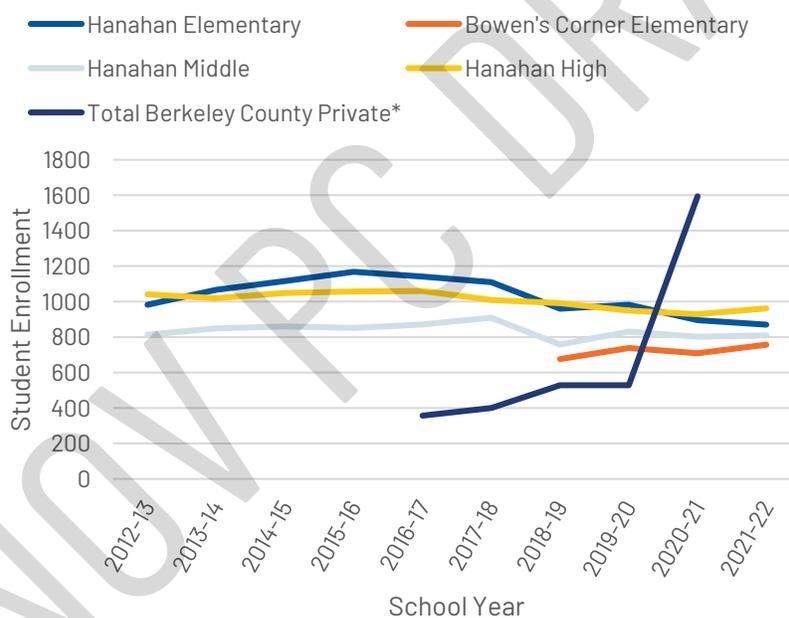
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<sup>9</sup> This inventory does not include the planned referendum improvements or any WestRock Park facilities

At the start of the 2018-19 school year, there were two significant changes that occurred in the educational services provided to the city. The opening of Bowen’s Corner Elementary School and the relocation of fifth grade from Hanahan Middle to Hanahan Elementary created additional capacity for future growth in student enrollment. As of 2022, Hanahan Elementary and Bowen’s Corner Elementary each provide Pre-K through 5th grade services, Hanahan Middle provides 6th through 8th grade services, and Hanahan High provides 9th to 12th grade services.

The BCSD publishes the 135-day average daily attendance to report on the active number of students attending each public school at that time of the year. Comparing the attendance over a period of time provides a snapshot of public-school enrollment trends for the various schools. As seen in Figure X, Hanahan Elementary had enrollment consistently over one thousand students until 2018-19 when due to the service changes, students were likely reallocated into different school districts, altering enrollment numbers. Hanahan Elementary experienced the largest change in enrollment from its peak in 2015-16 (1,168 students) to its lowest in 2021-22 (870 students). Since the change in 2018-19, school enrollment across all four schools has remained relatively steady.

FIGURE X: BERKELEY COUNTY SCHOOL DISTRICT DAY 135 ATTENDANCE BY SCHOOL



\*Source: South Carolina Department of Education Headcounts

According to the 2019 ACS, approximately 91% of Hanahan school age children (K-12) attended public schools and the remaining 9% attended private schools, representing a slight increase (previously 87%) in public school attendance since the 2010 ACS. However, more recent data from the South Carolina Department of Education shows that the onset of the COVID-19 pandemic drastically changed school enrollment in the area. Specifically, private school enrollment between the 2019-20 and 2020-21 school years increased by about one thousand students, or by over 200%, as seen in Figure X. COVID-19 had a large impact on the foundation of school systems across the

country and is the probable reason for the sudden and significant shift toward private school attendance at that time.

### School Enrollment Forecasts

Despite the shift in public to private schools, the public educational facilities in Hanahan are forecasted to have a relatively steady enrollment in the upcoming decade. Based on BCSD attendance forecasts, Hanahan Elementary was the only facility near capacity at the 135-day attendance estimation. As seen in Table X, Bowen's Corner Elementary and Hanahan High are forecasted to remain under 90% capacity over the next decade, however, Hanahan Elementary is forecasted to be over capacity (100-110%) beginning in the school year 2022-23 and remain over capacity. Hanahan Middle School will eventually begin reaching capacity but is not forecasted to do so in the next decade.

School Enrollment forecasts are an important tool to use when assessing the needs for new or improved facilities and infrastructure, such as additional classrooms, after-school services, sports and recreation programs, additional parking, school bus services, children/pedestrian safety officers, police protection, and other ancillary needs that maintaining a school may require. Although the BCSD, will provide some of these needs, at-capacity schools can impact Hanahan's physical infrastructure, such as roads, sidewalks, and parks, increase traffic congestion through school bus stops and pickup/drop-off lines, crime and public safety and the community social structures. Continued coordination with BCSD and Berkeley County is required to address these future needs based on the forecasted enrollment numbers.

TABLE X: BERKELEY COUNTY SCHOOL DISTRICT 135-DAY ATTENDANCE 10-YEAR FORECASTS

SOURCE: BERKELEY COUNTY SCHOOL DISTRICT

School Name	Grades	Capacity	2021-22	2022-23	2023-24	2024-25	2025-26	2026-27	2027-28	2028-29	2029-30	2030-31	2031-32
Bowen's Corner ES	PK-5	969	777	802	819	820	811	819	811	806	813	823	837
Hanahan ES	PK-5	1026	1024	1060	1084	1103	1110	1116	1119	1111	1116	1126	1140
Hanahan MS	6-8	954	809	796	819	833	867	862	880	895	912	910	905
Hanahan HS	9-12	1340	961	1022	1037	1042	1028	1015	1008	1026	1037	1056	1078
<b>Subtotal</b>		<b>4289</b>	<b>3571</b>	<b>3681</b>	<b>3759</b>	<b>3799</b>	<b>3815</b>	<b>3812</b>	<b>3818</b>	<b>3839</b>	<b>3878</b>	<b>3915</b>	<b>3960</b>

Utilization Legend

< 90%

90% - 100%

100% - 110%

> 110%

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## Post-Secondary Education

There are no post-secondary schools within the limits of Hanahan, but many higher education facilities exist in the region and in proximity to the city. Trident Technical College, Thornley Campus, is located on Rivers Ave adjacent to the western city boundary, near the Hanahan Recreation Complex and Hanahan Elementary School. Other institutions such as, Charleston Southern University, College of Charleston, the Citadel, and the Medical University of South Carolina are all post-secondary education facilities located within the BCD region.

## Libraries and Other Cultural Buildings

Hanahan Library is a branch of the Berkeley County Library System and is located at 1216 Old Murray Court. The 6,700 square-foot facility finished construction in 2014 and offers several additional features, such as a community meeting space, a kitchen area, a small conference room and two study rooms, as well as the latest technology. Many of the programs offered at the library aim to support the needs of youth and teens. These programs include story time, summer reading programs, and reading challenges.



## Government Facilities

The Hanahan Municipal Center is the main administrative building for the City of Hanahan. Located at 1255 Yeamans Hall Rd, this facility houses the municipal court, City Council chambers, most city departments and staff offices. As seen in Map X, the Hanahan Police Department and Hanahan Fire Station No. 1 are also located on this property.

## Public Safety and Police

As mentioned above, the Hanahan Police Department is also located along Yeamans Hall Rd adjacent to City Hall and within the Municipal Complex. There are over 40 employees comprised of officers and administrative staff. The Department is divided into three divisions: Operations, Investigations and Support. In addition to the standard police services, the Hanahan Police Department provides additional services, which include Victim Services, Explorers Youth Program, Citizen Police Academy, two School Resource Officers and four part-time volunteers in a Reserve Officer Program. All these services go above and beyond to protect and serve the residents of the community.



## Fire Protection and Emergency Services

The City of Hanahan has three fire stations that provide fire protection services to the residents of Hanahan and the region. There are over 30 paid, professional firefighters that work to provide this protection for residents. The Hanahan Fire Department has a fleet of nine vehicles, including five pumpers and one aerial. The local fire stations are as follows:

- Fire Station No. 1 – located adjacent to the Municipal Complex and the Hanahan Police Department, serving central and south Hanahan
- Fire Station No. 2 – located on South Basilica Ave, serving the Otranto and Eagle Landing subdivisions and north Hanahan
- Fire Station No. 3 – located on Williams Ln, serving the Tanner Plantation subdivision and east of Goose Creek Reservoir

Staff within the department emphasize the importance of fire prevention education as well as risk and hazard reduction. Along with fire and rescue response and control, the department also responds to other emergency situations including but not limited to vehicle extractions, medical emergencies, incidents involving hazardous materials, high-angle rescues, structural collapse, swift water rescue and any natural or man-made disasters. Personnel has also been allocated to provide emergency care through a contract with Berkeley County Emergency Medical Services.

## Emergency Preparedness

The Berkeley County Hazard Mitigation Plan (BCHMP) was adopted in 2021 and provides a plan in the event of a disaster emergency. Being along the coast, the most common disaster emergencies are hurricanes. The plan identifies the responsibilities of individuals and agencies for the various types and phases of a disaster emergency. Individual sections within the Plan include direct response procedures for the emergency operation center, communications, public information, fire and rescue services, medical services, transportation and evacuation of residents. With the implementation of specific building codes, City Ordinances, and infrastructure, the risk of natural

and manmade hazards have been mitigated. These topics are discussed in depth in the Resilience Element of this Plan.

## Health Services

There are several medical facilities located within a 10-mile radius of Hanahan. Some of the major hospitals include Bon Secours St. Francis Hospital, Trident Medical Center, MUSC Health University Medical Center, Roper Hospital, East Cooper Medical Center and MUSC Shawn Jenkins Children's Hospital. The closest hospitals providing emergency services for residents of Hanahan are either Trident Medical Center in North Charleston or Bon Secours St. Francis Hospital in West Ashley. Both of these medical centers have on-site emergency departments and several specialized care services. There are also several other smaller facilities located throughout the region that provide a varying degree of specialized services.

## Social Services

There are numerous social services facilities that are located within Hanahan. These facilities are both public, private and non-profit, and provide a range of services to people with varying needs. The Dream Center, opened by Seacoast Church in 2009, provides several support services including an emergency food assistance program, a mentoring program and medical, dental and vision clinics to underserved people in North Charleston, Hanahan, and Goose Creek. According to the Dream Center Fall 2020 Newsletter, in 2019, the Dream Center distributed over 150,000 lbs. of food to people in the community.

The Helping Hands of Goose Creek is an organization providing food resources to disadvantaged communities. This local food pantry was established in 1989 by the Trident United Way and serves the needs of south Berkeley County.

The Carolina Youth Development Center operates a facility known as the Callen-Lacey Center for Children, and is the only emergency youth shelter in Berkeley County that provides a secure, protective, and nurturing environment for more than one thousand abused, abandoned and neglected children since its establishment. The opening of the NuHouse in 2019 afforded an additional service supporting young adults ranging in age from 17 to 21 as they transition from dependent living to independent living.

Local places of worship and philanthropic organizations also provide different services for people in the community. Some of these services includes food pantries and youth outreach programs. The outreach that these organizations provide aid well beyond the City of Hanahan but are indispensable in the health and sustainability of Hanahan residents.

## Public Infrastructure

The Charleston Water System (CWS) provides potable water to the Greater Charleston area, including the City of Hanahan. The Hanahan Water Treatment Plant is located on the banks of the Goose Creek Reservoir. This facility was the primary source of drinking water for the CWS for much of the 1900's and is the largest treatment plant in the State. Today, this facility treats water taken from the Edisto River and the Bushy Park Reservoir serving approximately 400,000 residents. In recent years, the facility has had several upgrades in technology and equipment. The Hanahan Water Plant meets or exceeds all regulatory requirements and is a member of the Partnership for

Safe Water. The daily volume produced averages 55 million gallons per day (mgd) although the facility has the capacity to produce 118 mgd.

The City of Hanahan is served by Berkeley County's Lower Berkeley Wastewater Treatment Plant (WWTP). Located on Red Bank Road, this facility is capable of treating 22.5 million gallons of wastewater a day. This process removes pollutants from the wastewater and discharges the treated water into the Cooper River.

Private well and septic systems are required for all properties within Hanahan that are not connected to the Charleston Water System or the Berkeley County Water and Sanitation Authority (BCWSA). The South Carolina Department of Health and Environmental Control regulates and permits these private systems.

#### MAP X: WATER, SEWER AND STORMWATER

### Stormwater Management

Stormwater Management has become a more relevant topic over the past 20 years. Methods to reduce runoff and increase mitigation efforts were not widely practiced until recent years as flooding problems have increased. Stormwater mitigation efforts can include: restricting development in floodplains and floodways, inclusion of rock and vegetation swales, promotion of pervious surfaces, requiring a net zero fill in the floodplain, and encouraging green street infrastructure.

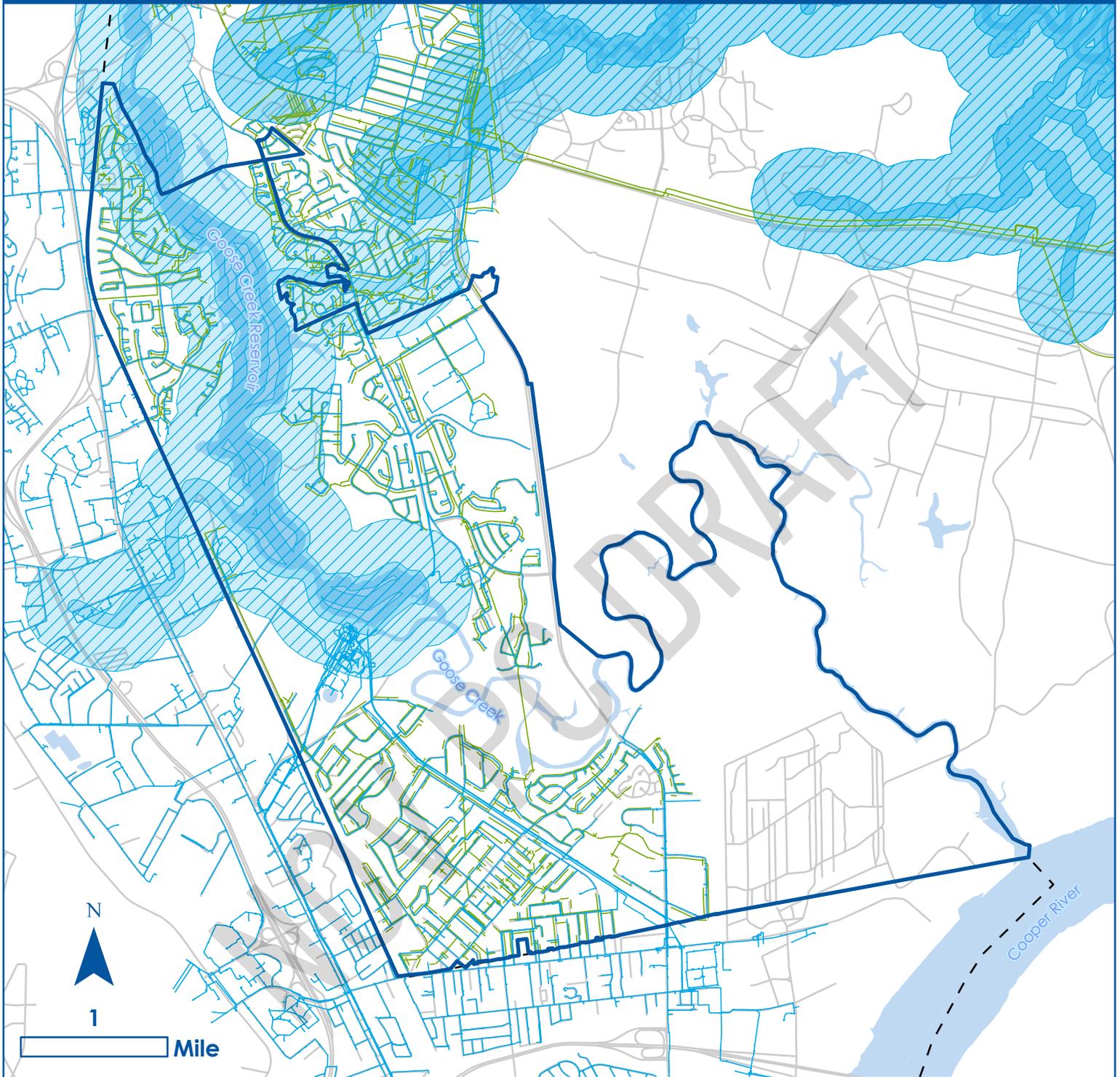
Stormwater is of concern for two main issues: one related to the volume and timing of runoff water (flood control and water supplies) and the other related to potential contaminants that the runoff water is carrying, such as chemicals, debris, and trash. Managing the quantity and quality of stormwater runoff is critical to protect, maintain and enhance the water quality, the environment and the overall health and safety of the community. The City of Hanahan adopted a Stormwater Management Ordinance in 2007 that identifies regulations and best management practices that will reduce flooding, reduce the impact development has on the environment, and maintain water quality standards.

### Solid Waste Management

The Public Works Department consists of over a dozen employees that provide weekly trash and recyclable pick-up services to Hanahan households. All solid waste and recyclables are transported to Berkeley County Municipal Waste Landfill operated by BCWSA. The solid waste facility and recycling center are located on US Highway 52 in Moncks Corner. The Department currently has six garbage trucks, seven pick-up trucks and two flatbeds all of which regularly undergo preventative maintenance. Approved recyclable materials include: plastics, aluminum and steel cans, glass bottles and jars, and paper products.

# Water, Sewer, & Stormwater

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## Charleston Water System

— CWS Water Main

## Berkeley County Water & Sanitation

— BCSW Sewer Main

▨ Source Water Protection Areas

## Political Boundaries

▭ Hanahan Boundary

⌚ County Boundary

*Note: The location of all Water and Sewer Mains are intended for illustrative purposes and do not represent actual locations.*

## Historic and Cultural Resources Element

The identification, restoration and preservation of cultural and historic resources provide several benefits to the local community, including cultural identity, a distinct and unique sense of place and belonging, and educational opportunities. Like many towns within former colonies, the history of Hanahan has an abundance of resources and symbols from the colonial and civil war eras.

Cultural and historic resources provide a link between past and present generations. They come in many different forms, such as districts or neighborhoods, buildings, structures, sites, or artifacts and objects. All these different forms of resources provide historic, archaeological, social and/or cultural significance to the community and help to distinguish Hanahan as a unique place.

Despite its proximity to the city of Charleston, one of the most unique historical and cultural places in the nation, the historic resources within Hanahan are limited. The area within Hanahan at one time was settled by a few, remote plantation owners. With preservation of historic resources being threatened over the past fifty years due to the rapid suburbanization of American cities, like Charleston, suburban sprawl has impacted the cultural uniqueness of many communities including Hanahan.

If properly identified and planned for, the preservation or restoration of cultural resources can contribute to a community culturally, economically, socially, and aesthetically. Identifying these resources is the first step in the process to properly including them in future development and community plans. The location and area of influence of the cultural resources should always be carefully considered during consideration of land use matters, such as zoning changes, and proposed development projects to ensure the longevity of these invaluable features.

In this Element, the history of Hanahan highlights the major cultural and historic resources within the community. This inventory can be used to formulate policy decisions aiming to protect and restore these important resources for future generations. It is also vital to remember in this element that cultural and historic resources are not static; instead, they are ever-evolving as the community grows, changes and adapts. Residents today are a contributing piece of Hanahan's story, creating new features, buildings, neighborhoods, and sites that future generations will also consider in the same way, as cultural and historic resources that tell their ancestral stories.

### Area History

Before the colonization of North America, the Lowcountry region was inhabited by Native American tribes, namely the Etiwan and Sewee. Like so many Native American tribes, they were invaluable in the success of the European colonists by teaching them how to adapt food, housing, and travel methods to survive harsh conditions in the new land. The Lord Proprietors were granted the Carolina Charter by King Charles II in 1663 and 1665, beginning the colonization of the Carolinas.

Shortly after this, land grants were made to Edward and Arthur Middleton and to John Yeamans along a tributary of the Cooper River, Goose Creek. Arthur Middleton established the Yeshoe Plantation (later renamed Otranto Plantation) at the navigable head of Goose Creek, while John Yeamans established Yeamans Hall Plantation downstream. These locations were deemed very valuable as they had access to navigable water enabling direct access to Charles Town (Charleston) by water.

Following the protests and conflicts that plagued the Lowcountry in the early 1700's, Carolina was officially made into a Royal colony in 1719 and ten years later was split into North Carolina and South Carolina. The Lowcountry region entered into a golden age of economic prosperity as a Royal Colony and later as one of the thirteen original States. The Revolutionary War briefly impacted this economic prosperity during the British Occupation of Charleston, but it quickly recovered and then further expanded for decades leading up to the Civil War in 1861.

The local economy suffered many of the same impacts that the other Confederate States experienced during the Civil War, especially with the successful Union blockade of the Port of Charleston. After the Civil War, the economy of the Hanahan area shifted away from the plantation economy and was reborn with the expansion of the railway system.

One of the most important events in the history of Hanahan was the damming of Goose Creek at the turn of the twentieth century. The City of Charleston required a permanent and reliable source of freshwater due to the groundwater contamination by effluent from raw sewage. The private Charleston Water and Light Company created the Goose Creek Reservoir and Saxon Pumping Station and Treatment Facility in 1903. New roadways and railways were constructed to provide access for supplies to be delivered directly to the site. This new water supply quickly proved inadequate so other projects were conducted to help supplement the needs of the region.

In 1917, J. Ross Hanahan, Chairman of the Charleston Commissioners of Public Works (CPW), was instrumental in the acquisition of the reservoir, pumping station, and adjoining lands for the CPW from the private company. The pumping station and railroad station were later renamed after Mr. Hanahan after a mistake in shipments with a similarly named rail station located in North Carolina.

During and after World War II, the US military was a major employer of residents in the Hanahan community. In 1941, the US Army Depot was established for the transmission of munitions from the interior of the country to Europe. This depot was a point of embarkation for troops bound for Europe and was a destination for prisoners of war. The US Navy acquired a large tract of land east of Hanahan as the Weapons Station Annex, later becoming the site for the Atlantic Polaris Missile Factory and the Nuclear Power Training School.

## Post-World War II

Similar to many small communities outside of larger American cities, suburbanization changed the Hanahan area into a bedroom community of the Charleston metropolitan region. In 1946, the Highland Park Fire and Water District met the service demands of this growing community and was later designated as a Public Service District (PSD). In 1947, the name of the local community and the PSD was changed to the Hanahan Public Service District, for the nearby railroad station on Remount Road. The Hanahan Public Service Commission (PSC) was formed in 1950 as the community reached the population milestone of 3,000 residents. The Public Service Commission created a new zoning commission to administer land use controls in the district.

Hanahan experienced some community identity conflicts and local divisiveness as the city continued to urbanize in what was otherwise a rural county. Leaders of Hanahan considered secession from Berkeley County in favor of annexation into adjacent Charleston County. This was a popular idea as most 'Hanahanians' were employed in Charleston County and utilized services therein. Due to the proximity difference between Berkeley County services, like health care, schools, emergency services etc., mostly located in Moncks Corner, and Charleston County

services, many Hanahan residents were closer to Charleston County services than Berkeley County services. This debate subsided when Hanahan High School opened in 1958. Community identity was further strengthened after the creation of The Hanahan News, later to become The Hanahan & Goose Creek News, which effectively ended talks of secession from Berkeley County.

## Incorporation Conflicts

In 1956, the people of the Hanahan PSD were introduced to the idea of incorporation. Having a population of approximately 5,500 people by this time, the costs and benefits of becoming a municipality were explored. The increasing need for more adequate public infrastructure fueled this discussion and eventually after a decade, Hanahan expanded even further with the addition of a Parks and Playground Commission, a U.S. Post Office branch, and a public library. At the end of the 1960's, the district was nearing build-out and by 1970, the US Census reported Hanahan PSD to have almost 8,400 residents.

Major conflicts arose in 1972 when the City of North Charleston became an incorporated City. This reignited the discussion for incorporation of Hanahan as North Charleston annexed a parcel within the Hanahan PSD into its city limits. Locals learned of a state law prohibiting the incorporation of a new city within two miles of an existing city of 15,000 people. Also, during this time, the constitutionality of the Zoning Commission and Ordinance were under scrutiny and faced legal action in court.

State Senator Rembert C. Dennis of Berkeley County, an ally to the Hanahan PSD incorporation proposal, had been working for years at the State Capital to create legislation to support zoning in PSDs but had not yet had success in getting such an act passed. Shortly after, he shifted his political focus to the amendment of the state code to cover municipal incorporation. Along with State Assemblyman Robert L. Helmly of Berkeley County, they successfully amended the code, clearing the way for Hanahan's incorporation. A petition was sent out to initiate a local referendum on the matter of incorporation. With a very narrow margin of 1,093 votes in favor and 903 in opposition, Hanahan became an incorporated city on September 18, 1973 with a population of 11,408 people. The entire PSD and abutting undeveloped lands were included in the city limits.

Since its incorporation, Hanahan has been able to update, administer and enforce its zoning ordinance and became eligible for federal revenue-sharing funds, distributed to incorporated municipalities on a per capita basis. Since the original drawings of the city limits, Hanahan has effectively doubled its size by annexing the Otranto and the Tanner Plantation neighborhoods.

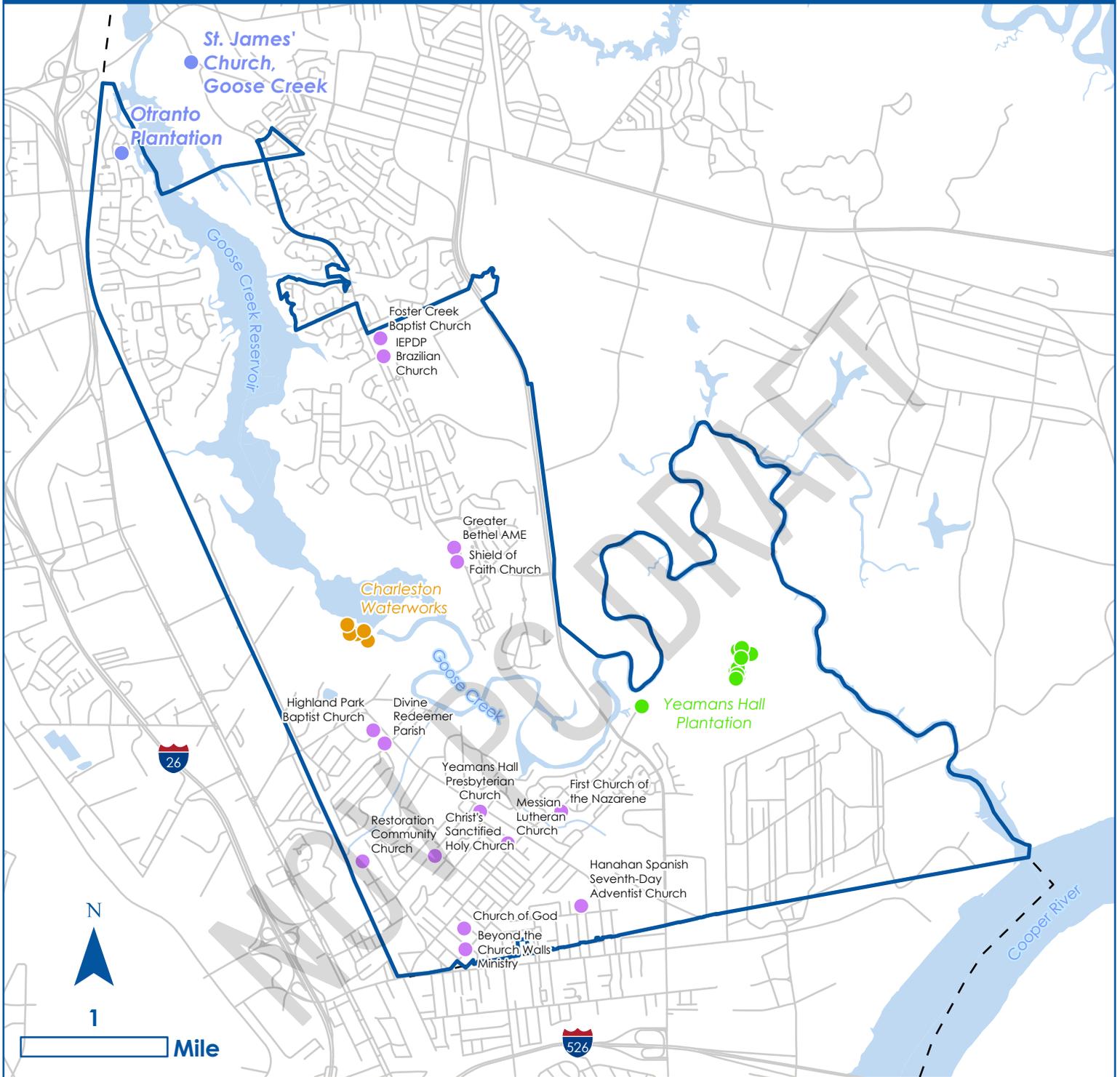
## Resource Inventory

Districts, buildings, structures, sites and objects of local, state or national importance, that meet specified criteria, may be nominated for listing in the National Register of Historic Places. The National Register is the nation's official list of historic, architectural, and archaeological resources worthy of preservation. Within the Hanahan city limits, there are several historical resources that are eligible or potentially eligible to be included on the National Register of Historic Places, however Otranto Plantation is currently the only resource within city limits that is included in this exclusive list of national historic places. Map X shows the location of all historic and cultural resources within or near Hanahan.

MAP X: LOCATION OF HISTORIC AND CULTURAL RESOURCES

# Historic & Cultural Resources

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## National Register Eligibility

- Eligible
- Potentially Eligible
- Registered Historic Sites

## Community Facilities

- Place of Worship

## Political Boundaries

- Hanahan Boundary
- County Boundary

## Otranto (Yeshoe) Plantation

Established in 1679, this land was granted to Edward and Arthur Middleton of Barbados, who had recently relocated to Carolina. Shortly after, Edward transferred his share of the 1,780-acre plantation to his brother, Arthur. Passing through several owners via inheritance and sale, and having been subdivided twice over the following two centuries, the remaining 400 acres of the plantation were sold to the Otranto Hunting Club in 1872. It was at this time that the clubhouse was constructed, which currently remains on the



former plantation's site as a single-family residence. In recent decades, a real estate developer purchased the property and renovated the plantation house, the interior of which had been gutted by a fire. This newly renovated building was to be the clubhouse for a residential community to be constructed on the 400-acre plantation. Otranto Plantation was added to the National Register in 1978, two years after the Otranto residential community voted to join the City of Hanahan for improved public services. The Otranto Plantation Indigo Vats was listed on the National Register in 1989.

## Yeamans Hall Plantation

One of several 'eligible' or 'potentially eligible' sites for listing on the National Register of Historic Places is the Yeamans Hall Plantation. This land was granted to Sir John Yeamans as early as 1670. During the earthquake of 1886, the house was lost in a fire, driving the Smith family, who owned the plantation at the time, to sell the plantation in 1900. In 1915, D. W. Durant, a North Charleston developer, seeing an opportunity to reuse the land, invited the renowned landscape architect Frederick Law Olmsted, Jr., to survey the land and assess its



suitability as a golf resort. With impressive reviews from Olmsted, Durant and architect James Gamble Rogers and others organized the Yeamans Hall Company and purchased the land in 1924. Olmsted's design firm was commissioned to prepare a "general plan" for the exclusive Yeamans Hall Golf Club, and Rogers designed the clubhouse. The clubhouse opened in 1924 and still functions in its original capacity today.

## Historical Markers

There are currently two historical markers located within the limits of Hanahan: Bowen's Corner and Steepbrook Plantation.

- **Bowen's Corner** is significant in the history of African American slaves and freed men after the Civil War. The marker is located at the intersection of Foster Creek Road and Tanner Ford Boulevard.
- **Steepbrook Plantation** was once home to a long-time member of the Commons House of Assembly and Speaker of the House (1765-1772), Peter Manigault. The two-story house is located on Mabeline Road at the Hanahan Elementary School.

There are no structures or relics at either of these locations, but the historical markers serve as a reminder of the history that took place at these locations all those years ago.



## Gullah Geechee Cultural Heritage Corridor

Established through the National Heritage Areas Act of 2006, the Gullah Geechee Cultural Heritage Corridor and Commission are intended to highlight the Gullah Geechee people and their decedents. This corridor spans from Wilmington, NC to Daytona Beach, FL. According to the National Park Service...

*The Gullah Geechee Cultural Heritage Corridor Commission is charged with helping to achieve the goals of the Corridor designation: to recognize, sustain, and celebrate the important contributions made to American culture and history by the Gullah Geechee; to assist state and local governments and public and private entities in South Carolina, Georgia, North Carolina, and Florida in interpreting the story of the Gullah Geechee and preserving Gullah Geechee folklore, arts, crafts, and music; and to assist in identifying and preserving sites, historical data, artifacts, and objects associated with Gullah Geechee people and culture for the benefit and education of the public.*

## Unique Natural or Scenic Resources

The Goose Creek Reservoir is a scenic, 600-acre natural drainage basin that serves as one of the main local scenic attractions. Accessible by the Bettis Boat Landing off Mabeline Road and access to the Cooper River from the Steward St Water Access at the end of Steward St, the reservoir provides Hanahan residents and visitors with opportunities for fishing, boating and bird and alligator watching.

## Places of Worship

There are several places of worship in Hanahan that provide a range of religious services to residents and attendees. As seen in Map X, most of the places of worship are in Hanahan Proper and are naturally dispersed throughout the neighborhood. Newer neighborhoods, like Eagles Landing, Otranto and Tanners Plantation, have fewer churches in the neighborhoods but those institutions create a foundation for the neighborhood.

## Natural Resources Element

Natural resources are any naturally occurring element or phenomena in the environment, such as weather, climate, hydrologic features, plants and animal species, soil types, erosion/sedimentation, etc. The interaction between the different resources located within an area is described as an ecosystem. As the built environment infringes on the natural environment, maintaining and preserving balanced and sustainable ecosystems has been an ongoing endeavor worldwide.

In an effort to help identify and promote the preservation of local natural resources, South Carolina requires local municipalities and counties to include a Natural Resources Element within their comprehensive plans. This requirement brings the topic of natural resources front and center in local municipal planning and strongly recommends that these resources be thoughtfully considered during all planning processes.

Natural resources play a pivotal role specifically in the comprehensive planning process. The resources outlined within this Element will impact all other Elements in this Plan, especially the Land Use and Resiliency Elements. Hanahan has several very important natural resources that are unique to Hanahan, one being the Goose Creek Reservoir. Throughout this Element, the major natural resources will be identified, mapped and discussed to document the condition and importance of these resources when formulating planning policies and recommendations. The Resiliency Element will later build on some of the natural hazards that occur and can affect these resources.

## Weather And Climate

Weather and climate patterns are affected by many different factors, such as elevation, latitude, land cover, waterbodies, etc. Due to the proximity of the Atlantic Ocean and the Tropic of Cancer, the BCD region experiences maritime tropical weather patterns, bringing warm and moist air conditions from the Caribbean. Therefore, Hanahan typically experiences mild winters while the rest of the year tends to be warm. Similar to most other areas in the northern hemisphere, January is typically the coldest month of the year and July is typically the hottest most of the year. Between the months of June and September, Hanahan experiences the highest chance of precipitation, with the wettest month typically being July. Due to the maritime tropical weather patterns, afternoon thunderstorms are common in the summer months. The year-round climate is considered “temperate to subtropical,” with an average annual “high” temperature of 75.4 degrees Fahrenheit. The climate makes South Carolina very desirable and is an important pull factor for retirees choosing South Carolina as a place for retirement or a winter home.

## Hydrologic Features

### Watersheds

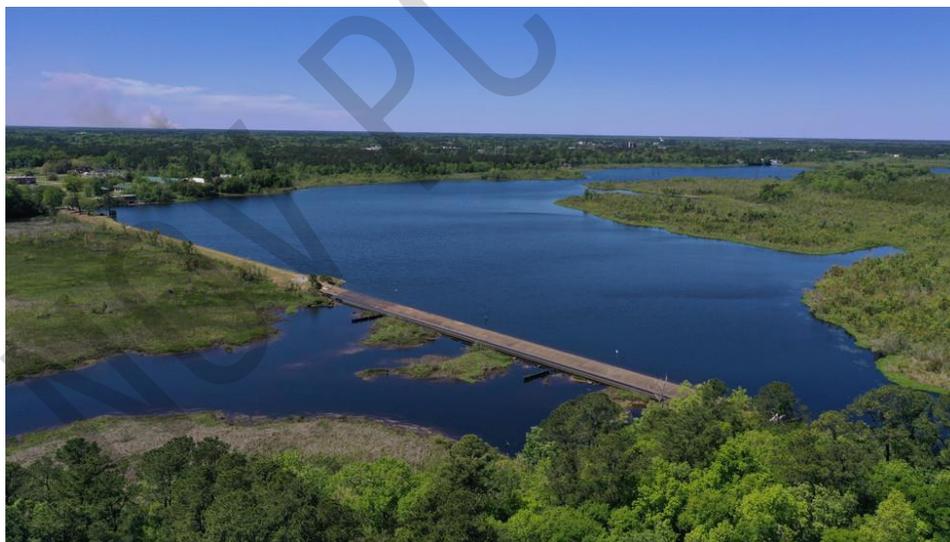
There are several different hydrologic features that all perform a variety of different functions within the hydrologic cycle. Each feature helps store, filter and move water through the hydrologic cycle once in a watershed. A watershed is a land area that channels rainfall and snowmelt to creeks, streams, and rivers, and eventually to outflow points such as reservoirs, bays, and the ocean. A watershed encompasses several different hydrologic features such as streams, rivers, lakes, reservoirs, marshes, wetlands, floodplains, and aquifers. Other important features that are

located within a watershed are stream buffers, forested lands, plants and animals, soil types and slopes. These features do not directly store or move water through the watershed, but their presence can greatly impact the retention and filtration of stormwater, as well as reduce the potential erosion, caused by rainfall.

The City of Hanahan lies entirely within the Goose Creek watershed, which is part of the larger Cooper River Watershed. About half of the watershed is located within Berkeley County, with smaller portions located in Charleston and Dorchester Counties. The Goose Creek Watershed is approximately 61.8 square miles in size, with approximately 27.8% being areas of storage i.e., lakes, ponds, reservoirs and wetlands, 17.8% being impervious surfaces and 13.3 percent being forested land. The mean annual precipitation for this area is approximately 50.1 inches, therefore, the Goose Creek Watershed processes about 53.7 billion gallons of rainwater annually, however, not all this rainwater ends up in the Cooper River. Evaporation, percolation, and human usage remove a fair amount of this water from the hydrologic cycle. The Goose Creek Watershed likely accounts for about 5% of the total discharge of the Charleston Harbor.

### Rivers, Streams, and Reservoirs

Perhaps one of the most important natural resources within Hanahan, is the Goose Creek Reservoir. This structure allows for the separation of the freshwater upstream from the brackish water of the lower Goose Creek just before it flows into the Cooper River. Smaller tributaries of Goose Creek are the Limehouse Branch, Turkey Creek, Old Goose Creek, and the McChune Branch, of which Turkey Creek is the only non-freshwater tributary. There are approximately XX stream miles within the Goose Creek Watershed and XXX.X acres of lakes, reservoirs, ponds and other storage areas, the largest of which is obviously the Goose Creek Reservoir.



Rivers and streams are the most common way rainfall travels through the hydrologic cycle. Due to Hanahan being an urbanized area, the municipal separate storm sewer systems (MS4s) are another common way for rainfall and stormwater to travel, however, most likely the outflow of this system is a local stream or tributary. Hanahan is a regulated Small MS4 and has an agreement with Berkeley County for the County to manage and oversee the city's stormwater permitting.

## Floodplains

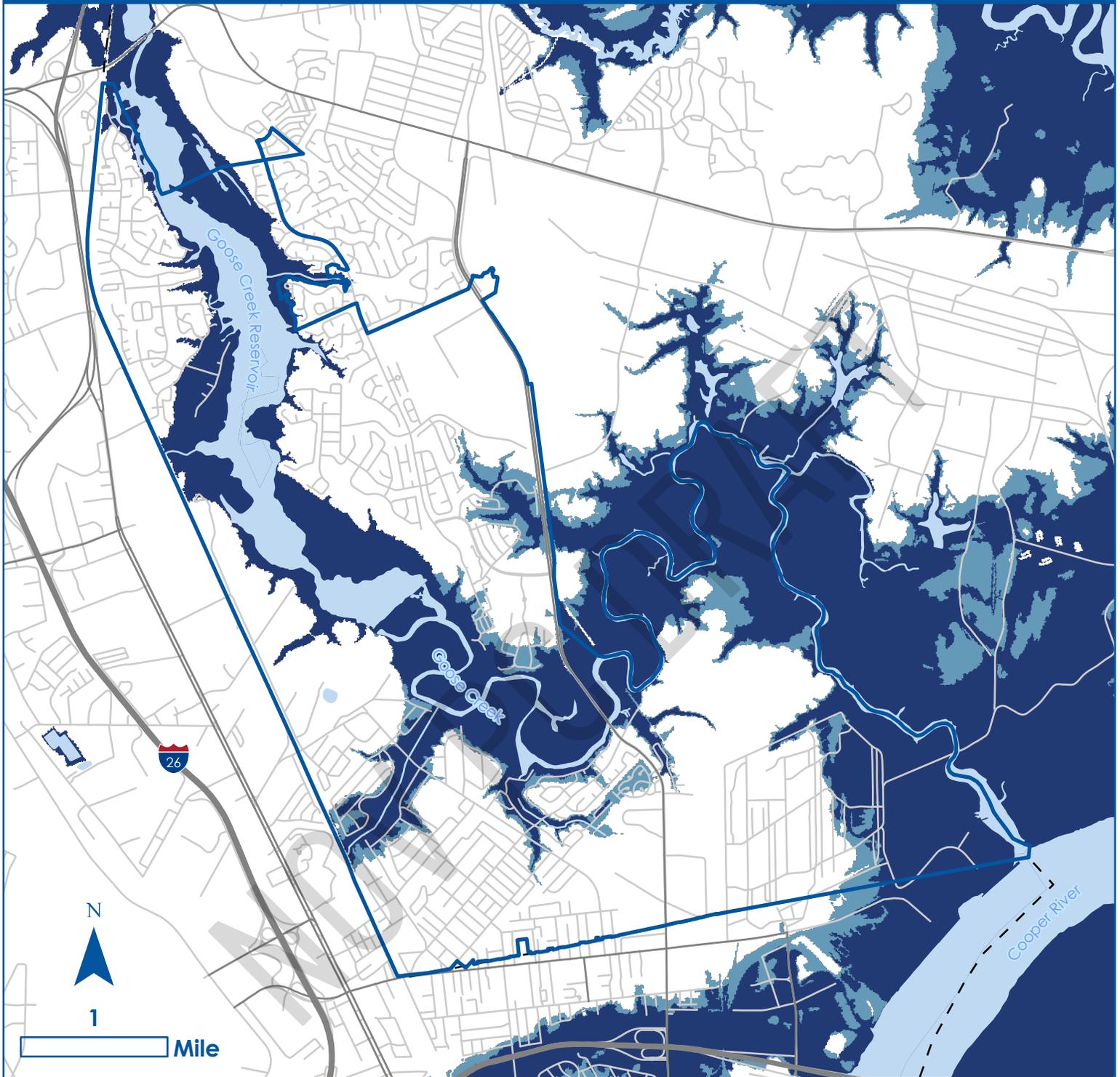
Floodplains are another important feature that works alongside other hydrologic features. Floodplains are adjacent to bodies of water such as rivers, streams, and lakes, however, they can also be in low-lying areas that temporarily store water only after large rain events. Unlike lakes and reservoirs, floodplains store water only on a temporary basis. This is the most important function of this feature because this alleviates some of the volume of water from the adjacent water bodies. This then reduces the velocity of the flow, retains the water, filters water through vegetation and minerals, and allows time for the water to percolate which replenishes the groundwater. Fast-moving rivers or streams are not able to perform these tasks as effectively.

Due to Hanahan's location adjacent to several major water bodies i.e., the Cooper River, Goose Creek Reservoir, Goose Creek and Foster Creek, development within a floodplain is not uncommon. According to the public participation survey, there were a number of concerns regarding the flooding of property, streets and buildings. As seen on Map X, the 100-year floodplain impacts XX properties and XX buildings within the city limits. It should be noted that the 100-year floodplain is not a flood that happens every 100 years but rather a flood that has a one percent chance of occurring at that level. There are several factors that can impact the chance of a 100-year flood event occurring such as soil saturation, size of the watershed, duration of rainfall, storm intensity, slopes, etc.

MAP X: 100-YEAR AND 500-YEAR FLOODPLAINS

# Floodplains

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## FEMA Flood Insurance Rate

- 1% Annual Chance Flood Hazard
- 0.2% Annual Chance Flood Hazard

## Political Boundaries

- Hanahan Boundary
- County Boundary

## Wetlands

Unlike floodplains, wetlands are an area of land, often very flat, that is either permanently covered by water or frequently saturated with water. There can be both freshwater and saltwater/brackish water wetlands. The Cooper River, a saltwater river, and the upper Goose Creek watershed, a freshwater watershed, allow Hanahan to have a mixture of both freshwater and saltwater wetlands. An important area for retention, filtration and percolation, wetlands perform numerous functions within the hydrologic cycle as well as provide a diverse ecosystem for flora and fauna.

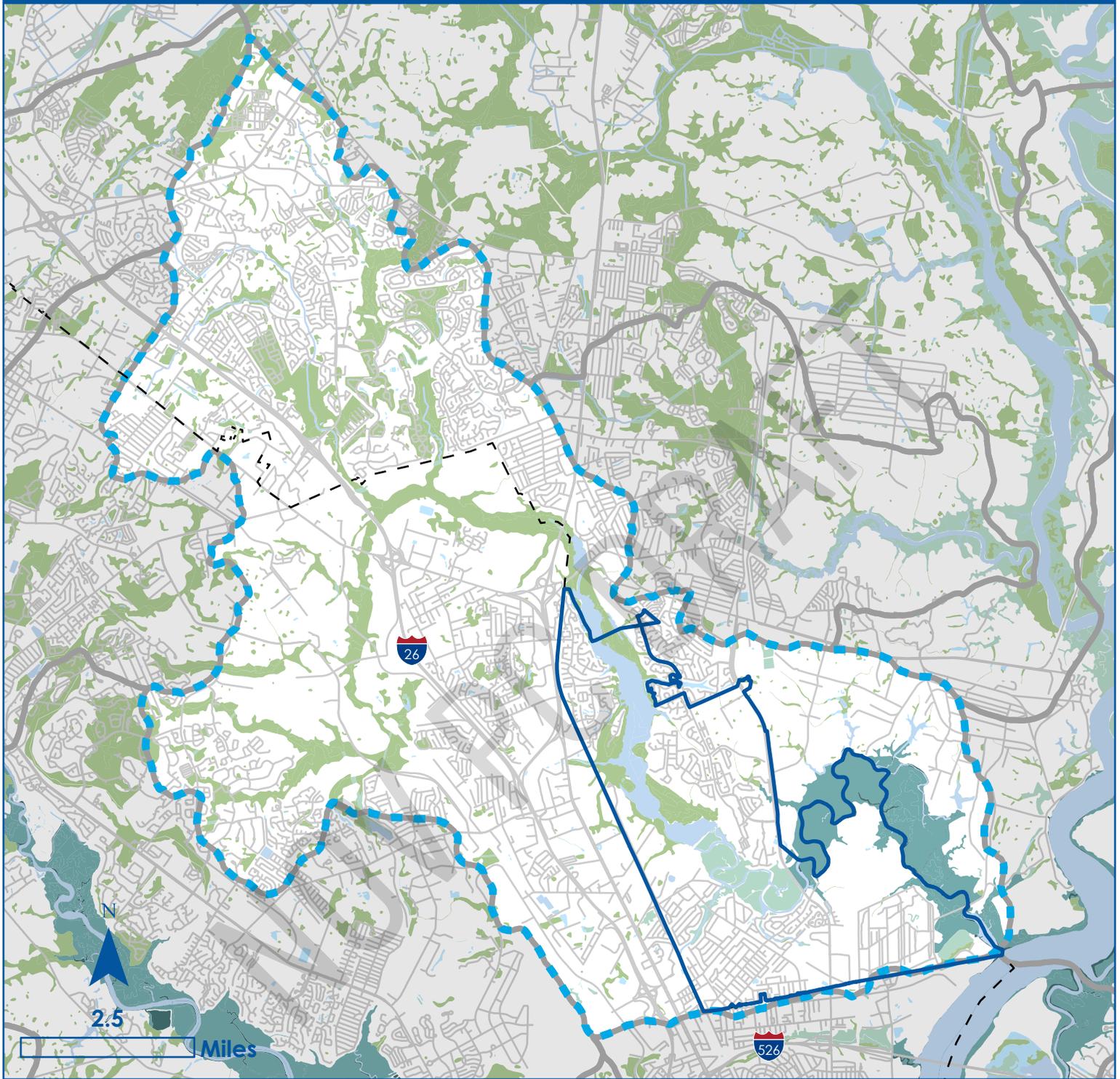


As seen in Map X, most of the wetlands within Hanahan are along the Goose Creek Reservoir and lower Goose Creek. There are several branches of wetlands that extend into urban and residential areas of Hanahan. These areas should be protected as they serve as filtration for stormwater and a potential recreational area. Unlike other watersheds within the Cooper River basin, the Goose Creek Watershed has some of the high-density urban development, therefore, priority preservation efforts should be given to the preservation of the natural resources within this watershed. There are nearly 5,400 acres of valuable freshwater wetlands that provide an indispensable filtration process for stormwater and runoff before flowing into the Goose Creek Reservoir. Multi-municipal efforts to reduce pollution, clean up trash, stop the fill of wetlands and limit the clearing of forested land, should be a priority.

MAP X: WETLANDS AND WATERSHEDS

# Wetlands and Watersheds

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## Wetland Types

- Freshwater Pond
- Freshwater Emergent Wetland
- Freshwater Forested/Shrub Wetland
- Estuarine and Marine Wetland
- Estuarine and Marine Deepwater

## Hydrologic Unit

- Goose Creek Watershed
- Other Watersheds

## Political Boundaries

- Hanahan Boundary
- County Boundary

## Groundwater

One of the most valuable natural resources is groundwater. This source of freshwater can be used for a variety of uses but is most importantly used for drinking water. Groundwater can be found underground in areas known as aquifers. Aquifers are areas below the water table of permeable rock or other loose materials such as gravel and sand that water is able to flow at various rates depending on the porosity of the materials. Aquifers can be accessed most by manmade wells and natural springs. Groundwater can be recharged through the percolation of stormwater, the gradual absorption from waterbodies and by subterranean rivers.

Hanahan is located within the Middendorf Formation Aquifer, which is part of the larger Southeastern Coastal Plains Aquifer System. In 2001, the Department of Health and Environmental Control (DHEC) designated Charleston, Berkeley and Dorchester Counties as the Trident Capacity Use Area in accordance with the Groundwater Use and Reporting Act. This designation was made after investigations by the South Carolina Department of Natural Resources (SCDNR) found significant groundwater declines, saltwater intrusion, and large cones of depression likely caused by the increase in reliance on groundwater as a result of rapid industrial and commercial growth. As a designated Capacity Use Area, anyone who withdraws three million gallons or more in a month must receive a permit from the DHEC. In addition, the amounts of groundwater withdrawn are reported to DHEC annually so that users can be monitored.

Since 1996, reports measuring the water levels at various well sites throughout the aquifer have allowed for the tracking of the depletion of the aquifer over time. The latest report released in 2019 identifies that the cone of depression in Kiawah Island which formed in 2001, has since been replenished and the cone of depression in Berkeley County which formed in 2009, has also been replenished. The cone of depression has remained in the Mount Pleasant area since 1996 but has fluctuated in water levels over the years. The hope is that the recent rise in water level elevation from -101 ft in 2016 to -79 ft in 2019 will continue. Additional freshwater resources will need to be explored if the cone of depression will ever be replenished.

## Water Quality

The health of a community can be greatly influenced by the quality of the local water supply. Water quality can impact all aspects of life such as the food supply, recreational opportunities, environmental sustainability, resident health and welfare, and overall quality of life.

Common examples of water pollutants are oils and debris from roadways, wastewater and septic leakage, excess nutrients/minerals such as nitrogen, iron, manganese, bacteria, and industrial chemicals. The pollution of surface and groundwater has become an increasingly important issue over the past couple of decades as water pollution is tainting a lot of waterbodies at unprecedented levels. Stormwater management policies and an increase in filtration systems can help mitigate some of these pollutants from contaminating the surface and groundwater supply.

The BCDCOG last updated its 208 Water Quality Management Plan in 2011. The purpose of this Plan is to preserve and enhance water quality and to meet the goals of the Federal Clean Water Act and the South Carolina Pollution Control Act. The 208 Plan serves as a guide to local decision-makers when addressing issues and opportunities related to water quality and more specifically how wastewater management and planning impact water quality. The DHEC monitors water quality from numerous monitoring sites throughout the region, four of which are located within Hanahan.

There are three sites along the Goose Creek Reservoir and one site along Goose Creek. As seen in Map X, each monitoring site supports different uses depending on different environmental factors. The most common causes of impaired use in Berkeley County are high levels of mercury, high levels of fecal coliform and low levels of dissolved oxygen.

## Soil Types and Characteristics

In areas with gentle slopes, large flat plains and different types of wetlands, the composition of the soil is an important consideration when discussing environmental protection policies. Soil types can range from sandy, silty, clay-like and anywhere in-between. Loam is a blend of all three soil types and is typically the best for cultivation. The composition of the soil can impact the quality of land for agriculture, water infiltration, stability of land for construction, the erodibility from water and wind, and the filtration of pollutants/excess nutrients from the ground.

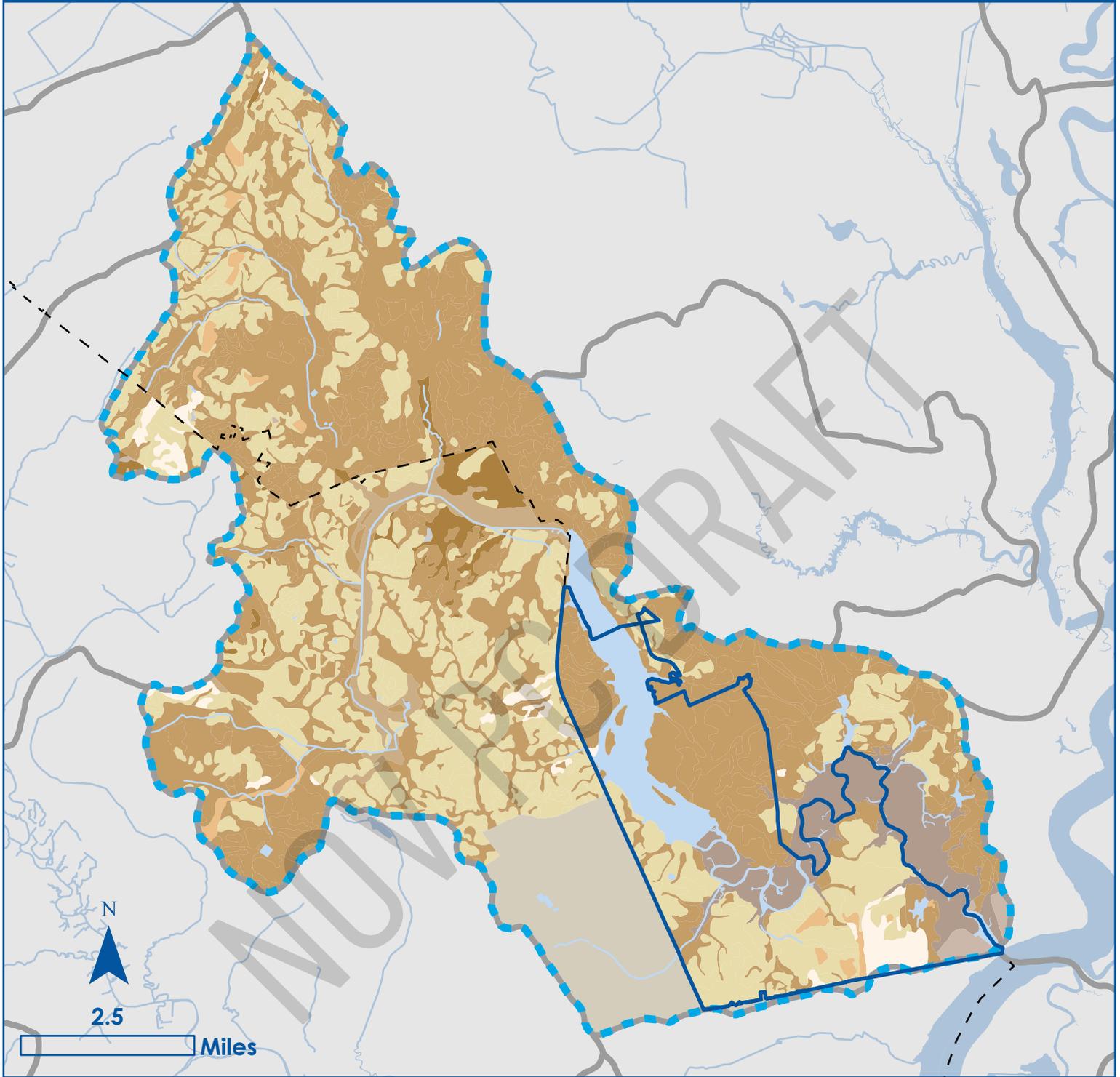
Hanahan is in a coastal region with large amounts of wetlands and floodplains. For a watershed to function efficiently, a mixture of different soil types is needed to support the different functions that other features in the hydrologic cycle provide. In areas outside of the floodplain, soil types with high infiltration rates and low runoff potential are ideal. As seen in Map X, many of the soil types within the Goose Creek Watershed are sand-based soils with about 77% being either loamy sand or sandy loam. Sandy soils are the best soil types for infiltration of water as they are the largest mineral size compared to silt and clay. The large volume of high-quality groundwater discussed previously can partially be attributed to the ideal soil type for filtering water as it infiltrates the ground and eventually recharges the aquifers.

### MAP X: SOIL TYPES

Soil downstream from the dam is primarily composed of silty clay loam. The mixture of silt and clay creates a dense and almost impermeable soil type with very slow infiltration rates but high runoff potential, making this soil type ideal for the storage and eventual drainage of excess water. Silty soils are also very fertile allowing for the wetlands in this area to provide a thriving ecosystem for terrestrial and aquatic life. Although most of land in Hanahan is classified as having some level of national or state agricultural importance, Hanahan is an urbanized environment, therefore, it's likely that most land will not be utilized by agriculture.

# Soil Types

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## Hydrologic Unit

- Goose Creek Watershed
- Other Watersheds

## Soil Texture and Composition

- Sand
- Loamy Sand
- Sandy Loam
- Sandy Clay Loam
- Clay Loam
- Loam
- Silty Loam
- Silty Clay Loam
- Urban

Muck

Water

## Political Boundaries

- Hanahan Boundary
- County Boundary

## Plant and Animal Species

The Endangered Species Act of 1973 enabled Federal and State governments to survey and designate plants and animals on a multi-level scale to signify the level of protection that they need in order to survive as a species. These conservation designations allow for specific laws and protection measures to be applied to their habitats and ecosystems. Furthermore, the state recently published iteration two of the State Wildlife Action Plan (SWAP) in 2015 that identifies the species of greatest conservation need in South Carolina. The SWAP also outlines nine broad statewide conservation strategies that are generally impacting all priority species. This plan also provides protection guidelines and an implementation strategy for County and municipal governments to review and adapt to meet local conservation needs.

Species identified in the SWAP were classified based on a priority scale ranging from moderate to high to highest priority. Not all species in the SWAP are listed on either the State or Federal Endangered Species List, however, as seen in Table X, all Federal or State listed species will have at least a High priority ranking. According to a SC DNR dashboard, in Berkeley County, there were 220 total tracked species, 63 of which ranked as moderate, 34 ranked as high and 39 ranked as highest priority. There are five different plant and animal species in the Hanahan area that have a SWAP ranking, four of which, have some level of federal or state protection. To further protect these habitats, the specific location is not shown on Map X but rather the general area.

MAP X: STATE WILDLIFE ACTION PLAN SPECIES OF GREATEST CONSERVATION NEEDS

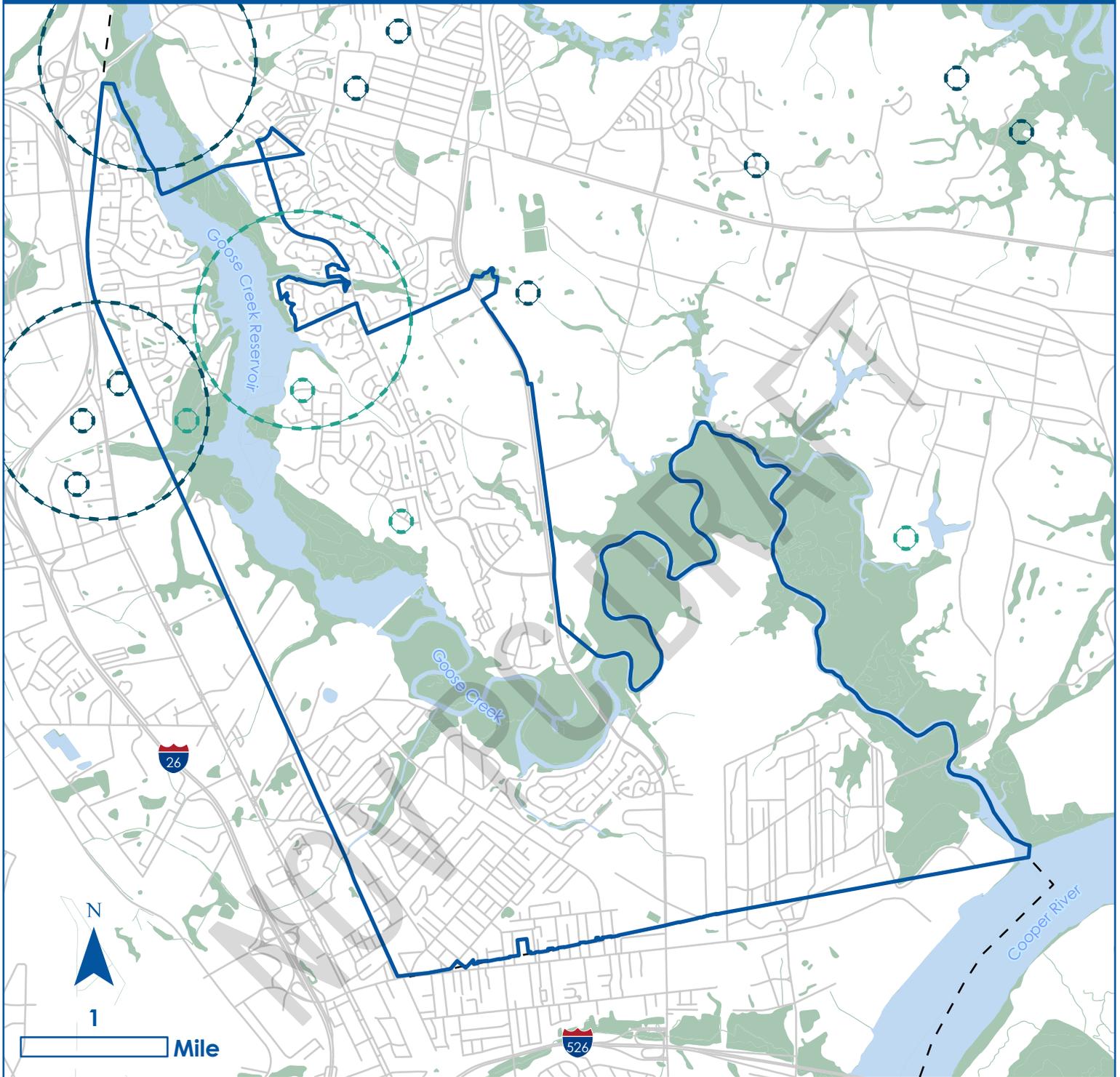
## Greenways and Environmental Protections

Greenways are not a new concept in the BCD region. There are several examples of greenways that are used to connect different neighborhoods and commercial centers. A greenway is an undeveloped area of land that is used for the environmental protection of natural resources as well as possible recreational opportunities. By identifying the most environmentally rich areas within Hanahan, areas with several different natural resources should have priority preservation. As seen in Map X, these areas create hubs and corridors that can be linked together to create a greenweb. The areas in and around Hanahan are scored differently based on ecological and environmental metrics. Unsurprisingly, the wetlands surrounding Goose Creek and the Goose Creek Reservoir have a high score.

MAP X: GREEN INFRASTRUCTURE CORES

# SWAP Species of Greatest Conservation Needs

Hanahan Comprehensive Plan 2040 Update



## SWAP Priority Ranking

- Moderate
- High
- Highest

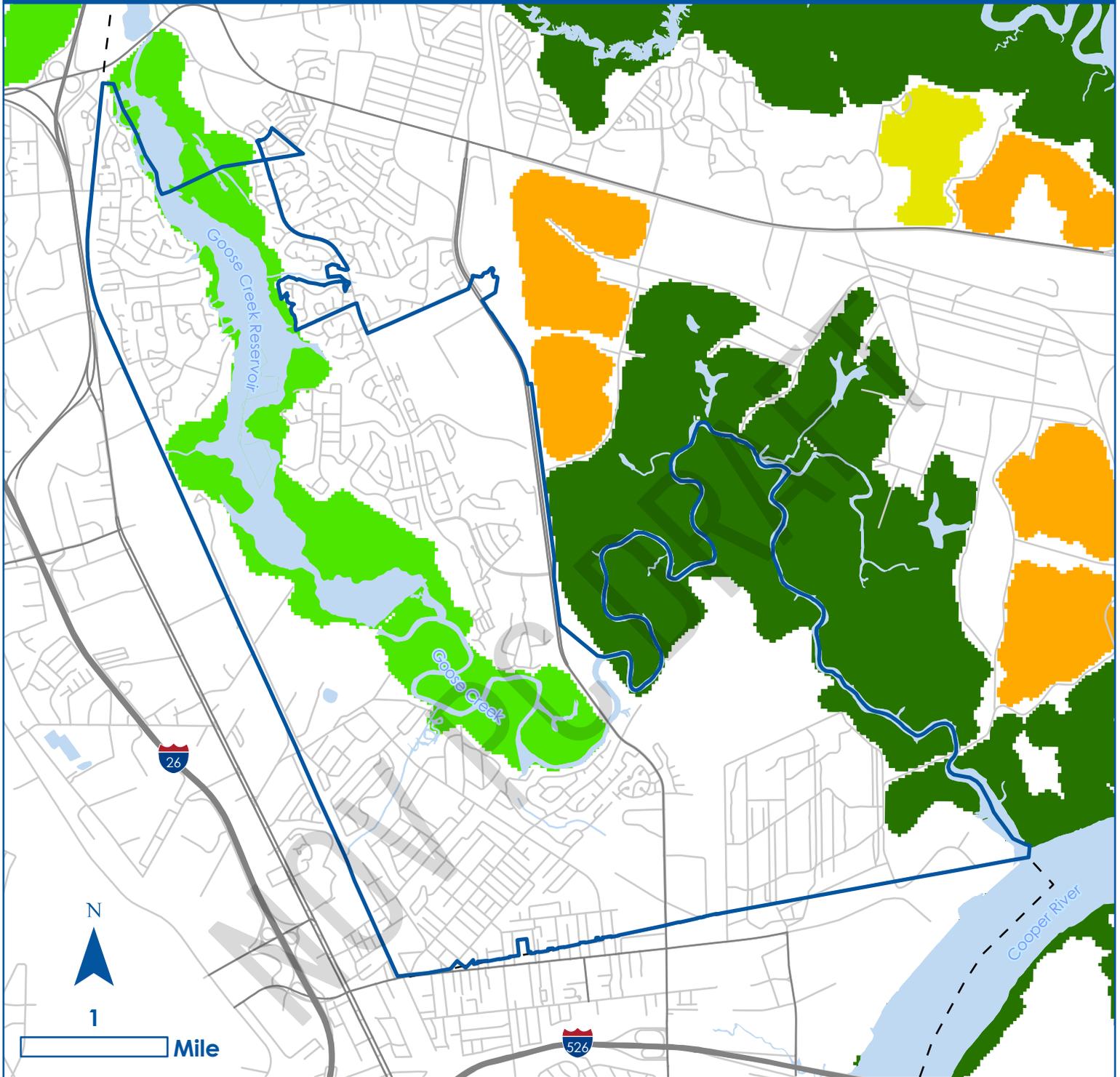
Wetlands

## Political Boundaries

- Hanahan Boundary
- County Boundary

# Green Infrastructure Cores

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## Green Infrastructure Score Weight

- 2.4 - 5.1
- 1.9 - 2.3
- 1.7 - 1.8
- 1.6
- 1.3 - 1.5

## Political Boundaries

- Hanahan Boundary
- County Boundary

TABLE X: LIST OF STATE WILDLIFE ACTION PLAN SPECIES OF GREATEST CONSERVATION NEEDS

Species Name	Common Name	Federal Listing	State Listing	SWAP Priority Ranking
<i>Picoides borealis</i>	Red-cockaded Woodpecker	Endangered	Endangered	Highest
<i>Sternula antillarum</i>	Least Tern	Migratory Bird Treaty Act	Threatened	Highest
<i>Schwalbea americana</i>	Chaffseed	Endangered		Highest
<i>Nerodia Floridana</i>	Florida Green Watersnake			Highest
<i>Haliaeetus leucocephalus</i>	Bald Eagle	Bald & Golden Eagle Protection Act	Endangered	High

NOV PC DRAFT

## Resiliency Element

The Lowcountry region has the potential to experience a wide variety of natural hazards ranging from flooding to droughts to earthquakes. The most common natural hazards that Hanahan faces are hurricanes, tornadoes and flooding. These events can result in extensive damage to a community not only physically, but financially, spiritually and socially. For the past couple of decades, the National Oceanic and Atmospheric Administration (NOAA) has studied these weather-related events to help better prepare local communities for these types of hazards and disasters.

In September 2020, the South Carolina Legislature passed the South Carolina Resilience Revolving Fund Act (RRFA) or the Disaster Relief and Resilience Act to expand the state's planning efforts for resilience to natural disasters and flooding events. One of four primary components of the RRFA requires local governments to include a Resiliency Element in future Comprehensive Plans. This requirement is intended to enable communities to assess natural hazard risks and identify potential impacts on the health, safety and welfare of the community all at the local level rather than at a state or regional level. The analysis of these factors will incite discussions on possible recommendations that could help mitigate the effect that these risks would have on the local community.

The Resiliency Element of this Plan will identify the major natural hazards that could occur in the City of Hanahan, assess the potential risks and identify the impacts on the community. Many of the natural geographic features outlined in this Element are discussed in greater detail in the Natural Resource Element of this Plan. Most of the information discussed in this Element will directly reflect the Berkeley County Hazard Mitigation Plan, therefore, for greater detail on resiliency planning, please refer to that document.

## Existing Local Regulations

The City of Hanahan has several different Ordinances and other regulatory documents that address the need for resiliency towards natural hazards. Most regulations can be found within the City's Code of Ordinances. Some of the local regulations pertaining to resiliency are as follows:

- **Ch. 18 Environment, Art. III: Stormwater Management**

In 2018, the City of Hanahan added an amendment authorizing Berkeley County to enforce the County's Stormwater Management Ordinance within the City.

- **Ch. 22 Flood Damage Prevention Ordinance**

Last updated in 2017, the City's Flood Damage Prevention Ordinance aims to protect human life and health, minimize property damage, and encourage appropriate construction practices to minimize public and private losses due to flood conditions by requiring that uses vulnerable to floods, including facilities which serve such uses, be protected against flood damage at the time of initial construction.

- **Zoning and Land Development Ordinances**

The Zoning Ordinance gives the Design Control Committee certain powers to protect and promote the natural environment and landscaping. Although the intention is to preserve the community character of Hanahan, this oversight also promotes conservation and sustainable development practices. Other applicable regulations outlined in the Zoning Ordinance that impact resiliency efforts include landscaping criteria, compatible land uses, and the designation of protected trees.

- **Berkeley County Hazard Mitigation Plan 2020 Update (BCHMP)**

Recently adopted in 2021, the BCHMP is valid through 2026. The purpose of this Plan is to review the different hazards that impact Berkeley County and its municipalities, identify the potential impacts of those hazards and form recommendations to help mitigate the impacts that they can cause. Mike Cochran, the Hanahan City Administrator, was the representative and point of contact for the city during the planning process.

## Natural Hazards

Weather-related events, such as hurricanes, tropical storms, tornadoes and flooding impact more people yearly. Coastal communities continue to increase in population and often, thorough planning is not done to ensure the resiliency of these communities during natural hazard events. This section will identify the different types of natural hazards and the locations they would most likely impact. At the end of this Element, an overall risk assessment will show the types of natural hazards that Hanahan is most susceptible to and possible recommendations to address any gaps in the city's resiliency planning.

MAP X: LOCATIONS AND PATHS OF NATURAL HAZARDS (HURRICANES, EARTHQUAKES AND TORNADOES)

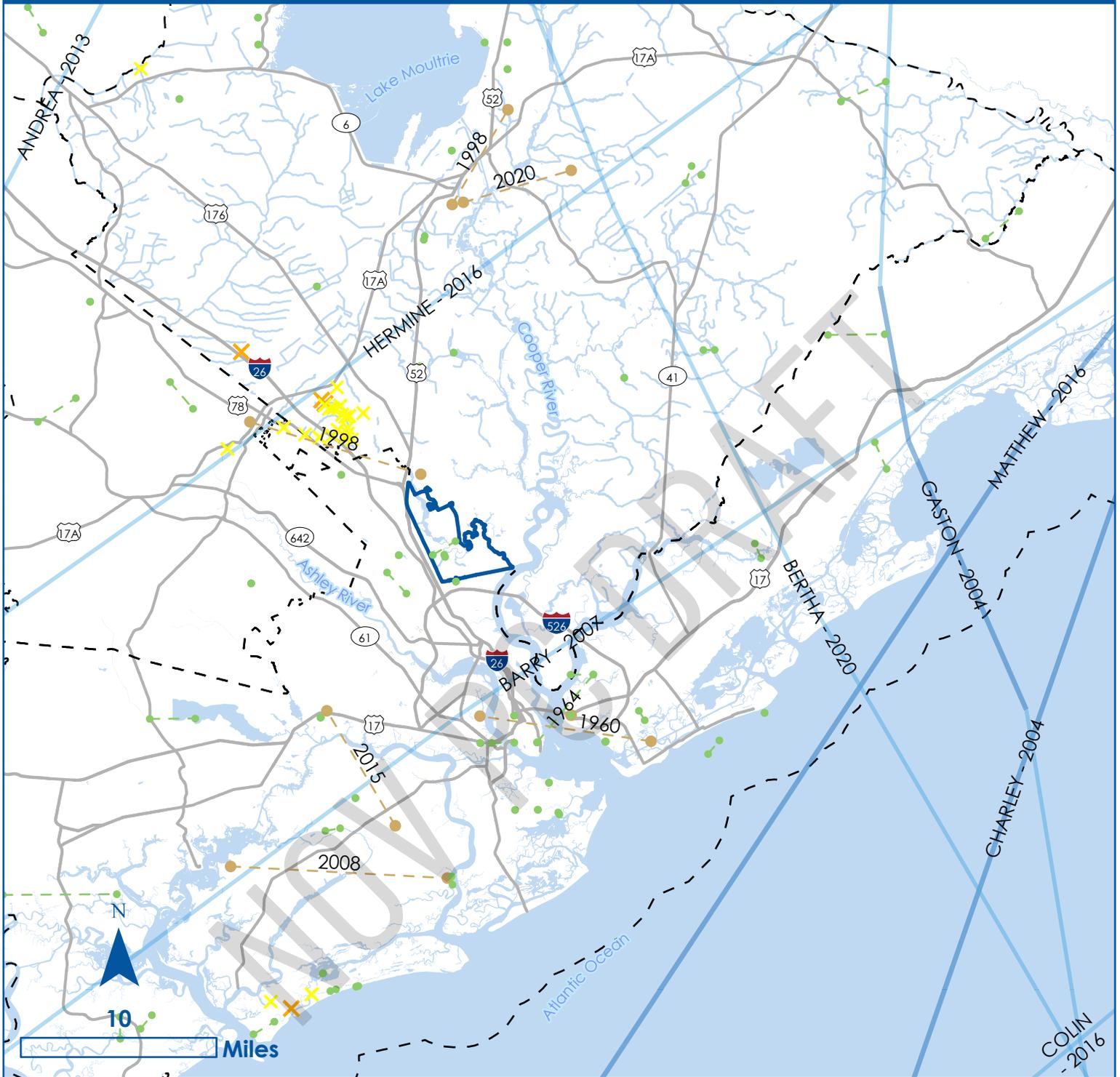
## Tropical Depressions, Storms and Hurricanes

According to the National Hurricane Center (NHC), a branch of the NOAA, there are several different classifications of tropical systems that are categorized based on the system's maximum sustained surface wind speeds. The classifications are as follows:

- Tropical Depressions - 39 mph winds or less;
- Tropical Storms - 39 to 73 mph winds;
- Category 1 Hurricane - 74 to 95 mph winds;
- Category 2 Hurricane - 96 to 110 mph winds;
- Category 3 Hurricane - 111 to 130 mph winds;
- Category 4 Hurricane - 131 to 155 mph winds; and
- Category 5 Hurricane - Over 155 mph winds.

# Locations and Paths of Natural Hazards

Hanahan Comprehensive Plan 2020 Update: August 2022 Draft



## Earthquake Magnitude

- ✕ 0 - 1.0
- ✕ 1.0 - 3.0
- ✕ 3.0 - 5.0
- ✕ Over 5.0

## Hurricane Categories

- Category 5
- Category 4
- Category 3
- Category 2
- Category 1
- Tropical Storm

## Tornado Intensity

- Weak (EF0 to EF1)
- Strong (EF2 to EF3)
- Violent (EF4 to EF5)

## Political Boundaries

- Hanahan Boundary
- County Boundary

South Carolina has a 79.7% chance annually of being impacted in some way by a depression, storm or hurricane.<sup>10</sup> Hurricane season for the South Atlantic and the Gulf States begins in June and lasts until the end of November. Trends reveal that August through October are the most common months, however, there have been systems that occur as early as February in the past. As seen on Map X, there have been several tropical storms and hurricanes that have impacted the area in and around Hanahan. Since 2000, there have been four hurricanes, all of which were category 1, that have been within 50 miles of Hanahan: Charley and Gaston (2004), Matthew (2016) and Isaias (2020).<sup>12</sup>

Tropical systems can create conditions for several additional hazards besides the intense wind. Heavy rainfall is almost guaranteed causing flooding; storm surges are also common along coastal and inland communities near waterbodies; and tornadoes are uncommon but occur mostly further inland and often on the fringes of the storm system. These additional hazards make tropical storms and hurricanes one of the most costly and dangerous natural hazards that can occur in Hanahan.

According to the South Carolina Emergency Management Division (SCEMD) Hurricane Evacuation Zones Map (last updated in 2021), Hanahan, along with most of Berkeley County, is within Zone G – Berkeley County of the Central Coast Region. The primary evacuation routes for Hanahan would be I-26, US 52, US 78, and US 176.

FIGURE X: SOUTH CAROLINA EMERGENCY MANAGEMENT DIVISION HURRICANE EVACUATION ZONE MAP

### Storm Surge and Storm Tides

The NHC defines a storm surge as an abnormal rise of water generated by a storm, over and above the predicted astronomical tides. This differs slightly from a storm tide which is the combination of a storm surge and astronomical tides. In the past, storm surges have been a leading cause of death during tropical systems and can cause massive amounts of damage to property. Coastlines with a shallow or gentle slope, such as South Carolina's, typically generate larger, more intense storm surges due to the progressive buildup of water and pressure before making landfall.

Storm surges are not strictly a coastal community hazard, but can impact communities several miles inland, especially with large rivers like the Ashley, Cooper and Wando flowing miles inland. The height and intensity of storm surges are not dependent on the category of the tropical system, therefore, adhering to storm surge warnings and alerts during all tropical systems is important for maintaining general health and safety.

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<sup>10</sup> Source: [South Carolina Department of Natural Resources: Hurricanes Comprehensive Summary Report](#)

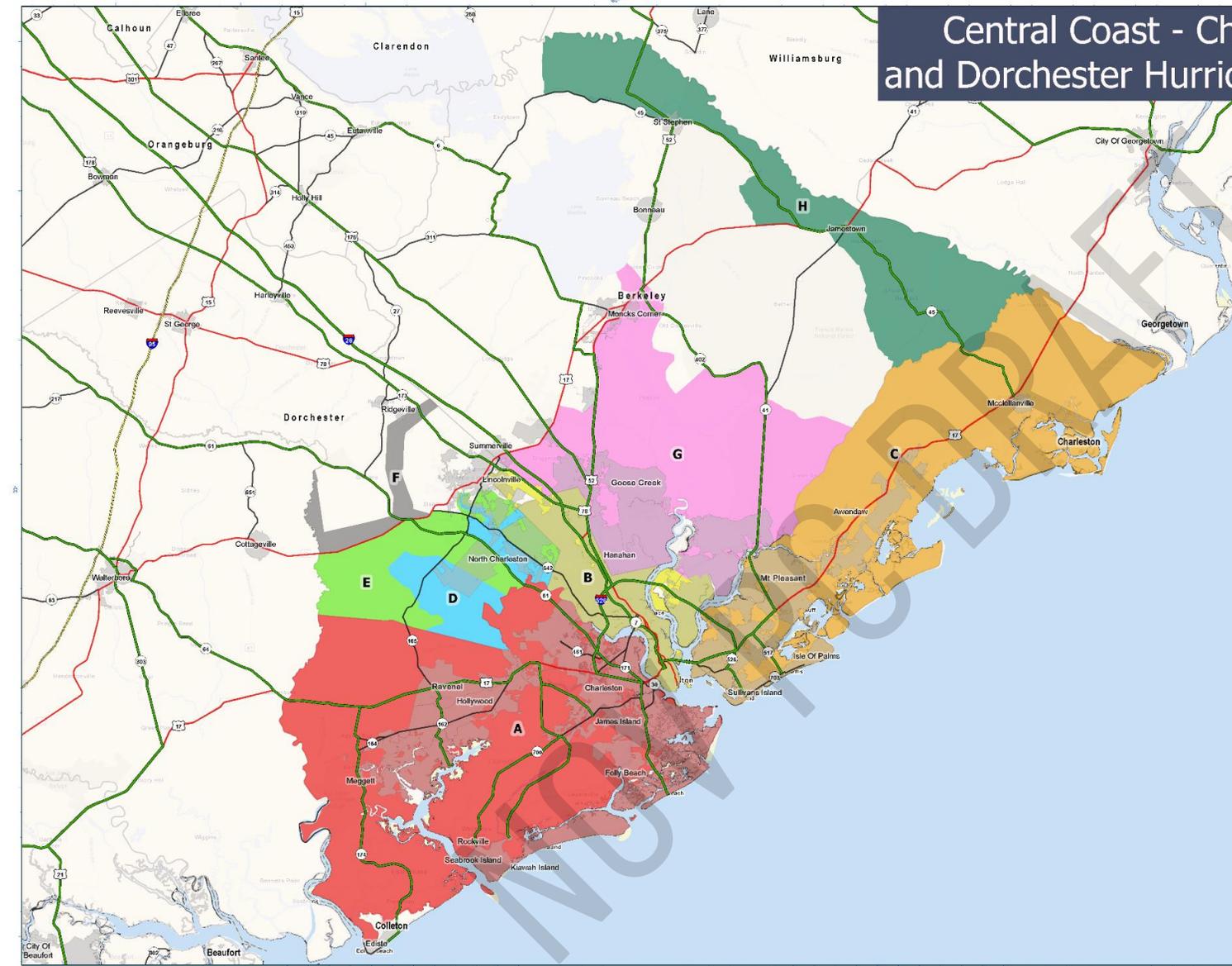
<sup>12</sup> Source: [NOAA Historical Hurricane Tracker](#)

# Central Coast - Charleston, Berkeley, and Dorchester Hurricane Evacuation Zones

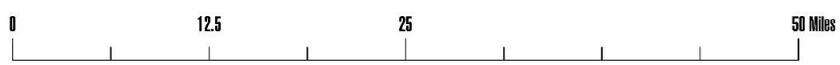
**KNOW YOUR ZONE**  
**PLAN • PREPARE • EVACUATE**

## Central Hurricane Region

-  A - Charleston
-  B - Charleston, Berkeley
-  C - Charleston
-  D - Dorchester
-  E - Dorchester
-  F - Dorchester
-  G - Berkeley
-  H - Berkeley
-  **SCDOT Evacuation Routes**
-  **City Limits**
-  **Counties**



**Disclaimer:** This map is a graphic representation of data obtained from various sources. All efforts have been made to warrant the accuracy of this map. However, SCEMD disclaims all responsibility and liability for the use of this map.



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 Charlie Kaufman - 3/8/2021 3:25 PM

## **Potential Impacts**

There are direct and indirect impacts that tropical systems can have on a community. The more direct impacts are the physical damage that is done during the storm and its aftermath such as building/infrastructure damage, road closures, power failure, fallen trees, and flooding. Secondary impacts have more of a social impact as opposed to an economic one, however, they can still have an economic impact. The disruption of the transportation network is a major secondary impact due to the effects it has on emergency responders, the supply chain, and people continuing to evacuate. Other common impacts that can occur include the loss of life of people or pets, financial strain and stress, loss in property value, temporary (or even permanent) closure of services such as schools, daycare, doctors' offices, hospitals, etc., and the lack of food and resources. Combined, all these impacts from a tropical storm or hurricane can put tremendous strain and stress on a community.

## **Flooding**

The Federal Emergency Management Agency (FEMA) defines a flood as a general or temporary condition of partial or complete inundation of two or more acres of normally dry land area or of two or more properties. Changing climate and weather patterns, environmental conditions and impervious surface coverage may affect the frequency and intensity of a flood. Flooding was a key issue identified in the public participation survey and therefore warrants an important discussion on the different types of flooding, the causes/effects and some best management practices to help mitigate the issue.

Flooding can result from multiple sources - rain from thunderstorms and tropical systems can cause inland and riverine flooding, while coastal flooding can result from a combination of storm surge, wind and rain. These different types of floods (rain, riverine, and coastal), however, can be attributed to the same weather event and can co-occur. Hanahan is especially susceptible to rain and riverine flooding due to its proximity to the Cooper River, Goose Creek and the Goose Creek Reservoir. As seen in Map X, the 100- and 500-year floodplain generally follows Goose Creek, Turkey Creek and some unnamed tributaries into the Hanahan neighborhoods. Areas that are within the 100-year floodplain or high-risk flood zones are designated by FEMA to be in the Special Flood Hazard Area (SFHA). Properties within this area are federally required to have flood insurance, while properties within the moderate to low-risk flood zones (500-year floodplain) are not federally required but are recommended.

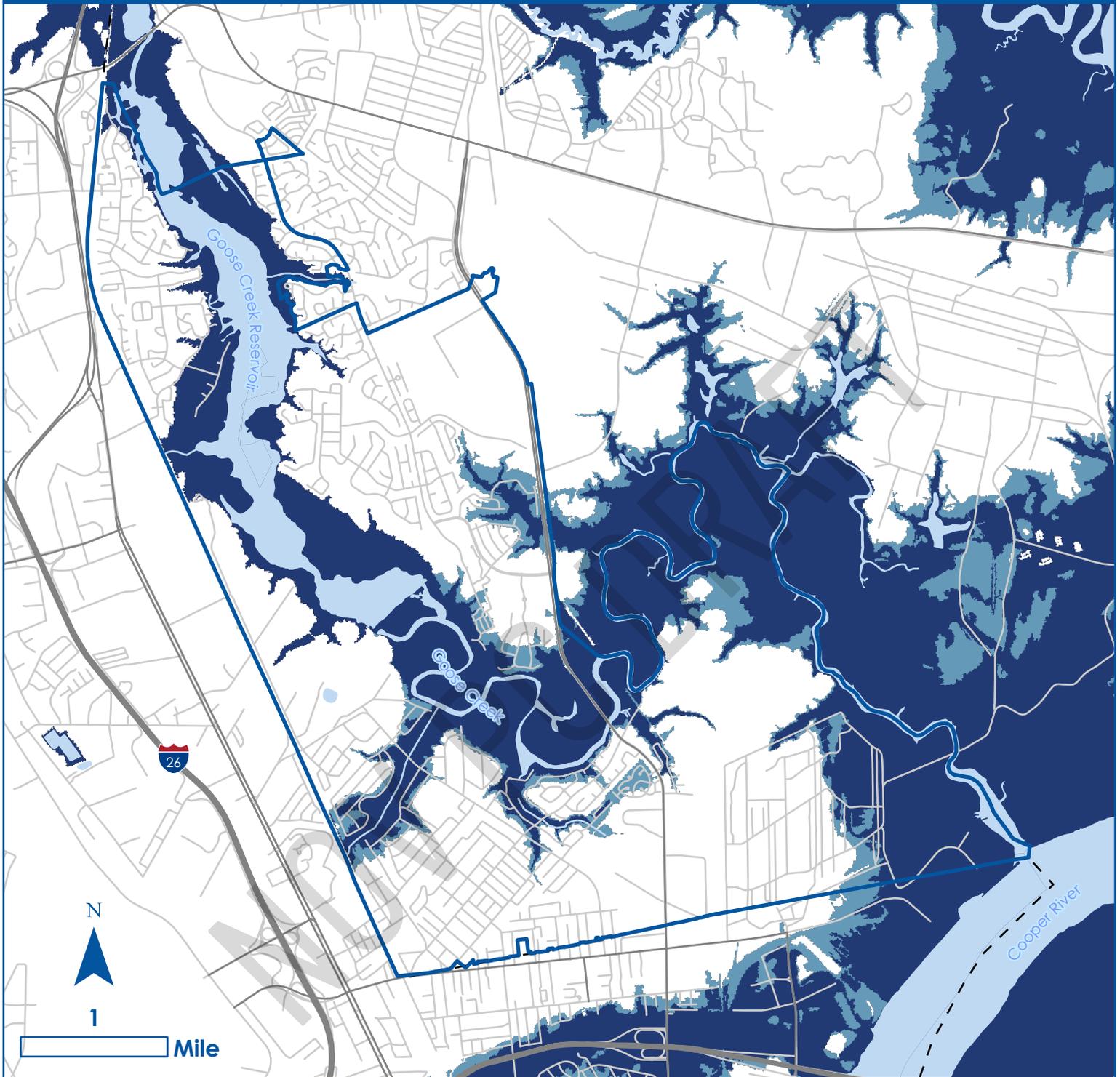
MAP X: FLOODPLAINS

## **Rain Flooding**

A lack of capacity in drainage systems and a slow groundwater absorption rate are major causes of rain flooding, especially in urbanized areas. The amount of impervious surface coverage contributes to this issue as it collects large volumes of stormwater and channels to specific drainage systems, increasing in velocity and picking up debris and pollutants along the way. The volume and velocity of the stormwater can damage infrastructure, erode riverbanks, and create dangerous conditions for traveling such as hydroplaning and moving water on the road. This type of flooding typically contributes to the conditions for riverine flooding.

# Floodplains

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## FEMA Flood Insurance Rate

- 1% Annual Chance Flood Hazard
- 0.2% Annual Chance Flood Hazard

## Political Boundaries

- Hanahan Boundary
- County Boundary

## Riverine Flooding

Flooding along rivers and streams may occur seasonally or during/after heavy rainfall. Also related to a lack of capacity, riverine flooding occurs when the river capacity is full and fills the floodplains. This type of flooding can impact multiple parts of a watershed other than the immediate area, specifically in downstream areas where flooding can occur several days later and can be just as impactful as the original rain event. The damming of Goose Creek reduces the risk of riverine flooding downstream from the dam; however, this increases the risk of flooding for properties upstream of and along the reservoir.

Flash floods can occur due to heavy rainfall that causes a rapid surge in water levels in streams and rivers. Long periods of rain over large areas of land, such as during a hurricane or tropical storm, can cause steady but intense riverine flooding that can potentially last for several days. Common stormwater management practices, such as restoring riparian buffers, reducing the amount of impervious surfaces and having proper building guidelines and setbacks from commonly flooded areas can help mitigate damage that riverine flooding can cause to properties and infrastructure.

## Coastal Flooding

Coastal flooding occurs mainly due to abnormally large high tides and/or heavy rainfall in coastal communities. While this type of flooding does not impact as many people or as large of an area as the other types of flooding, coastal flooding has become increasingly more common due to rising sea levels.

### **Potential Impacts**

Damage from flooding goes beyond the monetary value of the built environment but/and can have serious impacts on the natural environment, such as water pollution, erosion of streambanks, destruction of habitats and the displacement of wildlife. Many would believe that damage to a forest or a streambank is better than building or property damage, and while that is correct from an economic standpoint, the restoration of these environmental buffers is important for mitigating future flood events. The following are different environmental impacts that can be affected by flooding.

- Water Pollution and Water Quality  
The quality of the surface and groundwater can be negatively affected by flood waters transporting pollutants such as debris, minerals, oils, trash, excess nutrients, industrial chemicals, etc. into streams, rivers, reservoirs, lakes and aquifers.
- Debris  
Large fast-moving volumes of water are able to pick up and transport larger, heavier, debris such as trash, rubber from tires, nails and other metals, lawn clippings or dead leaves, animal waste, and plastics, depositing them in streams and rivers and introducing foreign and possibly harmful objects into the natural ecosystem.
- Erosion  
The velocity and volume of water can erode streambanks and alter the natural channel of a stream or river over time, potentially impacting adjacent habitats, roads, or buildings.
- Aquifer Recharge

Due to the slow rate of absorption for water to infiltrate the ground, surface water is not given the opportunity and time to filtrate and absorb into the ground during flash flooding, reducing the amount of water that is able to recharge the aquifers.

- Wildlife Habitats and Ecosystems

Common wildlife ecosystems like riparian buffers, wetlands, and floodplains are typically some of the most impacted areas during and after flood events, damaging food sources, shelters, and vegetation, likely temporarily or even permanently displacing the wildlife.

## Sea Level Rise

Sea level is measured and recorded as an average level of the surface of a waterbody in reference to a specific point of elevation, known as mean sea level (MSL). Coastal areas are particularly vulnerable to rising sea levels as they are adjacent to the coast, typically low-lying lands, and are more frequently saturated. Hanahan is fortunate because the damming of Goose Creek prevents a lot of the neighborhoods from being directly impacted by sea level rise (SLR). As seen in Map X, most of the wetland area along the lower Goose Creek would submerge at a one-foot SLR scenario. If the sea level continued to rise to two and three feet, the area underwater would not change all that much. This is likely due to the developers adjusting the natural height of the land before development so that SLR need not be of immediate concern.

MAP X: SEA LEVEL RISE IMPACT

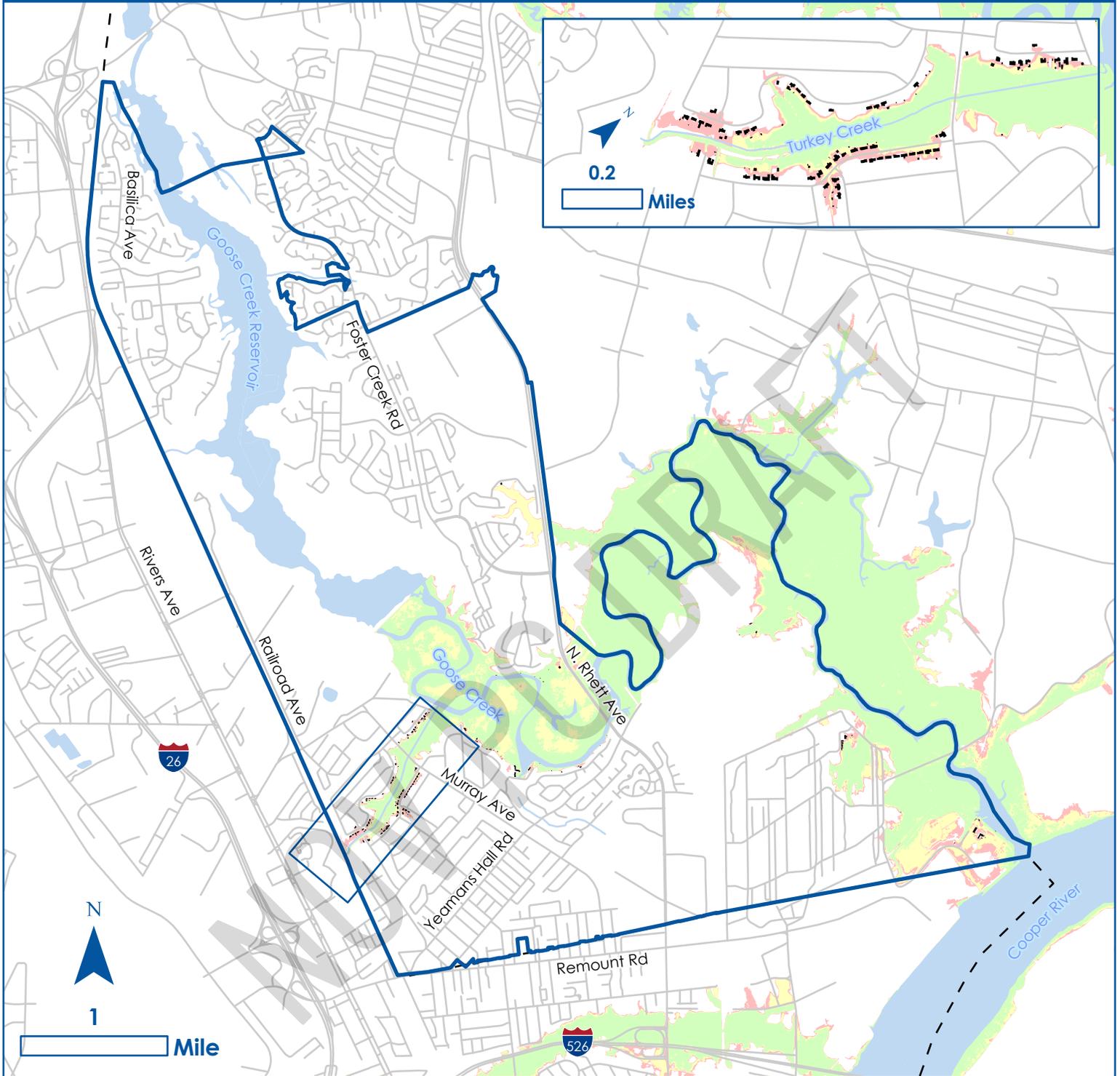
Properties around Turkey Creek are the only major areas within Hanahan that would be largely impacted by SLR. There is a greenway that protects Turkey Creek from the built environment, however, there would still be several buildings and properties impacted by the rise in sea level. Potential impacts include losing land area, losing property value, infrastructure damage, poorer water quality, and the disruption of natural resources and ecosystems. The Berkeley County Comprehensive Plan Resiliency Element has a greater breakdown of Sea Level Rise, like the historic trends, future projections, and some causes of this phenomenon.

## Stormwater Management Practices

Best management practices or commonly known as BMPs, are a set of practices and guidelines that when properly implemented are shown to help reduce the impact that stormwater can have on the built and natural environments. Many of these practices are geared towards preventing water pollution at construction sites, however, there are a set of design guidelines geared towards reducing the environmental impact that large rain events have in urbanized environments. Some of the more common and implementable practices include constructing rock swales, bioswales, and rain gardens, reducing the amount of impervious surface coverage, using pervious/porous surfaces when possible, restoring riparian buffers, implementing a zero net fill policy for new construction, and extending detention ponds. Implementing BMPs is the first step towards mitigating stormwater. Cooperation across municipalities in the Goose Creek watershed to adopt common stormwater management policies aimed to reduce the volume and velocity of stormwater is important for long-term mitigation and will benefit Hanahan being the downstream municipality.

# Sea Level Rise

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## Sea Level Rise (SLR)

- 1 ft SLR
- 2 ft SLR
- 3 ft SLR
- Buildings Underwater at 3 ft SLR

## Political Boundaries

- Hanahan Boundary
- County Boundary

## Dam or Levee Failure

There have been no historical incidents of dam failures in Berkeley County, even during major flood events such as those that occurred in 2015. However, there have been failures in other parts of South Carolina. According to the National Inventory of Dams (NID), there are 11 dams within Berkeley County that are designated as high-hazard, seven of which are around Lake Moultrie and Moncks Corner.<sup>13</sup> It is important to note that the dam for the Goose Creek Reservoir is not listed in the inventory, therefore, little data is known about the structure.

Dam Hazard Potential classifications have three categories:

- High-hazard, where failure will likely cause loss of life or serious damage to infrastructure;
- Significant-hazard, where failure will not likely cause loss of life but may damage infrastructure; and
- Low-hazard, where failure may cause limited property damage.

Lake Moultrie is served by four separate high-hazard dams or levees: the Pinopolis Dam (primary structure) and the East, West and North levees (associated structures). The Pinopolis Dam is the main outlet for Lake Moultrie and is located directly north of Moncks Corner. This dam provides hydroelectricity, a stable water supply, recreational opportunities, flood risk reduction and inland navigation to Berkeley County and other neighboring inland counties. All these structures were last inspected in September 2020 and have recently had an emergency action plan updated in the event of a failure. Due to these frequent inspections, the unlikelihood of failure, and the incalculable impact of dam failure, no mitigation strategies can be recommended.

## Other Natural Hazards

This section will identify and describe other natural hazards that would be uncommon or less likely to occur within Hanahan than those previously discussed. A lot of these hazards are likely to generally occur in Berkeley County, just less likely in Hanahan specifically.

## Tornadoes and Waterspouts

The National Severe Storms Laboratory (NSSL), a branch of NOAA, defines a tornado as a narrow, violently rotating column of air that extends from a thunderstorm to the ground. Tornadoes are regarded as one of the most violent atmospheric storms. When tornadoes form in the BCD region, it is more than likely due to other weather-related events such as tropical storms or hurricanes and typically occur further inland than Hanahan. As seen on Map X, there have been dozens of tornadoes with varying intensities that have touched down in and around the Hanahan area, most of which were categorized as “weak” or EF0 or EF1.

Similar to a tornado, a waterspout is a rotating column of air and water that can also be associated with severe thunderstorms and hurricanes. There are two types of waterspouts: a tornadic waterspout and a fair-weather waterspout. Due to Hanahan being a few miles inland, waterspouts are possible and should be treated like a tornado.

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<sup>13</sup> Source: [National Inventory of Dams](#)

## Earthquakes

The BCD region experiences earthquakes more frequently than most other areas along the east coast. In 2018, the USGS designated the BCD region as having the highest seismic hazard risk. As seen on Map X, since 2000, there have been 33 recorded earthquakes in the BCD Region, most of which were centered around Summerville. The most recent earthquake within the BCD Region over a 3.0 magnitude was in September 2021 having a magnitude of 3.27 and the epicenter was a few miles west of Hanahan near the Ashley River. According to the SCDNR...

*In South Carolina, approximately 70 percent of the earthquakes occur in the Coastal Plain and most are clustered around three areas west and north of Charleston: Ravenel-Adams Run-Hollywood, Middleton Place-Summerville, and Bowman.<sup>14</sup>*

Earthquakes can be especially devastating in coastal urbanized areas, like Hanahan, due to a phenomenon caused liquefaction. This phenomenon takes place when loosely packed, water-logged sediments at or near the ground surface lose their strength in response to intense ground shaking. Buildings, bridges, tunnels and other permanent structures or surfaces are at significant risk if this occurs during an earthquake. In 2012, SCDNR and SCEMD created a comprehensive map identifying the geologic hazards within the state. As seen in Figure X, the risk of liquefaction in the BCD region is mostly classified as having a "High Potential" for liquefaction, with most of the urbanized areas within this area, Hanahan included.

FIGURE X: GEOLOGIC HAZARDS OF THE SOUTH CAROLINA COASTAL PLAINS, 2012

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<sup>14</sup> Source: [SCDNR Geologic Survey: Earthquake Information](#)

# GEOLOGIC HAZARDS of the South Carolina Coastal Plain 2012

SC Department of Natural Resources, Geological Survey  
and  
SC Emergency Management Division, Office of the Adjutant General



### MAP GUIDE

- High Potential for Liquefaction
  - Low Potential for Liquefaction
  - Potential for Collapse
  - Potential for Sinkholes
  - Potential for Landslide
  - Low geologic hazard potential
  - Fault Line
- Liquefaction features caused by 1886 Charleston Earthquake
  - Prehistoric Liquefaction features
  - Known Sinkhole Occurrences
  - Limestone Cave
  - Landslide Occurrence
- Lakes and Rivers
  - Municipalities
  - County Boundary
  - Interstate
  - US Highway
  - Railroad
  - Power line
  - Gas Pipeline
  - Airport - Runway 3000-5000 ft
  - Airport - Runway >5000 ft
  - Bridge - Interstate
  - Bridge - Major Road
  - Hospital
  - Nuclear Reactor
  - High Hazard Dam
  - Significant Hazard Dam

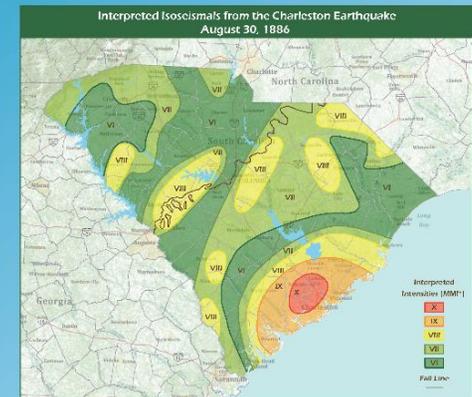
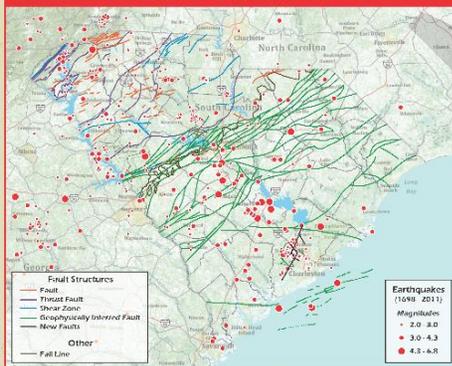
### MAP DISCLAIMER

This map and accompanying data have been prepared by the South Carolina Department of Natural Resources - Geological Survey. The information presented includes subjective assumptions developed on the basis of standard geologic principles. This map has been designed as a generalized guide to regional hazard potential. The map also may be useful to planners and regulators as a tool in the response and recovery from significant geologic hazards in the Coastal Plain, however, information should not be used for land-use zoning, building code requirements, or defining insurance rate zones. The relative hazard zones also are not intended to replace site-specific evaluations, such as engineering analysis or design. Hazard potential should be evaluated through site-specific geotechnical investigation by qualified practitioners. Not intended for use at a scale greater than presented here.

### FUNDING INFORMATION

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### Earthquake History and Fault Structures



An example of a sand blow, generally referred to as liquefaction, associated with the 1886 Charleston earthquake.



Paint store at the corner of East Bay and Cumberland Streets in downtown Charleston. Damage is result of the 1886 earthquake.



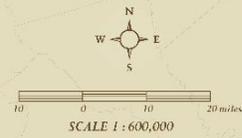
Train derailed from tracks by a four-foot high wall of water when the Charleston earthquake burst the mill dam at Langley Pond near Aiken, SC.



Sinkhole in Berry County. This conical depression is the most common type forming depressions on the lands-aps.



Sinkhole created by the collapse of limestone material just below the surface.



## Hazardous Waste and Materials

The Environmental Protection Agency (EPA) defines hazardous waste (or materials) as having properties that make it dangerous or capable of having a harmful effect on human health or the environment. Facilities that generate hazardous waste or materials (Generators) are categorized based on the quantity (tons) generated daily. The EPA has three categories: Very Small Quantity Generators (VSQG), Small Quantity Generators (SQG), and Large Quantity Generators (LQG). Generators are more common than most people realize. Common hazardous materials and waste generated by businesses can include: aerosols, batteries, dry cleaners, electronics, motor oil, paint, ink, printer cartridges, pesticides, sharps/syringes, and pharmaceutical waste. Therefore, all generators are required to register with the EPA as a safety monitoring mechanism, however, the locations and quantity of SQG, LQG VLQG were available for mapping, as seen on Map X.

A majority of businesses have plans and mitigation strategies in the event of a spill, leak or waste mismanagement. However, it is areas along the transportation routes that are the most vulnerable to the effects. Also seen on Map X, there are several major routes in or near Hanahan that are used for the transportation of these substances daily, including interstates, railroads and port terminals.

### MAP X: HAZARDOUS WASTE AND MATERIAL GENERATORS AND TRANSPORTATION ROUTES

Incidents during the transportation of hazardous materials and waste can have some of the most devastating consequences. Sites are prepared for a spill, leak or mismanagement of waste, but most places along the transportation routes are not, therefore, especially vulnerable. There are several major roads and railways in the BCD region that are used for the transportation of these materials and waste on a daily basis, some include: I-26, I-526, US 17, US 52, and the CSX railways. As seen on Map X, most of SQG, LQG, and VLQG are near one of these roads or railways.

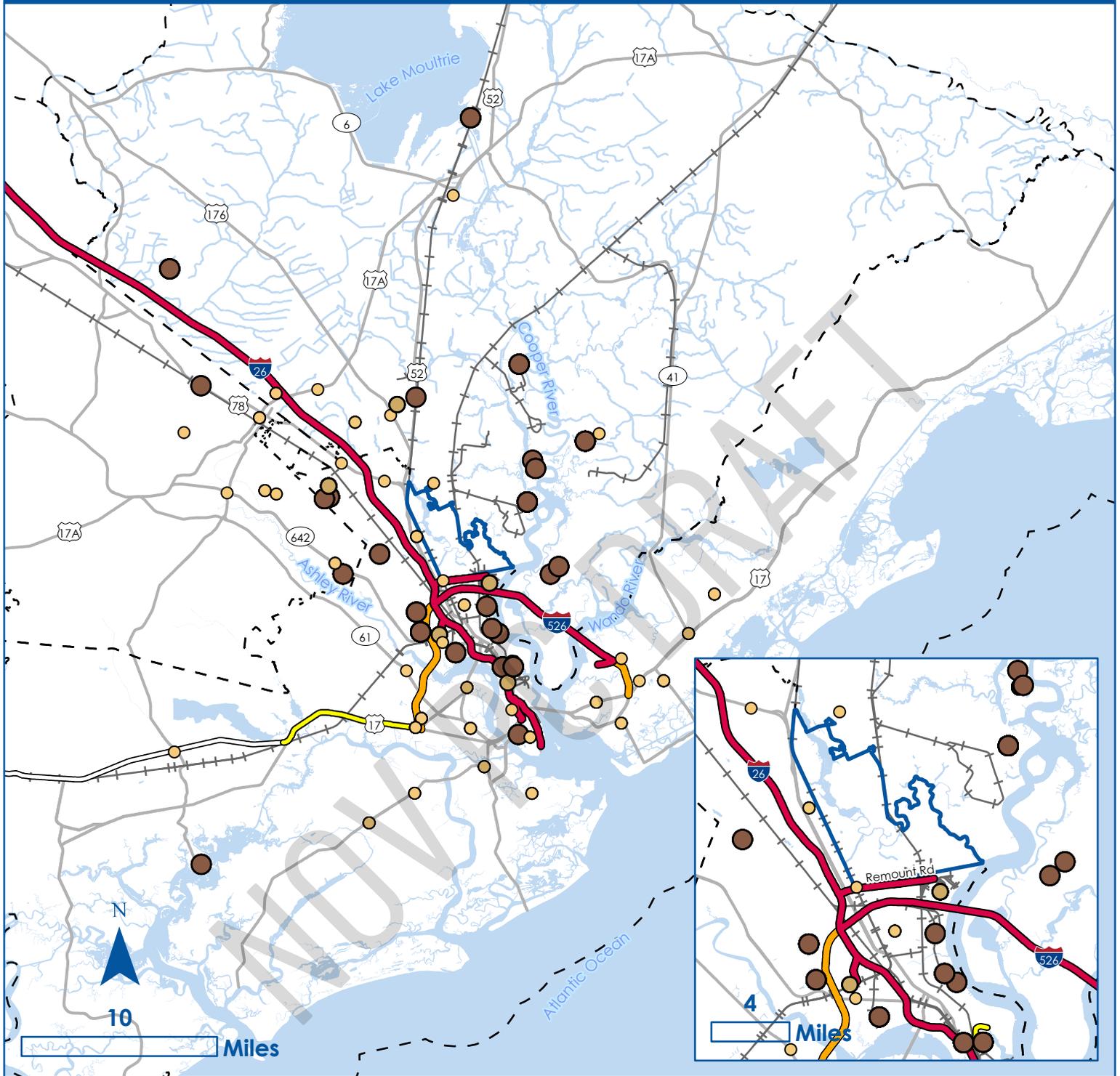
### **Potential Impacts**

Unlike most other hazards identified in this Element, human error is the sole reason for this hazard to occur. The impacts of this incident are largely dependent on the state of matter (solid, liquid or gas) of the waste or material. Solid materials like batteries or electronics are easier to contain as opposed to liquids or gases which can contaminate large areas within minutes. Common health-related impacts include burning, blindness, cancer, lung and heart damage, and severe irritation of the skin. Environmental impacts are a bit more widespread due to the difficulty of containing the contamination in an area and/or the swiftness to identify that an incident has occurred. Common environmental-related impacts include habitat damage, water contamination, loss of vegetation, threatening and death of wildlife, and long-term damage to the ground and soils.

The stability or extent of the danger of the material (explosive, combustible, radioactive, etc.) is an important factor as well, especially during transportation as it is given a specific classification by the US Department of Transportation (USDOT) based on the type of emergency response an incident would require. Due to the numerous sites, different types of materials or waste, and the different transportation options and routes, the severity and magnitude of an incident cannot be clearly or easily calculated.

# Hazardous Waste and Material Sites

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## National Highway Freight Network

- Primary Highway Freight System
- Non-Primary Highway Freight System
- Critical Urban Corridors
- Critical Rural Corridors
- Major Roadways
- Railways

## Generator Class

- SQG - Small Quantity Generator
- LQG - Large Quantity Generator
- VLQG - Very Large Quantity Generator

## Political Boundaries

- Hanahan Boundary
- County Boundary

## Wildfire

The term wildfire is used to broadly describe any forest, brush or grass fire that is not controlled or supervised. Wildfires have recently become a widely known term due to the massive wildfires in western states like California, Wyoming, Idaho and Oregon, sparking national attention to the issue. These fires cause immense damage to forests, wildlife habitats, water quality and air quality, not to mention property and building damage. Some of the major contributing factors that can influence the intensity of a wildfire can be lack of precipitation (drought), wind currents, forest density, and proximity to sources of water.

According to the National Park Service (NPS), there are three types of fire spread:

- Ground fires burn organic matter in the soil beneath surface litter and are sustained by glowing combustion;
- Surface fires spread with a flaming front and burn leaf litter, fallen branches, and other fuels located at ground level; and
- Crown fires burn through the top layer of foliage on a tree, known as the canopy. Crown fires, the most intense type of fire and often the most difficult to contain, need strong winds, steep slopes, and a heavy fuel load to continue burning.

In 2018, the US Forest Service was directed by Congress to create an interactive website that provides education, maps, charts, tools and resources about the risk of wildfires to communities: Wildfire Risk to Communities. There are four primary elements of wildfire risk: likelihood, intensity, susceptibility and exposure. These elements determine the overall potential risk that wildlife has on a community.

### **Potential Impacts**

Wildfires can cause a wide range of environmental, infrastructural, and health-related issues, such as smoke inhalation, burns, property damage, air and water pollution, habitat devastation, loss of human and/or animal life, crop loss and building damage. All wildfires are dangerous and devastating; however, it is the hard-to-control wildfires that typically do the most damage to a community(s). As seen in Map X, a majority of Hanahan has a moderate Wildfire Hazard Potential, which according to the Wildfire Risk to Communities, is an index that quantifies the relative potential for a wildfire that may be difficult to control.<sup>15</sup> This index can be used as measure to help prioritize where useful fuel treatments may be needed in the surrounding areas to help reduce the potential for hard-to-control wildfires. Additional infrastructure should be considered in the areas in and around Hanahan that have a high potential for hard-to-control wildfires.

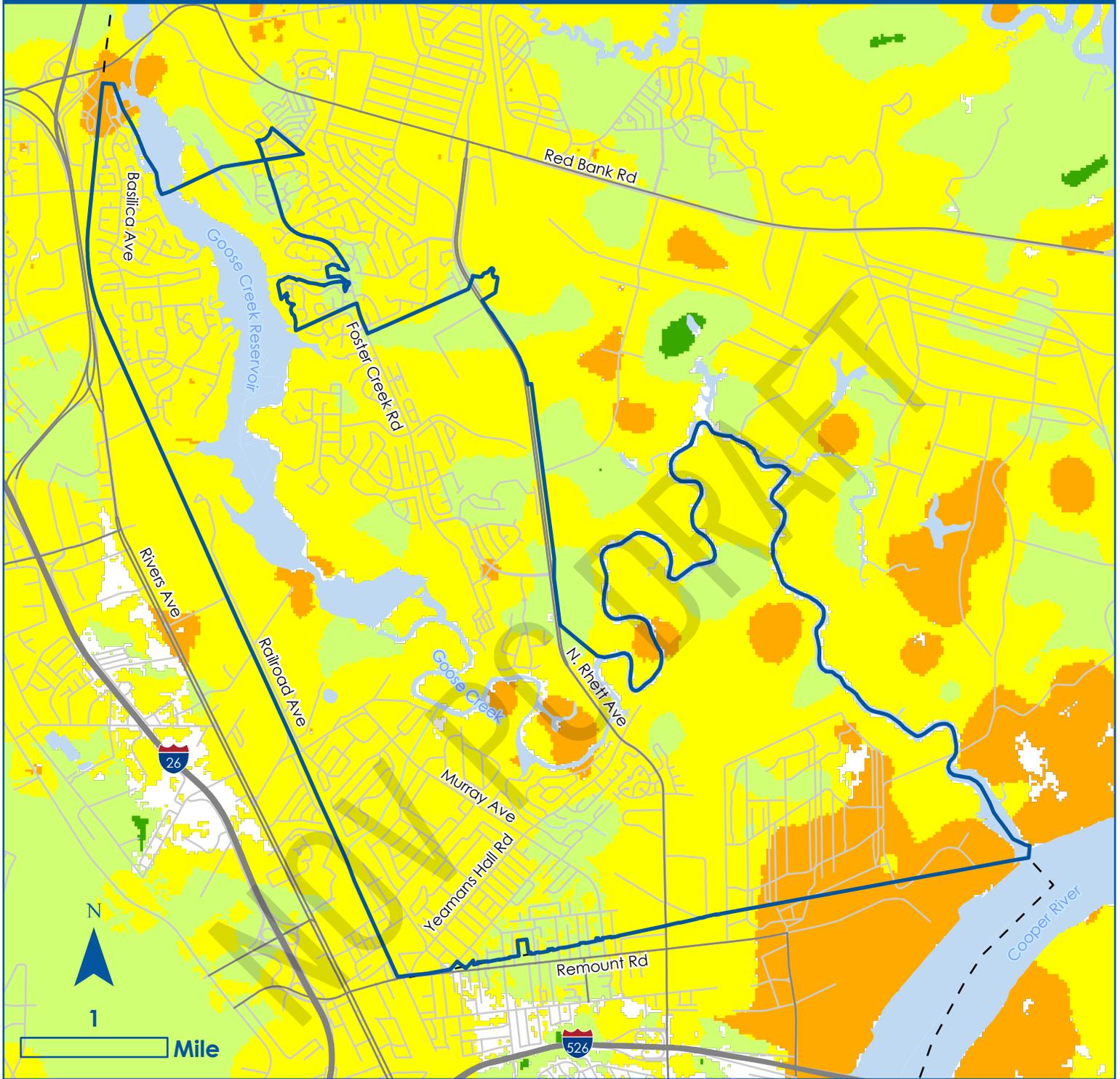
MAP X: WILDFIRE HAZARD POTENTIAL

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<sup>15</sup> Source: [Wildfire Risk to Communities](#)

# Wildfire Hazard Potential

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## Wildfire Risk to Communities: Wildfire Hazard Potential

- Very Low
- Low
- Moderate
- High
- Very High

- Interstates
- Major Roads
- Political Boundaries
  - Hanahan Boundary
  - County Boundary

## Seasonal Weather Extremes

### Winter Weather-related Events

Due to the infrequency of winter weather-related events, Hanahan, like most cities and towns in the south, does not have the adequate equipment and resources to manage the impacts that can occur during and after such events. There are many different combinations of weather that can occur during the winter season but a wintry mix of snow and rain, freezing temperatures, and ice storms are perhaps the most dangerous due to the hazardous road conditions that they can create.

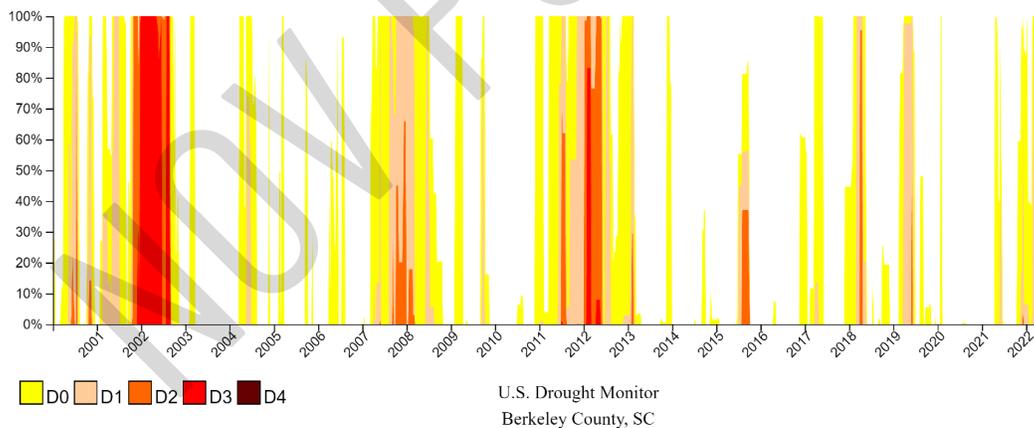
### Summer Weather-related Events

Extreme heat is an issue that has severe consequences for the elderly, poor and chronically ill people. This term has different parameters in different parts of the country but is generally defined as temperatures and/or humidity much higher than the average. As discussed in the Natural Resources Element, July tends to be the hottest month of the year and has the highest chance for precipitation, meaning relatively consistent high humidity levels.

### Drought

According to National Geographic, a drought is below-average precipitation that affects the amount of moisture in the soil as well as the amount of water in streams, rivers, lakes, and groundwater. These climatic occurrences are more common than most realize and can occur anywhere. According to the US Drought Monitor and SC Climate Office, since 2000, Berkeley County has had several periods of severe drought. As seen in Figure X, the major droughts occurred in 2002, 2008 and 2012, with several small clusters here and there. It seems for the most part, Berkeley County has not experienced many long or intense droughts since 2012.

FIGURE X: BERKELEY COUNTY US DROUGHT MONITOR



### Potential Impacts

The negative impacts that droughts can cause range from economic, social and environmental issues, causing droughts to be the second most costly natural hazard in the United States, behind hurricanes. Some of these impacts include loss of crops and arable land, economic hardships, the decline in food and drinking water, increased potential for wildfires, loss of wetlands, lower water levels in streams, lakes, reservoirs and rivers, and lower hydroelectric power efficiency.

Risk Level Assessment

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Hazard Type	Priority Level (Minimal, Low, Moderate, High, Immediate)	Recommendations
Flooding	Immediate	<ul style="list-style-type: none"> <li>• Continue to provide coordination of County stormwater management regulations as provided by the BC Engineering Department</li> <li>• Continue providing information to citizens regarding structural mitigation actions</li> <li>• Continue prohibiting new manufactured homes to be installed in "V" flood zones and requiring manufactured homes installed in "A" flood zones to be on permanent foundations</li> <li>• Work toward the goal of preserving green (open) space by introducing new parks and upgrades to existing facilities</li> <li>• Work toward eliminating flooding in existing subdivisions</li> <li>• Continue demolishing structures posing a threat to public safety, considering location within the special flood hazard area as a prioritization factor</li> <li>• Seek funding for retrofitting, demolishing, or relocating repetitively flooded properties if suitable candidates can be identified</li> </ul>
Tropical Storms and Hurricanes	High	<ul style="list-style-type: none"> <li>• Continue enforcing regulations requiring new manufactured homes brought into the City of Hanahan to be constructed to wind zone 2 requirements as required per State Law</li> <li>• Promote the use of voluntary standards for single-family residences to exceed minimal building code requirements for wind and seismic design</li> <li>• Distribute a brochure on protecting boats from damages during hurricanes to interested citizens through expos, offices, marinas, and boat dealers</li> <li>• Continue demolishing structures posing a threat to public safety, considering location within the special flood hazard area as a prioritization factor</li> </ul>
Sea Level Rise	High	
Earthquake	Moderate	<ul style="list-style-type: none"> <li>• Continue providing information to citizens regarding structural mitigation actions</li> <li>• Promote the use of voluntary standards for single-family residences to exceed minimal building code requirements for wind and seismic design</li> </ul>
Dam Failure	Moderate	
Hazardous Material and Waste	Moderate	<ul style="list-style-type: none"> <li>• Continue hazardous material training</li> <li>• Develop and implement projects to reduce air and water pollution in the city. Promote conservation of energy resources</li> </ul>
Tornado and Waterspouts	Low	<ul style="list-style-type: none"> <li>• Continue providing information to citizens regarding hazard safe interior rooms</li> </ul>
Tropical Depressions	Low	
Wildfire	Low	
Winter Storm	Minimal	
Drought	Minimal	

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