



2045 METROPOLITAN TRANSPORTATION PLAN UPDATE

Appendix H: Environmental Context

Prepared for:



Prepared by:



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GRAND STRAND AREA TRANSPORTATION STUDY
METROPOLITAN PLANNING ORGANIZATION

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INTRODUCTION

This technical memorandum documents the qualitative environmental inventory performed to assess the potential environmental impacts of the Grand Strand Area Transportation Study (GSATS) 2045 Metropolitan Transportation Plan (MTP) Update roadway projects. The purpose of this initial environmental inventory is to evaluate the environmental and cultural resources in the region that may be negatively impacted by a roadway project. This assessment is done early in the planning process with the intent of preventing or minimizing negative impacts on the environment.



ENVIRONMENTAL OVERVIEW

It is inevitable that some projects presented in this MTP will have an impact on the region's environmental and culturally significant features. Roadway projects often require land acquisition to construct a new facility or widen an existing one. While sidewalks and bicycle facilities involve smaller cross-sections and often occur as part of a larger roadway project, they also have an impact on the environment for which they are designed. Transit improvements – whether they are extensions of an existing bus route or the creation of a new one – can occur on existing or planned roadways and can also impact the natural and social environments of a community. As communities in a region continue to grow, they face increasing challenges concerning the relationship between natural resources and development needs. It will be important to strike an acceptable balance between development, mobility, and commerce and the desire for a high quality of life that includes clean air and water, environmental preservation, and recreational opportunities. In the GSATS region, environmental features that may be impacted by transportation projects include rivers, wetlands, public parks, beaches, wildlife management areas, historic and archaeological sites, and community resources, such as schools, libraries, and hospitals.

NATURAL RESOURCES

The Grand Strand Area is located along the Atlantic Coast and includes beaches, wildlife management areas, numerous rivers, streams, and wetland areas. Some of the natural resources located within the three counties that the GSATS region partially covers include:

- **Georgetown County, SC** - Brookgreen Gardens, Tom Yawkey Wildlife Center, Waccamaw National Wildlife Refuge, Winyah Bay, Waccamaw River, and area beaches.
- **Horry County, SC** - Waccamaw National Wildlife Refuge, Intracoastal Waterway, Waccamaw River, and area beaches.
- **Brunswick County, NC** - Green Swamp Preserve, Intracoastal Waterway, Cape Fear River, Lockwood Folly River, Shallotte River, and area beaches.

CULTURAL RESOURCES

Cultural resources are significant and meaningful assets in a community that serve essential, enriching, or humanizing functions. For the purposes of this analysis, cultural and community resources are comprised of schools, libraries, museums, historic sites, hospital or medical facilities, parks or recreational facilities, airports, and cemeteries found within the region. They are worthy of preservation and protection, as these locations provide popular destinations for citizens and visitors of all ages, as well as important community landmarks and critical service facilities. Depending on the type of facility, careful consideration and planning for transportation projects and investments should be undertaken to improve connectivity and access to these resources but not adversely impact the community. Hospital and medical facilities as well as police and fire stations are located throughout the region.

Most cultural resources in the region are located within city boundaries. Schools include public and private facilities and higher education facilities include Horry Georgetown Technical College, Coastal Carolina University, and Brunswick Community College. Parks or recreational facilities include pocket parks and larger regional parks, community centers, river walks, convention or exhibition halls, performing arts centers, country clubs, golf courses, and stadiums. Museums include the Georgetown County Museum, Horry County Museum, North Myrtle Beach Area Historical Museum, Franklin G. Burroughs-Simeon B. Chapin Art Museum, and Museum of Coastal Carolina. Airports in the region include the Conway-Horry County Airport, Myrtle Beach International Airport, Grand Strand Airport, Georgetown County Airport, and Odell Williamson Airport.

Historic sites include those deemed historically significant at either the local, state, or national level. In particular, it is important for metropolitan transportation planning purposes to identify historical landmarks or sites. Some examples of historic sites in the region are plantations and plantation homes, the Georgetown Lighthouse, Georgetown Historic District, Murrells Inlet Historic District, Pawleys Island Historic District, Conway Historic District, Myrtle Beach Atlantic Coast Line Railroad Station, Conway Post Office, and T.B. McClintic. Section 106 of the National Historic Preservation Act (NHPA) of 1966 (as amended in 1976, 1980, and 1992) and Section 4(f) of the Department of Transportation Act of 1966 requires the Federal Highway Administration (FHWA) to identify, evaluate, and protect properties of

historical significance. The National Register of Historic Places (NRHP), as administered by the National Park Service, is the official list of the nation's historic landmarks and sites considered historically important and worthy of preservation. Municipal governments can also designate locally historic properties.

ENVIRONMENTAL INVENTORY

An inventory of environmental features previously described was conducted using publicly available GIS data. The analysis does not identify the various levels of potential impacts but illustrates the location of environmental features in the GSATS region. This inventory of environmental features is not intended to substitute the need to complete more in-depth environmental assessments for individual projects. **Figures 1, 2, 3, and 4** illustrate some of the environmentally sensitive areas in the GSATS region.

Figure 1 illustrates the recreational and scenic resources in the GSATS region. Some of the larger recreational sites include the Huntington Beach State Park, Bird Island Coastal Reserve, and Myrtle Beach State Park.

The GSATS region, situated along the Atlantic Coast, encompasses various rivers and tidal areas that are highly susceptible to heavy rainfall and tropical storms. Notably, past flood incidents such as Hurricane Matthew (2016) and Hurricane Florence (2018) caused extensive flooding on Highway 9 and Highway 90, nearly surpassing the levels of US 501 and US 17 in Georgetown. It is worth mentioning that Hurricane Florence exceeded flood levels that typically occur once every century.

Figure 2 illustrates the Federal Emergency Management Agency's (FEMA) Special Flood Hazard Area (SFHA) located in the GSATS region. The SFHA is designated at the land area covered by the floodwaters of the base flood on the National Flood Insurance Program's (NFIP) maps. The SFHA is the area where the NFIP's floodplain management regulations must be enforced and the area where the mandatory purchase of flood insurance applies.

Figure 3 illustrates the historic and archaeological resources located in the GSATS region. As previously described, several plantations, historic districts, and churches are listed on the National Register of Historic Places.

Figure 4 illustrates the location of hazardous and solid waste sites in the GSATS region. Hazardous and solid waste sites are locations with properties that make them dangerous or capable of having a harmful effect on human health or the environment. Hazardous waste is generated from many sources, ranging from industrial manufacturing process wastes to batteries and may come in many forms, including liquids, solids gases, and sludges. Hazardous and solid waste is regulated by the Environmental Protection Agency (EPA) under the Resource Conservation and Recovery Act (RCRA), passed in 1976, that established a framework for the proper management of hazardous waste.

Figure 1. Recreational and Scenic Resources in the GSATS Region

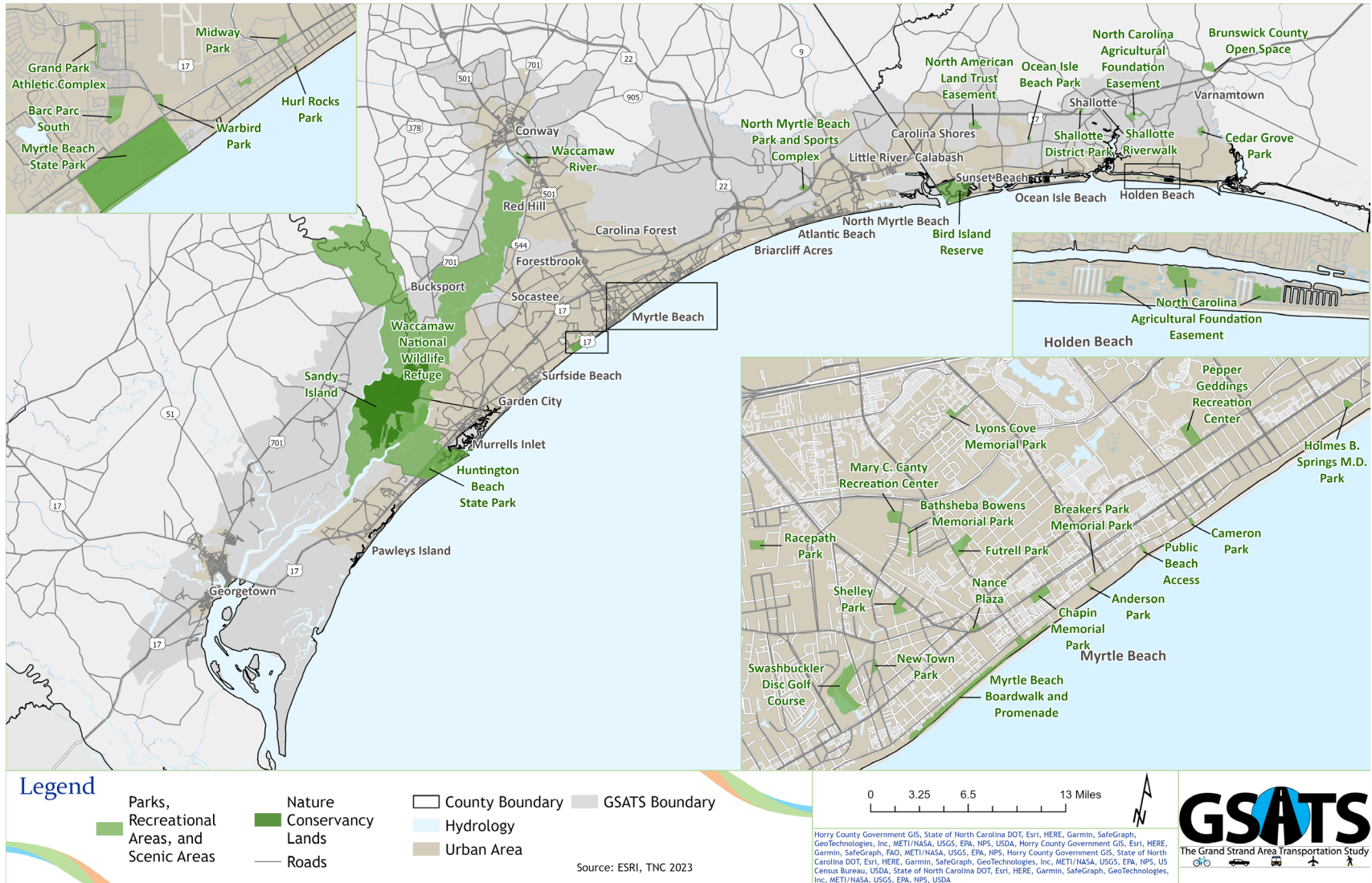


Figure 2. FEMA Special Flood Hazard Areas in the GSATS Region

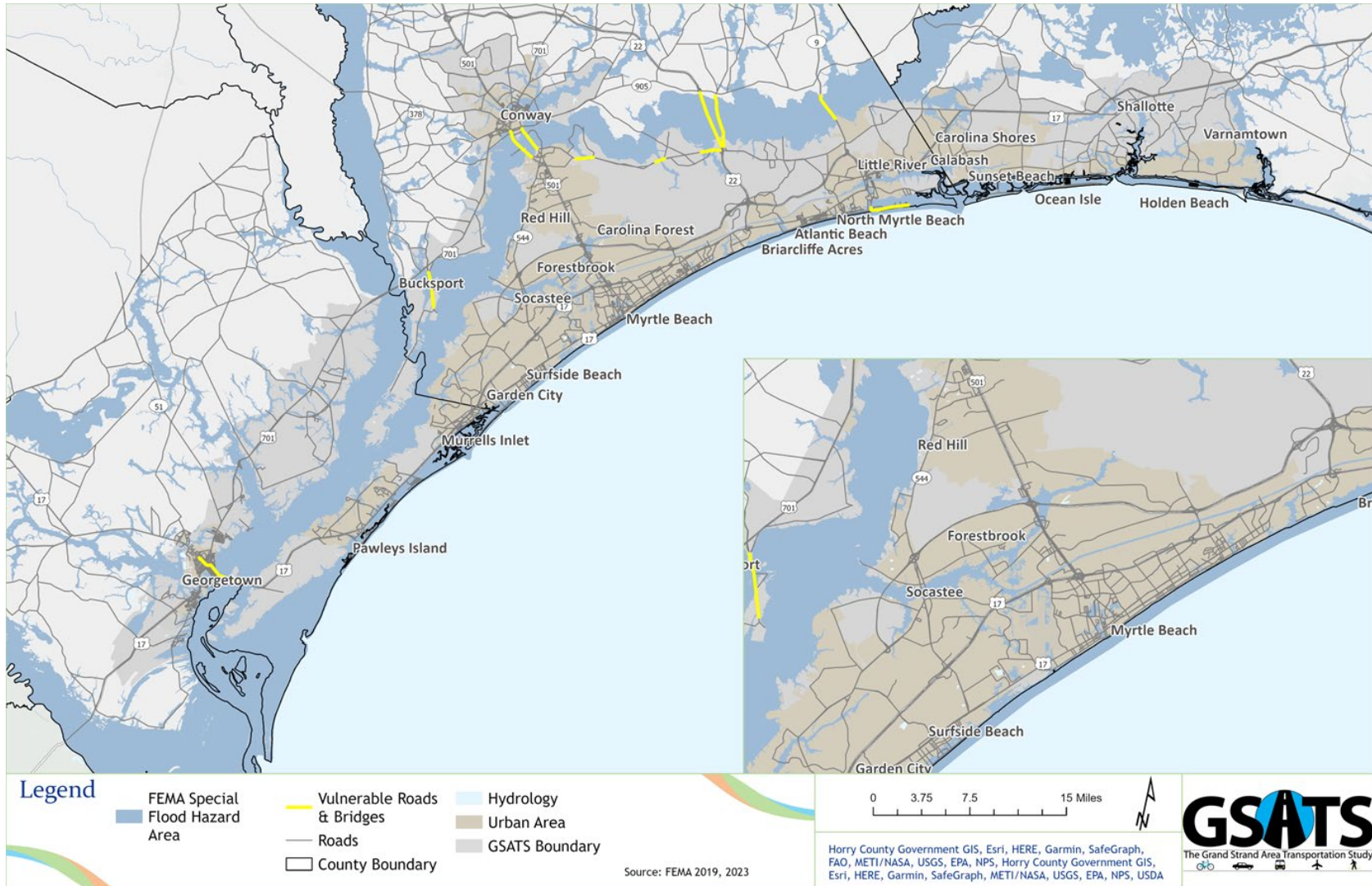


Figure 3. Historic and Archaeological Resources in the GSATS Region

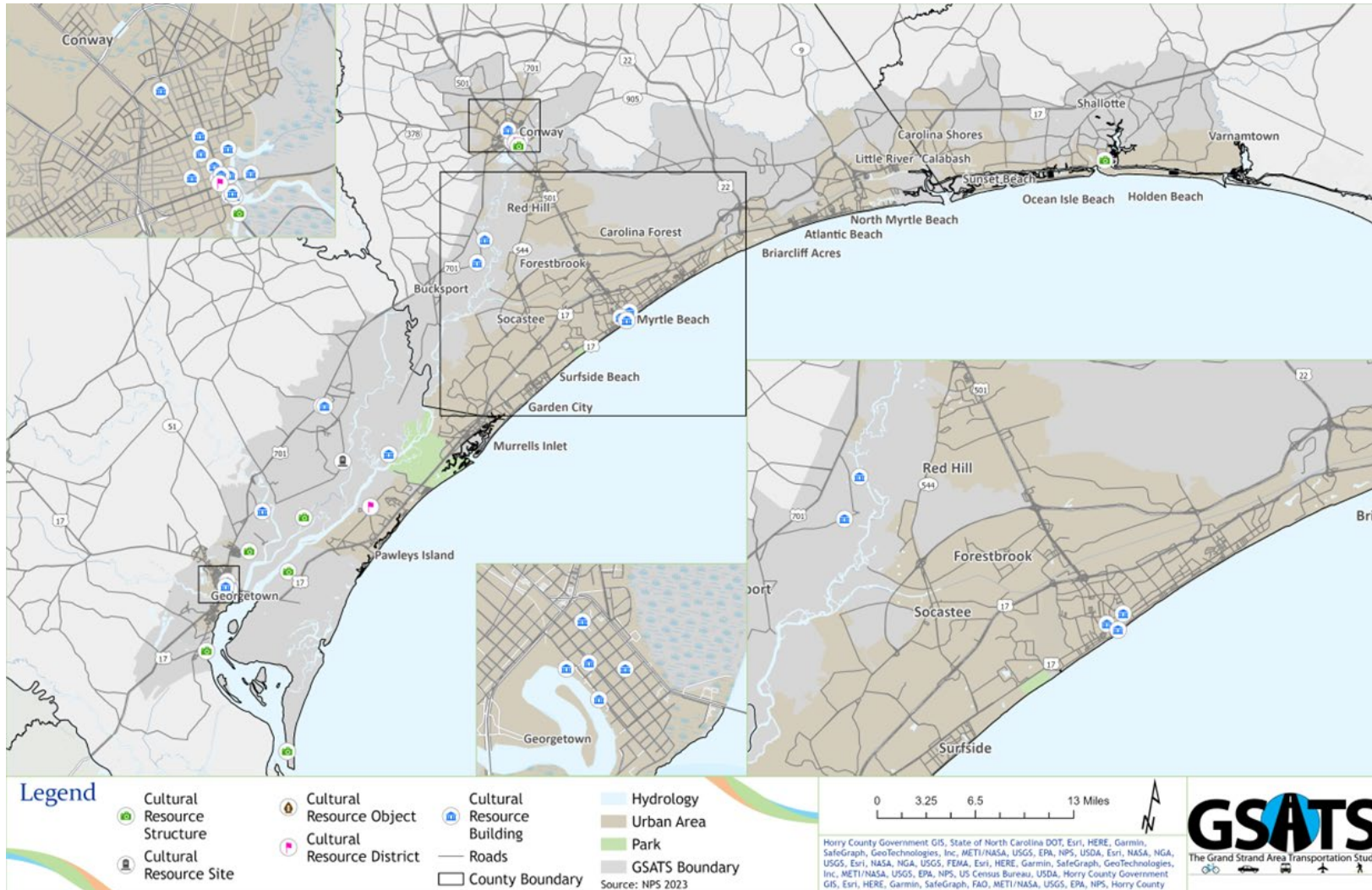
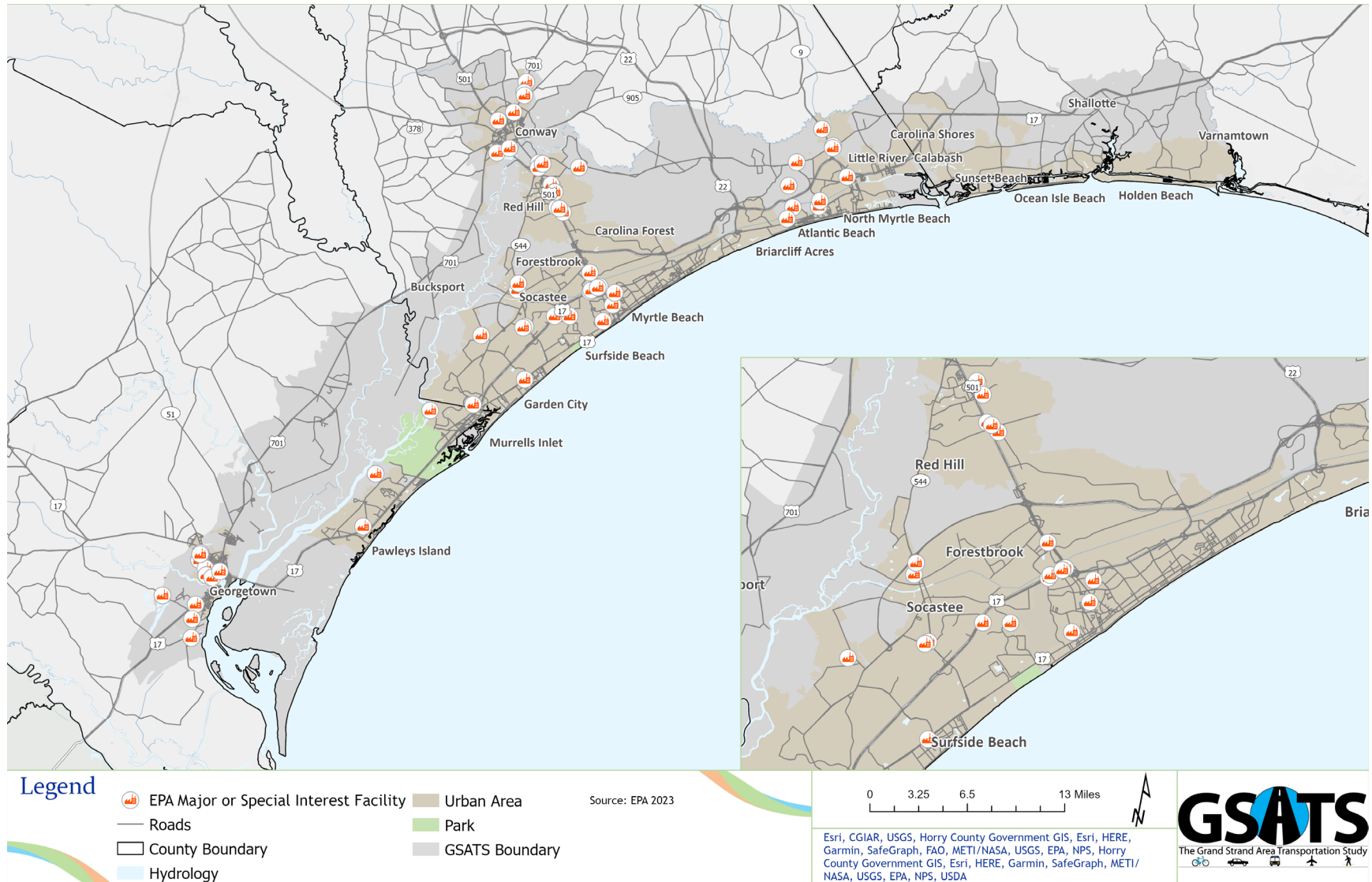


Figure 4. Hazardous and Solid Waste Sites and Facilities in the GSATS Region





AIR QUALITY

Air quality continues to play a major role in metropolitan transportation planning. The National Ambient Air Quality Standards (NAAQS) are federal standards that set allowable concentrations and exposure limits for certain pollutants in accordance with the Clean Air Act of 1970 (as amended). Primary standards are intended to protect public health, while secondary standards protect public welfare. Examples of public welfare include damage to crops, vegetation, and buildings. Air quality standards have been established for the following six criteria pollutants: ozone, carbon monoxide, particulate matter, nitrogen dioxide, lead, and sulfur dioxide. If monitored levels of any of these pollutants violate the NAAQS, then the EPA, in cooperation with the States of South Carolina and North Carolina, will designate the contributing area as being in “nonattainment” of air quality standards.

ATTAINMENT STATUS

Currently, the GSATS area is designated as being in attainment for the eight-hour ozone NAAQS amended in 2015. Ozone is a harmful gas formed when volatile organic compounds (VOCs) and nitrogen oxides (NOx) react with sunlight. Major sources of these air pollutants are trucks and cars.

CURRENT INITIATIVE

The Waccamaw Air Quality Coalition was formed to serve as a forum to discuss air quality concerns and ideas for the tri-county region of Georgetown, Horry, Williamsburg counties. The coalition serves as a resource to exchange information about regional air quality concerns and to obtain input from stakeholders to address issues in a coordinated and proactive effective manner

ENVIRONMENTAL JUSTICE

Title VI bars intentional discrimination as well as disparate impact discrimination (i.e., a neutral policy or practice that has a disparate impact on protected groups). Executive Order 12898 on Environmental Justice amplifies Title VI by providing that “each federal agency shall make achieving environmental justice part of its mission by identifying and addressing, as appropriate, disproportionately high and adverse human health or environmental effects of its programs, policies, and activities on minority populations and low-income populations.”

Environmental Justice refers to the fair treatment of minority and low-income populations that may suffer unduly as a result of programs, policies, and activities of any Federal agency. Evaluating Environmental Justice is an important component of any transportation plan. FHWA identifies three important guiding principles of environmental justice, which shape the treatment of minority and low-income communities in the transportation planning process:

1. Avoid, minimize, or mitigate disproportionately high and adverse human health and environmental effects, including social and economic effects, on minority and low-income populations.
2. Ensure the full and fair participation by all potentially affected communities in the transportation decision-making process.
3. Prevent the denial of, reduction in, or significant delay in the receipt of benefits by minority and low-income populations.

As part of this transportation plan update, US Census Bureau, 2016-2021 American Community Survey Five-Year Estimates data was used to identify the geographic distribution of minority and low-income populations. The Council on Environmental Quality (CEQ) provides guidelines for determining areas where disproportionate effects to minorities are likely to occur. The CEQ advises identifying areas where the minority and low-income populations (1) exceeds 50 percent or (2) is “meaningfully greater” than the local neighborhood area population. In the GSATS region, the concentrations of minority and low-income populations are determined by identifying those census block groups that have a higher percentage of minority or low-income population than the regional average. **Figures 5 and 6** present the distribution of minority and low-income populations, respectively.

Title VI of the 1964 Civil Rights Act (42 U.S.C. 2000d-1) states that, “No person in the United States shall, on the ground of race, color, or national origin, be excluded from participation in, be denied the benefits of, or be subjected to discrimination under any program or activity receiving federal financial assistance.”

Figure 5. Minority Population in the GSATS Region

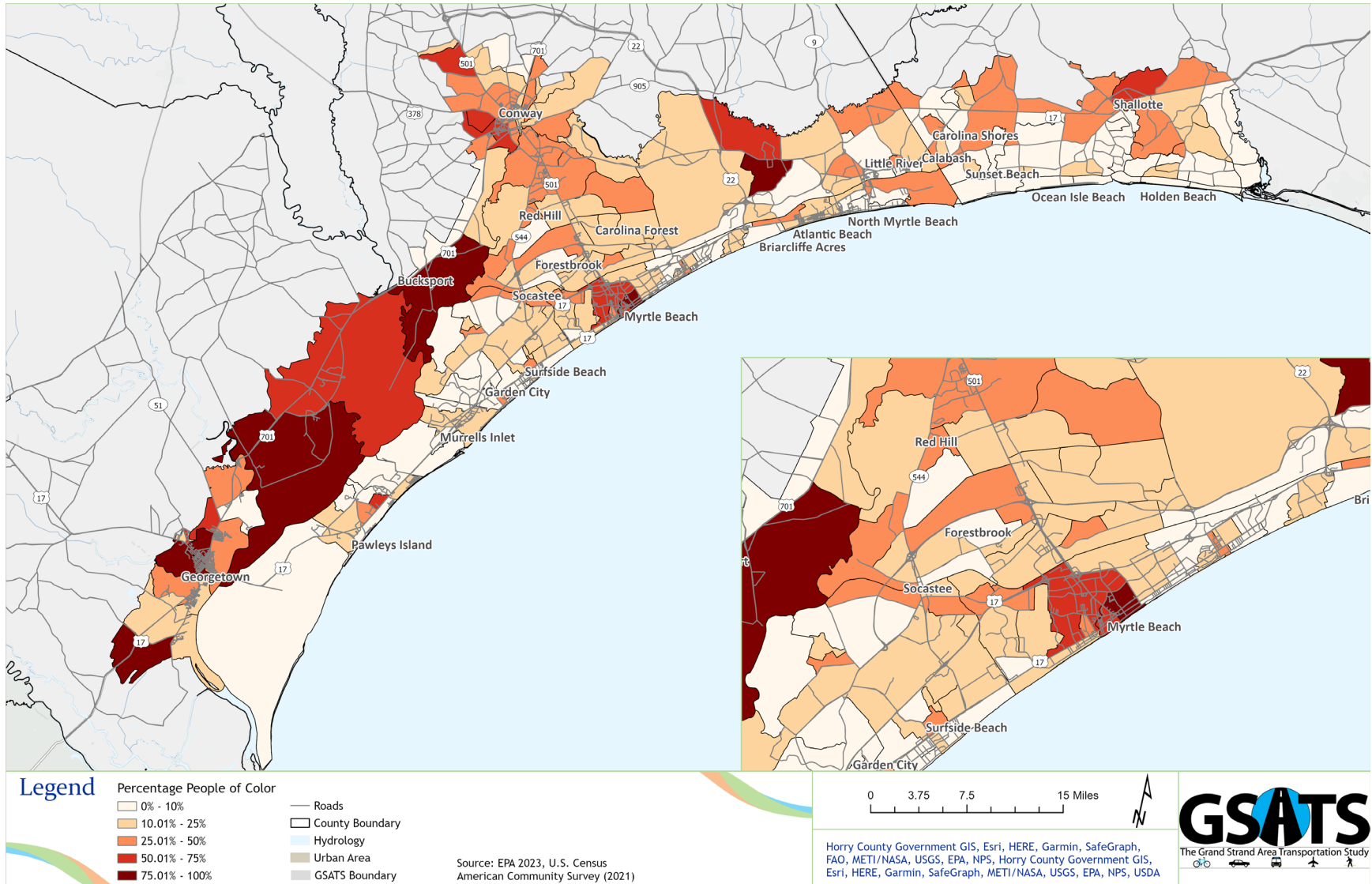
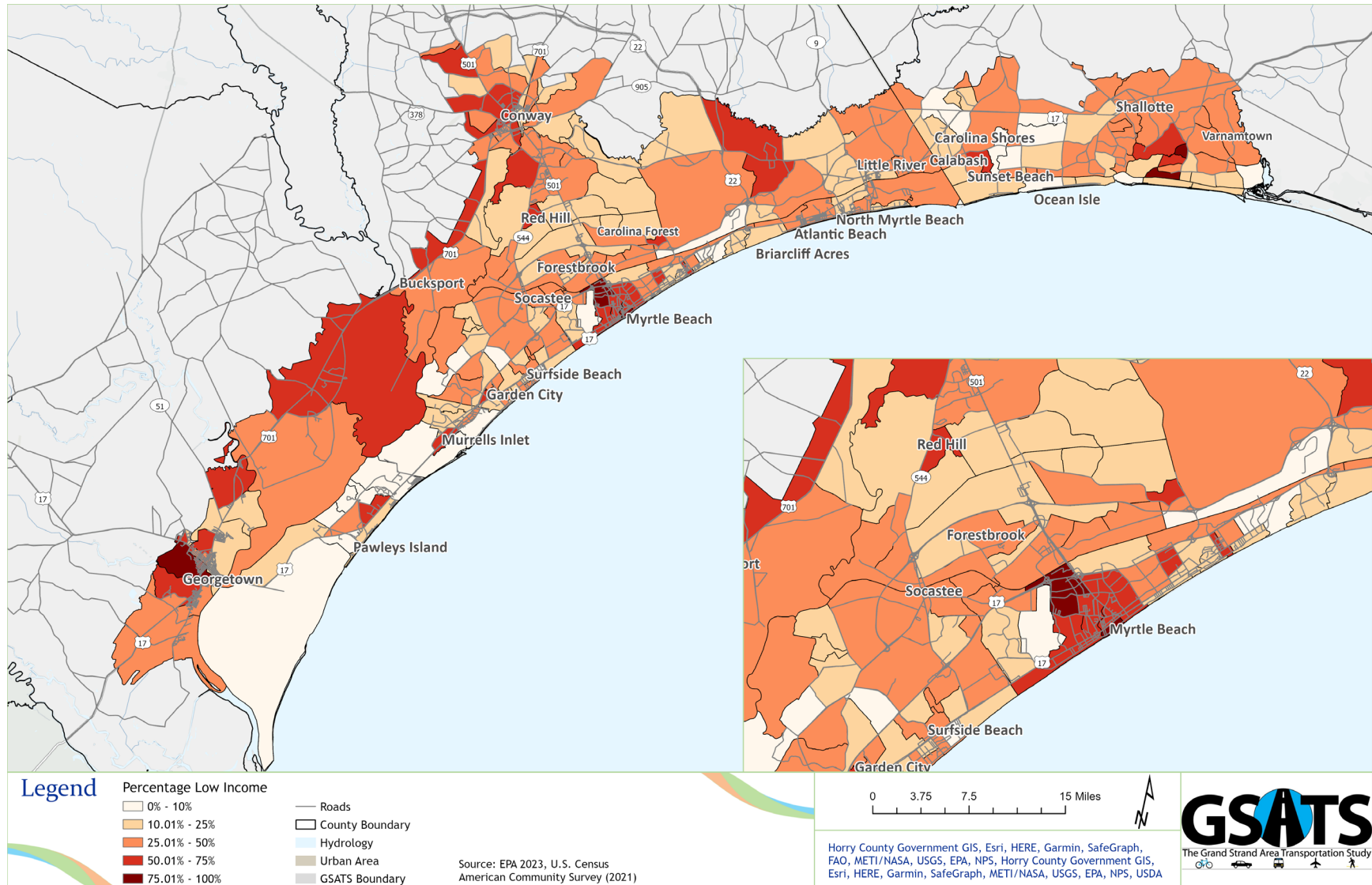


Figure 6. Population Below Poverty Line in the GSATS Region



It must be stressed that the Environmental Justice qualitative screening conducted for this study is not intended to quantify specific, project-level impacts. When individual studies begin as part of project implementation, more detailed analyses will be needed to identify and minimize specific community impacts on a project-by-project basis.

Proactive efforts should be made to ensure meaningful opportunities for public participation, including specific activities to increase outreach for low-income and minority participation during the project development process for each of the fiscally constrained projects identified in the MTP. This participation will be important to the decision-making process and will help to ensure that transportation needs of the target populations are met to the greatest extent possible.

In summary, all population groups would benefit from the planned transportation improvements in the region. In fact, many of the improvements will have positive impacts to these populations in terms of increased mobility within the community and additional transportation options. Relative to burdens, all segments of the population who live adjacent to roadway construction projects may endure some short-term construction-related impacts related to visual changes, noise, and alterations to access.

JUSTICE40 INITIATIVE

Justice40, implemented in January 2021, is a federal policy that aims to address environmental and economic disparities in disadvantaged communities. The goal of Justice40 is to ensure that 40% of the benefits from federal investments in climate and clean energy initiatives are directed towards these communities.

This initiative acknowledges that historically marginalized communities, including low-income neighborhoods and communities of color, have disproportionately suffered negative impacts of pollution and environmental degradation. Justice40 seeks to rectify this by allocating a significant portion of funding and resources to these communities, enabling them to benefit from the transition to a clean and sustainable economy.

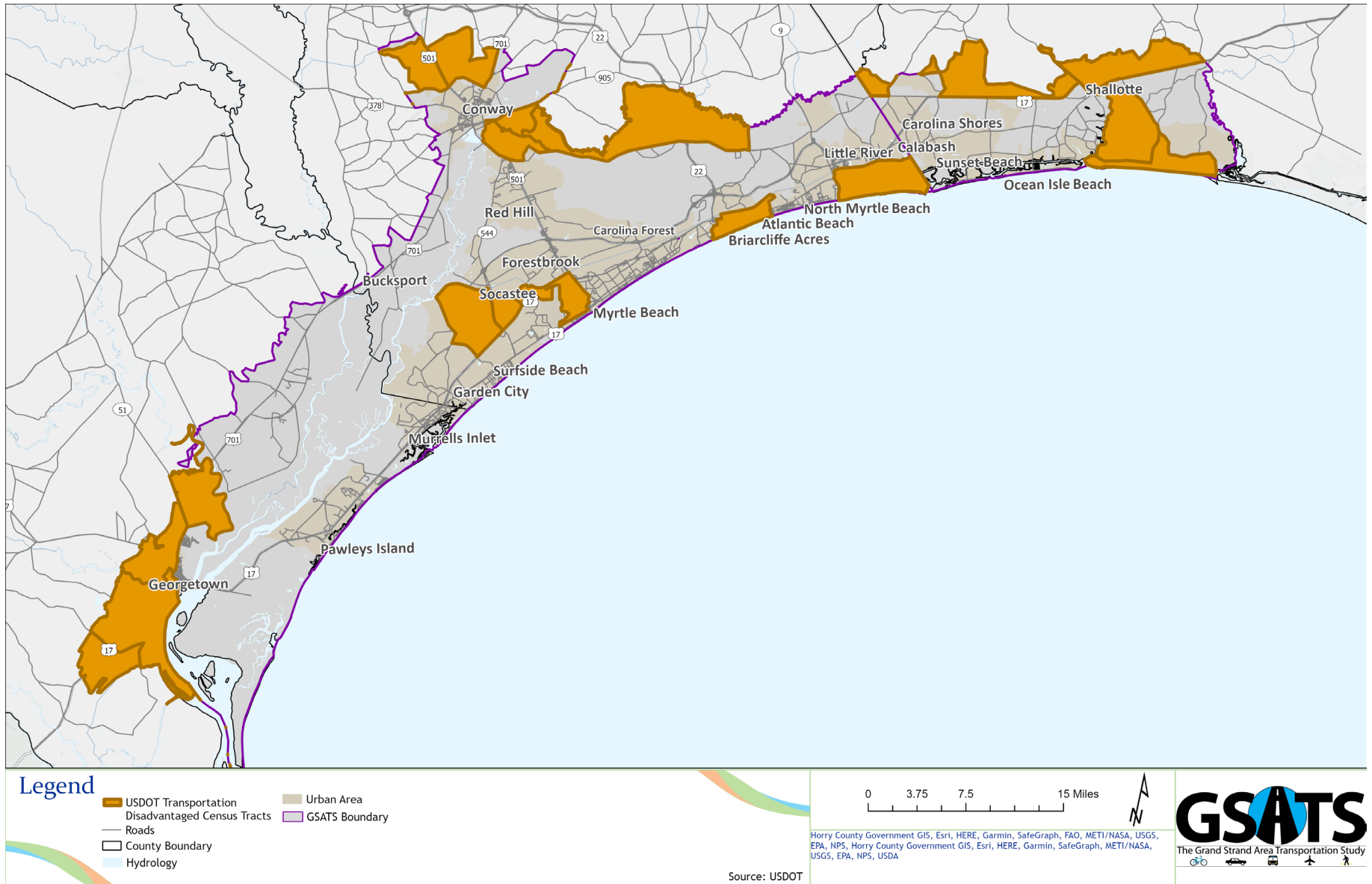
Under Justice40, specific strategies and programs may vary, but they generally focus on the following initiatives:

- Investing in clean energy infrastructure: This involves funding renewable energy projects, implementing energy efficiency upgrades, and providing clean transportation options in disadvantaged communities.
- Environmental justice considerations: Justice40 aims to incorporate environmental justice principles into decision-making processes, ensuring that the voices and concerns of marginalized communities are heard and addressed.
- Job creation and workforce development: The initiative strives to create job opportunities and develop workforce programs in clean energy sectors, thereby providing economic benefits to disadvantaged communities.

- Health and resilience: Justice40 places emphasis on improving public health outcomes and building community resilience to climate change impacts in vulnerable areas.

The Justice40 initiative aligns with broader goals of equity, environmental justice, and climate action. It seeks to address long-standing disparities and ensure that the benefits of clean energy and climate initiatives reach those who need them the most. **Figure 7** shows the Justice40 disadvantages census tracts in the GSATS study area.

Figure 7. Justice40 Disadvantaged Census Tracts





MITIGATION ACTIVITIES

The *Fixing America's Surface Transportation Act* (FAST Act) in 2015 require that MTPs include a discussion of types of potential environmental mitigation activities and potential areas to carry out these activities, including those that may have the greatest potential to restore and maintain the environmental functions affected by the plan. In addition, the MAP-21 and FAST Acts require that potential environmental mitigation activities be developed in consultation with federal, state, tribal, wildlife, land management, and regulatory (resource) agencies. GSATS is committed to minimizing and mitigating the negative effects of transportation projects on the natural and built environment to preserve the region's quality of life. In doing so, GSATS recognizes that not every project will require the same type or level of mitigation. Some projects involve major construction with considerable earth disturbance, while intersection improvements, street lighting, and resurfacing projects involve minor construction and less amounts of disturbance. The mitigation efforts used for a project should be dependent upon how severe the impact on environmentally sensitive areas.

The National Environmental Policy Act (NEPA) suggests mitigation in the following five steps.

- Avoiding the impact altogether by not taking a certain action or parts of an action.
- Minimizing impacts by limiting the degree or magnitude of the action and its implementation.
- Rectifying the impact by repairing, rehabilitating, or restoring the affected environment.
- Reducing or eliminating the impact over time by preservation and maintenance operations during the life of the action.
- Compensating for the impact by replacing or providing substitute resources or environments. (Source: 40 CFR 1508.20)

Effective mitigation starts at the beginning of the environmental process, not at the end. Mitigation must be included as an integral part of the alternatives development and analysis process. **Table 1** below details possible mitigation activities and measures that could be considered when dealing with environmental impacts. Many measures are considered during the project development phase. As described in the previous section, each of the projects will need to be reviewed and the appropriate mitigation strategy applied during the planning and implementation phases.

Table 1. Recommended Mitigation Measures for Impacted Resources

Resource	Mitigation Measures
Agricultural areas	Avoidance, minimization, compensation (could include preservation, creation, restoration, in-lieu fees, riparian buffers); design exceptions and variances; environmental compliance monitoring ¹ .
Air quality	Transportation control measures; transportation emission reduction measures; adoption of local air quality mitigation fee program; development of energy efficient incentive programs; adoption of air quality enhancing design guidelines.
Cultural resources	Avoidance, minimization; landscaping for historic properties; preservation in place or excavation for archeological sites; design exceptions and variances; environmental compliance monitoring.
Endangered and threatened species	Avoidance, minimization; time of year restrictions; construction sequencing; design exceptions and variances; species research, fact sheets and species management; environmental compliance monitoring.
Forested and other natural areas	Avoidance, minimization; replacement property for open space easements to be of equal fair market value and of equivalent usefulness; design exceptions and variances; environmental compliance monitoring.
Neighborhoods, communities, homes, and businesses	Impact avoidance or minimization; context sensitive solutions for communities (appropriate functional and aesthetic design features).
Parks and recreation areas	Avoidance, minimization, mitigation; design exceptions and variances; environmental compliance monitoring.
Wetlands, flood zones, and water resources	Avoidance, minimization; design exceptions and variances; environmental compliance monitoring; repairing, rehabilitating and restoring water flow.

¹Environmental compliance monitoring is a process of oversight designed to determine conformity with environmental legal mandates, regulations, lease stipulations, and conditions of approval. Conditions of approval include mitigation measures and other requirements imposed on applicants.



TRANSPORTATION RESILIENCE

The coastal GSATS region faces challenges to its transportation infrastructure due to extreme weather events and changing conditions. These include inland flooding, sea-level rise, and more frequent and severe storms. Such factors can have a significant impact on transportation facilities and systems, leading to social and economic consequences.

To address these challenges, the FAST Act requires Metropolitan Planning Organizations to incorporate strategies that enhance the resiliency and reliability of the transportation system. This includes reducing or mitigating stormwater impacts in long-range planning processes. Furthermore, the bipartisan infrastructure legislation for 2021 (BIL) includes provisions for resilience transportation projects. These projects aim to strengthen the ability of transportation infrastructure to withstand and recover from natural disasters, climate change impacts, and other disruptions.

The BIL provides funding for various types of transportation projects, including improving infrastructure resilience, climate change adaptation, electric vehicle infrastructure, public transit resilience, and rural infrastructure resilience. By investing in these projects, the goal is to create a more robust and sustainable transportation network that can effectively handle future challenges and disruptions. The plan seeks to improve public safety, minimize disruptions to transportation systems, and promote long-term economic growth by prioritizing infrastructure resilience.

The proposed project recommendations for the MTP were assessed to determine their proximity to coastal flood hazards. This analysis involved overlaying project alignments and locations onto a GIS layer that represents NOAA's Flood Composite Risk Areas. These risk areas combine data from various flood and hazard datasets. Projects that intersect with these flood composite risk areas were given higher priority to enhance the resilience of transportation infrastructure. **Figure 8** illustrates varying levels of the flood composite risk areas throughout the GSATS study area.

Figure 8. Flood Composite Risk Areas

