



# Qualifications to provide a Resilience Action Plan

## Village of Palmetto Bay – Resilience Action Plan

RFQ# 2023-00-004

May 3, 2023



Submitted by:  
WSP USA Environment and Infrastructure Inc.  
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# TRANSMITTAL LETTER



May 3, 2023

Ms. Missy Arocha, Village Clerk  
Village of Palmetto Bay  
9705 E. Hibiscus Street  
Palmetto Bay, Florida 33157

**RE: Village of Palmetto Bay – Resilience Action Plan RFQ# 2023-00-004**

Dear Ms. Arocha,

**WSP USA Environment & Infrastructure, Inc. (WSP)**, is pleased to submit the enclosed response to the RFQ to provide a Resilience Action Plan for Palmetto Bay. WSP is committed to supporting communities in planning for future challenges and building local resilience. Our team recognizes the importance of this effort to protect the safety of Village residents and businesses and support the continued careful growth and development of Palmetto Bay.

WSP is a trusted partner to a wide range of clients, providing environmental services, civil and geotechnical engineering, infrastructure design and management, water resources services, and hazard mitigation planning services to create a resilient and sustainable future for public and private sector clients across the United States. Over the last two decades, we have evolved through a series of mergers and acquisitions from our heritage as MACTEC, AMEC, Amec Foster Wheeler, Wood, and now as WSP. Though our name has changed, we retain many legacy staff, now with the backing and resources of a Top 10 ENR firm. Our corporate headquarters are in New York, NY. Our Durham, NC office will administer the Agreement, and WSP staff from our Durham, NC, Miami, FL, and Kennesaw, GA offices will provide services for this contract.

WSP is immediately available to begin assisting the Village of Palmetto Bay in developing the Resilience Action Plan. We understand and are fully qualified to provide the requested scope of work, which includes the following deliverables and services: meeting materials and facilitation for project kick-off and committee coordination meetings, facilitation of public outreach and engagement throughout the planning process, identification and assessment of critically significant facilities, development of vulnerability assessments for heat and flood exposure and sensitivity, assessment of social vulnerability, assessment of natural resource vulnerability, identification of Adaptation Action Areas and associated comprehensive plan goal, objective and policy recommendations to support resilience, and identification of suggested capital improvement projects to support resilience.

Our team combines experts in hazard mitigation and resilience planning, comprehensive and land use planning, environmental engineering, and Geographic Information Systems (GIS). We have over 20 years of experience developing qualitative, quantitative, and spatial hazard vulnerability assessments as part of the planning requirements of the Disaster Mitigation Act and 44 CFR 201.6 and the Community Rating System's Floodplain Management Plan requirements. Additionally, we have over 30 years of experience in comprehensive and land use planning, including developing policy recommendations and comprehensive plan amendments. Our team members collaborate regularly, and our shared expertise and experience will benefit the Village of Palmetto Bay in developing a Resilience Action Plan that meets the planning requirements of the Resilient Florida Program, Florida Statute 380.093, Florida Statute 163.3178, and the Village's community character and growth goals.

Our experienced leadership will prove valuable in this effort. WSP offers the following strengths to ensure the successful development of this Resilience Action Plan:

**WSP has experience with flood vulnerability assessment and resilience planning in Florida.** WSP's familiarity with state and local datasets will prove valuable to Palmetto Bay in this planning effort. Our team specializes in local data mining and the facilitation of data sharing between public agencies and local communities. WSP has supported numerous communities in Miami-Dade County and throughout South Florida in assessing flood risk and

vulnerability, using local and regional data for sea level rise, coastal flooding, and elevation. We also understand the data mining and dataset compilation requirements for the Resilient Florida Program. Our past clients throughout the County and region include Palmetto Bay, Cutler Bay, Coral Gables, Doral, Miami Lakes, South Miami, Miramar, Seminole County, St. Augustine, Collier County, Monroe County, and Orange County.

**Our team has developed over 40 comprehensive plans, master plans, and redevelopment plans throughout the southeast.** WSP's local government planning team has won planning awards related to comprehensive plans prepared in the states of Georgia, Tennessee, and Alabama. Our clients and staff have been the beneficiaries of 40+ planning and design awards spanning 3 decades of planning services. WSP's comprehensive planning projects have been recognized for excellence in innovation, education, communication, and effectiveness. Our planning team principal has been recognized for his outstanding contributions to planning.

**WSP's relationships with our clients are based on outstanding performance and service.** We are proud to have earned a high level of repeat clients and the opportunity to provide a variety of additional services. The WSP team prioritizes comprehensive quality compliance reviews of our projects by assigning subject matter experts as Quality Assurance and Quality Control (QA/QC) managers. Our QA/QC Program supports compliance with state and local planning criteria, adherence to scope of work requirements, and overall client satisfaction with our services.

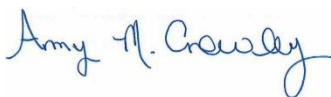
Our Project Manager, **David Stroud, CFM**, will prove a valuable asset to Palmetto Bay in this effort. Mr. Stroud has over 30 years of hazard mitigation and resilience planning experience including 18 years working directly for FEMA's CRS Program as the Flood Training Coordinator and Lead Hazard Mitigation Planner. Mr. Stroud, supported by two of our key staff members for this project, has guided the Village in Community Rating System program improvements, including development of the Village's Floodplain Management Plan, which assesses current flood risk and vulnerability throughout the community. Mr. Stroud will serve as your point-of-contact and is authorized to make representations for WSP regarding this project. He is located in our Durham, NC office which will conduct the services and administer the Agreement. He can be contacted as follows:

**Mr. David Stroud, CFM**

Assistant Vice President Hazard Mitigation Lead  
4021 Stirrup Creek Drive, Suite 100  
Durham, NC 27703  
Tel: (919) 325 6497  
Email: david.stroud@wsp.com

The intent of this response is to demonstrate the WSP team's ability to provide the services and deliverables necessary to complete the requested Resilience Action plan for the Village of Palmetto Bay. Our team's hazard mitigation, resilience, and comprehensive planning expertise and our recent and ongoing experience with the Village of Palmetto Bay and throughout southeast Florida make us uniquely qualified and prepared to support the Village in assessing vulnerability and planning for resilience. We appreciate the opportunity to submit our qualifications look forward to discussing our qualifications and interest in the project in greater detail.

Sincerely,



Amy Crowley, P.E., PMP, CFM  
Vice President, Service Line Lead



David Stroud, CFM  
Assistant Vice President, Hazard Mitigation Lead

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# SUMMARY OF QUALIFICATIONS



# SUMMARY OF QUALIFICATIONS

## PROJECT TEAM

WSP believes that project success hinges on the qualifications of the project team. Our team consists of professionals with extensive expertise and abilities who are highly capable of meeting the project requirements and driven to provide Palmetto Bay with a useful Resilience Action Plan. We are confident that our team of professionals can provide the required expertise for all services requested in the RFQ. The key staff proposed to work on the Village of Palmetto Bay Resilience Action Plan have demonstrated success working together and are well-tuned with each other's skills and work styles.

The WSP team responding to this RFQ specializes in resilience planning and comprehensive planning including flood risk and vulnerability analyses, loss estimation modeling using HAZUS-MH software, hazard mitigation planning and emergency management, the FEMA CRS Program, data collection and Geographic Information Systems (GIS), and community outreach including stakeholder coordination and meeting facilitation. Our repeat clients speak to our commitment to quality deliverables and strong client relationships. We have established a track record of providing our clients with effective and uniquely adapted services and products within budget and on schedule.

The staffing diagram below indicates the key staff proposed for this project.



## KEY STAFF BIOS AND ROLES

Summary of key team members bios and roles are provided below. Full resumes are included under Tab 5 Qualifications of Key Personnel.

### David Stroud, CFM - Project Manager

Mr. Stroud has 30 years of experience as a floodplain manager and hazard mitigation planner. His expertise includes developing hazard mitigation plans and reviewing and scoring plans for FEMA. Mr. Stroud worked for the

Insurance Services Office (ISO) on behalf of FEMA's CRS Program as the lead hazard mitigation planner and Flood Training Coordinator for 18 years. He assisted in the development of the 2007, 2013, and 2017 CRS Coordinator's Manuals and the 2021 Addendum and will join the upcoming committee developing the 2023 manual. He has worked directly with FEMA Headquarters staff in crafting the local multi-hazard mitigation planning guidance to align with the CRS 10-Step Planning criteria including the five-year update guidance (Blue Book). Mr. Stroud has significant experience with the minimum regulations of the National Flood Insurance Program (NFIP), FEMA grant programs and FEMA's Repetitive Loss Program. He works with communities, states and FEMA Regional offices on all aspects of hazard mitigation planning and the CRS Program. With ISO, he was responsible for internal staff training on the CRS Program, Hazard Mitigation Planning and Repetitive Loss and taught week-long classes on the CRS at FEMA's Emergency Management Institute (EMI). Over the years, he has provided numerous planning and CRS workshops by invitation from states, FEMA Regional Offices, and various state floodplain associations.

Mr. Stroud will serve as the Project Manager and team lead for this planning project.

**Cindy Popplewell, PE, CFM – QA/QC Manager**

Ms. Cindy Popplewell is an Associate in WSP's Hazard Mitigation and Emergency Management Program and has over 26 years of water resources engineering experience with a current focus on hazard mitigation and emergency management. Ms. Popplewell has served as project manager and senior planner on several Disaster Mitigation Act (DMA) mitigation plans for both State and local communities and is experienced in leading disaster recovery efforts including FIMA grant application preparation, benefit-cost analysis, and residential and stormwater infrastructure damage assessments. Additional project work has included floodplain management, hydrologic and hydraulic modeling and FIRM development; NFIP/Community Rating System compliance; and municipal stormwater permitting, utility development and billing.

Ms. Popplewell will provide Quality Assurance and Quality Control reviews for all project deliverables.

**Lee Walton, AICP – Comprehensive Planning Lead**

Mr. Walton, a Certified Planner with a background in architectural design, has over 24 years of experience providing guidance and project leadership to local governments and affiliated agencies. His responsibilities include project management, planning, environmental assessment and design for projects of public and private sector clients. He also manages the planning group within the Wood Atlanta office, and is responsible for strategic planning, marketing, performance reporting and interdisciplinary coordination. His key areas of technical specialty include comprehensive planning, master planning, redevelopment planning, recreation planning, hazard mitigation planning, economic development, industrial planning, transportation planning, grant writing/administration, urban design, facility planning, architecture and all aspects of public involvement. In conjunction with dozens of projects in recent years, he has planned, organized and facilitated hundreds of public and stakeholder involvement efforts of all types, including charrettes, open house presentations, visual preference surveying, focus group meetings and individual interviews. He uses Web-based technology and audience response system tools to augment public and stakeholder involvement activities.

Mr. Walton will oversee the comprehensive planning services and deliverables and public engagement efforts.

**Garrett Shields, GISP, CFM – GIS Lead**

Mr. Shields is a GIS Professional with over 11 years of experience. His experience includes advanced spatial analysis using GIS software, data management, floodplain mapping, Database development, natural hazard risk assessment and automated tool development. He has extensive training and experience with the ESRI suite of software including ArcGIS Desktop (8.x, 9.x, and 10.x), ArcServer, ArcSDE, ArcGIS Online and ArcGIS Mobile as well as experience with SQL Server and Oracle database management systems. Mr. Shields has assisted in the production and maintenance of numerous GIS datasets, spanning the entire State of North Carolina. Nationally, Mr. Shields has performed floodplain mapping, DFIRM/FIS development and risk assessment tasks in support of FEMA's Risk MAP program in Oklahoma, Texas, Arkansas, Florida, Pennsylvania and New Mexico.

Mr. Shields will advise and oversee data collection and GIS analysis and mapping.

### **Nicole Cortez – Environmental Science Lead**

Ms. Cortez is an environmental scientist and the Resiliency Coordinator for the South Florida Water Management District (SFWMD or District). She leads resilience monitoring activities tracking and documenting trends in observed water, climate, and ecosystem data, including technical analyses and interpretation, resilience metrics workgroup coordination, and facilitating IT automation, to support the assessment of current and future climate condition scenarios, operational decisions, and resiliency priorities. Ms. Cortez specializes in communicating scientific findings through agency reports, engaging online platforms, and presentations. She has developed and continues to update annual characterization of disadvantaged communities used to rank resiliency projects. Ms. Cortez assists in developing programmatic practices and procedures to establish an effective program that addresses critical environmental issues in water management and ensures regional resilience.

Ms. Cortez will advise data collection and support the resilience planning and vulnerability assessment process.

### **Abby Moore, AICP, CFM – Resilience Planning Lead**

Ms. Moore is a Certified Planner with expertise in mitigation, hazard risk assessment, floodplain management, climate change adaptation and resilience, project management, and community planning and development. Ms. Moore holds a Master's in City and Regional Planning specializing in Land Use & Environmental planning and natural hazards resilience and disaster recovery. Ms. Moore has working knowledge of the requirements of the Disaster Mitigation Act (DMA), the National Flood Insurance Program (NFIP), and the NFIP's Community Rating System (CRS). Ms. Moore is skilled in research, data collection and analysis, GIS, risk and vulnerability assessment, mitigation strategy development, stakeholder and public engagement, and facilitation. She has provided technical assistance in the development of hazard mitigation plans, floodplain management plans, and CRS support services for local government, state government, and university clients throughout FEMA Regions 3, 4, 6, 7, 8, and 9.

Ms. Moore will oversee the resilience planning and vulnerability assessment and support the comprehensive planning and public engagement process.

### **Ranger Ruffins – Resilience Planner**

Ms. Ruffins is a hazard mitigation and resiliency planner with three years of experience in hazard mitigation planning, floodplain management planning, resilience planning, and the CRS program. Ms. Ruffins recently earned her Master's in City and Regional Planning at the University of North Carolina at Chapel Hill where she specialized in Land Use and Environmental Planning with a focus on hazard mitigation and resilience planning. Her research centered on challenges and drivers of inequity in resilience planning and how to identify opportunities for equitable resilience strategies. In her time with WSP, Ms. Ruffins has worked on numerous hazard mitigation plans and developed a strong working knowledge of the DMA requirements, as well as the NFIP and its associated CRS program. Ms. Ruffins is skilled in GIS, data collection and research, and community engagement and meeting facilitation.

Ms. Ruffins will support the resilience planning and development of the vulnerability assessment.

### **Meagan Matechak, ENV SP – Community Planner**

Meagan Silas Matechak is a planner and sustainability professional with over 8 years of experience working with public and private sector clients. Her resilience work includes urban and coastal flooding evaluations and mitigation, green infrastructure design, and environmental hazard studies. In addition to her planning experience, she has a civil and environmental engineering background. She has developed projects in commercial, residential, and municipal planning and design, giving her a variety of different types of project experience and extensive experience with AutoCAD, GIS, and StoryMaps, to analyze and portray proposed elements of project designs. Key specialty areas include site planning and design, redevelopment planning, stormwater management, green infrastructure design, recreation planning, urban design, zoning, and resilience and sustainability planning. She has experience organizing public and stakeholder involvement, including surveying, interviews, and open-house presentations.

Ms. Matechak will support the comprehensive planning and public engagement processes.

## KEY STAFF AVAILABILITY AND CAPACITY

Our team has been successful in handling multiple projects simultaneously by balancing project milestones and deadlines so that each project underway is equally and adequately addressed. WSP has a strong bench with expertise in a variety of resilience and comprehensive planning projects. Our team coordinates regularly through daily informal check-ins as well as multiple recurring weekly meetings to discuss workload and scheduling, project demands and deliverables, and project data and resource needs.

We pride ourselves in providing outstanding service and ensuring our clients' needs are met, which includes always delivering our projects on time and within budget. Our references can indicate that our performance in delivering projects on time and within budget is common in all our deliverables.

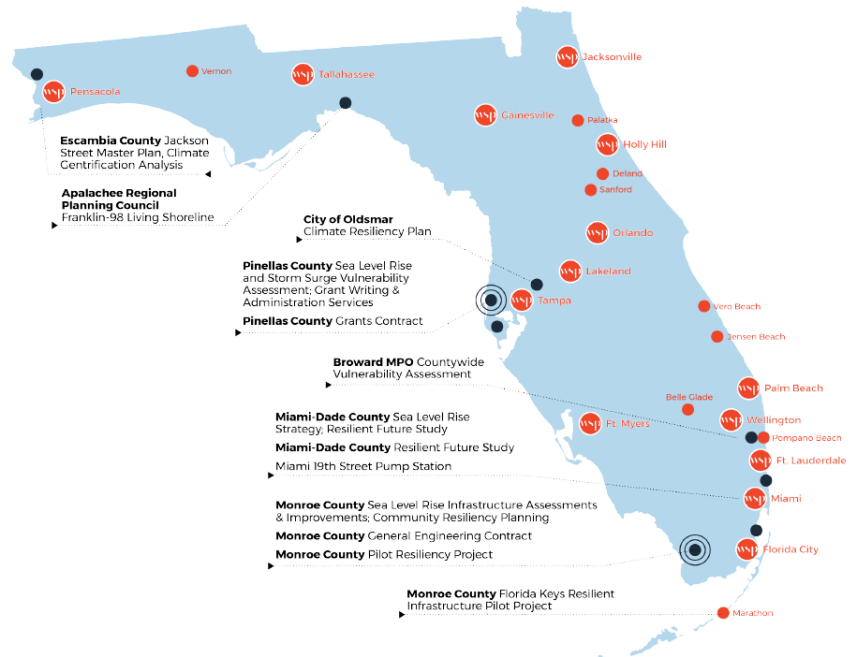
## QUALIFICATIONS & RELATED EXPERIENCE

WSP has a wide variety of experience with resilience planning to support federal, state, and local government clients in identifying and implementing feasible, wide-ranging solutions that build resilience to natural hazards and changing climate conditions. Our team develops plans, policies, and procedures through collaborative processes with a focus on public and stakeholder engagement. We work regularly with clients in the coastal zone to analyze the threats and vulnerabilities they face—including increased risk from coastal storms, sea level rise, and heavier rainfall events, as well as aging infrastructure, population changes, and other short- and long-term stressors—and to identify and prioritize opportunities to mitigate risks, reduce vulnerability, and increase local capacity and capability through sustainable projects and practices that support long-term resilience.

## RESILIENCE PLANNING EXPERIENCE IN FLORIDA AND KNOWLEDGE OF STATE STATUTES

WSP has 19 offices and over 700 employees in Florida that have done extensive resilience and mitigation work throughout the state, including in Palmetto Bay and Miami-Dade County. As such, our team understands the unique resilience and mitigation challenges present in Florida and is also well versed in the State statutes that guide resilience work. WSP has a complete understanding of the criteria necessary for this Resilience Action Plan to meet the requirements of Florida Statute 380.093 and the Resilient Florida Grant Program vulnerability assessment as well as Florida Statute 163.3178 and the comprehensive planning requirements associated with coastal management.

### Resilience Experience and Presence in Florida



WSP plans meet the requirements outlined in Florida Statute 380.093 and Resilient Florida Grant Program. For example, WSP worked with Pinellas County to develop a Sea Level Rise and Storm Surge Vulnerability study

meeting several statute requirements around flood scenario planning and evaluation of critical assets. WSP assessed long-term vulnerabilities and developed climate adaptation strategies for future tidal flooding and storm surge regarding the entire County. This assessment included sea level rise projections based on various NOAA-developed scenarios. WSP produced inundation maps to show impacted assets and future flooding maps for year 2040, 2070, and 2100. Additionally, the team worked with the County, municipal governments constituents and other project stakeholders to develop a countywide asset database that covered the geographic location and vital attribute information for a variety of critical assets. Infrastructure assets included potable water supply, wastewater management, stormwater management, transportation, natural gas and electrical. The project was able to determine predicted flooding at thousands of assets during any horizon-year/sea-level-rise scenario as the tidal flooding and storm surge inundation maps were developed.

Similarly, WSP will work with the Village of Palmetto Bay to meet the following requirements outlined in the Florida Statutes 380.093 and 163.3178:

- Assess various coastal flooding and sea level rise scenarios for the entire Village
- Assess Village facilities and assets essential to government and business functions, safety, public health, the economy, and environmental management and protection
- Use elevation data and other modeling techniques to assess the vulnerability and risk of identified assets
- Identify strategies that limit development in flood prone locations and coastal areas at risk of impacts from sea level rise (including recommendations for comprehensive plan amendments)

## COMPREHENSIVE PLANNING EXPERIENCE AND KNOWLEDGE OF MIAMI-DADE COUNTY COMPREHENSIVE DEVELOPMENT MASTER PLAN



Our team has over 30 years of comprehensive planning experience and has worked with communities to develop over 40 comprehensive plans, master plans, and redevelopment plans throughout the southeast alone. Our team's planning lead, Lee Walton, has over 25 years of experience in comprehensive planning and has worked with over 20 repeat communities updating their comprehensive plans. He has served as the Project Manager and/or Principal Author for approximately 20 comprehensive plans within the past 20 years.

WSP's comprehensive planning is award winning and has been recognized for excellence in innovation, education, communication, and effectiveness.

WSP's comprehensive planning work includes an in-depth community analysis of existing conditions and projected growth through a detailed assessment of land use, housing, demographics, natural and historic resources, transportation, community services, and economic development. These assessments are used to produce a final plan that is clear, has a realistic set of goals and strategies, and is supported by a short and long-term land use plan and community work program to guide implementation.

WSP's work updating comprehensive plans has also included revising outdated and inconsistent language, updating content for compliance with state and federal regulations, updating content to address emerging trends and local issues, and reorganizing content to be more efficient and user-friendly.

With this experience WSP is well equipped to provide resilience and adaptation recommendations that address the resilience vulnerability outcomes and integrate appropriately with the Village of Palmetto Bay comprehensive plan

and the Miami-Dade County Comprehensive Development Master Plan. Additionally, we are able to develop plan amendments that align with existing state statutes and local and county planning visions.

Throughout the planning process the WSP team will also work to integrate related elements from the Miami-Dade County Comprehensive Development Master Plan into the Resilience Action Plan and potential updates to the Village of Palmetto Bay comprehensive plan. Our team will review existing comprehensive plan goals, policies, and objectives for relevant elements like coastal management, land use, conservation, aquifer recharge and drainage, recreation and open space, and others. These plan components will be used to develop the Village’s resilience goals and objectives and create Adaptation Action Area (AAA) Goals, Objectives, and Policies that support an integrated local resilience strategy aligned with the overall resilience goals of the County. The Miami-Dade Comprehensive Development Master Plan will be one of several plans evaluated to understand the Village’s capacity for resilience strategy implementation and achieve plan integration.

## VULNERABILITY ASSESSMENT AND RESILIENCE PLANNING EXPERIENCE

WSP has developed risk and vulnerability assessments for hazard mitigation plans, floodplain management plans, resilience plans, and other hazard specific plans for local, state, and tribal governments across the country. Our resilience plans seek to understand communities risks and vulnerabilities to natural hazards and climate change, and identify strategies to build local resilience, and minimize those risks and vulnerabilities. Our team has completed vulnerability assessments using qualitative research as well as quantitative and GIS spatial analysis to determine potential exposure, sensitivity, and impacts on people, the built environment, critically significant facilities, and natural resources. Included in these vulnerability assessments is also an evaluation of climate change implications for each hazard, to understand not just current vulnerability but also potential future conditions and associated changes in vulnerability. By choosing WSP, the Village will receive the highest quality vulnerability assessment including a professionally facilitated planning process that will lead to meaningful resilience action development.

The table below details WSP’s experience with vulnerability assessments throughout the southeast United States.

Client/Location	Year of Service	Service Provided
Village of Palmetto Bay, FL	2022 - Present	Floodplain Management Plan and Repetitive Loss Area Analysis (RLAA)
Monroe County, FL	2018 - Present	Multi-Jurisdictional Local Mitigation Strategy update; Roads Vulnerability Analysis and Capital Plan; Harry Harris Park Vulnerability/Adaptation Analysis
Orange County, FL	2017 - Present	Floodplain Management Plan original plan and plan update, RLAA, and Program for Public Information (PPI)
Collier County, FL	2014 - Present	Floodplain Management Plan and Local Mitigation Strategy Hazard Identification and Risk Assessment update
Pinellas County, FL	2018 - 2022	Sea Level Rise & Storm Surge Vulnerability Assessment
City of Oldsmar, FL	2020 - 2021	Climate Resiliency Plan
Miami-Dade County, FL	2019 - 2021	Sea Level Rise Strategy
Fernandina Beach, FL	2019 - 2020	Downtown Waterfront Resiliency Master Plan
City of St. Augustine, FL	2018 - 2019	City of St. Augustine Resilience Planning and Implementation
Town of Cutler Bay, FL	2014 - 2021	Floodplain Management Plan (2016 plan and 2021 update)
Town of Edenton, NC	Present	Resilience Risk Assessment and Strategy Development
City of Rocky Mount, NC	2020 - 2022	Natural Hazards Resilience Plan
Town of Morehead City, NC	2019 - 2021	Stormwater Master Plan Pilot Study
North Carolina Department of Transportation	2018 - 2019	Flood Resilience Feasibility Study

## SELECTED SERVICE PROVIDER FOR NORTH CAROLINA RESILIENT COASTAL COMMUNITIES PROGRAM

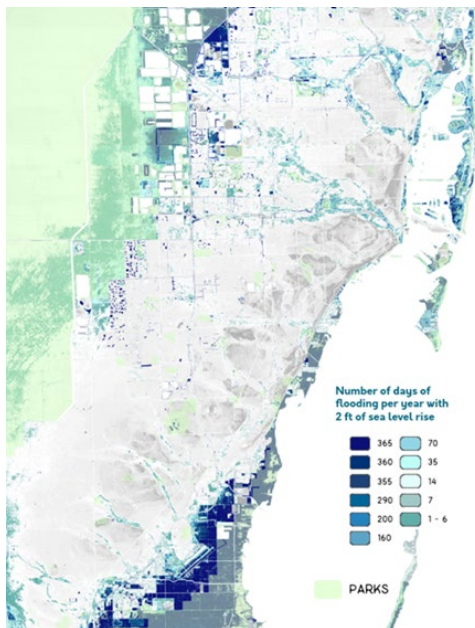
The N.C. Resilient Coastal Communities Program (RCCP) provides funding for coastal North Carolina communities for setting coastal resilience goals, assessing existing and needed local capacity, and identifying and prioritizing projects to enhance community resilience to coastal hazards. WSP has been selected as one of nine service providers to work with local governments and provide direct technical assistance to complete a community engagement process, risk, and vulnerability assessment, and develop a resilience project portfolio.

This initiative, funded through the N.C. State Legislature and the National Fish and Wildlife Foundation, enables local governments to help overcome barriers in coastal resilience and adaptation planning, boost local government capacity, and support a proactive, sustainable, and equitable approach to coastal resilience planning and project implementation. This WSP team was chosen based on our resilience expertise and experience working with local communities to assess vulnerability and develop strategies to address resilience needs.

### IDENTIFY AND MAP CRITICAL ASSETS

WSP regularly identifies and maps critical assets as part of our hazard mitigation and resiliency plans to spatially assess these assets' vulnerability to natural hazards and identify specific mitigation needs. WSP has also led collaborative teams of GIS professionals, engineers, and planners to conduct specialized evaluations of critical assets.

To address the vulnerability of North Carolina's infrastructure to natural flooding disasters and to initiate strategies to mitigate against future flooding disasters, the Secretary of Transportation commissioned the I-95/I-40 Flood Resilience Feasibility Study, conducted by WSP in 2019, to identify improvement options and estimate costs to increase flood resilience. Through this effort, our team worked with NCDOT Divisions to identify and map critical assets that were subject to flooding during Hurricane Matthew and Hurricane Florence, establish resilience criteria for these assets, engineer and evaluate potential solutions, and present opportunities for resilience improvements.



WSP also conducted a risk-based vulnerability assessment for the Miami-Dade County Office of Resilience. The purpose of the assessment was to understand the impacts that climate hazards will have in Miami-Dade County into the future and to evaluate the costs of risk and action. Meeting several requirements of Florida Statutes 380.093 and 163.3178, and the Resilience Florida Grant Program, WSP conducted a risk-based analysis of assets within the county geography, including residential properties, county-owned properties, and transportation assets. Using GIS, the team overlaid future groundwater, sea level rise, and storm surge data on the identified assets and identified damages based on HAZUS depth-damage curves and the County's understanding of past damages.

WSP understands that mapping critical assets is fundamental to understanding vulnerability and identifying specific problem areas. This will be key in identifying Adaptation Action Areas (AAA). The WSP GIS and planning team will use a wide range of data to map and assess both physical and non-physical assets to best determine where to prioritize adaption and resilience strategies.

# COMPREHENSIVE APPROACH TO RESILIENCE

## INTEGRATE EXISTING RESILIENCE FRAMEWORKS

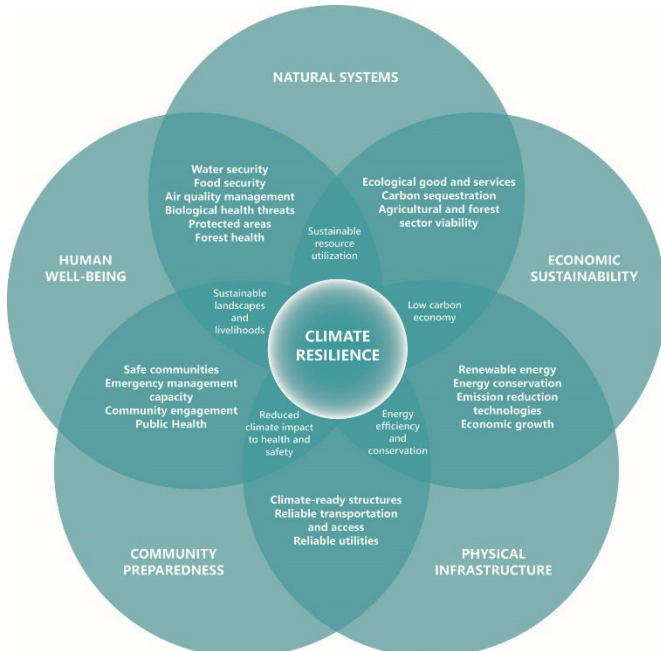
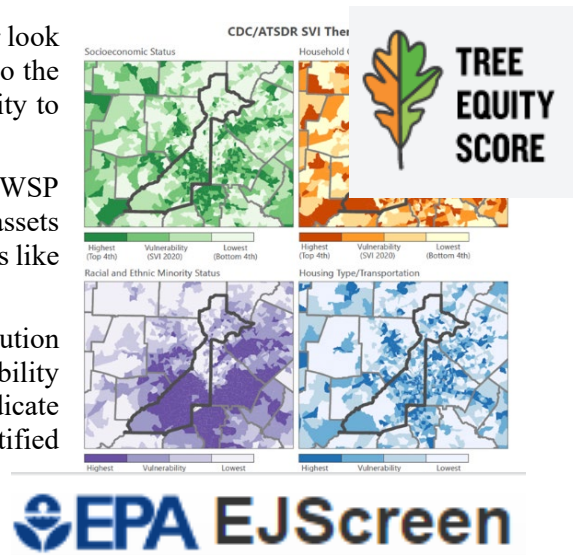
In our plan development processes, our team incorporates key components of existing resilience frameworks, like the U.S. Resilience Toolkit and the EPA’s Regional Resilience Toolkit, to create comprehensive and integrated plans that compliment national practices. Our team also recognizes the importance of case studies as a tool for local planning and examines other communities in the region and across the U.S. for models of local resilience. Examining local case studies and plans also supports further integration and coordination of resilience efforts.

## EXAMINE AND ADDRESS SOCIAL VULNERABILITY

WSP understands that resilience planning requires taking a broader look at local vulnerability and considering not just physical risk but also the social and demographic factors that influence a community’s ability to respond to and recover from both chronic and acute hazards.

For the City of Rocky Mount Natural Hazards Resilience Plan, WSP assessed both physical and non-physical assets. Non-physical assets included socially vulnerable populations as well as economic factors like jobs, types of employment, and people.

WSP mapped socially vulnerable populations and their distribution across the City of Rocky Mount using the CDC’s Social Vulnerability Index (SVI) data, which summarizes 16 social factors that often indicate vulnerability into four distinct themes. Relevant themes were identified for each hazard type and used as an indicator of an area’s adaptive capacity, or ability to respond to and recovery from a hazard event. This allowed for a spatial analysis of vulnerable populations and hazard risk.



## IDENTIFY COMPOUNDING FACTORS

WSP also evaluates stressors to further understand challenges to building resilient communities. Stressors are factors or conditions that contribute to or exacerbate the impacts of a threat. Many stressors reflect existing challenges and social vulnerability in the community, and when coupled with severe weather or threats, these challenges can make it difficult for the community and individuals to cope with and adapt to the impacts. WSP will examine several relevant stressors like aging infrastructure, housing availability, affordability, and age, aging populations, public health and mental health challenges, food access, and more were to understand compounding impacts on the identified assets.

Ministry of Health - Saskatchewan. Climate Resilience (Graphic). <https://www.saskatchewan.ca/-/media/images/environment/climate-change-prairie-resilience/resilience-graphic.jpg?la=en&h=421&w=968&hash=968A0E7946BEBEDB02BFC8D109404139>

## COMPREHENSIVE CRITERIA FOR PROJECT PRIORITIZATION

### RESILIENCE SCORECARD: How can we choose and prioritize resilience strategies?

Strategies were evaluated on the following **effectiveness**, **implementation**, and **benefits** criteria in order to weigh their relative priorities and select which strategies to work on first:

**Resilient:** Is the strategy itself resilient to identified shocks and stressors?  
**Redundant:** Does the strategy reduce/avoid service interruptions?  
**Sustainable:** Does the strategy provide long-term benefits and minimize future mitigation needs?  
**Scalable:** Can the project be expanded or duplicated if successful?  
**Targeted:** Does the strategy benefit high-sensitivity and/or low adaptive capacity assets?

**Feasible:** Can the strategy be implemented with existing administrative and technical capabilities?  
**Supported:** Does the strategy have political and public support?  
**Integrated:** Does the strategy align with other City planning goals and projects?

**Cost-Beneficial:** Do the benefits of the strategy outweigh the costs?  
**Social Benefits:** Does the strategy increase equity within the City?  
**Economic Benefits:** Does the strategy support the local economy?  
**Environmental Benefits:** Does the strategy protect existing natural systems and resources?

criteria that a project should address, a comprehensive set of project co-benefit impacts that a project can potentially provide, and considerations for ease of project implementation. The scorecard criteria provide a comprehensive evaluation gaging ability to address things like social benefits and equity, environmental protection, and support for the local economy.

WSP will work with the Village of Palmetto Bay to create a similar but unique prioritization process that evaluates the strategies identified through the planning process. The Village will also benefit from the scorecard as it serves as a tool for integrating resilience considerations into other Village actions. For example, the Resilience Scorecard can be used to evaluate capital improvement projects, comprehensive plan policies, and other Village planning efforts.

## PLANNING COMMITTEE COORDINATION AND PUBLIC ENGAGEMENT

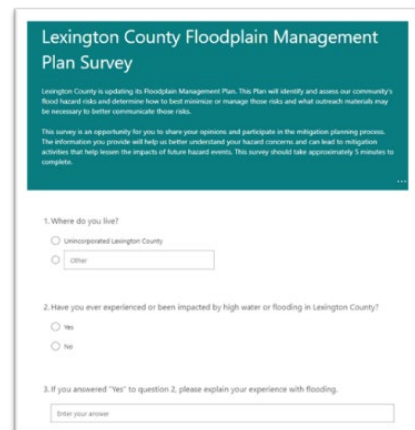
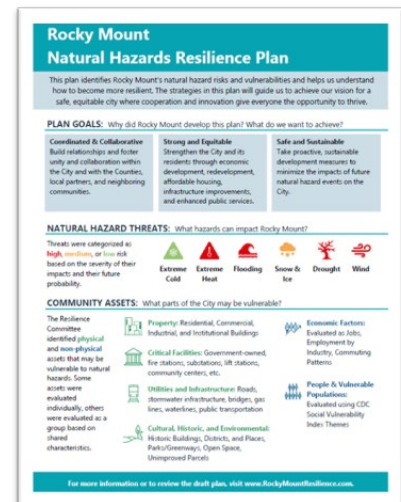
WSP is experienced in stakeholder coordination and developing and implementing successful outreach programs. Our staff is skilled in analyzing and synthesizing complex data; developing materials to summarize and convey planning process data, and facilitating conversations on exposure, vulnerability, and resilience objectives to encourage public and stakeholder input. WSP works with the local community staff and public information officers at the beginning of the process to identify how best to best communicate and disseminate information.



Recently, the WSP planning team hosted an in person public workshop to receive input on the Bryan Texas Floodplain Management Plan. WSP provided an overview of the planning process and used large maps that enabled residents to discuss specific challenges and pinpoint flood issues in their community. The Miami team also hosted [a workshop](#) that presented the findings of the C-8 and C-9 Flood Protection Level of Service (FPLOS) Adaptation and Mitigation Planning Projects Study, developed in collaboration with the South Florida Water Management District (SFWMD). Recommendations are incorporated into the SFWMD Sea Level Rise and Flood Resiliency Plan. The in-person workshop also had a virtual option and made all meeting materials available on the SFWMD website.

WSP regularly incorporates the following outreach methods and materials into local hazard mitigation planning processes:

- Public Meetings and Workshops:** WSP designs and facilitates public meetings structured to educate the public on the relevant planning process and solicit feedback to inform key plan components, such as critical asset identification, vulnerability assessment, and community priorities and goals for resilience. Our team works with each of our clients to select meeting times, locations, and formats that will enable greater accessibility and participation. We have held meetings in flood-affected neighborhoods and scheduled multiple meetings to provide more options and opportunities for participation, holding meetings online to reduce the time and resource burden to attend, and/or streaming in-person public meetings online via a clients Facebook page. WSP provides meeting minutes and presentation slides for all public and committee meetings.
- Materials for Website, Newsletters, Webinars, etc.:** WSP supports public outreach processes by providing information, media advisories, and text for webpages, newsletters, and other materials to publicize planning processes. WSP also creates easy to read flyers to advertise public meetings and information sheets to explain planning processes. These materials are written and designed to reduce barriers to participation and increase accessibility. An example of a project summary sheet created for the Rocky Mount Natural Hazards Resilience Plan is shown to the right. Print materials are brought to public meetings and made available in local government offices, libraries, community centers, recreation centers, and other locations identified to improve access for socially vulnerable and underrepresented populations.
- Project Websites:** WSP can develop stand-alone websites for planning projects that can serve as a one-stop-shop for all planning process information and updates. These sites contain a variety of information including access to an online survey/questionnaire, minutes from meetings, PowerPoint presentations, draft documents, and more. A website supports improved communication, document delivery, and feedback with planning committee members, improve planning process transparency, and increase public and stakeholder outreach opportunities during the planning process.
- Public Surveys:** WSP develops public surveys to encourage public involvement and gather public input in the planning process. Surveys can be made available online and distributed in hard copy format at public meetings, workshops, and other local community events and spaces. Multiple surveys can be used: one to gather input on defining resilience, evaluating threats, and determining top concerns in the community, and another to understand priorities for resilience objectives and strategies.
- Stakeholder Representation:** Our team understands that even with extra efforts made to facilitate accessible opportunities for participation, some socially vulnerable and underrepresented populations simply may not have the time or resources to attend planning meetings. Because of this, our team stresses the importance of stakeholder outreach and engagement, assisting our clients in identifying key stakeholders that may represent socially vulnerable and underrepresented communities and inviting these stakeholders to participate on a planning committee or to provide input, data, feedback on draft documents, or other comments to our planning team. WSP will also coordinate sending a request for input and support of the planning process to stakeholder organizations and agencies that cannot participate in the committee. All stakeholders will be asked to provide data and information to support the plan and publicize the project website, outreach materials, and public meetings to their networks.



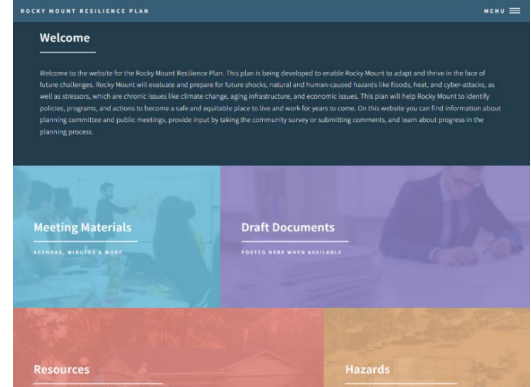
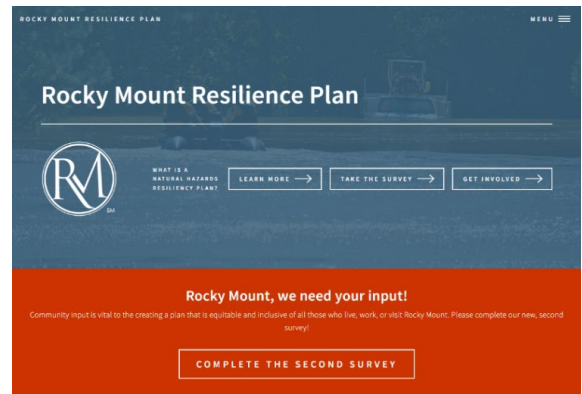
## WEBSITE DEVELOPMENT & HOSTING

WSP has an experienced team of GIS professionals with the ability to deliver a wide range of services to our clients. WSP is experienced in website development and hosting, custom tool and application development, and GIS data production and management. WSP's GIS analysts and developers in our Durham, NC office regularly support a variety of FEMA floodplain mapping and hazard mitigation projects, including expertise in developing customized web applications.

Our team has coordinated numerous planning processes involving multiple jurisdictions and stakeholders, and we have facilitated public and stakeholder engagement and committee coordination during these planning processes through the use of project websites, developed in-house by our GIS and programming team. These websites support improved communication, document delivery, and feedback with planning committee members, improve planning process transparency, and increase public and stakeholder outreach opportunities during the planning process. Examples of hazard mitigation plan websites from recent projects are shown below. The WSP team will create a similar website to support coordination and outreach for the Village of Palmetto Bay Resilience Action Plan.

Virtual committee coordination has proven effective in recent years in maximizing participation and input across jurisdictions and stakeholders. A project website will ensure all committee members, municipal stakeholders, and the public have quick and easy access to the project schedule and general project communications. A project website will also allow for meeting minutes and draft project documents to be uploaded for easy access and review by members of the Steering Committee.

For past projects, particularly multi-jurisdictional plans, our team has developed websites to streamline coordination and provide planning updates. These websites contained a variety of information and tools to support the planning process, including access to surveys, presentations and minutes, draft plans, and other mitigation resources.



# SIMILAR COMPLETED PROJECTS

Below is a selection of projects that WSP has completed in the past ten years which showcase our abilities in the full range of services needed for the successful development of the Village of Palmetto Bay Resilience Action Plan. Client contact information is provided for each project.

## Project Description:

<b>Client: Village of Palmetto Bay, FL</b>		
Services: Floodplain Management Plan		
<b>Start Date:</b> May 2022	<b>End Date:</b> April 2023	<b>Cost:</b> \$32,885

WSP (formerly Wood) developed a floodplain management plan (FMP) for the Village of Palmetto Bay as a subconsultant to the Corradino Group. The plan received the highest score in the nation under FEMA’s Community Rating System (CRS) Activity 510.

The planning process combined the Disaster Mitigation Act’s four phases with the CRS 10-step planning process to create a public-centered planning process. The project utilized an active committee created for development of a Program for Public Information, also led by WSP. This committee was expanded and formalized as the Floodplain Management Planning Committee which solidified public and stakeholder input throughout the planning process, as 50% of the committee’s membership comprised members of the public and other stakeholders outside of the local government. Additional public input and engagement was sought through two virtual public meetings, informational flyers, a public questionnaire, and online outreach.

A thorough asset inventory was completed to assess the impact each hazard would have on the Village. The evaluated hazards include climate change and seal level rise, coastal/stream bank erosion, dam/levee failure, hurricane/tropical storm, flood (inland and coastal), and stormwater/localized flooding. A vulnerability and risk

assessment was completed using Miami-Dade County parcel data and building footprints, County and Village GIS data, hazard GIS data from federal agencies, and descriptions of risk from previous plans and community input.

WSP created maps to visualize risk, vulnerability, and past occurrences. This included projected sea level rise impacts, flood hazard areas, storm surge maps (SLOSH modeling), past hurricane tracks, and social vulnerability.

In addition to a floodplain management plan, WSP has worked with Village to develop a Repetitive Loss Area Analysis and other CRS consulting services.

### OUTCOMES:

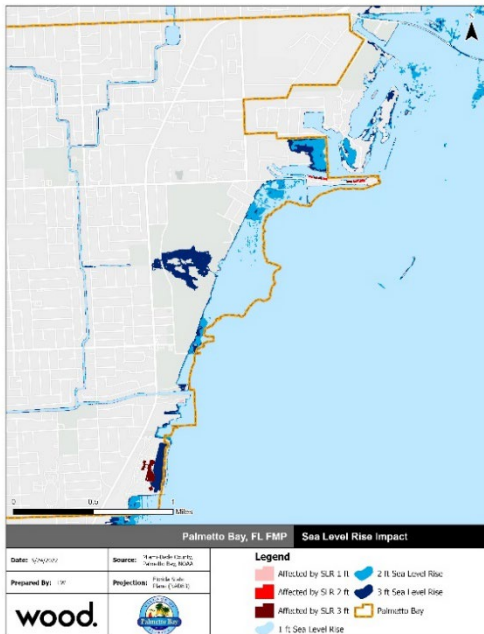
- Detailed assessment of hazard vulnerability, including sea level rise and coastal flood analysis
- Highest scoring Floodplain Management Plan in the CRS, providing 75% of a CRS class improvement in credit
- Established a formal Floodplain Management Planning Committee

### TEAM MEMBERS INVOLVED:

David Stroud, CFM  
Garrett Shields, GISP, CFM  
Abby Moore, AICP, CFM  
Ranger Ruffins

### CLIENT CONTACT:

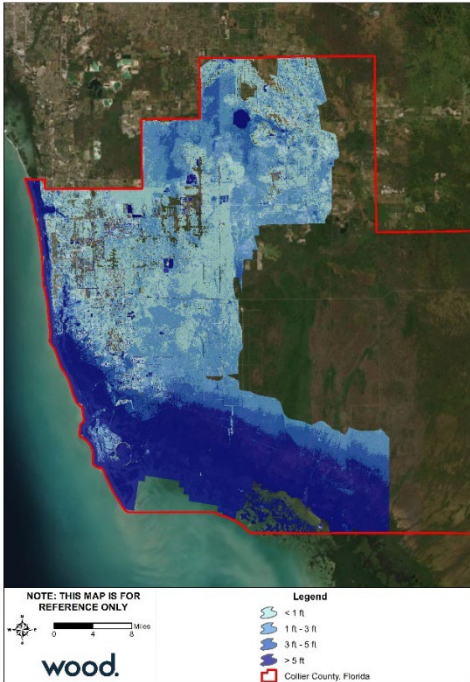
Andrea Candelaria  
Resilience Coordinator  
Village of Palmetto Bay  
(305) 259-1238  
acandelaria@palmettobay-fl.gov



**Project Description:**

<b>Client: Collier County, FL</b>		
Services: Hazard Identification & Risk Assessment		
<b>Start Date:</b> October 2019	<b>End Date:</b> March 2020	<b>Cost:</b> \$24,500

WSP (formerly Wood) supported Collier County, Florida in the development of a Consolidated Hazard Identification and Risk Assessment (HIRA) in support of the 2020 update to the Collier County Local Mitigation Strategy (LMS). The final HIRA was compliant with the FDEM LMS Process, the FEMA DMA planning requirements, and the Community Rating System (CRS) planning process for floodplain management planning. This approach supported CRS participant communities in maintaining and/or achieving greater CRS class ratings.



The HIRA included all relevant natural and technological or human-caused hazards from the State Hazard Mitigation Plan and the previous local mitigation strategy, which resulted in analysis of 23 natural and technological hazards. Each hazard was evaluated and prioritized based on probability, impact, spatial extent, warning time, and duration. WSP evaluated vulnerability of each of the participating jurisdictions to each hazard, assessing exposure and potential impacts as applicable. For example, the team estimated the number and value of buildings in each storm surge inundation zone, flood zone, and sea level rise inundation area based on best available data from the National Oceanic and Atmospheric Administration (NOAA), the U.S. Army Corps of Engineers, the U.S. Geological Survey, and other resources.

The HIRA was completed on an expedited timeline to meet the County’s plan update schedule requirement.

Based on our team’s work on the County’s HIRA and previous Floodplain Management Plan, WSP was recently selected by Collier County to prepare a Resilience Vulnerability Assessment as part of the County’s Resilient Florida Program planning efforts.

**OUTCOMES:**

- Detailed assessment of hazard vulnerability, including coastal flood analysis
- DMA and CRS compliant risk and vulnerability assessment

**TEAM MEMBERS INVOLVED:**  
 David Stroud, CFM  
 Garrett Shields, GISP, CFM  
 Abby Moore, AICP, CFM

**CLIENT CONTACT:**  
 Richard Zyvoloski Jr, FPDM, CFM  
 Emergency Management Division  
 Collier County  
 (239) 252-3603  
 richard.zyvoloski@colliercountyfl.gov

## Project Description:

<b>Client: Monroe County, FL</b>		
Services: Multi-Jurisdictional Local Mitigation Strategy Update		
<b>Start Date:</b> November 2019	<b>End Date:</b> May 2021	<b>Cost:</b> \$64,750

WSP (formerly Wood) worked with Monroe County, Florida to complete the 2020 update of the County’s Multi-Jurisdictional Local Mitigation Strategy (LMS). The plan was developed to meet DMA local mitigation planning requirements, FDEM additional review requirements, and the more robust 10-step planning process of the National Flood Insurance Program’s Community Rating System (CRS). This approach meant that the LMS earned significant credit under Activity 510 Floodplain Management Planning of the CRS program, helping CRS participant communities to maintain and/or achieve greater CRS Class ratings.

The LMS update included all relevant natural and human-caused hazards from the State Hazard Mitigation Plan and the previous local mitigation strategy. To update the vulnerability assessment, WSP focused on the unique geographic nature of Monroe County that makes it particularly susceptible to coastal hazards such as hurricanes, storm surge, flooding, and sea level rise. These hazards were each detailed in individual profiles and WSP evaluated vulnerability of people, property, and critical facilities to each hazard. WSP evaluated sea level rise using a combination of data from NOAA and the Southeast Florida Regional Climate Change Compact’s Unified Sea Level Rise Projection. The team also evaluated high tide flooding and its influence on other coastal hazard impacts.

To support improved communication across the committee and increase public outreach opportunities, Wood developed a plan website containing a variety of information and tools to support the planning process, including:

- Descriptions of identified hazards for public education on risk
- Access to a public survey for public and stakeholder input
- Presentations, agendas, and minutes from committee and public meetings
- Draft plan sections and documents for committee and public review
- Resources to support the plan development, such as the FEMA Mitigation Ideas publication
- Ability to submit comments to the consultant team and planning committee

Upon completion of the plan, WSP’s client contact, Jeff Manning, nominated the project team for an Outstanding Project Delivery award.

### OUTCOMES:

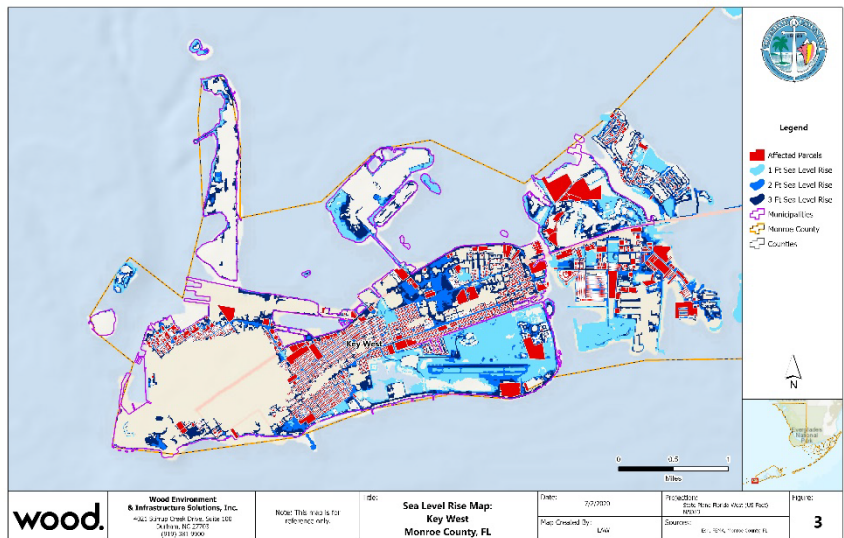
- Detailed assessment of sea level rise and coastal flooding vulnerability
- Created a plan website to coordinate among the planning committee and support public engagement

### TEAM MEMBERS INVOLVED:

David Stroud, CFM  
Garrett Shields, GISP, CFM  
Abby Moore, AICP, CFM

### CLIENT CONTACT:

Jeff Manning, Senior Planner  
Monroe County Emergency Mgmt  
(305) 289-6325  
jeff.manning@monroecounty-fl.gov



## Project Description:

<b>Client: City of Rocky Mount, NC</b>		
Services: Natural Hazards Resilience Plan		
<b>Start Date:</b> February 2021	<b>End Date:</b> June 2022	<b>Cost:</b> \$79,650

WSP (formerly Wood) developed a natural hazards resilience plan for the City of Rocky Mount, North Carolina. The plan built upon the findings of a regional Hazard Mitigation Plan to identify specific climate threats, compile an asset inventory, and evaluate risk and vulnerability using spatial, quantitative, and qualitative data for the City. Six climate threats were evaluated: extreme cold, extreme heat, flooding, snow and ice, drought, and wind. WSP evaluated the vulnerability of physical assets like buildings and critical facilities and non-physical assets like socially vulnerable communities and natural resources.

Each threat was assigned a risk rating based on the magnitude of its impacts and its probability of occurrence. Asset vulnerability was evaluated based on each asset’s sensitivity and adaptive capacity relative to each applicable threat. Findings were summarized by asset-threat pair as key issue statements to be targeted through resilience strategies.

To develop the resilience action plan, WSP worked with the Resilience Steering Committee as well as City staff, public, and stakeholder input to create a resilience scorecard for strategy evaluation and prioritization. With committee input and using the resilience scorecard, WSP developed and prioritized 35 resilience strategies into a resilience action plan. The scorecard also enables Rocky Mount to integrate resilience into other planning processes, such as capital improvements planning, by evaluating any local action or recommendation through a resilience lens.

### OUTCOMES:

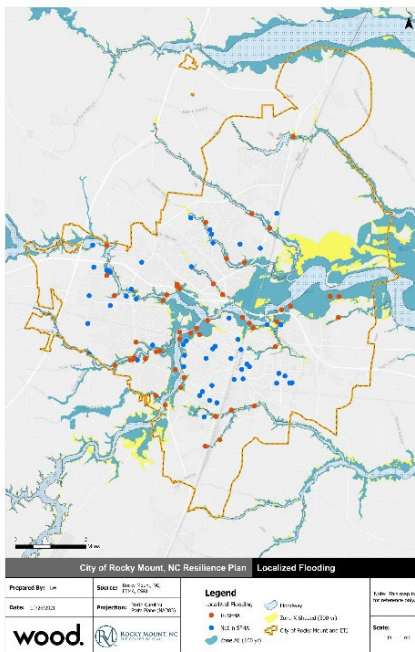
- Detailed vulnerability analysis of risk, sensitivity, and adaptive capacity
- Resilience scorecard for project evaluation
- Resilience strategies

### TEAM MEMBERS INVOLVED:

David Stroud, CFM  
Garrett Shields, GISP, CFM  
Abby Moore, AICP, CFM  
Ranger Ruffins

### CLIENT CONTACT:

Brenton Bent  
Director of Water Resources  
City of Rocky Mount  
(252) 972-1299  
brenton.bent@rockymountnc.gov



To engage the Steering Committee, the public, and stakeholders throughout the planning process, the following outreach and engagement strategies were employed:

- A plan website was created to educate and engage the public, document the planning process, provide access to online surveys, and house meeting materials and draft sections of the plan.
- Two public surveys were distributed, one to gather input on defining resilience, evaluating threats, and determining top concerns in the community, and another to understand priorities for resilience objectives and strategies. Individuals were asked to share their experiences with past hazard events to help the Steering Committee understand the significance of specific threats and assets.
- City staff were also asked to complete a survey to define resilience, set plan goals, and describe their departments’ strengths and limitations in implementing strategies for hazard resilience.
- Three public workshops were held, including one to present the draft resilience definition, vision statement, and plan goals based on public and committee input, one to gather public input on draft resilience strategies, and a final meeting to present the final draft plan for review and feedback.

## Project Description:

**Client: City of Fernandina Beach, FL**

Services: Downtown Waterfront Resiliency Master Plan

**Start Date:**  
January 2019

**End Date:**  
August 2019

**Cost:**  
\$35,700

WSP (formerly Wood) worked with the City of Fernandina Beach, FL to develop a resilience plan that will enable the city to plan for the protection of their historic coastal downtown area from the effects of rising sea levels, high-tide events, storm surge, and flash floods combined with stormwater runoff and subsidence hazards. The plan comprises data, analysis, and a set of prioritized policy and project recommendations to guide efficient, effective, and systematic future infrastructure investments, including green infrastructure and nature-based solutions.

Throughout the planning process, WSP worked with the City and a resiliency steering committee to include input and perspectives from a range of departments and staff with various expertise.

To assist the City in determining the vulnerabilities of the Downtown Waterfront project area, there was a review of existing sea level rise assessments and studies, the identification of shocks and stressors specific to the planning area, including flood from storm surge, heatwaves, severe storms, aging infrastructure, lack of mobility, among others.

Wood identified potential actions that could be taken by the City to minimize the impact of sea level rise and flooding. These actions were presented in the Plan as menu of adaptation strategies that could be implemented within the downtown waterfront project area. The Plan also includes general design guidelines prepared to assist developers, property owners, and residents adapt to predicted increases in water levels.

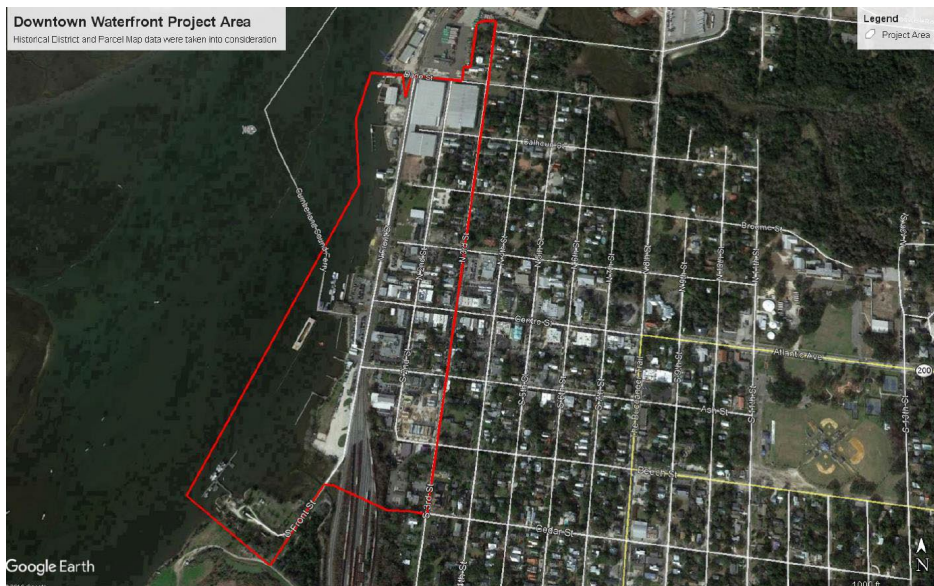
A portion of this planning effort was funded by the Florida Department of Environmental Protection, Florida Coastal Management Program, and Office for Coastal Management.

### OUTCOMES:

- Provided a menu of adaptation actions
- Created a scorecard to help evaluate and prioritize projects

### CLIENT CONTACT:

Andre Desilet, P.E., CFM  
Stormwater Director  
City of Fernandina Beach  
1181 S 5th Street  
Fernandina Beach, FL 32034  
904.310.3431  
adesilet@fbfl.org



## Project Description:

<b>Client: City of St. Augustine, FL</b>		
Services: Resilience Planning and Implementation		
<b>Start Date:</b> May 2018	<b>End Date:</b> September 2019	<b>Cost:</b> \$26,910

WSP (formerly Wood) worked with the City of St. Augustine to develop a resilience plan and support the implementation of plan actions. The plan allowed the City to embed resilience into critical infrastructure, proactively address shocks and stresses that can impact the City, and drive implementation of projects that can have the greatest impact across the social, economic, and environmental areas for City residents. Our support included the following key tasks:

- Develop criteria to prioritize capital improvement expenditures that can result in co-benefits and address shocks and stress.
- Facilitate a resilience workshop that will provide the bottom-up input required to drive stakeholder engagement around the key shocks such as sea level rise (SLR), infrastructure adaptation, and resilience.
- Work with City planning, engineering, and the comprehensive plan to develop a resilience plan that will allow the City to prioritize, allocate funding, and implement projects to protect critical infrastructure.

### OUTCOMES:

- Development of a resilience plan, including meeting facilitation and stakeholder involvement
- Produced a scorecard for evaluating the resilience of capital improvement projects

### CLIENT CONTACT:

Todd Grant, PG  
Public Works Deputy Director  
Phone: (904) 209-4271  
tgrant@citystaug.com

WSP worked with SCAPE Landscape Architecture to facilitate the kick off workshop in May 2018. More than 45 key stakeholders participated in discussions on prioritizing critical shocks and stresses, identifying vulnerable assets in the City, brainstorming potential resiliency projects, and defining what makes a project “resilient” for St. Augustine. The workshop allowed the City to analyze the shocks and stress that affect (or may affect) the City and to assess important assets such as: Social/Cultural/Historic Resources, Open Space and Natural Resources, Health and Human Services, and Physical Infrastructure (utilities, roads, bridges).



The outcomes of this workshop included:

- Analysis of the shocks and stresses that affect (or have the potential to affect) the City
- Steps for addressing resiliency of key vulnerable assets
- Scorecard to support evaluation of capital improvement projects

WSP also developed a custom scorecard tool for the City of St. Augustine to assist in evaluating projects in their Capital Improvement Plan based on three elements: a project’s resilience to shocks and stresses; a project’s contribution to overall City resilience; and feasibility of project implementation. Projects are evaluated based on several weighed criteria for each of these categories, and by scoring

projects on these criteria, the City also documents the reasons and rationale for selection of projects to be implemented.

## Project Description:

Client: North Carolina Department of Transportation		
Services: I-40/I-95 Flood Resilience Feasibility Study		
<b>Start Date:</b> December 2018	<b>End Date:</b> August 2019	<b>Cost:</b> \$163,000

Following Hurricanes Matthew and Florence in North Carolina, the NCDOT partnered with WSP (formally Wood) to develop the I-95 / I-40 Flood Resilience Feasibility Study to determine the location, severity and duration of flood waters impacting strategic transportation corridors in eastern NC. The study identified more than 75 alternates to increase Hurricane Flooding resiliency along I-95, I-40 and NC24. The study included:

- NCDOT HQ and Division Coordination
- Field visits
- LiDAR Analysis
- Flood Study Analyses
- Conveyance Analyses
- High Water Mark Analyses
- Defining Resilience Criteria
- Improvement Option Identification (elevate roadway, increase conveyance, etc.)
- Feasibility design (plan sets, road profiles, bridge elevations, cost estimate, etc.)

### OUTCOMES:

- Completed flood hazard analysis based on field visits, high water marks, and H&H modeling
- Coordinated across NCDOT HQ and Division Offices
- Provided support for public outreach
- Defined resiliency criteria
- Identified improvement options
- Provided feasibility design

### TEAM MEMBERS INVOLVED:

David Stroud, CFM  
Garrett Shields, GISP, CFM  
Abby Moore, AICP, CFM

### CLIENT CONTACT:

Matthew Lauffer, PE, CPM  
Assistant State Hydraulics Engineer  
Phone: (919) 707-6703



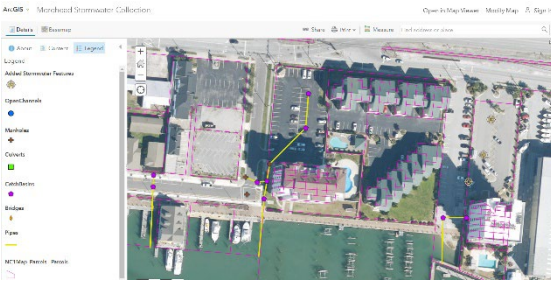
The results of the I-95 / I-40 Flood Resilience Feasibility Study have increased design

standards on on-going interstate projects, led to a number of resilience planning initiatives such as GIS analyses of roadway flooding potential, and prompted multi-tier resilience planning studies ranging from GIS analysis to 2D modeling. The report was ultimately augmented by a digital geospatial dashboard to provide spatial context and summary information for the report. This web-based portal allowed NCDOT officials and decision makers fingertip access to recommended improvements at study areas as well as both summarized and detailed information about proposed design schematics and associated costs. By creating this dashboard, Wood was able to distill a report with over 1,000 pages (including appendices) into a simple and easy to use web interface which had the added benefit of displaying study information with a spatial context that included other supporting datasets. This portal has been heavily utilized by NCDOT leadership including the NCDOT Secretary.

## Project Description:

<b>Client: Town of Morehead City, NC</b>		
Services: Stormwater Master Plan Pilot Study; Floodplain Management Plan, Program for Public Information, and Repetitive Loss Area Analysis updates		
<b>Start Date:</b> January 2017	<b>End Date:</b> October 2022	<b>Cost:</b> \$116,310; \$26,643

WSP (formally Wood) conducted critical asset mapping specific to local stormwater management in a coastal environment. For the Town of Morehead City, NC, WSP prepared a Stormwater Master Plan Pilot Study. This stormwater resilience project involved field survey and subsequent GIS mapping of collected data to create a stormwater system inventory. WSP developed an interactive stormwater asset inventory map located [here](#). WSP then used this inventory to conduct hydrologic and hydraulic modeling to identify shortcomings in the system.



Based on these findings, our team designed upgrades that would build local resilience by reducing or eliminating stormwater-related flooding and improve water quality through construction of Best

Management Practices (BMPs) and Low Impact Development (LID) techniques. A list of projects was developed and prioritized, and preliminary budget information was estimated to establish a Capital Improvement Plan for stormwater management.

This analysis allowed WSP to prepare a Disaster Relief and Mitigation Fund (DRMF) application for Morehead City through North Carolina Emergency Management (NCEM). As a result of the application, NCEM awarded Morehead City a \$2.4 million grant to implement a flood resilience project identified in the Pilot Study.

WSP has also developed a Floodplain Management Plan (FMP) and update for the Town. With assistance from our Team, the Town's FMP scored 361 of a possible 382 points. WSP also developed a Program for Public Information (PPI) to maximize credit under this activity, and assisted the Town in the development of a Repetitive Loss Area Analysis (RLAA) which scored the full 140 points possible. Together with the FMP, these projects earned over 500 points under Activity 510 alone, achieving a full CRS Class improvement for the Town.

### OUTCOMES:

- Used plan to submit a grant application and secure funding for a project developed from the plan
- CRS - compliant Floodplain Management Plan and Program for Public Information prepared through a joint planning process
- RLAA developed and scored max points
- Contracted again to develop stormwater master plan in pilot area

### TEAM MEMBERS INVOLVED:

David Stroud, CFM  
Garrett Shields, GISP, CFM  
Abby Moore, AICP, CFM

### CLIENT CONTACT:

Sandi Watkins, CFM  
Planning Director  
Phone: (252) 726-6848

## Project Description:

<b>Client: Pinellas County, FL</b>		
Services: Sea Level Rise and Storm Surge Vulnerability Assessment		
<b>Start Date:</b> June 2018	<b>End Date:</b> March 2022	<b>Cost:</b> \$490,000

Pinellas County is advancing the assessment of long-term vulnerabilities and the development of climate adaptation strategies in response to future tidal flooding and storm surge for the entire county, including its constituent municipalities. The county undertook this effort to identify long-term capital investments that could be advanced to enhance community resilience in consideration of projected climate changes and to identify a set of policy strategies that could be implemented to mitigate or adapt to the threats presented by these potential environmental shifts. The project was funded in part by a grant by the United States federal government using money from the Deepwater Horizon disaster. WSP led this effort, providing strategic consulting and engineering services to Pinellas County to help carry out this assessment.

WSP's first task was to develop predicted future tidal flood mapping for the county utilizing the latest (2017) National Oceanographic and Atmospheric Administration (NOAA) sea-level rise projections. WSP also assisted in the development of future storm-surge mapping, in conjunction with a team at the University of Florida. The storm surge mapping made use of state-of-the-art modeling that considers sea level rise and the projected effects of climate change on the frequency, intensities, and tracks of tropical systems. Wave action was included as an element of the mapping.

WSP also worked with Pinellas County, its municipal governments, and other stakeholders to develop a county-wide asset database, covering the geographic location and vital attribute information for a variety of critical assets, including potable water supply infrastructure, wastewater management infrastructure, stormwater management infrastructure, transportation infrastructure, natural gas infrastructure, and electrical infrastructure. As the tidal flooding and storm surge inundation maps are developed, WSP was able to determine predicted flooding at all of these thousands of assets during any horizon-year/sea-level-rise scenario.

At the completion of the vulnerability analysis, WSP worked with Pinellas County to conduct facility-level adaptation assessments for five assets. WSP examined in further detail the risk at these specific assets for each sea level rise scenario and developed preliminary recommendations for adaptation options specific to these facilities. WSP applied the Adaptation Decision-making Assessment Process (ADAP) for this effort, a a facility-level adaptation assessment process WSP helped develop for the Federal Highway Administration. ADAP involves a scenarios-based approach to design and includes a detailed benefit-cost analysis of each alternative under each climate scenario so that decision-makers have the information they need to make an informed decision.

### OUTCOMES:

- Development of Data Analytics to Analyze Climate Risks
- Analyzed all County owned assets (water, energy, transportation)
- Introduced a cost-effectiveness design approach for adaptive design

### CLIENT CONTACT:

Hank Hodde, CFM, ENV SP  
Sustainability & Resiliency Program  
Coordinator  
Pinellas County Administration  
Phone: (727) 464-3485  
Email: [hhodde@pinellascounty.org](mailto:hhodde@pinellascounty.org)

**Project Description:**

<b>Client: Monroe County, FL</b>		
Services: Harry Harris Park Vulnerability/ Adaptation Analysis		
<b>Start Date:</b> July 2018	<b>End Date:</b> April 2019	<b>Cost:</b> \$30,000



WSP provided Monroe County in the Florida Keys with a vulnerability and adaptation project to evaluate a range of planning and engineering options to address future climate impacts related to sea level rise, storm surge

**OUTCOMES:**

- Developed three project alternatives to address the revitalization and protection of Harry Harris Park from sea level rise

**CLIENT CONTACT:**  
 Rhonda Haag  
 1100 Simonton Street  
 Suite 205  
 Key West, FL  
 Phone: (305) 453 - 8774  
 Email: haag-rhonda@monroecounty-fl.gov

and flooding. The work included a range of adaptation strategies for the park across a range engineering and cost variables. Green Keys! is Monroe County’s plan for addressing climate change and sea level rise. The result of an 18-month planning process, it provides guidance for County decision-makers, staff, business owners, and residents with 165 recommendations and a 5-year Work Plan to increase sustainability and resilience. The plan contains six focus areas aligned with County priorities for future planning and project implementation.

As part of this project, WSP reviewed the existing park assets and infrastructure for its current state of use and needed repairs. The work aligned closely with the Public Assistance Program administered through FEMA and reviewed a range of architectural and engineering designs to repair and replace park amenities that were damaged by Hurricane Irma.

The project utilized the Southeast Florida Regional Climate Change Compact to incorporate sea level rise scenarios for the region to this park area. One of the most important aspects of the Compact is the development of unified sea level rise projections by scientific representatives of the Compact counties and other pertinent agencies, such as SFWMD and USACE which were completed in 2011 and updated in 2015.

WSP developed a range of engineering options and cost scenarios that allow the client to evaluate options to address multi-hazard climate impacts and allow the park assets, operations, and facilities to operate and provide needed services in the future. WSP utilized our existing resilience engineering expertise, background from conducting similar work in Florida, and leading resilience planning guidelines such as the Waterfront Alliance’s Waterfront Edge Design Guidelines (WEDG), to complete an adaptation plan for site-specific vulnerabilities. Our work at Harry Harris Park, and other similar projects, demonstrates some of the best adaptation options that can be implemented are often the simplest.



## Project Description:

**Client:** City of Oldsmar, FL

**Services:** Climate Resiliency Plan

**Start Date:**

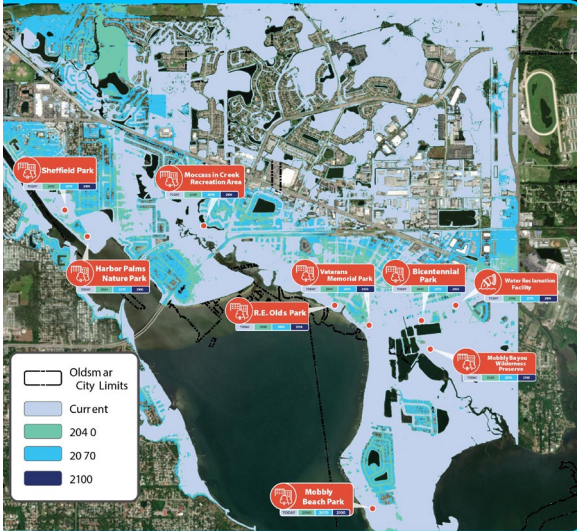
September 2020

**End Date:**

July 2021

**Cost:**

\$200,000



WSP worked with the City of Oldsmar to develop a Climate Resiliency Plan (CRP) for city-owned and managed assets. To develop the CRP, WSP conducted a risk-based vulnerability assessment for city assets using future probabilistic storm surge, sea level rise, and precipitation data. This work included coordination with

### OUTCOMES:

- Implemented a Risk Analysis Framework
- Applied subject matter expertise on infrastructure impacts
- Developed a risk framing that resulted in successful grant requests

### CLIENT CONTACT:

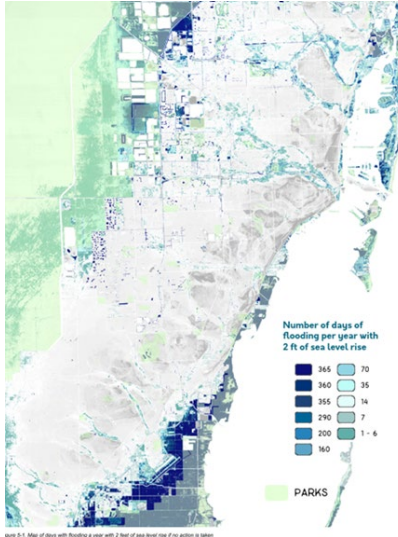
Ashlee Painter  
Environmental Management  
Sustainability Coordinator  
Phone: (813) 749-1135  
Email: [apainter@myoldsmar.com](mailto:apainter@myoldsmar.com)

University of Florida on development of a probabilistic flood model to represent future storm surge risks to the end of the century. Future precipitation values were generated by WSP's climate team and included as inputs, with sea level rise impacted tailwater conditions, into the stormwater model to generate scenarios for localized flooding from precipitation flooding for various future precipitation events for a range of return periods. The combined technical analysis was used to generate probabilistic stressor values for use in the project risk assessments to identify impacts to 2100.

WSP worked closely with City staff to create an inventory of risks to city owned assets associated with various water elevations. Measures were generated that identified the level of impact to asset use from various flood levels (minor to significant), and these measures were combined with flood probabilities to generate a series of time-period recommendations. This assessment created a simple three-dimensional analysis that looked at depth of flooding (not just presence) to determine impacts to the service of assets and city stakeholders. The resulting action-oriented plan establishes an investment roadmap for Oldsmar to follow to reduce risk to high-risk assets and change practices to incorporate resilience into City planning processes and investments. The project team also assessed the City's Comprehensive Plan and National Flood Insurance Program (NFIP) Community Rating System (CRS) program and made recommendations for policy changes that could benefit the City during the transition to FEMA's Risk Rating 2.0 program.

## Project Description:

<b>Client: Miami-Dade County, FL</b>		
Services: Sea Level Rise Strategy		
<b>Start Date:</b> 2019	<b>End Date:</b> 2021	<b>Cost:</b> \$125,000



WSP conducted a risk-based vulnerability assessment for the Miami-Dade County Office of Resilience. The purpose of the assessment was to understand the impacts that climate hazards will have in Miami-Dade County into the future and to evaluate the costs of risk and action. The assessment was used both to raise awareness of climate risk in the County to spur action and to inform the long-term regional economic costs of climate change. WSP conducted a risk-based analysis of assets within the county geography, including residential properties, county-owned properties, and transportation assets.

### OUTCOMES:

- Risk-based analysis of critical assets
- Plan integration with economic assessment

### CLIENT CONTACT:

Katherine Hagemann  
Resilience Program Manager,  
Adaptation Office of Resilience  
Phone: (786) 427-5210  
Email: hagemk@miamidade.gov

Using GIS, the team overlaid future groundwater, sea level rise, and storm surge data on the identified assets and identified damages based on HAZUS depth-damage curves and the County’s understanding of past damages. From this assessment and using tax assessor data and County cost estimates, WSP developed costs for three different scenarios: 1) “do nothing”, which assessed climate impacts under the assumption that the County would take no action to address risks over the course of the study, 2) “do everything”, which assumed that the County will take action to protect all vulnerable assets included in this modeling effort, and 3) “intermediate strategies”, which evaluated the costs of adopting strategies that fall somewhere between “do nothing” and “do everything” and arguably are more likely adaptation pathways than the two extremes on the spectrum.

The results of this technical assessment have been incorporated into a regional economic assessment, to understand how climate change impacts could impact the County’s regional economy to 2040. Additionally, the results of the technical assessment have been incorporated into the summary report for dissemination to the public and will also be shared with other County officials as a starting point for discussing the County’s plan for addressing the current and future impacts of climate change.

## Project Description:

<b>Client: City of Villa Rica, GA</b>		
Services: Comprehensive Plan		
<b>Start Date:</b> 2017	<b>End Date:</b> 2018	<b>Cost:</b> \$121,880

Villa Rica is a rapidly growing community approximately 20 miles west of Atlanta. Between 2000 and 2010 the city's population more than tripled, straining the city's infrastructure. Updates to the Comprehensive Plan and Downtown Master Plan promote strategic growth patterns intended to minimize impacts to city infrastructure.

WSP (formerly Wood) led the process and authored the comprehensive plan that received approval from Georgia DCA in 2018. As part of the Comprehensive Plan update, the WSP team created a community profile with analysis of existing conditions and projected growth through a detailed assessment of land use, housing, demographics, natural and historic resources, transportation, community services, and economic development. The final product is a clear, realistic set of goals and strategies that are supported by a short and long-term land use plan and community work program to guide implementation.

A robust public engagement process provided multiple opportunities for residents, business owners, city officials, and other stakeholders to provide input. The series of public meetings included visioning workshops, land use charrettes and an open house, all conducted in conjunction online tools such as surveys and a project webpage to maximize local participation and gather feedback during the process.

An important component of the Comprehensive Plan update was the development of a small area master plan for the city's downtown area. This master plan provides a strategy to mitigate impacts from the railroad which divides the downtown area. Work is in progress to create a more defined sense of place and accommodate future growth.

### OUTCOMES:

- Produced an updated comprehensive plan and downtown master plan to address rapid local growth and its impacts
- Involved robust public and stakeholder engagement via public meetings and workshops

### TEAM MEMBERS INVOLVED:

Lee Walton

### CLIENT CONTACT:

Tom Barber, City Manager  
(770) 550-2520  
tbarber@villarica.org



## Project Description:

**Client: Barrow County and Winder, GA**

Services: Comprehensive Plan and UDC Update

**Start Date:**  
2016

**End Date:**  
2018

**Cost:**  
\$197,500

Barrow County selected WSP (formerly Wood) to prepare a joint Comprehensive Plan update for unincorporated Barrow County and the cities of Winder, Bethlehem, Statham and Carl. Located in the Northeast Georgia Region between Gwinnett County and Athens-Clark Count, Barrow County has been a rapidly developing suburban community with attractive rural landscape.

Our planners used online surveys, Facebook, Twitter, municipal websites, newspaper articles and flyers to encourage the community to participate in the planning process. Stakeholder and public participation opportunities included a kick-off meeting to start the planning process, a series of visioning workshops held throughout the county and a framework workshop to bring together the ideas of the visioning workshop.

### OUTCOMES:

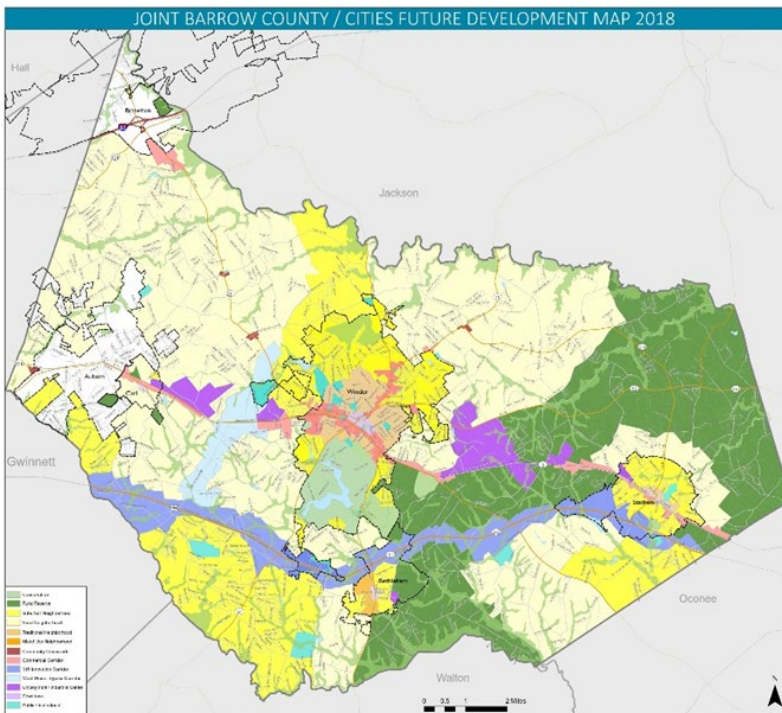
- Multi-jurisdictional comprehensive plan addressing unique area-specific needs and goals
- Robust community outreach to involve public and stakeholder input

### TEAM MEMBERS INVOLVED:

Lee Walton

### CLIENT CONTACT:

Guy Herring, Former Director of Planning (current Planning Director for Oconee County)  
(706) 769-3910  
gherring@oconee.ga.us



The outcome of the planning process is a DCA-approved and County-adopted Comprehensive Plan with vision for growth and development for the next 20 years. Immediately following adoption of the Comprehensive Plan update, WSP began working with the Barrow County Planning staff to identify Comprehensive Plan-driven needs for updates to the Barrow County Unified Development Code. Nearly complete, this process has included consultation with elected officials, appointed officials, real estate and development industry stakeholders and others in the process of identifying critical issues, opportunities and recommendations. The WSP team prepared a series of technical

memos to summarize research on critical issues and present options for solutions. The resulting UDC update will include a variety of text amendments, updated formatting for user-friendly improvement, and provisions for consistency with recent and changing State and Federal requirements.

## REFERENCES

The WSP team proudly provides the following client references from the above listed recently completed vulnerability assessment, resilience planning, and comprehensive planning projects. For more details on the referenced projects, see the Project Descriptions in the previous section.

<b>Project Name</b>	<b>Village of Palmetto Bay Floodplain Management Plan</b>
Client:	Village of Palmetto Bay, FL
Address:	9705 East Hibiscus St, Palmetto Bay, FL 33157
Contact Person:	Andrea Candelaria, Resilience Coordinator
Contact Phone # & Email:	(305) 259-1238; acandelaria@palmettobay-fl.gov
<b>Project Name:</b>	<b>Collier County Hazard Identification and Risk Assessment</b>
Client:	Collier County, FL
Address:	8075 Lely Cultural Pkwy, Suite 448, Naples, FL 34113
Contact Person:	Richard Zvoloski Jr, FPEM, CFM, Emergency Management Division
Contact Phone # & Email:	(239) 252-3603; richard.zvoloski@colliercountyfl.gov
<b>Project Name:</b>	<b>Monroe County Local Mitigation Strategy</b>
Client:	Monroe County, FL
Address:	490 63 <sup>rd</sup> St Ocean, Suite 150, Marathon, FL 33050
Contact Person:	Jeff Manning, Senior Planner, Monroe County Emergency Mgmt
Contact Phone # & Email:	(305) 289-6325; jeff.manning@monroecounty-fl.gov
<b>Project Name:</b>	<b>City of Rocky Mount Natural Hazards Resilience Plan</b>
Client:	City of Rocky Mount, NC
Address:	331 S. Franklin St., PO Box 1180, Rocky Mount, NC 27802-1180
Contact Person:	Brenton Bent, Director of Water Resources
Contact Phone # & Email:	(252) 972-1299; brenton.bent@rockymountnc.gov
<b>Project Name:</b>	<b>City of Fernandina Beach Downtown Waterfront Resiliency Master Plan</b>
Client:	City of Fernandina Beach, FL
Address:	1181 S 5th Street, Fernandina Beach, FL 32034
Contact Person:	Andre Desilet, P.E., CFM, Stormwater Director
Contact Phone # & Email:	(904) 310-3431; adesilet@fbfl.org
<b>Project Name:</b>	<b>City of St. Augustine Resilience Planning and Implementation</b>
Client:	City of St. Augustine, FL
Address:	P.O. Box 210, St. Augustine, FL USA 32085
Contact Person:	Todd Grant, PG, Utilities Director
Contact Phone # & Email:	(904) 209-4271; tgrant@citystaug.com
<b>Project Name:</b>	<b>I-40/I-95 Flood Resilience Feasibility Study</b>
Client:	North Carolina Department of Transportation
Address:	1590 Mail Service Center, Raleigh, NC 27699-1590
Contact Person:	Matthew Lauffer, PE, CPM, Assistant State Hydraulics Engineer
Contact Phone # & Email:	(919) 707-6703; mslauffer@ncdot.gov
<b>Project Name:</b>	<b>Morehead City Floodplain Management Plan (2017) and Plan Update (2022)</b>
Client:	Town of Morehead City, NC
Address:	706 Arendell Street, Morehead City, NC 28557
Contact Person:	Sandi Watkins, CFM, Planning Director
Contact Phone # & Email:	(252) 726-6848; Sandi.Watkins@moreheadcitync.org

<b>Project Name:</b>	<b>Pinellas County Sea Level Rise &amp; Storm Surge Vulnerability Assessment</b>
Client:	Pinellas County, FL
Address:	315 Court Street, Suite 601, Clearwater, FL 33756
Contact Person:	Hank Hodde, CFM, ENV SP, Sustainability & Resiliency Program Coordinator
Contact Phone # & Email:	(727) 464-3485; hhodde@pinellascounty.org
<b>Project Name:</b>	<b>Monroe County Harry Harris Park Vulnerability/ Adaptation Analysis</b>
Client:	Monroe County, FL
Address:	1100 Simonton Street, Suite 205, Key West, FL 33040
Contact Person:	Rhonda Haag, Chief Resiliency Officer
Contact Phone # & Email:	(305) 453-8774; haag-rhonda@monroecounty-fl.gov
<b>Project Name:</b>	<b>City of Oldsmar Climate Resiliency Plan</b>
Client:	City of Oldsmar, FL
Address:	100 State Street West, Oldsmar, Florida 34677
Contact Person:	Ashlee Painter, Environmental Management Sustainability Coordinator
Contact Phone # & Email:	(813) 749-1135; apainter@myoldsmar.com
<b>Project Name:</b>	<b>Miami-Dade Sea Level Rise Strategy</b>
Client:	Miami-Dade County, FL
Address:	111 NW 1 <sup>st</sup> Street, 12 <sup>th</sup> Floor, Miami, FL 33128
Contact Person:	Katherine Hagemann, Resilience Program Manager
Contact Phone # & Email:	(786) 427-5210; hagemk@miamidadegov
<b>Project Name:</b>	<b>City of Villa Rica Comprehensive Plan</b>
Client:	City of Villa Rica, GA
Address:	571 W Bankhead Hwy, Villa Rica, GA 30180
Contact Person:	Tom Barber, City Manager
Contact Phone # & Email:	(77) 550-2520; tbarber@villarica.org
<b>Project Name:</b>	<b>Barrow County Comprehensive Plan and UDC Update</b>
Client:	Barrow County and Winder, GA
Address:	30 N Broad Street, Winder, GA 30680
Contact Person:	Guy Herring, Former Director of Planning (current Planning Director for Oconee County)
Contact Phone # & Email:	(706) 769-3910; gherring@oconee.ga.us

# PROJECT APPROACH/TIMELINE



Project Approach/Timeline

# PROJECT APPROACH

WSP understands that the Village of Palmetto Bay seeks a Resilience Action Plan that will evaluate vulnerabilities and identify actionable steps to build local resilience. This plan will detail the exposure of critically significant facilities, critical infrastructure, neighborhoods, roadways, socially vulnerable populations, and natural resources to flood risks associated with climate change such as sea level rise, precipitation events, and groundwater table changes. Future flooding scenarios will be identified and evaluated for risk and vulnerability. Vulnerability to future heat events will also be evaluated. With these findings, the plan will identify Adaptation Action Areas (AAAs) and provide goals, objectives and policies to build resilience in AAAs through comprehensive plan amendments and capital improvement projects. This plan will serve as a guide for strategic decision-making to build the Village’s long-term resilience.

## DETAILED SCOPE OF WORK

### KICK-OFF AND FLOOD HAZARD DATA COLLECTION

It is imperative that all pertinent and best available data is collected for the Village in order to accurately identify hazards and assess exposure of lives, property, infrastructure, and other assets to the identified hazards. WSP will use GIS to the extent possible to analyze the impact that a hazard would have on people, services, facilities, and structures in Palmetto Bay. WSP will provide a technical memo outlining all data compiled and used in the vulnerability assessment. Below is a non-exhaustive list of data to be collected:

- Storm event summary reports
- USGS gage records
- High water marks collected by USGS
- FEMA Flood Insurance Study Report and Flood Hazard Areas
- Topographic data
- Aerial photography
- Elevation Certificates
- Miami-Dade County Local Mitigation Strategy
- Village of Palmetto Bay Floodplain Management Plan
- Statewide Flood Vulnerability and Sea Level Rise Dataset and Assessment
- Building footprint, value, and first flood elevation based on local parcel and building data
- Regional and local climate data
- U.S. Census data on population, housing, economics, and other demographic data
- Social Vulnerability Data from CDC, EPA
- Employment centers
- Local growth and development trends

WSP will initiate the planning process with the following coordination:

**Initial Coordination Meeting:** WSP will facilitate a meeting with the Resilience Coordinator and Director of Community and Economic Development to finalize the scope and schedule for the plan, gather initial data from the Village, and form the Steering Committee. WSP recommends utilizing the existing Floodplain Management Planning Committee as the Steering Committee for this planning process but will provide a letter for requesting participation in the Steering Committee and will assist the Village in developing a list of potential Steering Committee members should the Village wish to expand participation or develop a new committee. WSP will provide an agenda, sign-in sheets, presentation, meeting minutes, and a summary report from this meeting.

**Staff Survey:** WSP will create a survey to distribute to Village staff to understand the resilience-related priorities throughout various Village departments. WSP will use the results from this survey to inform the development of goals and objectives and the identification of adaptation priorities and resilience actions that account for the different facets of resilience represented by various Village departments.

## STEERING COMMITTEE COORDINATION

Once a Steering Committee is established, WSP will facilitate a planning process informed by the Resilience Planning Meetings Roadmap developed in the EPA’s Regional Resilience Toolkit. As such, WSP recommends holding four Steering Committee meetings throughout the planning process.

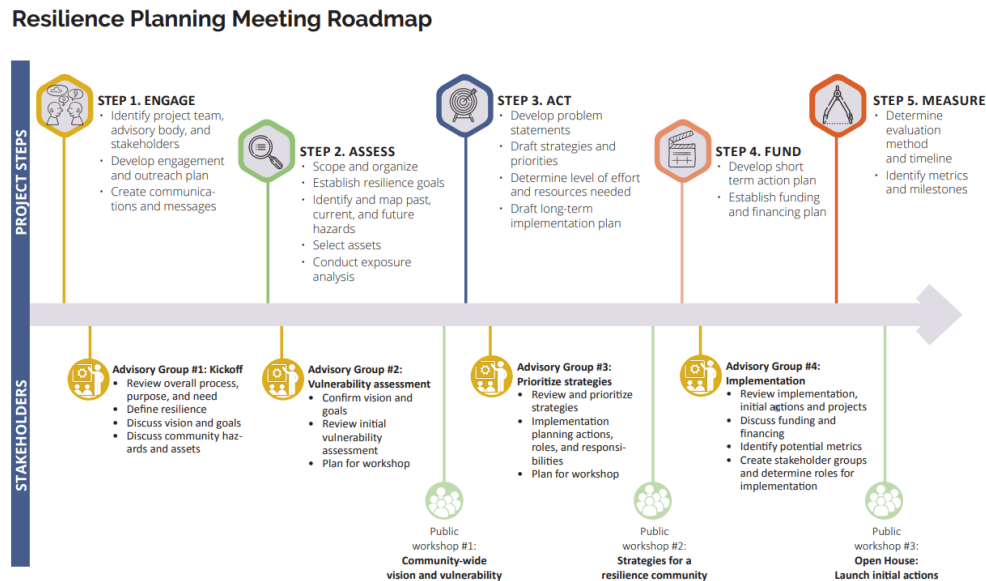


Figure 22. Resilience planning meeting roadmap

**NOTE:** For this to be a representative and successful plan, public engagement must run throughout the entire planning process, involving stakeholders and members of the public in assessing risks and vulnerabilities. WSP recommends that members of the public and stakeholders be involved in the Steering Committee for the plan. This will give the plan credibility and ensure that multiple points of view are considered in Committee discussions. Additional stakeholders, including representatives from non-profits and community-based organizations, community members, representatives from private entities and organizations representing the private sector, economic development, and the business community, will be engaged through targeted outreach and public workshops.

**Steering Committee Meeting 1:** WSP will facilitate a kickoff meeting to define the scope of the planning process with the full Steering Committee, including presenting preliminary flood/climate hazard data for Committee discussion. The Committee will work to identify and classify critical assets, regional assets, and particularly vulnerable locations for in-depth analysis in the vulnerability assessment.

**Steering Committee Meeting 2:** WSP will present a preliminary vulnerability assessment based on the flood hazard scenarios and assets defined in the first meeting and input from the public and will solicit Steering Committee feedback for additions or revisions to the vulnerability assessment. WSP will also present suggested capital improvement projects as well as recommended locations for AAAs for Steering Committee review.

**Steering Committee Meeting 3:** WSP will incorporate Steering Committee and public input into a final draft vulnerability assessment. WSP will facilitate discussion of the assessment outcomes and recommendations and will lead the Steering Committee in identifying strategies for adaptation and resilience. WSP will work with the Steering Committee to identify goals and objectives and set prioritization criteria that will be used for a resilience scorecard to evaluate the qualitative costs and benefits of proposed adaptation strategies.

**Steering Committee Meeting 4:** WSP will present the final draft report to the Steering Committee.

In addition to the above meetings, WSP will work with the Steering Committee via email to ensure regular communication throughout the planning process. WSP will provide agendas with meeting time, date and location, presentation materials, meeting minutes, and sign in sheets/attendance, for all Steering Committee meetings. All meeting information will be included in the final report.

## PUBLIC OUTREACH AND COMMUNITY ENGAGEMENT

WSP will work with the Steering Committee to craft a public outreach plan including engagement methods such as workshops, a survey, website, flyers, social media posts, and other outreach tools. We aim to reach the widest audience possible and offer multiple opportunities for varying degrees of involvement in order to reduce barriers and encourage participation.

To begin the planning process, WSP will develop a public survey to gather relevant flood hazard input, identify community assets and highly vulnerable areas, and solicit input on adaptation priorities for a resilient Palmetto Bay. Public involvement will also be sought through designated public information meetings and workshops. The purpose of these meetings will be two-fold: to inform the public of the Steering Committee’s progress and to engage the public and gather input for incorporation into the plan. WSP recommends holding two public workshops. WSP will provide copies of meeting announcements, agendas, sign in sheets, presentations, meeting minutes, materials created at the workshops, and a summary report on attendee feedback and workshop outcomes for each workshop.

**Public Workshop 1:** WSP will provide an overview of the purpose and scope of the plan, as well as the preliminary flood/climate hazard data. WSP will then facilitate a workshop style feedback session for members of the public to provide their input on critical assets and highly vulnerable areas. Public surveys and informational flyers will also be made available. Members of the WSP Team will be available to answer questions and record comments.

**Public Workshop 2:** WSP will facilitate a workshop to present the preliminary vulnerability assessment findings and discuss analysis outcomes. This will be an opportunity for members of the public to review the draft vulnerability assessment and provide feedback on the results before the report is finalized. The public will also be asked to brainstorm and suggest strategies for the adaptation and resilience. Members of the WSP Team will be available to answer questions and record comments.

WSP recognizes the need for flexibility and creativity throughout the public engagement process. Some engagement activities, such as the public workshops, will be held in person; however, WSP will also develop virtual outreach tools, such as an online survey and informational flyers, to inform and engage the public more effectively. WSP will work directly with the Village and Steering Committee to tailor this approach to meet the Village’s needs.

**Plan Website:** To support coordination among the Steering Committee outside of formal meetings and to keep the public up to date, WSP will develop a website that will house information about the plan, a public survey, and links for direct contact with the WSP planning team to support public and stakeholder involvement in the plan. The website can also include webmaps of relevant flood hazard data.

## VULNERABILITY ASSESSMENT

The foundation of the Village of Palmetto Bay’s plan will be a vulnerability assessment that identifies and evaluates the impact of the flood/climate hazards and scenarios that will affect the Village. The vulnerability assessment will allow for a better understanding of the potential consequences of climate change on the Village and will provide a framework for developing a resilience action plan to adapt and reduce risk in the future. WSP’s approach to develop the vulnerability assessment will be a three-step process:



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## IDENTIFY THE HAZARDS

The first step in developing the risk and vulnerability assessment for the Village will be to identify the hazards and future flooding scenarios. This will include, but is not limited to, flood hazards associated with tidal flooding, current and future storm surge flooding, rainfall-induced flooding, groundwater table changes, and at least two sea level rise scenarios. The vulnerability assessment will also evaluate extreme heat. WSP will work with the Steering Committee to determine specific scenarios across at least two planning horizons that will be evaluated. These scenarios will be compliant with Florida statute 380.093.

WSP will use data from the National Oceanic and Atmospheric Administration (NOAA), the comprehensive statewide flood vulnerability and sea level rise data set and assessment, NCEI's storm event data base, the Palmetto Bay Floodplain Management Plan, the Miami Dade Local Mitigation Strategy, Steering Committee and public input, the U.S. Census, social vulnerability indexes, economic indicators, and national and regional climate predictions to evaluate vulnerability.

WSP will use GIS mapping and overlay analysis to visualize and evaluate flood hazard risk. All analyses will be conducted in the North American Vertical Datum of 1988. Data will be projected into the appropriate Florida State Plane Coordinate System. The most recent publicly available Digital Elevation Model will be used. GIS shapefiles collected and evaluated through this process will be compiled and provided along with metadata files and a summary technical memo.

As part of the hazard identification, WSP will profile the hazard scenarios to provide an analysis of the risks each hazard poses to critical assets, including a prioritization of the hazards and scenarios based on likelihood, cost, spatial extent, and time horizon.

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## INVENTORY ASSETS

The next step in the vulnerability assessment is to conduct an inventory of the Village's assets to understand exposure to the flood and climate hazards identified in the previous step. This inventory will include the existing built environment, including critical infrastructure and critical facilities, transportation assets, sub-surface infrastructure, as well as natural and cultural resources, socially vulnerable communities, vital community systems, and other critical and/or regionally significant assets as defined in Florida Statute 380.093.

### Physical Assets



#### Property

Residential, Commercial, Industrial, and Institutional Buildings



#### Critical Facilities

Government-owned, fire stations, substations, lift stations, community centers, etc.



#### Utilities and Infrastructure

Roads, stormwater infrastructure, bridges, gas lines, waterlines, public transportation



#### Cultural, Historic, and Environmental

Historic Buildings, Districts, and Places, Parks/Greenways, Open Space, Unimproved Parcels

### Non-Physical Assets



#### Economic Factors

Jobs, Employment by Industry, Commuting Patterns



#### People & Vulnerable Populations

CDC Social Vulnerability Index (SVI) by theme: (1) Socioeconomic Status, (2) Household Composition, (3) Race/Ethnicity/Language, and (4) Housing/Transportation

Open space and future development will also be considered to understand how vulnerability may change in the future and how development may affect risk and vulnerability. The analysis of future development will inform the development of recommendations for designating Adaptation Action Areas (AAAs) by means of comprehensive plan update. This analysis will also drive suggested policy and ordinance changes as well as potential changes to future land use and planned capital improvement projects.

Above is an example list of potential categories of assets to be evaluated as part of the exposure analysis. Per the Resilient Florida Grant Program Guidelines, WSP will produce a list of all assets impacted by the identified hazard scenarios.

In identifying and evaluating assets, WSP will also coordinate with local schools to review their resilience planning efforts. Additionally, WSP will consider potential connections in the utilization of stormwater infrastructure, opportunities for green infrastructure such as living shorelines, and potential impacts of nearby non-jurisdictional projects at the local, state, and federal levels.

In addition to understanding what assets are in the community and where they are located, WSP will work with the community to inventory the adaptive capacity of these identified assets. Adaptive capacity is defined as the ability of an asset to adjust to, respond to, or prepare for a hazard. Understanding adaptive capacity will help to determine adaptation needs and adaptation potential.

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### ASSESS VULNERABILITY

Once the hazards are assessed and the Village's assets are inventoried, WSP will determine vulnerability to flood hazard scenarios by evaluating exposure and sensitivity.

- **Exposure** is the what and where: WSP will examine the presence of assets (as defined above) in places where they could be adversely affected by flooding, and will quantify that exposure in terms of the depth of flooding at each location.
- **Sensitivity** is the how: WSP will determine the degree to which each asset might be affected by flooding. The analysis will include evaluation of impacts on each asset type at each scenario.

As data allows, these factors will be determined with GIS spatial analysis by overlaying critical asset shapefiles with the extent of the hazard as identified by a mapped floodplain, high-water mark, storm surge data, sea level rise projections, tidal projections, and more.

For the heat vulnerability assessment, WSP will prepare an analysis of the built environment, socioeconomic demographics, and human health factors to summarize heat vulnerability. WSP will include in this qualitative summary, to the extent possible, a discussion of exposure and sensitivity. For example, data such as availability of air conditioning, especially for vulnerable populations, can help determine how sensitive those populations are to an extreme heat event. Information such as locations of critical assets, vulnerable populations, health factors, population and employment centers, and business districts, along with local input will be considered in describing heat vulnerability.

To determine flood-related vulnerabilities, WSP will first consider whether an asset is exposed to a given flood scenario. Exposure will be summarized by the depth of flooding at a certain asset for a given flood scenario. WSP will then evaluate sensitivity to each flood scenario by determining the percentage of land area inundated and the number of critical assets impacted. Sensitivity will be summarized with an assigned risk level. Identifying critical assets' vulnerability can highlight areas for potential prioritization of resilience strategies. In evaluating flood-related vulnerabilities WSP will also analyze social vulnerability by incorporating socioeconomic metrics into the assessment of flood exposure and sensitivity. Additionally, WSP will evaluate natural resource vulnerabilities by determining, with GIS where possible, current and future exposure to climate and flooding risks.

Vulnerability assessment results will be evaluated and presented to allow the Village to target and prioritize resilience objectives. The results will identify natural resources, specific populations, portions of the planning area, critical facilities and infrastructure, and other critical assets most vulnerable to flooding. WSP will provide maps, tables, and written analysis summarizing key vulnerability findings including identified social vulnerabilities and potential economic losses. The results will highlight challenges and problem areas to be addressed. Findings will be used to define AAAs and develop the resilience action plan.

## RESILIENCE ACTION PLAN DEVELOPMENT

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### COMMUNITY RESILIENCE GOALS & OBJECTIVES

The goals and objectives will set the shared definition for what resilience means for Palmetto Bay and how, in broad terms, a resilient future will be achieved. This shared definition will guide the development of specific strategies and ensure each strategy is firmly rooted in Palmetto Bay's overall vision for resilience and community development. Involvement of the Steering Committee, public, and stakeholders in the development of the goals ensures buy-in and public support for the plan's implementation.

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### ASSESS CAPABILITY & PLAN INTEGRATION

WSP will support Palmetto Bay in developing realistic, achievable, effective strategies for building resilience. To accomplish this, WSP will review the Village's existing capabilities to implement projects, as defined in the recently developed Floodplain Management Plan. Another essential element of resilience is the degree of integration of existing plans. Palmetto Bay undertakes planning activities across its many departments and over varying timelines – it is important to understand if and how these plans reinforce shared goals and support resilience, or whether certain planning efforts contradict or counteract resilience objectives. WSP will conduct a thorough review of the Village's comprehensive plan to understand needs and opportunities for integration and updates. This effort will inform the creation of resilience strategies and the identification of AAAs and associated Goals Objectives and Policies (GOPs) for potential adoption into the Village of Palmetto Bay's comprehensive plan.

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### RESILIENCE ACTION PLAN

WSP will employ the following process, informed by the U.S. Climate Resilience Toolkit, to facilitate the development of resilience strategies:

**Brainstorm:** WSP will lead the Steering Committee through a brainstorming session to consider the plan goals and objectives as well as the vulnerability assessment findings to identify, through a collaborative effort, specific ways to increase resilience. Using the findings from the vulnerability assessments and public/stakeholder input, WSP will guide the Steering Committee in developing a resilience action plan including suggested capital improvement projects, locations for potential AAA designation, GOPs for AAAs, and other potential resilience strategies. This step will result in a full list of strategies to be considered for implementation.

**Define Criteria:** For each strategy, the Steering Committee will define an implementation timeline, identify the resources needed for implementation, assign responsibility for the project, identify potential funding sources, and establish criteria for monitoring progress towards completion.

**Prioritize:** WSP will provide a proposed set of criteria for project evaluation and prioritization and will work with the Steering Committee to modify these criteria according to the specific goals for the plan to develop a Resilience Scorecard. With the Resilience Scorecard, WSP will lead the Steering Committee in evaluating and scoring each of the identified strategies, including a qualitative cost-benefit analysis. This Resilience Scorecard will remain a valuable tool to the Village for carrying resiliency priorities forward in evaluating future planning efforts and CIP projects.

Identification of potential AAAs is expected to lead to recommendations to officially designate one or more AAAs through an amendment to Village of Palmetto Bay Comprehensive Plan. Once clarified through analysis and initial public input, WSP will prepare draft documentation with proposed AAAs and recommended resilience-focused goals, objectives and policies. As appropriate, these will be carried

through a comprehensive plan amendment process in accordance with Florida Statute 163.3184 (procedures for adoption of a comprehensive plan or amendment).

## DRAFT PLAN DEVELOPMENT

WSP will compile all findings of the vulnerability assessments, the resilience action plan, a description of the planning process and meeting materials, and remaining plan components into a complete report. WSP will make the draft report available for Steering Committee, staff, and public review on the plan website. A review period will be set aside to gather comments on the draft report. As detailed above, a public workshop will be held prior to finalizing the report to present a summary of findings and outcomes and solicit feedback. Additionally, the report will be circulated to the Village of Palmetto Bay departments and boards as well as local and regional stakeholders, organizations, and agencies. Comments will be incorporated into a final draft, which will be presented to the Village Council for formal adoption.

## PLAN ADOPTION

Full understanding of the Resilience Action Plan and its outcomes and formal adoption of the plan by the Village Council will give the plan political support and encourage public backing. WSP will educate the Council and Village stakeholders on the importance of and need for the Resilience Action Plan and will present the findings and outcomes of the project to the Council for their feedback. WSP will then support the Village staff and Village Council in formally adopting the Resilience Action Plan by providing an executive summary, draft resolution, and final revised report for Council adoption.

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## ACTION PLAN

The detailed list of tasks provided below outlines the steps required to accomplish this scope of work and produce a Resilience Action Plan that is compliant with Florida Statute 380.093 and provide all deliverables required by the Resilient Florida Grant Program or otherwise requested by the Village in the RFQ.

### Task 1 - Plan Kickoff & Data Collection

1. WSP will work with the Village Resilience Coordinator and Director of Community and Economic Development to review and finalize the scope and work plan, project goals, schedule, timelines for completion, and roles and responsibilities.
2. WSP will work with the Village Resilience Coordinator and Director of Community and Economic Development to create a Steering Committee of Village staff, subject matter experts, and stakeholders.
3. WSP will create a survey to distribute to Village staff to understand their resilience priorities, identify critical assets and highly vulnerable areas, and brainstorm goals and objectives that reflect goals of various Village departments.
4. WSP will schedule and facilitate a Kickoff meeting with the Steering Committee to review the project scope, goals, schedule, milestones and deliverables and to set goals and objectives. WSP will also present preliminary vulnerability information for Committee discussion and gather input on critical asset identification and flood hazard scenarios.
5. WSP will provide a memo summarizing flood hazards in the Village including mapping of flood hazard areas to provide context as the committee reviews vulnerability, assets, and resilience goals.
6. WSP will work with the Committee to create a plan for community and stakeholder outreach and engagement. WSP will develop a public survey to gather input on relevant hazards, identify community assets, and solicit input on goals and priorities for a resilient Village of Palmetto Bay.
7. WSP will identify and collect initial data and documents including pertinent reports, studies, plans, authorities, policies, land use, and other resources. WSP will request necessary GIS layers and data and coordinate with federal and state agencies to obtain other available data.

8. WSP will facilitate a public kickoff meeting to provide an overview of the purpose and scope of the project, preliminary vulnerability and critical asset information, and initial goals and objectives discussed by the Steering Committee. WSP will solicit feedback on the vulnerability assessment and critical assets, goals, and objectives. Public surveys and informational flyers will be made available.

**Deliverables (RFQ Deliverable 1 & 3):**

- ✓ Internal Kickoff Meeting – Work plan and schedule, agenda and sign in sheets indicating location, date, and time of meeting, meeting minutes, and presentation materials
- ✓ Steering Committee Kickoff (Steering Committee Meeting #1) – Agenda and sign in sheets, presentation materials, minutes, and summary report on attendance and meeting outcomes
- ✓ Staff Survey
- ✓ Public Meeting #1 – Meeting announcements and advertisements, agenda and sign in sheet, presentation and handout materials, meeting minutes, summary report of attendee feedback and meeting outcomes, materials created at the meeting (as applicable)
- ✓ Public Survey #1 – Online and hard copy format
- ✓ Memo summarizing flood hazard mapping results
- ✓ Technical documentation of data sources and mapping analyses

**TASK 2 - VULNERABILITY ASSESSMENTS**

1. WSP will acquire background data, including reviewing existing regional and local plans, hazard identifications, and vulnerability assessments. This will also include additional data collection as needed from the Village and other local, state, and national resources.
2. WSP will finalize a list of critical assets and vulnerable areas, including an updated inventory of critical facilities and infrastructure.
3. GIS specialists will use Digital Elevation Model data and other GIS tools to complete mapping for each flood hazard scenario and conduct a spatial vulnerability assessment for all identified assets.
4. WSP will use GIS findings and additional qualitative analysis to assess vulnerability and risk associated with each asset and flood scenario, including exposure and sensitivity analyses and evaluation of social vulnerability and natural resource vulnerability.
5. WSP will prepare a memo on vulnerability assessment findings, including a summary of heat vulnerability, flood exposure, flood sensitivity, social vulnerability, and natural resource vulnerability as well as all peril of flood compliance documentation.
6. Resilience Steering Committee Meeting #2 – WSP will facilitate a virtual Committee meeting during which the committee will review the draft vulnerability assessment findings and provide feedback and additional data. The Steering Committee will also discuss preliminary outcomes and recommendations, including capital improvement project needs and recommended AAA locations.

**Deliverables (RFQ Deliverable 2):**

- ✓ Preliminary Vulnerability Assessment Memo (Heat Vulnerability Analysis, Exposure Analysis, Sensitivity Analysis, and summary of vulnerability results, incorporating FDEP Florida Resilient Coastlines Program requirements as outlined in s. 380.093, F.S.)
- ✓ Full list of critical assets and their locations
- ✓ Peril of Flood Compliance Documentation
- ✓ Steering Committee Meeting #2 – Agenda and sign in sheets, presentation materials, meeting minutes, and summary report on attendance and meeting outcomes
- ✓ Technical memo outlining data compiled
- ✓ Data sets used to perform the vulnerability assessment
- ✓ GIS Shapefiles of all mapping data used to illustrate flooding and sea level rise

- ✓ GIS metadata for all data compiled to perform the vulnerability assessment

### **TASK 3 – DEVELOP RESILIENCE ACTION PLAN**

1. WSP will review existing plans, policies, staff, funding opportunities, and more to understand capability to implement resilience projects and opportunities for plan integration for Palmetto Bay.
2. WSP will hold Steering Committee Meeting #3 to guide the Committee to develop a resilience strategy. Goals and objectives will be finalized, and the Committee will discuss resilience action selection and prioritization criteria, including cost-benefit analysis of proposed strategies.
3. WSP will prepare an updated comprehensive resilience action plan based on Committee discussion, input from project leads on existing project progress, and public input.

#### **Deliverables (RFQ Deliverable 4):**

- ✓ Steering Committee Meeting #3 – Agenda and sign in sheets, presentation materials, meeting minutes, and summary report on attendance and meeting outcomes
- ✓ Draft resilience action plan including suggested capital improvement projects, locations for potential AAA designation, and qualitative cost-benefit analysis for proposed strategies

### **TASK 4 – DRAFT REPORT (DELIVERABLE 4)**

1. WSP will finalize remaining sections of the report including summary of public engagement outcomes, summary of planning process, full list of evaluated critical assets, and any appendices to the plan.
2. WSP will prepare a public review draft of the Resilience Action Plan report for Steering Committee and public review and comment. The report will be posted on the project website and otherwise made available for public review and comment.
3. WSP will facilitate a final Steering Committee Meeting #4 to present the draft report findings and to solicit comments and feedback.
4. WSP will facilitate Public Meeting #2 to review the draft report findings and outcomes and solicit comments and feedback from the public to incorporate into the final report.

#### **Deliverables (RFQ Deliverable 4):**

- ✓ Steering Committee Meeting #4 – Agenda and sign in sheets, presentation materials, meeting minutes, and summary report on attendance and meeting outcomes
- ✓ Public Meeting #2 – Meeting announcements and advertisements, agenda and sign in sheet, presentation and handout materials, meeting minutes, summary report of attendee feedback and meeting outcomes, materials created at the meeting (as applicable)
- ✓ Digital file of the draft Resilience Action Plan report in PDF and Word format
- ✓ Revised Draft Report based on feedback by the Steering Committee, staff, and the public
- ✓ Additional or revised GIS data sets, shapefiles, and metadata (as applicable)
- ✓ Draft Resilience Action Plan report

### **TASK 5 – FINAL REPORT & PLAN ADOPTION & IMPLEMENTATION**

1. WSP will prepare the final Resilience Action Plan report for submission to the Village and will provide a draft adoption resolution.
2. WSP will present the final Resilience Action Plan report and recommendations to Village Council.

#### **Deliverables (RFQ Deliverable 4):**

- ✓ Presentation of the final Resilience Action Plan report and recommendations to Village Council
- ✓ Draft resolution of adoption and assistance with formal adoption process
- ✓ Digital files of completed final report based on outcomes from Village Council

## PROJECT TIMELINE

WSP has prepared the following work schedule to provide the Village of Palmetto Bay with a Resilience Action Plan and all deliverables therein by June 30, 2024. WSP can adjust this schedule as needed to meet the needs of the Village.

**WSP will work with the Village of Palmetto Bay to finalize a schedule during the initial coordination period that meets the Village's needs for grant performance and project completion.**

2023/2024	Jul	Aug	Sept	Oct	Nov	Dec	Jan	Feb	Mar	Apr	May	Jun
<b>Project Tasks</b>												
Task 1: Plan Kickoff & Data Collection												
Task 2: Vulnerability Assessments												
Task 3: Develop Resilience Action Plan												
Task 4: Draft Report												
Task 5: Final Report & Plan Adoption												
<b>Project Meetings</b>												
Steering Committee Meeting #1												
Steering Committee Meeting #2												
Steering Committee Meeting #3												
Steering Committee Meeting #4												
Public Meeting #1												
Public Meeting #2												
Ongoing Public Outreach & Engagement												
Presentation of Final Plan Deliverables												

# QUALIFICATIONS OF KEY PERSONNEL THAT WILL BE ASSIGNED TO THIS PROJECT



# QUALIFICATIONS OF KEY PERSONNEL

## David Stroud, CFM

### Project Manager

#### Professional Summary

Mr. Stroud has 30 years of experience as a floodplain manager and hazard mitigation planner. His expertise includes developing hazard mitigation plans and reviewing and scoring plans for FEMA. Mr. Stroud worked for the Insurance Services Office (ISO) on behalf of FEMA's CRS Program as the lead hazard mitigation planner and Flood Training Coordinator for 18 years. He assisted in the development of the 2007, 2013, and 2017 CRS Coordinator's Manuals, and will join the upcoming committee developing the 2023 manual. He has worked directly with FEMA Headquarters staff in crafting the local multi-hazard mitigation planning guidance to align with the CRS 10-Step Planning criteria including the five-year update guidance (Blue Book). Mr. Stroud has significant experience with the minimum regulations of the National Flood Insurance Program (NFIP), FEMA grant programs and FEMA's Repetitive Loss Program. He works with communities, states and FEMA Regional offices on all aspects of hazard mitigation planning and the CRS Program. With ISO, he was responsible for internal staff training on the CRS Program, Hazard Mitigation Planning and Repetitive Loss and taught week-long classes on the CRS at FEMA's Emergency Management Institute (EMI). Over the years, he has provided numerous planning and CRS workshops by invitation from states, FEMA Regional Offices, and various state floodplain associations.

#### Representative Projects

**Cutler Bay Floodplain Mitigation Plan, Cutler Bay, FL.** Mr. Stroud also served as the Project Manager on the development of a Floodplain Mitigation Plan for the Town of Cutler Bay, FL. This plan followed both the Disaster Mitigation Act (DMA) and CRS Planning requirements. Mr. Stroud was responsible for facilitating all planning meetings, overseeing the development of the risk assessment and developing the mitigation strategy section of the plan. The plan was completed on schedule and within budget.

**Collier County Flood Mitigation Plan, Collier County, FL.** Mr. Stroud served as the Project Manager on the development of a FMP for the Town of Cutler Bay, FL. Mr. Stroud was responsible for facilitating all planning meetings, overseeing the development of the risk assessment and developing the mitigation strategy section of the plan. The plan was completed on schedule and within budget.

**Rocky Mount Natural Hazards Resilience Plan, NC.** Mr. Stroud was the project lead for the City of Rocky Mount, NC Resilience Plan. The planning process includes a robust committee and public outreach and engagement strategy including staff and public surveys, committee meetings, public workshops, and a project website. The risk and vulnerability assessment involves in-depth evaluation of individual threat-

#### Education

MURP, Urban and Regional Planning, Ball State University, 1990

B.S., Urban and Regional Studies, Ball State University, 1985

A.S., Architectural Drafting, Vincennes University, 1983

#### Professional Certifications

Certified Floodplain Manager  
#US-00-00065

#### Memberships/Affiliations

American Planning Association (APA)

North Carolina Chapter of the American Planning Association (NCAPA)

Association of State Floodplain Managers (ASFPM)

Natural Hazards Mitigation Association (NHMA) – on Planning Committee

Florida Floodplain Manager's Association (FFMA)

North Carolina Association of Floodplain Managers (NCAFPM)

FEMA Region IV HAZUS Users Group

Georgia Association of Floodplain Managers (GAFM)

Association of Floodplain Managers of Mississippi (AFMM)

South Carolina Association of Hazard Mitigation (SCAHM)

asset pairs to understand assets' sensitivity and adaptive capacity in the face of future threats. A comprehensive capability assessment identifies resource gaps and opportunities.

**Flood Mitigation Plan, Repetitive Loss Area Analysis and Natural Floodplain Functions Plan for the City of Savannah, GA.** Mr. Stroud served as the project manager in the development of a CRS and DMA qualified flood mitigation plan which included a repetitive loss area analysis and a natural floodplain functions plan. The plan identified flood hazards, assessed flood risk, and provided mitigation actions for the City. This project prioritized a list of floodplain management activities to improve Savannah's CRS Rating.

**Watershed Master Plan, Stormwater Manual and Stormwater Regulations for Town of Cutler Bay, FL.** Served as the Project Manager for Cutler Bay, FL development of a Watershed Master Plan, Stormwater Manual and stormwater regulations. This project involved 3 major canal basins and 18 smaller specific basins where detailed modelling occurred for both the 25- year and 100-year peak discharge. The Stormwater Manual involved a process for implementation of a stormwater program and 7 Low Impact Development Techniques which the Town can install in lieu of installing permanent Best Management Practices.

**North Carolina Regional Hazard Mitigation Plans.** Mr. Stroud served as the Planning Manager to develop 9 Regional Hazard Mitigation Plans throughout central and eastern North Carolina. These regional plans included both natural and man-made or technological hazards. These plans were also developed to be compliant with FEMA's CRS program.

**Lexington County, SC Public Works Department: SC Flood Recovery Work.** Mr. Stroud served as the lead trainer of FEMA's Substantial Damage Estimator (SDE) Software, assisted in identifying and providing data to support Public Assistance (PA) projects, as well as, working with the floodplain administrator with NFIP and other support functions. Lexington County had 151 damaged Roads, 363 flooded buildings and 7 breached dams.

**Disaster Resistant University Plan for The Citadel, Charleston, SC.** Mr. Stroud served as the Planning Manager for the develop of the DRU. This DRU plan was a multi-hazard mitigation plan with hazard identification and vulnerability assessments for both natural and manmade hazards, including sea level rise and climate change as well as civil disturbances and hazardous materials accidents. The plan received approval from the South Carolina Emergency Management Division with no requested changes.

**Hazard Mitigation Plan for Chatham County, GA.** Mr. Stroud served as the Planning Lead for this multi-jurisdictional hazard mitigation plan. This plan included both natural hazards and technological or human-caused hazards. The plan was developed using a more robust 10-step CRS planning process but also met the 4 phases of the 44CFR201.6 planning requirements.

**Hazard Mitigation Plan for Camden County, GA.** Mr. Stroud served as the Planning Lead for this multi-jurisdictional plan which included both natural and technological or human-caused hazards. The plan was developed using a more robust 10-step CRS planning process but also met DMA planning requirements.

**City of Folly Beach CRS Program Improvement, Folly Beach, SC.** Mr. Stroud served as project manager for Folly Beach's Cycle Verification Visit. Mr. Stroud worked with all departments within Folly Beach including the City's Building Official and CRS Coordinator. Coordination with Charleston County was also a part of this project. This effort generated enough credit for the City to jump from a Class 7 to a Class 4 and save policy holders more than \$1 million per year and on average \$631 per policy.

# Cindy Popplewell, PE, CFM

## QA/QC Manager

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### Professional Summary

Ms. Cindy Popplewell is an Associate in WSP's Hazard Mitigation and Emergency Management Program and has over 26 years of water resources engineering experience with a current focus on hazard mitigation and emergency management. Ms. Popplewell has served as project manager and senior planner on several Disaster Mitigation Act (DMA) mitigation plans for both State and local communities and is experienced in leading disaster recovery efforts including FIMA grant application preparation, benefit-cost analysis, and residential and stormwater infrastructure damage assessments. Additional project work has included floodplain management, hydrologic and hydraulic modeling and FIRM development; NFIP/Community Rating System compliance; and municipal stormwater permitting, utility development and billing.

### Representative Projects

**DR-4337 Florida Hurricane Irma, Collier County, FL.** WSP, formally Wood, was tasked by Collier County, FL to perform field damage assessments for the County water and wastewater facilities utilizing FEMA's SDE Software. Ms. Popplewell prepared training for field staff and performed quality assurance reviews of all substantial damage estimates.

**Flood Damage Support, Lexington County, Lexington, SC, DR-4241 South Carolina Severe Storms and Flooding.** WSP, formally Wood was tasked by Lexington County, SC to perform field damage assessments for approximately 500 residential structures utilizing FEMA's SDE Software. Ms. Popplewell performed quality assurance reviews of all substantial damage estimates.

**2018 and 2023 Missouri State HMP Update.** Ms. Popplewell served as senior planner for the preparation of the State of Missouri Multi-Hazard Mitigation Plan Update. Plan preparation includes facilitating planning committee meetings, conducting hazard research, local plan roll-up, guiding the development of mitigation strategies, and compiling plan document for approval by FEMA as an Enhanced State Plan. Additions the enhanced plan include review of public assistance projects, public health (COVID-19), and future recommendations.

**Comprehensive Floodplain Management Plan, Metro Water Services, Nashville, TN.** Ms. Popplewell was the technical lead and prepared a floodplain management plan for repetitive loss areas within Metro Nashville as required for National Flood Insurance Program to maintain Community Rating System classification. She prepared the plan according to 10-step process outlined by FEMA including coordinating committee meetings, public meetings, and presentation to City Council for plan adoption. She also prepared an Action Plan to improve the CRS classification of Metro Nashville including outlining multiple activities, required effort, and required personnel. She developed automated direct mailing as outreach publication to repetitive loss areas within Metro Nashville. The direct mailing was developed using ArcObjects and Visual Basic with ArcGIS as an individually addressed, property specific information brochure including a map of the local flood hazard area, elevation certificate information, and a narrative on Community Rating System topics.

### Education

M.S. Civil Engineering,  
University of Kentucky, 1995

B.S. Civil Engineering, University  
of Kentucky, 1994

### Professional Certifications

Professional Engineer TN #  
105683

Certified Floodplain Manager  
#US-03-00925

### Memberships/Affiliations

Association of State Floodplain  
Managers (ASFPM)

Vice Chair, Tennessee  
Association of Floodplain  
Management

**Hazard Mitigation Technical Assistance Program (HMTAP) Sector A Contract, Federal Emergency Management Agency (FEMA), 10/2021 - ongoing.** Ms. Popplewell serves as a Task Order Manager for a multi-year mitigation services support contract consisting of WSP staff and specialty subcontractors. Task Order support includes HMGP application assistance, BCA, engineering reviews, and as-needed programmatic and policy support for Headquarters and Regions 8, 9 and 10. Fiscal Year 21 Task Orders include support for HMGP application development in Oregon, and HMGP application compliance reviews for Region 10.

**City of Waveland HMGP Citywide Drainage, Project Manager.** Ms. Popplewell serves as Project Manager for the final closeout of the City of Waveland Hazard Mitigation Grant Program Citywide Drainage Improvements project. Final closeout tasks included preparation and submittal of monthly progress reports and mitigation construction updates; reconciliation of project costs; and coordination with the Mississippi Emergency Management Agency.

**DR-4145 Colorado Severe Storms, Flooding, Landslides, and Mudslides, CO.** Hazard Mitigation Grant Program Application Support Services, Colorado Division of Homeland Security and Emergency Management. Provided benefit cost technical assistance in the preparation of Hazard Mitigation Grant Program applications for local governments in Colorado in the wake of devastating flooding (DR-4145).

**Alabama Department of Economic and Community Affairs (ADECA) Office of Water Resources (OWR), Substantial Damage Estimator (SDE).** Ms. Popplewell was the Course Instructor for ADECA Office of Water Resources. The one-day course covered SDE Tool objectives and functions, creating SDE Assessments, quality assurance reviews, and field preparations. Multiple hands-on exercises were included to fully utilize the SDE Tool.

**DR-4086 Tennessee Severe Storms, Tornadoes, Straight-line Winds, and Flooding. HMGP Grant Application Preparation- Metropolitan Government of Nashville and Davidson County, TN, Metro Water Services, Stormwater Division, Grant Application Services.** Ms. Popplewell prepared the necessary HMGP grant application materials including GIS mapping for 30 residential properties damaged due to the flood event.

**DR-1604 Hurricane Katrina, Multiple Communities along Mississippi Gulf Coast.** Ms. Popplewell served as Project Manager for a multitude of hazard mitigation services for seven communities along the Mississippi Gulf Coast. Services included: Preparation of FEMA's new Expanded Mitigation Strategies Planning Grant Pilot; Partnered Mitigation Project (PMP) Applications to combine Public Assistance (PA) funding with HMGP funding; and Flood Mitigation Assistance (FMA) Grant Applications for residential home acquisition and demolition; and preparation of Hazard Mitigation Grant Program (HMGP) Project Applications including retrofit to critical facilities, residential home acquisition and demolition, residential home elevation, and residential mitigation reconstruction (rebuild).

**2014 Arkansas HMP Update Project.** Ms. Popplewell was the manager and senior planner for the preparation of the State of Arkansas All-Hazards Mitigation Plan Update. Plan preparation includes facilitating planning committee meetings, conducting hazard research, local plan roll-up, guiding the development of mitigation strategies, and compiling plan document for approval by FEMA.

**FEMA, Hazard Mitigation Assistance Benefit Cost Analysis Review.** Performed Benefit Cost Analysis reviews for multiple HMA grant applications ranging in hazards from flood to hurricane/wind.

# Lee Walton, AICP

## Comprehensive Planning Lead

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### Professional Summary

Mr. Walton, a Certified Urban Planner with a background in architectural design, has 25 years of local government planning related experience. He manages the planning group within WSP's Atlanta office, and is responsible for strategic planning, marketing, performance reporting and interdisciplinary coordination. His key areas of technical specialty include land development policy, comprehensive city planning, master planning, redevelopment planning, recreation systems/facilities planning, sustainability analysis, economic development, industrial planning, transportation planning, urban design, facility planning, and citizen engagement. He coordinates planning resources involved with resilience planning and Smart Cities technology application. Recent assignments involving strategic planning for community resilience and smart cities include coordination and support for the Al Ula, Saudi Arabia Smart City master plan and project management for preparation of guidelines and training in Best Practices for Integrating Planning for Hazard Mitigation and Land Use for the State of Georgia (U.S.). In conjunction with dozens of projects in recent years, he has planned, organized, and facilitated hundreds of public and stakeholder involvement efforts of all types, including charrettes, open house presentations, visual preference surveying, focus group meetings and stakeholder interviews.

### Representative Projects

**City Comprehensive Plan Update, Villa Rica, GA.** Mr. Walton served as the project manager and led the WSP team that facilitated public engagement and plan development for the most recent city comprehensive plan update. Comprehensive planning was linked with preservation and revitalization-oriented downtown improvement planning for Villa Rica's historic core.

**Barrow County Comprehensive Plan Update and Unified Development Code Update, Winder, Georgia.** Mr. Walton managed the team to complete a comprehensive plan update in accordance with the amended (2014) Georgia State Minimum Planning Standards. Following adoption of the Comprehensive Plan update, the WSP team continued support to Barrow County by identifying needed updates and revisions to the Unified Development Code and completing those updates, including the associated public involvement process and significant coordination with the local homebuilders' association.

**City of Atlanta Comprehensive Development Plan Update Public Involvement, Atlanta, Georgia.** Mr. Walton was the project manager for this project. He organized and facilitated public involvement events in Atlanta neighborhoods. Coordinated WSP team support effort and facilitated neighborhood public outreach meetings in coordination with City Planning Department staff.

### Education

Master of City and Regional Planning, Land Use Planning Specialization Georgia Institute of Technology  
BS, Architecture, Georgia Institute of Technology

### Experience

Industry: 25 years  
WSP: 18 years

### Professional Certifications

American Institute of Certified Planners, #16080

### Memberships/Affiliations

Member, American Planning Association  
Member, Georgia Planning Association  
Member, APA Federal Planning Network  
Member, APA Sustainability Network

### Areas of Expertise

Comprehensive Plans  
Development Codes  
Military Installation Master Plans  
Campus/Facilities Plans  
Parks, Recreation and Greenspace Plans  
Resilience & Smart Cities  
Urban Design  
Public Involvement

**Land Use Planning for Hazard Mitigation, Georgia Department of Community Affairs, Atlanta, Georgia.** Mr. Walton served as the project manager and was responsible for oversight of scope, schedule, and project team that assisted Georgia counties and cities to prepare for future hazards and become more disaster resilient. The Georgia Department of Community Affairs (DCA) hired our team (formerly Amec) to conduct a comparative analysis of the local hazard mitigation plans and comprehensive plans of local governments in 20 Georgia counties that were impacted by severe storms, tornadoes and flooding in 2008. The resulting Guidebook presents Best Practices recommendations drawn from this analysis, from agency publications, and from experts in the fields of hazard mitigation and land use planning. In conjunction with the Guidebook, Wood prepared and delivered training through the DCA Community Planning Institute (CPI) in the form of a training curriculum for local government staff and officials.

**Florida Polytechnic University Campus Master Plan, Lakeland, Florida.** Mr. Walton was the lead Planner for detailed analysis of campus development goals/objectives, assessment of impacts of campus development on adopted level of service standards, and preparation of campus master plan update documentation for University review and approval.

**Green Cove Springs Waterfront Master Plan and Mooring Study, Green Cove Springs, Florida.** Mr. Walton managed the process to prepare a master plan for conservation, revitalization and public space enhancement on the St. John's River waterfront. Assessed existing conditions (land use, environmental constraints, infrastructure, etc.). Updated goals and policies to inform future comprehensive planning. Developed concepts for public space enhancement and mooring field expansion. Defined recommended implementation projects. Received input through hybrid in-person/virtual public involvement process and addressed public comments.

**Multi-jurisdictional Comprehensive Plan Whitfield County, GA.** Mr. Walton served as the project manager. His responsibilities included facilitation of public workshops, which were held across the county and were coordinated with the Parks and Recreation Master Plan public participation process. The Comprehensive Plan has been cited by DCA as a good example of a plan that meets the Local Planning Requirements, specifically citing the Community Vision, Community Issues and Opportunities, and Implementation Program.

**South Fulton Zoning Update, Fulton County, GA.** Mr. Walton managed the process to update the zoning ordinance ultimately adopted for the new City of South Fulton, including a robust public involvement process and detailed tracking of public input comments to inform zoning text revisions and other code updates.

**Downtown Commercial Historic District Design Guidelines, Dalton, GA.** Mr. Walton managed and updated a second edition of the Dalton Local Commercial Historic District Design Guidelines, affecting 12 blocks in the city's commercial area, to be used by the local Historic Preservation Commission as well as local and state government agency stakeholders.

**Local Government Comprehensive Planning Summary** Mr. Walton has acted as WSP Project Manager and/or Senior Planner for the development of comprehensive plans over the past 20 years for the following communities: Georgia: City of Acworth, City of Alpharetta, Banks County, Barrow County (multi-jurisdictional plan), Bulloch County (multi-jurisdictional plan), Burke County (multi-jurisdictional plan), City of Calhoun, Catoosa County, Chattooga County, Columbia County, Dawson County, City of Kennesaw, Gordon County (multi-jurisdictional plan), Hall County, Oconee County, Spalding County (multi-jurisdictional plan), City of Union City, City of West Point, Whitfield County (multi-jurisdictional plan), City of Villa Rica; Alabama: City of Prichard, City of Spanish Fort; Tennessee: City of Gallatin, Maury County/City of Columbia; Missouri: Camden County.

# Garrett Shields, GISP, CFM

## GIS Lead

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### Professional Summary

Mr. Shields is a GIS Professional with over 11 years of experience. His experience includes advanced spatial analysis using GIS software, data management, floodplain mapping, Database development, natural hazard risk assessment and automated tool development. He has extensive training and experience with the ESRI suite of software including ArcGIS Desktop (8.x, 9.x, and 10.x), ArcServer, ArcSDE, ArcGIS Online and ArcGIS Mobile as well as experience with SQL Server and Oracle database management systems. Mr. Shields has assisted in the production and maintenance of numerous GIS datasets, spanning the entire State of North Carolina. Nationally, Mr. Shields has performed floodplain mapping, DFIRM/FIS development and risk assessment tasks in support of FEMA's Risk MAP program in Oklahoma, Texas, Arkansas, Florida, Pennsylvania and New Mexico.

### Representative Projects

**Floodplain Mitigation Plan for Collier County, FL.** Lead Analyst for the floodplain management plan for Collier County, FL. Mr. Shields performed a high accuracy flood risk assessment using data provided by the local community. He also provided thematic mapping services as well as enhanced risk products to the community.

**Town of Cutler Bay Flood Mitigation Plan, Cutler Bay, FL.** Lead Analyst for the floodplain management plan for the Town of Cutler Bay, FL. Mr. Shields performed a high accuracy flood risk assessment using data provided by the local community. He also provided thematic mapping services as well as enhanced risk products to the community.

**Natural Hazards Resilience Plan for Rocky Mount, NC.** Oversaw the GIS mapping and data analysis for the Rocky Mount, NC Resilience Plan. Worked with the GIS and planning team to figure out the methodology and reviewed all created maps and tables. Much of the resilience plan, including recommended strategies, was based on the GIS analysis.

**Flood Mitigation Plan, Repetitive Loss Area Analysis and Natural Floodplain Functions Plan for the City of Savannah, GA.** Lead Analyst for the floodplain management plan for the City of Savannah, GA. Mr. Shields performed a high accuracy flood risk assessment using data provided by the local community. He also coordinated the completion of a Repetitive Loss Area Analysis (RLAA) so better report at risk structures to the city. He also provided thematic mapping services as well as enhanced risk products to the community.

**Floodplain Management Plan for Lexington County, SC.** Lead Analyst for the floodplain management plan for Lexington County, SC. Mr. Shields performed a high accuracy flood risk assessment using data provided by the local community. He also provided thematic mapping services as well as enhanced risk products to the community.

### Education

B.S., Geography, Appalachian State University, 2009

### Professional Certifications

Certified Floodplain Manager  
#NC-13-0519  
Geographical Information Systems Professional  
Certification # 80640  
FEMA Hazus Practitioner  
FEMA Hazus Professional

### Memberships/Affiliations

American Society for Photogrammetry and Remote Sensing (ASPRS)  
North Carolina Association of Floodplain Managers  
South Carolina Association for Hazard Mitigation  
North Carolina Arc Users Group, Executive Board Member  
South Carolina Arc Users Group

### Publications/Presentations

Shields, G. (2014): A Professional's Guide to Data Processing with ESRI ModelBuilder. Conference Presentation. SC Arc Users Group Annual Conference (SCARC) (2/10-2/11). Columbia, SC  
Shields, G., Slone, B. (2014): From Local to Regional; Bridging the Data Gap for Risk Analysis Conference Presentation. Association of State Floodplain Managers (6/1-6/6). Seattle, WA.

**Floodplain Management Plan for Town of Morehead City, NC.** Lead Analyst for the floodplain management plan for the Town of Morehead, NC. Mr. Shields utilized the NCFMP iRisk database to compile loss assessment data and create high accuracy risk datasets. He also provided thematic mapping services as well as enhanced risk products to the community.

**Cumberland & Hoke Regional Hazard Mitigation Plan Update.** Lead Analyst and Production Manager in charge of performing multi-hazard risk assessments and loss estimations for all communities within Cumberland and Hoke Counties in NC. Coordinated directly with local officials for data collection and development. Created high accuracy risk datasets using the NCFMP iRisk database which were used to conduct detailed loss estimation analyses for each community for inclusion in the regional hazard mitigation plan update.

**Robeson County Hazard Mitigation Plan Update.** Lead Analyst and Production Manager in charge of performing multi-hazard risk assessments and loss estimations for all communities within Robeson County in NC. Coordinated directly with local officials for data collection and development. Created high accuracy risk datasets using the NCFMP iRisk database which were used to conduct detailed loss estimation analyses for each community for inclusion in the regional hazard mitigation plan update.

**Hampton Roads, Virginia - Regional Hazard Mitigation Plan Update.** Lead Analyst and Production Manager in charge of performing multi-hazard risk assessments and loss estimations for 22 communities in the Hampton Roads, VA area. Coordinated directly with local officials for data collection and development. Created high accuracy risk datasets used to conduct detailed loss estimation analyses for each community for inclusion in the regional hazard mitigation plan update.

**North Carolina Risk Map and Support Services.** Mr. Shields has provided professional GIS services to GTM-NCFMP since 2009, performing floodplain mapping and data development tasks for 29 Flood Insurance Study updates and various LOMC/LOMRs in the State of North Carolina. He also has provided technical support and consulting services to GTM-NCFMP for the development of NC FRIS, iRISK and FLOOD Database products and procedures. Mr. Shields has led GIS production efforts for FLOOD database population for over 25% of the State.

**North Carolina Floodplain Mapping Program (NCFMP) - Effective Digital Display Environment (D2E) Database Development (2011-2013).** The NCFMP has developed a D2E Geodatabase designed to store the spatial and tabular data necessary to archive and disseminate Flood Insurance Study (FIS) information in a digital database available via an internet portal. Mr. Shields worked as a Production Coordinator for the Back Population of the D2E Database for 68 sub basins (contained within 22 counties) within the Cape Fear, Lumber and White Oak River Basins, which involved converting all effective DFIRM and FIS data into the D2E format, incorporating effective Letters of Map Revision (LOMR) and developing a one percent annual chance water surface raster. Mr. Shields was responsible for assisting in project production; coordination with project managers as well as staff training and QA/QC.

# Abby Moore, AICP, CFM

## Senior Hazard Mitigation and Resiliency Planner

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### Professional Summary

Ms. Moore is a senior mitigation planner with expertise in hazard risk assessment, floodplain management, climate change adaptation and resilience, project management, and community planning and development. Ms. Moore earned a Master's in City and Regional Planning specializing in Land Use & Environmental planning and natural hazards resilience and disaster recovery, and researched community tools and opportunities to plan for flood resilience in the face of climate change and uncertainty. Ms. Moore has working knowledge of the requirements of the Disaster Mitigation Act (DMA), the National Flood Insurance Program (NFIP), and the NFIP's Community Rating System (CRS). Ms. Moore is skilled in research, data collection and analysis, GIS, risk and vulnerability assessment, mitigation strategy development, stakeholder and public engagement, and facilitation. She has provided technical assistance in the development of hazard mitigation plans, floodplain management plans, and CRS support services for local government, state government, and university clients throughout FEMA Regions III, IV, VI, VII, VIII, and IX.

### Representative Projects

**Monroe County Local Mitigation Strategy, Monroe County, FL.** Ms. Moore supported the risk assessment, mitigation strategy development, and plan preparation for this DMA- and CRS-compliant update of the multi-jurisdictional local mitigation strategy. Florida Department of Emergency Management recognized this plan as model plan for Florida communities and uses it to teach mitigation planning courses.

**Rocky Mount Natural Hazards Resilience Plan, NC.** Ms. Moore is creating a plan for the City of Rocky Mount, NC to identify strategies to build resilience of buildings, infrastructure, the local economy, and people to priority natural hazards and climate change. The planning process includes a robust committee and public outreach and engagement strategy including staff and public surveys, committee meetings, public workshops, and a project website. The risk and vulnerability assessment involves in-depth evaluation of individual threat-asset pairs to understand assets' sensitivity and adaptive capacity in the face of future threats. A comprehensive capability assessment identifies resource gaps and opportunities.

**Floodplain Management Plan for Lexington County, SC.** Ms. Moore supported the planning process, risk assessment, and mitigation strategy components of this project through development of public outreach and engagement materials; research and preparation of hazard profiles, vulnerability assessment, capability assessment, and mitigation actions; and meeting facilitation. Lexington County contracted Wood to complete the five-year update of this plan, which is currently underway.

**Camden County Hazard Mitigation Plan, Camden County, GA.** Ms. Moore served as project manager in coordinating the update of this multi-jurisdictional hazard mitigation plan. The plan meets DMA, CRS, and EMAP criteria and addresses coastal high-priority hazards including climate change, sea level rise, and coastal erosion. The plan was approved by FEMA with no comments.

**North Carolina Department of Transportation I-40/I-95 Flood Resilience Feasibility Study, North Carolina.** Ms. Moore provided hazard mitigation and resilience planning expertise to the

### Education

MCRP, City & Regional Planning, University of North Carolina Chapel Hill, 2017  
B.A., Urban Studies, University of Pittsburgh, 2012

### Memberships/Affiliations

American Planning Association (APA)  
North Carolina Chapter of the American Planning Association (NCAPA)  
APA Hazard Mitigation and Disaster Recovery Planning Division  
APA Women & Planning Division

### Professional Certifications

American Institute of Certified Planners, #34299  
Certified Floodplain Manager #NC-19-0767

development of the I-40/I-95 Flood Resilience Feasibility Study Report, which identified more than 75 alternates to increase flood resiliency along I-95, I-40 and NC24 following Hurricanes Matthew and Florence. Ms. Moore worked with project team engineers and GIS technicians to compile study findings, develop the report, and support additional deliverables. She also coordinated with NCDOT Division staff to incorporate feedback from multiple technical advisors and subject experts into the revision process.

**Floodplain Management Plan and Repetitive Loss Area Analysis for the Town of Morehead City, NC.** Ms. Moore developed hazard profiles and vulnerability assessments, analyzing the connection between flood risk and land use to enable the identification of policies aimed at supporting sustainable, long-term resilience. Ms. Moore also led the development of a RLAA, including field data collection and report preparation, and assisted in the development of a CRS-compliant PPI. Morehead City contracted Wood to complete the five-year update of these plans, which is currently underway.

**Floodplain Management Plan and Repetitive Loss Area Analysis for Chatham County, GA.** Ms. Moore prepared and facilitated planning meetings, developed public outreach and engagement materials, assessed risk and vulnerability, and developed mitigation alternatives. She also supported the analysis of repetitive loss areas, identification of mitigation measures, and preparation of the RLAA report

**County and Regional Multi-Jurisdictional Hazard Mitigation Plan Updates, NC.** Ms. Moore supported the update of hazard mitigation plans for nine counties and multi-county regions covering over 170 communities. She coordinated with project managers; profiled natural and technological hazards; assessed risk, vulnerability, potential impact, and future conditions; prepared for and facilitated committee meetings and public workshops; led the data collection, planning process documentation, and plan document preparation effort; and assisted all participating jurisdictions through plan adoption.

**Chatham County Hazard Mitigation Plan, Chatham County, GA.** Ms. Moore served as project manager in coordinating the DMA- and CRS-compliant update of the hazard mitigation plan for the county and all incorporated jurisdictions to address natural and technological hazards of concern to the county.

**Disaster Resistant University Plan for The Citadel, Charleston, SC.** Ms. Moore served as a hazard mitigation planner supporting the planning process and risk assessment stages of the project, including researching and developing hazard profiles, and assisting in the development of vulnerability assessments and the capability assessment. This DRU plan was a multi-hazard mitigation plan with hazard identification and vulnerability assessments for both natural and manmade hazards, including sea level rise and climate change as well as civil disturbances and hazardous materials accidents. The plan received approval from the South Carolina Emergency Management Division with no requested changes.

**County Multi-Jurisdictional Hazard Mitigation Plan Updates, Iowa.** Ms. Moore supported the full scope of the planning process for the development of multi-jurisdictional hazard mitigation plan updates for nine Iowa counties with a range of up to 25 participating jurisdictions. Her role has included developing hazard profiles for natural and technological hazards, including assessing risk, vulnerability, potential impact, and future conditions. She has also assisted in data collection and analysis, creating meeting materials, documenting the planning process, drafting the plan documents, preparing Local Mitigation Plan Review Tools, and working directly with jurisdictional representatives and client project managers to coordinate the update, development, and prioritization of new and continuing mitigation strategies.

# Ranger Ruffins

## Hazard Mitigation and Resiliency Planner

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### Professional Summary

Ms. Ruffins is a planner with experience in hazard mitigation and floodplain management planning, resilience planning, and the CRS program. Ms. Ruffins recently earned her Master's in City and Regional Planning; her research focused on challenges and drivers of inequity in resilience planning and how to identify opportunities for equitable resilience. With WSP, Ms. Ruffins has worked on numerous hazard mitigation plans; and has a working knowledge of DMA requirements, the NFIP, and the CRS program. Ms. Ruffins is skilled in GIS, data collection and research as it relates to hazards and resilience, and community engagement and meeting facilitation.

### Representative Projects

#### **Floodplain Management Plan for Village of Palmetto Bay, FL.**

Ms. Ruffins supported the planning process, risk assessment, and mitigation strategy components of this FMP, including development of public outreach and engagement materials, goal-setting assistance, research and preparation of the risk and vulnerability assessment, and mitigation action prioritization. The FMP evaluated coastal hazards like sea-level rise, coastal erosion, hurricane and tropical storms, and other flood hazards.

#### **Floodplain Management Plan and Repetitive Loss Area Analysis for Orange County, FL.**

Ms. Ruffins has supported the planning process, risk assessment, and mitigation strategy components of this FMP. The FMP evaluated coastal hazards like sea-level rise, coastal erosion, hurricane and tropical storms, and other flood hazards. In addition to plan development, Ms. Ruffins will work with the GIS on the development of the Repetitive Loss Area Analysis for the County.

**Natural Hazards Resilience Plan for Rocky Mount, NC.** Ms. Ruffins is supporting the full scope of the planning process for this resilience plan. She has assisted in the identification of specific climate threats, compiled an asset inventory, and evaluated risk and vulnerability using spatial, quantitative, and qualitative data. Ms. Ruffins has also helped develop resilience strategies and has worked with the Resilience Steering Committee to create a resilience scorecard to be used for strategy evaluation and prioritization.

**Floodplain Management Plan for Lexington County, SC.** Ms. Ruffins supported the planning process, risk assessment, and mitigation strategy components of this project through development of public outreach and engagement materials; research and preparation of hazard profiles, vulnerability assessment, capability assessment, and mitigation actions; and meeting facilitation.

#### **Multi-Jurisdictional Hazard Mitigation Plan Update for Augusta-Richmond County, GA.**

Ms. Ruffins supported the ongoing development of the DMA and CRS compliant hazard mitigation plan update that covered three jurisdictions. She updated community profiles with recent growth and development data and developed hazard profiles for natural and technological hazards. Ms. Ruffins also assessed risk, vulnerability, potential impact, and future conditions; supported the planning process through document preparation; and assisted with the data collection, planning process documentation, and plan document preparation effort.

### Education

MCRP, City & Regional Planning, University of North Carolina Chapel Hill, 2021  
B.A., Environmental Studies, University of North Carolina Chapel Hill, 2016

### Memberships/Affiliations

American Planning Association (APA)  
North Carolina Chapter of the American Planning Association (NCAPA)  
APA Hazard Mitigation and Disaster Recovery Planning Division

**Multi-Jurisdictional Hazard Mitigation Plan for Pickens County, SC.** Ms. Ruffins supported the development of the DMA and CRS compliant hazard mitigation plan update that covered eight jurisdictions. She updated community profiles with recent growth and development data and facilitated interviews with each jurisdiction to assess capability and additional vulnerability information. She developed hazard profiles for natural and technological hazards and assessed risk, vulnerability, potential impact, and future conditions; supported the planning process through document preparation; and assisted with the data collection, planning process documentation, and plan document preparation effort.

**Disaster Resistant University Plan for The Citadel, Charleston, SC.** Ms. Ruffins is serving as a hazard mitigation planner supporting all stages of the project, including developing hazard profiles, assisting in the development of vulnerability assessments, and the capability assessment. This plan is a multi-hazard mitigation plan with hazard identification and vulnerability assessments for both natural and manmade hazards, including sea level rise, climate change, and hazardous materials accidents.

**CRS Program Work (2021-2023).** Ms. Ruffins has supported project work for several CRS clients. Most recently her work has focused on a number of WSP's Florida clients including the City of Coral Gables, the Village of Palmetto Bay, the City of St Cloud, Osceola County, the Village of Miami Shores, Orange County, FL, and others. Ms. Ruffins has put together Activity 330 Outreach Brochures and flyers and Program for Public Information documents. She has also developed resources for meeting facilitation, prepared planning documents, and prepared Activity 510 Repetitive Loss Area Analyses.

# Nicole A. Cortez

## Environmental Scientist

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### Professional Summary

Nicole Cortez is a south Florida native with more than a decade of experience supporting a variety of environmental programs. She has worked in environmental outreach and education, stakeholder engagement, regulation and compliance, ecological field monitoring and evaluation, and resilience monitoring and coordination. Nicole provides client-facing consultation and embedded support to implement environmental monitoring and planning programs, along with handling project management responsibilities. Ms. Cortez specializes in communicating scientific findings through agency reports, engaging online platforms, and presentations. She also fosters collaboration with stakeholders and coordinates stakeholder engagement activities for a variety of projects. Ms. Cortez has developed and continues to update annual characterization of disadvantaged communities used to rank resiliency projects.

### Representative Projects

**South Florida Water Management District (SFWMD or District).** Ms. Cortez serves as the Resiliency Coordinator where she leads resilience monitoring activities tracking and documenting trends in observed water, climate, and ecosystem data, including technical analyses and interpretation, resilience metrics workgroup coordination, and facilitating IT automation, to support the assessment of current and future climate condition scenarios, operational decisions, and resiliency priorities. Communicates scientific findings through agency reports, online platforms, and presentations. Manages projects and coordinates workgroups focused on developing future tide and rainfall projections. Fosters collaboration with internal and external stakeholders and coordinates stakeholder engagement activities for a variety of projects. Developed and continues to update annual characterization of disadvantaged communities used to rank resiliency projects and provide grant writing support. Provides resources for educators working to foster climate literacy and citizen science among their students. Develops and coordinates public communications. Assists in developing programmatic practices and procedures to establish an effective program that addresses critical environmental issues in water management and ensures regional resilience.

**CalRecycle Emergency Response Project.** Ms. Cortez worked as the Environmental Assessment Data Manager and planned soil sampling and environmental site assessment field activities. Provided field leadership and training and instruction of junior staff. Managed soil sampling field and laboratory data for project deliverables. Prepared soil sampling data packages and remediation recommendations for managerial and client review.

**Florida Power and Light Turkey Point Nuclear Power Plant Combined Monitoring Project.** Ms. Cortez worked as a field scientist where she implemented an extensive water quality, hydrogeologic, and ecological monitoring plan to ensure the client met regulatory compliance and environmental monitoring requirements. Performed a variety of water and soil sampling and vegetation monitoring activities at over one hundred stations following Florida Department of Environmental Protection (FDEP) and Environmental Protection Agency (EPA) protocols for data and sample collection for field and laboratory analysis. Managed samples to ensure sample collection and laboratory analysis occurred within the appropriate hold times. Maintained, cleaned, calibrated, and troubleshoot field sampling equipment. Conducted pre-sampling event preparation and post-sampling event processing in accordance with

### Education

B.S. Environmental Studies,  
Minor in Biology  
Florida International University,  
2014

### Professional Certifications

OSHA 40-hr HAZWOPER  
Certified Wetland Delineator  
NAUI Open Water Diver

### Memberships/Affiliations

Florida Native Plant Society

mandated schedules. Prepared and performed and performed quality assurance and quality control (QA/QC) of field and analytical data for data usability summaries and reporting.

**Miami-Dade County Division of Environmental Management (DERM).** Served as the Pollution Control Inspector and performed comprehensive inspections of permitted hazardous waste facilities, issued enforcement notices, and prepared inspection reports for review by section supervisor and manager. Advised permittees on corrective actions and provided Best Management Practices (BMPs) to prevent, reduce, and remediate hazardous waste pollution and impacts to the local environment. Investigated environmental complaints and provided findings to enforcement and/or engineering staff. Explained local ordinances, and state and federal regulations to facility operators, the regulated community, and the public.

**South Florida Water Management District Exotic Plants Survey Project.** Ms. Cortez was the Field Scientist for this project and planned and conducted ecological field surveys to identify the presence of exotic-invasive plant species in native tree island communities throughout the District's Water Conservation Areas (WCAs) in Miami-Dade and Broward counties. Prepared field data and QA/QC for analysis. Collaborated with lead project scientists in writing annual reports and presented annual findings to SFWMD project managers and stake holders.

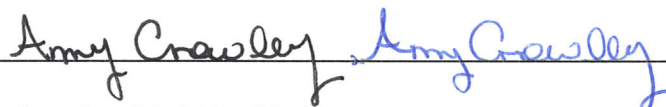
**SECTION 6.0: Required Proposal Submittal Forms**

**DRUG-FREE WORKPLACE CERTIFICATION**

Whenever two or more Proposals, which are equal with respect to price, quality, and service, are received by the State or by any political subdivision for the procurement of commodities or contractual services, a Proposal received from a business that certifies that it has implemented a drug-free workplace program shall be given preference in the award process. Established procedures for processing tie Proposals will be followed if none of the tied Consultants have a drug-free workplace program. In order to have a drug-free workplace program, a business shall:

- 1) Publish a statement notifying employees that the unlawful manufacture, distribution, dispensing, possession, or use of a controlled substance is prohibited in the workplace and specifying the actions that will be taken against employees for violations of such prohibition.
- 2) Inform employees about the dangers of drug abuse in the workplace, the business' policy of maintaining a drug-free workplace, any available drug counseling, rehabilitation, and employee assistance programs, and the penalties that may be imposed upon employees for drug abuse violations.
- 3) Give each employee engaged in providing the commodities or contractual services that are under Proposal a copy of the statement specified in Subsection (1).
- 4) In the statement specified in Subsection (1), notify the employees, that, as a condition of working of the commodities or contractual services that are under Proposal, the employee will abide by the terms of the statement and will notify the employee of any conviction of, or plea of guilty or nolo contendere to, any violation of Chapter 893 or of any controlled substance law of the United States or any state, for a violation occurring in the workplace no later than five (5) days after such conviction.
- 5) Impose a sanction on or require the satisfactory participation in a drug abuse assistance or rehabilitation program, if such is available in the employee's community, by any employee who is so convicted.
- 6) Make a good faith effort to continue to maintain a drug-free workplace through implementation of this section.

As the person authorized to sign the statement, I certify that this Consultant complies fully with the above requirements.

Signature of Official: 

Name (typed): Amy Crowley, PE, PMP, CFM

Title: Vice President, Service Line Lead

Consultant: WSP USA Environment & Infrastructure Inc.

Date: 5/1/23

**ACKNOWLEDGEMENT, WARRANTY AND ACCEPTANCE**

A. Consultant/Consultant warrants that it is willing and able to comply with all applicable State of Florida laws, rules, and regulations.

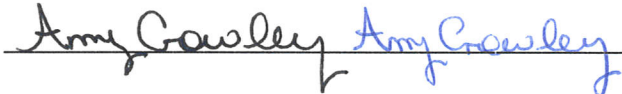
B. Consultant/Consultant warrants that they have read, understand and are willing to comply with all the requirements of the RFQ and the addendum/ addenda nos.

C. Consultant/Consultant warrants that it will not delegate or subcontract its responsibilities under an agreement without the prior written permission of the Council.

D. Consultant/Consultant warrants that all information provided by it in connection with this proposal is true and accurate.

E. CONTINGENCY FEE AND CODE OF ETHICS WARRANTY:

Consultant/Consultant warrants that neither it, nor any principal, employee, agent, representative or family member has promised to pay, and Consultant has not, and will not, pay a fee the amount of which is contingent upon the Village awarding this contract. Consultant warrants that neither it, nor any principal, employee, agent, representative has procured, or attempted to procure, this contract in violation of any of the provisions of the Miami-Dade County conflict of interest and code of ethics ordinances. Further, Consultant acknowledges that a violation of this warranty will result in the termination of the contract and forfeiture of funds paid, or to be paid, to the Consultant, if the Consultant is chosen for performance of the contract.

Signature of Official: 

Name (typed): Amy Crowley, PE, PMP, CFM

Title: Vice President, Service Line Lead

Consultant: WSP USA Environment & Infrastructure Inc.

Date: 5/1/23

**NON-COLLUSIVE AFFIDAVIT**

STATE OF NORTH CAROLINA     }  
  }  
COUNTY OF DURHAM            }

SS:

Amy Crowley, PE, PMP, CFM being first duly sworn, deposes and says that:

(1) He/she is the, (Owner, Partner, Officer, Representative or Agent) of: WSP USA Environment & Infrastructure Inc. the Consultant that has submitted the attached Proposal;

(2) He/she is fully informed respecting the preparation and contents of the attached Proposal and of all pertinent circumstances respecting such Proposal;

(3) Such Proposal is genuine and is not a collusive or a sham Proposal;

(4) Neither the said Consultant/Consultant nor any of its officers, partners, owners, agents, representatives, employees or parties in interest, including this affiant, have in any way colluded, conspired, connived or agreed, directly or indirectly, with any other Consultant or person to submit a collusive or sham response in connection with the work for which the attached Proposal has been submitted, or to refrain from responding in connection with such work, or have in any manner, directly or indirectly, sought by agreement or collusion, communication, or conference with any Consultant or person to fix this Proposal or to secure through any collusion, conspiracy, connivance, or unlawful agreement, any advantage against the Village of Palmetto Bay, or any person interested in the proposed Work;

Signed, sealed and delivered  
In the presence of

Signature of Official: *Amy Crowley Amy Crowley*

Name (typed): Amy Crowley, PE, PMP, CFM

Title: Vice President, Service Line Lead

Consultant: WSP USA Environment & Infrastructure Inc.

Date: 5/1/23

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ACKNOWLEDGMENT

State of North Carolina

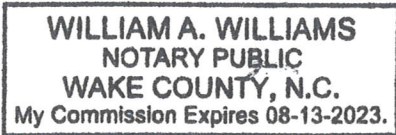
County of Durham

On this MAY 1<sup>ST</sup> day of, 2023, before me, the undersigned Notary Public of the State of North Carolina personally appeared Amy Crowley, PE, PMP, CFM and whose name(s) is/are subscribed to the within instrument, and he she/they acknowledge that he she/they executed it.

WITNESS my hand and official seal

WAW  
NOTARY PUBLIC, STATE OF NORTH CAROLINA

NOTARY PUBLIC  
SEAL OF OFFICE:



WILLIAM A. WILLIAMS  
(Name of Notary Public: Print, Stamp or Type as commissioned.)  
 Personally known to me, or  
 Produced identification:

NCPL  
(Type of Identification Produced)  
 Did take an oath or  
 Did not take an oath.

**SWORN STATEMENT PURSUANT TO**  
**SECTION 287.133 (3)(a) FLORIDA STATUTES, ON PUBLIC ENTITY CRIMES**

THIS FORM MUST BE SIGNED AND SWORN TO IN THE PRESENCE OF A NOTARY PUBLIC OR OTHER OFFICIAL AUTHORIZED TO ADMINISTER OATHS.

1. This sworn statement is submitted to the Village OF PALMETTO BAY, FLORIDA

By Amy Crowley, PE, PMP, CFM

For WSP USA Environment & Infrastructure Inc

Whose business address is: 4021 Stirrup Creek Drive, Durham, NC 27703

And (if applicable) its Federal Employer Identification Number (FEIN) is:  
91-1641772

(if the entity has no FEIN, include the Social Security Number of the individual signing this

Sworn statement - S.S. # \_\_\_\_\_)

2. I understand that a "public entity crime" as defined in Paragraph 287.133(1)(g), Florida Statutes, means a violation of any state or federal law by a person with respect to and directly related to the transaction of business with any public entity or with any agency or political subdivision of any other State or of the United States, including, but not limited to, any Proposal or contract for goods or services to be provided to any public entity or an agency or any political subdivision of any other state or of the United States and involving antitrust fraud, theft, bribery, collusion, racketeering, conspiracy, or material misrepresentation

3. I understand that "convicted" or "conviction" as defined in Paragraph 287.133(1)(b), Florida Statutes means a finding of guilt or a conviction of a public entity crime, with or without an adjudication of guilt, in any federal or state trial court of record relating to charges brought by indictment or information after July 1, 1989, as a result of a jury verdict, non-jury trial, or entry of a plea or guilty or nab contenders.

4. I understand that an "affiliate" as defined in Paragraph 287.133(1)(a), Florida Statutes, and means:

A. A predecessor or successor of a person convicted of a public entity crime; or

B. An entity under the control of any natural person who is active in the management of the entity and who has been convicted of a public entity crime. The term "affiliate" includes those officers, directors, executives, partners, shareholders, employees, members, and agents who are active in the management of an affiliate. The ownership by one person of shares constituting a controlling Interest in another person, ore pooling of equipment or income among persons when not for fair market value under an arm's

length agreement, shall be a prima facie case that one person controls another person. A person who knowingly enters into a joint venture with a person who has been convicted of a public entity crime in Florida during the preceding 36 months shall be considered an affiliate.

5. I understand that a "person" as defined in Paragraph 287.133(1)(e), Florida Statutes, means any natural person or entity organized under the laws of any state or of the United States with the legal power to enter into a binding contract and which Proposals or applies to Proposal on contracts for the provision of goods or services let by a public entity, or which otherwise transacts or applies to transact business with a public entity. The term "person" includes those officers, directors, executives, partners, shareholders, employees, members, and agents who are active in management of any entity.

Signed, sealed and delivered in the presence:

Signature of Official: Amy Crowley Amy Crowley

Name (typed): Amy Crowley, PE, PMP, CFM

Title: Vice President, Service Line Lead

Consultant: WSP USA Environment & Infrastructure Inc.

Date: 5/1/23

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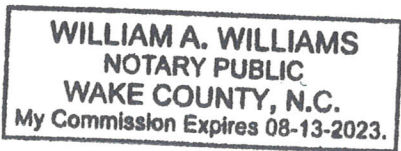
State of North Carolina

County of Durham

On this MAY 12<sup>TH</sup> day of, 2023, before me, the undersigned Notary Public of the State of North Carolina personally appeared Amy Crowley, PE, PMP, CFM and whose name(s) is/are subscribed to the within instrument, and he/she/they acknowledge that he/she/they executed it.

WITNESS my hand and official seal

[Signature]  
NOTARY PUBLIC, STATE OF NORTH CAROLINA



NOTARY PUBLIC  
SEAL OF OFFICE:

William A. Williams

(Name of Notary Public: Print, Stamp or Type as commissioned.)

- Personally known to me, or
- Produced identification:

NCDL

(Type of Identification Produced)

- Did take an oath or
- Did not take an oath.

**AMERICANS WITH DISABILITIES ACT (ADA)**  
**DISABILITY NONDISCRIMINATION STATEMENT**

THIS FORM MUST BE SIGNED AND SWORN TO IN THE PRESENCE OF A NOTARY PUBLIC OR OTHER OFFICIAL AUTHORIZED TO ADMINISTER OATHS.

This sworn statement is submitted to the VILLAGE OF PALMETTO BAY, FLORIDA

by: Amy Crowley, PE, PMP, CFM - Vice President, Service Line Lead

*(print individual's name and title)*

for: WSP USA Environment & Infrastructure Inc.

*(print name of entity submitting sworn statement)*

Whose business address  
is: 4021 Stirrup Creek Drive, Durham, NC 27703

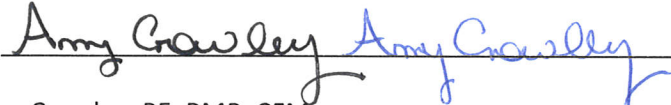
and (if applicable) its Federal Employer Identification Number (FEIN) is:  
91-1641772

*(If the entity has no FEIN, include the Social Security Number of the individual signing this sworn statement: \_\_\_\_\_ - \_\_\_\_\_ - \_\_\_\_\_.)*

I, being duly first sworn state: That the above named Consultant, corporation or organization is in compliance with and agreed to continue to comply with, and assure that any Sub-Consultant, or third party Consultant under this project complies with all applicable requirements of the laws listed below including, but not limited to, those provisions pertaining to employment, provision of programs and services, transportation, communications, access to facilities, renovations, and new construction.

The American with Disabilities Act of 1990 (ADA), Pub. L. 101-336, 104 Stat 327, 42 USC 1210112213 and 47 USC Sections 225 and 661 including Title I, Employment; Title II, Public Services; Title III, Public Accommodations and Services Operated by Private entities; Title IV, Telecommunications; and Title V, Miscellaneous Provisions.

The Florida Americans with Disabilities Accessibility Implementation Act of 1993, Section 553.501-553.513, Florida Statutes:  
The Rehabilitation Act of 1973, 229 USC Section 794;  
The Federal Transit Act, as amended 49 USC Section 1612;  
The Fair Housing Act as amended 42 USC Section 3601-3631.

Signature of Official: 

Name (typed): Amy Crowley, PE, PMP, CFM

Title: Vice President, Service Line Lead

Consultant: WSP USA Environment & Infrastructure Inc.

Date: 5/1/23

ACKNOWLEDGMENT

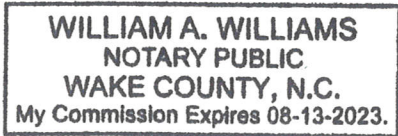
State of North Carolina

County of Durham

On this MAY 1<sup>ST</sup> day of, 2023, before me, the undersigned Notary Public of the State of North Carolina personally appeared Amy Crowley, PE, PMP, CFM and whose name(s) is/are subscribed to the within instrument, and he/she/they acknowledge that he/she/they executed it.

WITNESS my hand and official seal

[Signature]  
NOTARY PUBLIC, STATE OF NORTH CAROLINA



NOTARY PUBLIC  
SEAL OF OFFICE:

William A. Williams

(Name of Notary Public: Print, Stamp or Type as commissioned.)

- Personally known to me, or
- Produced identification:

NCDL

(Type of Identification Produced)

- Did take an oath or
- Did not take an oath.

**BUSINESS ENTITY AFFIDAVIT**  
**(CONSULTANT / CONSULTANT DISCLOSURE)**

Consultant or Consultant hereby recognizes and certifies that no elected official, or employee of the Village of Palmetto Bay (the "Village") shall have a financial interest directly or indirectly in this transaction or any compensation to be paid under or through this transaction, and further, that no Village employee, nor any elected or appointed officer (including Village board members) of the Village, nor any spouse, parent or child of such employee or elected or appointed officer of the Village, may be a partner, officer, director or proprietor of Consultant or Consultant, and further, that no such Village employee or elected or appointed officer, or the spouse, parent or child of any of them, alone or in combination, may have a material interest in the Consultant or Consultant. Material interest means direct or indirect ownership of more than 5% of the total assets or capital stock of the Consultant or Consultant. Any exception to these above-described restrictions must be expressly provided by applicable law or ordinance and be confirmed in writing by Village. Further, Consultant or Consultant recognizes that with respect to this transaction or proposal, if any Consultant or Consultant violates or is a party to a violation of the ethics ordinances or rules of the Village, the provisions of Miami-Dade County Code Section 2-11.1, as applicable to Village, Village Charter Section 7.6 (Lobbyist), or the provisions of Chapter 112, part III, Fla. Stat., the Code of Ethics for Public Officers and Employees, such Consultant or Consultant may be disqualified from furnishing the goods or services for which the proposal or proposal is submitted and may be further disqualified from submitting any future proposals or proposals for goods or services to Village.

Accordingly, Consultant or Consultant completes and executes the Business Entity Affidavit form below. The terms "Consultant" or "Consultant," as used herein, include any person or entity making a proposal herein to Village or providing goods or services to Village.

I, Amy Crowley, PE, PMP, CFM being of first duly sworn

state:

The full legal name and business address of the person(s) or entity contracting or transacting business with the Village of Palmetto Bay ("Village") are (Post Office addresses are not acceptable), as follows:

91-1641772

*Federal Employer Identification Number (If none, Social Security Number)*

CONTINUED ON FOLLOWING PAGE

WSP USA Environment & Infrastructure Inc.

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*Name of Entity, Individual, Partners or Corporation*

---

*Doing Business As (If same as above, leave blank)*

4021 Stirrup Creek Drive, Durham, NC 27703

---

*Street Address Suite Village State Zip Code*

**OWNERSHIP DISCLOSURE AFFIDAVIT**

1. If the contact or business transaction is with a corporation, the full legal name and business address shall be provided for each officer and director and each stockholder who holds directly or indirectly five percent (5%) or more of the corporation's stock. If the contract or business transaction is with a trust, the full legal name and address shall be provided for each trustee and each beneficiary. All such names and addresses are (Post Office addresses are not acceptable), as follows:

Full Legal Name	Address	Ownership
WSP USA Inc. (100% Owner)*	One Penn Plaza, 4th Floor New York, NY 10119	100 %
<i>*WSP USA Environment &amp; Infrastructure Inc. is a wholly-owned subsidiary of WSP USA Inc. Its ultimate parent company WSP Global Inc. is a Canadian corporation publicly traded on the Toronto Stock Exchange. See Attachment A for full ownership chain.</i>		%

See Attachment B for Officer & Director Listing. \_\_\_\_\_ %

2. The full legal names and business address of any other individual (other than Sub-Consultant, material men, suppliers, laborers, or lenders) who have, or will have, any interest (legal, equitable, beneficial, or otherwise) in the contract or business transaction with the Village are (Post Office addresses are not acceptable), as follows:

Not Applicable to WSP USA Environment & Infrastructure Inc.

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CONTINUED ON FOLLOWING PAGE

Signature of Official: Amy Crowley Amy Crowley

Name (typed): Amy Crowley, PE, PMP, CFM

Title: Vice President, Service Line Lead

Consultant: WSP USA Environment & Infrastructure Inc.

Date: 5/1/23

ACKNOWLEDGMENT

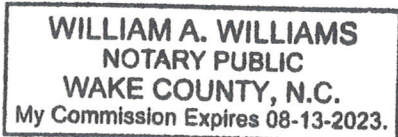
State of North Carolina

County of Durham

On this MAY 1<sup>st</sup> day of, 2023, before me, the undersigned Notary Public of the State of North Carolina personally appeared Amy Crowley, PE, PMP, CFM and whose name(s) is/are subscribed to the within instrument, and he/she/they acknowledge that he/she/they executed it.

WITNESS my hand and official seal

William A. Williams  
NOTARY PUBLIC, STATE OF NORTH CAROLINA



NOTARY PUBLIC  
SEAL OF OFFICE:

William A. Williams

(Name of Notary Public: Print, Stamp or Type as commissioned.)

- Personally known to me, or
- Produced identification:

NCDC

(Type of Identification Produced)

- Did take an oath or
- Did not take an oath.

**WSP USA Environment & Infrastructure Inc.**  
**Ownership Information**

WSP USA Environment & Infrastructure Inc. is a wholly-owned subsidiary of WSP USA Inc. Its ultimate parent company\* WSP Global Inc. is a Canadian corporation publicly traded on the Toronto Stock Exchange.

\*The full ownership chain to the ultimate parent is:



Attachment B

No individual Officer or Director holds any ownership interest in WSP USA Environment & Infrastructure Inc.

**WSP USA ENVIRONMENT & INFRASTRUCTURE INC.**

**OFFICERS AND DIRECTORS**

<u>Title</u>	<u>Name</u>	<u>*Business Address</u>	<u>Reference Number</u>	
CEO	Joseph J. Sczurko, Jr.	Portland, ME	(1)	Portland, ME
President	Lytle C. Troutt, Jr.	Kennesaw, GA	(2)	Kennesaw, GA
Senior Vice President	Raymond M. Steege	St. Louis, MO	(3)	St. Louis, MO
Senior Vice President	Jason Wits	Chantilly, VA	(4)	Chantilly, VA
Vice President & Assistant Secretary	Deborah J. Barrow	Kennesaw, GA	(2)	Kennesaw, GA
Vice President	Mark C. Diblin	Gainesville, FL	(5)	Gainesville, FL
Vice President	Joseph F. Farrell	Kennesaw, GA	(2)	Kennesaw, GA
Vice President & Secretary	Bradley J. Knight	Kennesaw, GA	(2)	Kennesaw, GA
Vice President	Jennifer C. Lewis	Altamonte Springs, FL	(6)	Altamonte Springs, FL
Vice President	Andrew J. Lynn	New York, NY	(7)	New York, NY
Vice President & Treasurer	Kendall Sherrill	Kennesaw, GA	(2)	Kennesaw, GA
Assistant Vice President	Jeffrey A. Barrett	Charlotte, NC	(8)	Charlotte, NC
Assistant Vice President	Charles K. Conner	Oakland, CA	(9)	Oakland, CA
Assistant Vice President	Victor A. Fisher	Sacramento, CA	(10)	Sacramento, CA
Assistant Vice President	Charles Gardiner	Altamonte Springs, FL	(6)	Altamonte Springs, FL
Assistant Vice President	Fred E. Lusk, III	Fresno, CA	(11)	Fresno, CA
Assistant Vice President	Jay M. Martin	Brentwood, TN	(12)	Brentwood, TN
Assistant Vice President	Mark A. Murphy	Los Angeles, CA	(13)	Los Angeles, CA
Assistant Vice President	Francis P. Wiegand	San Diego, CA	(14)	San Diego, CA
Assistant Secretary	Jason Fanelli	Fort Worth, TX	(15)	Fort Worth, TX
Assistant Secretary	Hillary F. Jassey	New York, NY	(7)	New York, NY
Assistant Secretary	Alex Volterano	Blue Bell, PA	(16)	Blue Bell, PA
Controllor	Nicholas P. Mitrakis	New York, NY	(7)	New York, NY
Board Director	Lewis P. Cornell	Orange, CA	(17)	Fullerton, CA
Board Director	W. Stephen Dale	Shelton, CT	(18)	Stamford, CT
Board Director	Andrew C. Esposito	Orange, CA	(17)	Ladera Ranch, CA

Attachment B

No individual Officer or Director holds any ownership interest in WSP USA Environment & Infrastructure Inc.

**WSP USA ENVIRONMENT & INFRASTRUCTURE INC.**

**OFFICERS AND DIRECTORS**

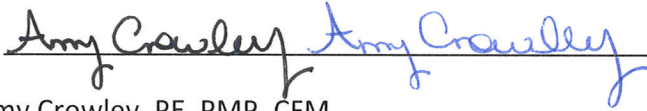
<u>Title</u>	<u>Name</u>	<u>*Business Address</u>	<u>Reference Number</u>
	<b><u>*Business Addresses</u></b>		
	(1)	511 Congress Street, Portland, ME 04101	
	(2)	1075 Big Shanty Road NW, Suite 100, Kennesaw, GA 30144	
	(3)	15933 Clayton Road, Suite 215 (Ballwin), St. Louis, MO 63011	
	(4)	4795 Meadow Wood Lane, Suite 310 East, Chantilly, VA 20151	
	(5)	404 SW 140th Terrace, Gainesville, FL 32669	
	(6)	550 Northlake Boulevard, Suite 100, Altamonte Springs, FL 32701	
	(7)	One Penn Plaza, 4th Floor, New York, NY 10119	
	(8)	1001 Morehead Square Drive, 6th Floor, Charlotte, NC 28203	
	(9)	180 Grand Avenue, 11th Floor, Oakland, CA 94612	
	(10)	10670 White Rock Rd., Ste. 100, Rancho Cordova, Sacramento, CA 95670	
	(11)	1281 East Alluvia Avenue, Suite 101, Fresno, CA 93720	
	(12)	216 Centerview Drive, Suite 300, Brentwood, TN 37027	
	(13)	6001 Rickenbacker Road, Los Angeles, CA 90040	
	(14)	9177 Sky Park Court, San Diego, CA 92123-4341	
	(15)	4925 SunValley Drive, Fort Worth, TX 76119	
	(16)	751 Arbor Way, Suite 180, Hillcrest I, Blue Bell, PA 19422	
	(17)	1100 Old Town & Country Road, Suite 200, Orange, CA 92868	
	(18)	6 Research Drive, Suite 260, Shelton, CT 06484	

**ACKNOWLEDGMENT OF CONFORMANCE**  
**WITH OSHA STANDARDS**

To the Village of Palmetto Bay,

We WSP USA Environment & Infrastructure Inc. (Consultant), hereby acknowledge and agree that we, as the Prime Consultant for Village of Palmetto Bay, Village of Palmetto Bay \_\_\_\_\_, RFQ# **2023-00-004**, as specified, have the sole responsibility for compliance with all the requirements of the Federal Occupational Safety and Health Act of 1970, and all State and local safety and health regulations, and agree to indemnify and hold harmless the Village of Palmetto Bay, against any and all liability, claims, damages losses and expenses they may incur due to the failure of :

\_\_\_\_\_  
(Sub-Consultant's Names) to comply with such act or regulation.


Signature of Official: 

Name (typed): Amy Crowley, PE, PMP, CFM

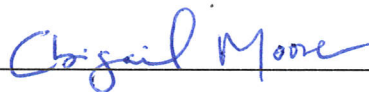
Title: Vice President, Service Line Lead

Consultant: WSP USA Environment & Infrastructure Inc.

Date: 5/1/23

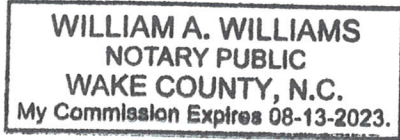
Attest: 

Print Name: William A. Williams

Attest: 

Print Name: Abigail Moore





NOTARY PUBLIC

SEAL OF OFFICE:

William A. Williams

(Name of Notary Public: Print, Stamp or Type as commissioned.)

- Personally known to me, or
- Produced identification:

NCDL

(Type of Identification Produced)

- Did take an oath or
- Did not take an oath.

**STATEMENT OF PAST CONTRACT DISQUALIFICATIONS**

The Consultant shall state whether it or any of its officers or employees who have a proprietary interest in it, has ever been disqualified, removed, or otherwise prevented from proposing on, or completing a federal, state, or local government project because of the violation of law, a safety regulation, or for any other reason, including but not limited to financial difficulties, project delays, or disputes regarding work or product quality, and if so to explain the circumstances.

Do you have any disqualification as described in the above paragraph to declare?

Yes or No, if yes, explain the circumstances.

Yes. WSP is a large international services company and as such, there are inevitably disputes arising from time to time. While details of those disputes are confidential, we can confirm that there are no disputes or litigation of any kind, that individually or collectively, will have a material effect upon the quality of WSP's performance and its ability to provide services for this contract.

Executed on 5/1/23 at 4021 Stirrup CK Dr. Ste 100 Durham, NC  
under penalty of perjury of the laws of the State of Florida, that the foregoing is true and correct. 27763

Signature of Official: *Amy Crowley* *Amy Crowley*

Name (typed): Amy Crowley, PE, PMP, CFM

Title: Vice President, Service Line Lead

Consultant: WSP USA Environment & Infrastructure Inc.

Date: 5/1/23

**E-VERIFY**  
**AFFIDAVIT**

STATE OF North Carolina

COUNTY OF Durham

I, Amy Crowley, PE, PMP, CFM (the individual attesting below), being duly authorized by and on behalf of WSP USA Environment & Infrastructure Inc. (hereinafter "Employer") after first being duly sworn hereby swears or affirms as follows:

1. Employer understands that E-Verify is the federal E-Verify program operated by the United States Department of Homeland Security and other federal agencies, or any successor or equivalent program used to verify the work authorization of newly hired employees pursuant to federal law in accordance with NCGS §64-25(5).
2. Employer understands that Employers Must Use E-Verify. Each employer, after hiring an employee to work in the United States, shall verify the work authorization of the employee through E-Verify in accordance with NCGS §64-26(a).
3. Employer is a person, business entity, or other organization that transacts business in this State and that employs 25 or more employees in this State. (Mark "Yes" or "No")
  - a. YES X
  - b. NO
4. Employer's subcontractors will comply with E-Verify, and Employer will ensure compliance with E-Verify by any and all subcontractors subsequently hired by Employer.

This 1 day of May, 2023

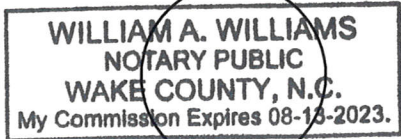
Amy Crowley Amy Crowley  
Signature of Affiant

Print or Type Name: Amy Crowley, PE, PMP, CFM

State of North Carolina

County of Durham

CONTINUED ON FOLLOWING PAGE



Seal

Signed and sworn to (or affirmed) before  
me, this the 1<sup>st</sup> day  
of MAY, 20 23.

My Commission Expires: 08-13-2023

A handwritten signature in blue ink, appearing to read "W.A. Williams", written over a horizontal line.

Notary Public

NHCS – E-Verify 081815

# Request for Taxpayer Identification Number and Certification

**Give Form to the  
requester. Do not  
send to the IRS.**

▶ Go to [www.irs.gov/FormW9](http://www.irs.gov/FormW9) for instructions and the latest information.

Print or type.  
See Specific Instructions on page 3.

<b>1</b> Name (as shown on your income tax return). Name is required on this line; do not leave this line blank. <b>WSP USA Environment &amp; Infrastructure Inc.</b>	
<b>2</b> Business name/disregarded entity name, if different from above	
<b>3</b> Check appropriate box for federal tax classification of the person whose name is entered on line 1. Check only <b>one</b> of the following seven boxes.	<b>4</b> Exemptions (codes apply only to certain entities, not individuals; see instructions on page 3):
<input type="checkbox"/> Individual/sole proprietor or single-member LLC	<input checked="" type="checkbox"/> C Corporation
<input type="checkbox"/> Limited liability company. Enter the tax classification (C=C corporation, S=S corporation, P=Partnership) ▶ _____	<input type="checkbox"/> S Corporation
<input type="checkbox"/> Other (see instructions) ▶ _____	<input type="checkbox"/> Partnership
<input type="checkbox"/> Trust/estate	<input type="checkbox"/> Trust/estate
<b>Note:</b> Check the appropriate box in the line above for the tax classification of the single-member owner. Do not check LLC if the LLC is classified as a single-member LLC that is disregarded from the owner unless the owner of the LLC is another LLC that is <b>not</b> disregarded from the owner for U.S. federal tax purposes. Otherwise, a single-member LLC that is disregarded from the owner should check the appropriate box for the tax classification of its owner.	
<b>5</b> Address (number, street, and apt. or suite no.) See instructions. <b>1075 Big Shanty Rd NW, Suite 100</b>	<b>Requester's name and address (optional)</b>
<b>6</b> City, state, and ZIP code <b>Kennesaw, GA 30144</b>	
<b>7</b> List account number(s) here (optional)	

## Part I Taxpayer Identification Number (TIN)

Enter your TIN in the appropriate box. The TIN provided must match the name given on line 1 to avoid backup withholding. For individuals, this is generally your social security number (SSN). However, for a resident alien, sole proprietor, or disregarded entity, see the instructions for Part I, later. For other entities, it is your employer identification number (EIN). If you do not have a number, see *How to get a TIN*, later.

**Note:** If the account is in more than one name, see the instructions for line 1. Also see *What Name and Number To Give the Requester* for guidelines on whose number to enter.

<b>Social security number</b>									
<b>or</b>									
<b>Employer identification number</b>									
9	1	-	1	6	4	1	7	7	2

## Part II Certification

Under penalties of perjury, I certify that:

1. The number shown on this form is my correct taxpayer identification number (or I am waiting for a number to be issued to me); and
2. I am not subject to backup withholding because: (a) I am exempt from backup withholding, or (b) I have not been notified by the Internal Revenue Service (IRS) that I am subject to backup withholding as a result of a failure to report all interest or dividends, or (c) the IRS has notified me that I am no longer subject to backup withholding; and
3. I am a U.S. citizen or other U.S. person (defined below); and
4. The FATCA code(s) entered on this form (if any) indicating that I am exempt from FATCA reporting is correct.

**Certification instructions.** You must cross out item 2 above if you have been notified by the IRS that you are currently subject to backup withholding because you have failed to report all interest and dividends on your tax return. For real estate transactions, item 2 does not apply. For mortgage interest paid, acquisition or abandonment of secured property, cancellation of debt, contributions to an individual retirement arrangement (IRA), and generally, payments other than interest and dividends, you are not required to sign the certification, but you must provide your correct TIN. See the instructions for Part II, later.

<b>Sign Here</b>	Signature of U.S. person ▶	Date ▶ 10/5/2022
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## General Instructions

Section references are to the Internal Revenue Code unless otherwise noted.

**Future developments.** For the latest information about developments related to Form W-9 and its instructions, such as legislation enacted after they were published, go to [www.irs.gov/FormW9](http://www.irs.gov/FormW9).

### Purpose of Form

An individual or entity (Form W-9 requester) who is required to file an information return with the IRS must obtain your correct taxpayer identification number (TIN) which may be your social security number (SSN), individual taxpayer identification number (ITIN), adoption taxpayer identification number (ATIN), or employer identification number (EIN), to report on an information return the amount paid to you, or other amount reportable on an information return. Examples of information returns include, but are not limited to, the following.

- Form 1099-INT (interest earned or paid)

- Form 1099-DIV (dividends, including those from stocks or mutual funds)
- Form 1099-MISC (various types of income, prizes, awards, or gross proceeds)
- Form 1099-B (stock or mutual fund sales and certain other transactions by brokers)
- Form 1099-S (proceeds from real estate transactions)
- Form 1099-K (merchant card and third party network transactions)
- Form 1098 (home mortgage interest), 1098-E (student loan interest), 1098-T (tuition)
- Form 1099-C (canceled debt)
- Form 1099-A (acquisition or abandonment of secured property)

Use Form W-9 only if you are a U.S. person (including a resident alien), to provide your correct TIN.

*If you do not return Form W-9 to the requester with a TIN, you might be subject to backup withholding. See What is backup withholding, later.*