Proposal

City of Fort Lauderdale, FL

Vulnerability Assessment

Solicitation Event 69

April 2023

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City of Fort Lauderdale
Procurement Services Division
100 N. Andrews Avenue, Suite 619
Fort Lauderdale, Florida 33301

April 20, 2023

Re: Solicitation Event 69 - Vulnerability Assessment for the City of Fort Lauderdale

Dear Review Committee:

The work effort on which the City of Fort Lauderdale (City) is preparing to embark, the development of your Vulnerability Assessment and Partial Adaptation Plan, will be an instrumental stepping stone to prepare the City for responding to changing climate conditions. **The need for this work has never been more evident, following the historic rain and flooding events on April 13, 2023, resulting catastrophic damage to critical facilities such as City Hall, significant emergency management challenges, and recent dialogue between elected officials.** This event underscored the need to view resiliency through a wider lens and why the multiple scenarios to be modeled will be valuable. Local government's response, the debate related to how communities develop or redevelop and how we maintain, manage and upgrade our infrastructure have all come under heightened scrutiny. Finally, the disproportionate impacts on disadvantaged communities at risk from current and future flooding conditions has been a primary issue of recent discussion. This single event has significantly heightened the importance of this project shining new light on how the City approaches its resiliency planning and how multiple concurrent efforts can be brought under an umbrella resiliency planning process.

This bid process for this project now has higher stakes for the City, as this project will involve that heightened scrutiny on the extent of Vulnerability Assessments representing the full community, with a focused spotlight on equitable prioritization of critical community assets We point out that this provides an opportunity given the pending opening of the Resilient Florida planning grant cycle to further benefit from that program by seeking additional funding to deliver a more comprehensive Vulnerability Assessment for the community. E.g., the existing funding has no current budget for community outreach and engagement. There is no public process currently associated with this catalytic project. Some may ask why that communication is missing.

However, the firm you select to support you through this next phase will be critical in helping to navigate this challenging terrain and articulate the City's equitable and innovative vision to guide all communities forward – and with actionable steps to move into pursuit of funding and implementation. **Fort Lauderdale just became a frontline community in the national conversation on the inequitable impacts of climate change on disadvantaged communities. Who you choose must be a best-in-class selection with deep expertise and defensible to your taxpayers.** We are fully prepared to support the City in the immediate pursuit of supplemental funding from FDEP (or via DEO/CDBG-MIT underutilized planning funds) to expand the scale and depth of this process to account for robust community engagement and to ensure all voices are heard and incorporated into the Vulnerability Assessment and Partial Adaptation Plan. In addition, should the recent events result in a presidentially declared disaster for Broward County, the City will have an opportunity to acquire federal funding to both supplement the next phases of this work, and fast track the implementation of critical infrastructure projects for risk reduction. Our Team has an unmatched record in navigating similar situations to maximize multiple funding opportunities for accelerating the resilience programs for the at-risk communities we serve. We understand the challenges ahead for City leaders and staff, and we stand ready to join you. We have a proven history in doing just that- "right sizing" the vulnerability assessment planning process to encompass all of the local government's needs by securing supplemental planning grants in the Resilient Florida program.

The expectations of the members of the community – the general voting public – will be for City leaders to take action. This engagement will support and reinforce the commitment of City leadership that is focused on equitable adaptation and that is already actively working to better understand and address these issues, but that has been unfairly characterized in a politicized. The work conducted under this engagement will directly help the City prepare for existing and future climate risks while delivering benefits that are sustainable and equitable, enhancing important ecological attributes, fostering economic prosperity, addressing the causes of climate change, and catalyzing a culture of innovation in solving complex challenges. **Arcadis has been working on these issues globally for decades and in the South Florida region for over thirty years and will lead this project from our Plantation office.**

We recognize that the City is not starting from scratch and has worked hard on significant policy development, capital planning and other programmatic elements, all of this prior to and while the Always Ready, Section 380.093, F.S. legislation was being developed and enacted. We also recognize that available data to inform this work (including from the County level) is constantly evolving to better align model results with actual experienced conditions. We will approach this work with adaptability in mind, to allow for incorporating changes in planning horizons, sea level rise scenarios, and modeling advancements in the areas of groundwater depth, rainfall projections and other key datasets. Now there is an opportunity with these planning grant funds to bring this work under a new umbrella and expand upon it while positioning the City to access future grants under that program and others.

Arcadis is a global leader in climate resilience and has been at the forefront of helping many communities across the world with distinct physical risks and social, cultural, and economic complexities to live with and adapt to climate change since our inception in 1888. Our Team's project approach is proven through recent nationally-recognized resilience planning projects including the Miami-Dade County Sea Level Rise Adaptation Strategy, Climate Ready Boston, Resilient New Jersey, Chicago's Climate Action Plan. We help our clients develop long-term solutions for reducing climate risk, incorporating sustainability, and for garnering broad consensus in taking action through engagement at all levels. Locally, the project will be delivered by the same team of local resilience experts who have led (during public service or as consultants) efforts on these issues for local governments throughout South Florida. Our team has worked for the City of Miami, Palm Beach County government, the Southeast Florida Regional Climate Change Compact, the Resilient305 Initiative, the USACE Jacksonville District, and more.

With this extensive Arcadis experience on large and complex national and South Florida projects, we highlight our key partners Erin L. Deady, P.A. and Clearview Geographic who have jointly conducted many vulnerability assessments in Florida including Martin County, Monroe County, Pensacola and St. Lucie County. They are also engaged currently in developing many Florida Vulnerability Assessments for new projects (Islamorada, West Palm Beach and Lynn Haven) or updating previous work to bring existing Vulnerability Assessments into compliance with the new statute (Martin, Monroe and Pensacola). Additionally, we have specifically added Erin L. Deady, P.A. to the team given her unique experience as a lawyer and urban planner having worked on a myriad of legislative, agency rulemaking and legal analysis related to resiliency implementation. These two key partners combined have some of the most extensive vulnerability assessment experience in the State having worked on challenges with implementation of Section 380.093, F.S. related to the extent of mapping and asset compilation, metadata and asset security issues. In two years, Erin has authored 53 successful Resilient Florida planning and capital project grants valued over $94 million including supplemental Resilient Florida planning grants, 4 last year alone, several the year prior.

Thank you for the opportunity to present our approach, qualifications, and pricing in this proposal. We look forward to partnering with the City on your resilience journey. Should you have any questions or require information, please do not hesitate to contact us.

Sincerely,
Arcadis U.S., Inc.

Leah K. Richter, PE
Project Officer, Proposal Contact, and Authorized Signatory
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Melissa Hew, CFM, WEDG
Project Manager
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Section 02.

Executive Summary

2. Executive Summary

Arcadis has been an active member of the local community since opening our office in the Fort Lauderdale region over 30 years ago. During this time, we have been privileged to collaborate on many local projects to help enable the vision of City and County leaders. Moreover, we have done so by supporting and working alongside local agencies in helping to build and improve our community. We are excited for the opportunity to apply our comprehensive and specialized expertise related to flood risk, resilience and adaptation.

Business Entity

Arcadis U.S. Inc. is wholly owned by Arcadis North America, Inc., a Colorado Corporation, whose sole shareholder is Arcadis USA, B.V., a Dutch company.

Background

Arcadis is a leading global natural and built asset design and consultancy firm working in partnership with our clients to deliver exceptional and sustainable outcomes through the application of design, consultancy, engineering, and project management services. We are active in the fields of infrastructure, water, environment, and buildings.

Arcadis has been in business under the present name for 55 years. Founded in 1888, the firm's roots began when the organization was founded in the Netherlands as an association for wasteland redevelopment. Arcadis has evolved throughout the 20th century, expanding its global reach and range of service offerings through strategic initiatives and targeted acquisitions.

Main Offices

Our Florida practice is supported by over 350 professionals among 8 Florida offices, including Plantation, Miami, Boynton Beach, Tampa, Orlando, Jacksonville, Pensacola, and Tallahassee.

Arcadis is excited for the opportunity to continue growing our partnership with the City and to expand the services that we provide. Currently Arcadis is providing Fort Lauderdale with Asset Management Roadway Infrastructure Inventory services, Construction Engineering Inspection Continuing services, and Lead and Copper Rule Compliance Program services.

Our Value to the City:

- *A diverse team of responsive, local resources backed by an **extensive network of designers, construction specialists, subject matter experts, and highly qualified specialty subconsultants**.*
- *A **Contract Manager** with **over 25 years of experience** under similar continuing services contracts that will assure that your projects are right staffed, scopes and budgets are clear and optimized, delivery goals are met, and project benefits are realized.*
- *The **right qualifications and approach to support the City on your flood risk, resilience and adaptation planning needs,** as well as the possibility to serve as your partner on strategic initiatives, including funding, resilience and sustainability.*

Minimum Qualifications Exceeded

- ✓ Relevant experience in conducting vulnerability assessments related to flooding.
- ✓ Project Manager has experience in flood risk assessments at the municipal scale and has served as Project Manager on similar projects.
- ✓ No record of judgments, pending lawsuits against the City or criminal activities involving moral turpitude and not have any conflicts of interest that have not been waived by the City Commission.
- ✓ No arrears or in default of any debt or contract involving the City nor have failed to perform faithfully.
- ✓ Licensed and registered in the State of Florida.

Officers/Principals/Key Individuals & Office Locations

Leah Richter, PE: Contract Manager, Plantation, FL

Melissa Pomales, PE: Principal in Charge, Plantation, FL

Melissa Hew, CFM, WEDG: Project Manager, Plantation, FL

Erin Deady P.A., AICP (ELDPA): Deputy Project Manager, Delray Beach, FL

Alex Zelenski, GISP (Clearview): Background Data & Gap Analysis, DeLand, FL

Martin Rossi. PSM (Miller Legg): Survey Lead, Fort Lauderdale, FL

Key Elements of the Proposal:

Qualifications

Arcadis stands ready to support this great and unique City in reducing vulnerability to the growing risks from climate change, to ensure a prosperous and resilient Fort Lauderdale for future generations to live, work, play and visit. We are a global leader in climate resilience, and since our inception in the Netherlands over 100 years ago, have been at the forefront of helping many at-risk communities with distinct physical, social, cultural and economic complexities to live with, mitigate, and adapt to changing climate risks. Our hand-picked team is tailored to meet your unique goals for this project, and the qualifications, understanding and approach we present in this proposal is proven through similar successful vulnerability assessment projects throughout the state, and with recent landmark resilience planning projects nationwide including the Miami-Dade Sea Level Rise Strategy, Climate Ready Boston, and Resilient New Jersey. With a global and U.S. team over 35,000, and 6,000 respectively, our climate resilience practices is supported by subject matter experts in community planning, sustainability, engineering and infrastructure, economics, finance, digital innovation and many more to ensure a holistic resilience lens that addresses the complex interdependent challenges at-risk coastal communities like Fort Lauderdale face.

"Arcadis served as the lead consultant supporting Miami-Dade County in the development of our Sea Level Rise Strategy. The Arcadis team has deep and extensive expertise on climate adaptation, water resources, and urban planning. We benefited from their experience developing similar plans to adapt to sea level rise in Boston, New York, and other areas up and down the east coast and globally. This experience was instrumental in helping us develop a framework for approaching our own sea level rise planning efforts."

Katherine Hagemann, AICP, Former Resilience Program Manager for Adaptation Miami-Dade County

It is our distinct pleasure to present you with our proposal to conduct this Vulnerability Assessment for the City of Fort Lauderdale. Within our proposal you'll find:

- A summary of our Team's most relevant **experience and qualifications**, including the experience and achievements of the staff hand-selected for this project, and details on similar and related projects
- Our **understanding of the project needs, and proposed approach** for this project built-off and tailored from frameworks that have delivered successful outcomes for other communities, and that will ensure your goals and requirements are exceeded, the returns for your investment in this project are maximized, and that sets up implementation of the next phases of the City's resilience journey.
- Details on all required administrative items including references, forms and documents.

Responsiveness

We understand that this project's success requires a strong understanding of local and regional conditions and ready availability to you. Our Team presents a seamless and complimentary assembly of national and international resilience expertise grounded with an unmatched local and regional understanding of the resilience context. Our Team includes local -resilience experts who have been leading (during public service and/or as consultants) resilience efforts in south Florida for decades. Members of our Team have worked in leading roles for the Cities of Miami and Miami-Beach, Miami-Dade County, the Southeast Florida Regional Climate Change Compact, the City of Fort Lauderdale itself, to name a few. Arcadis project teams are agile and flexible. We are specialists in promptly identifying and anticipating a project's needs and quickly committing the appropriate staff, and making that staff available to you.

The contract will be managed from our nearby Plantation office, just minutes from the City's offices and facilities.

"Arcadis has always provided exceptional service, and highly professional staff to assist our needs. Would highly recommend." **- Peter Kunen, PE, Asst. Director PW/City Engineer, City of Hallandale Beach**

Project Management

We use industry best practices in planning and implementing assigned tasks, starting from initial engagement seeking up-front confirmation and understanding of your goals and objectives, adapting to your expectations, and then implementing via proven resource and project management processes and tools.

Subconsultant Partners

At this critical juncture for the City, we provide specialists in resilience planning, climate modeling and risk assessment, policy development, legal risk analysis, climate mitigation and sustainability, stormwater modeling, built and natural solutions, economic analysis, hazard mitigation and resilience funding, and grant management and compliance, among others. The Arcadis Team (the Team) stands ready to support the City in addressing the very real and present adaptation challenges. We have tailored the Team to directly address each of these challenges:

- **Erin L. Deady, PA (ELDPA) –** South Florida-based Woman-Owned Small Business; a visionary leader in the State in vulnerability assessments, resilience planning, and unparalleled legal and policy subject matter expertise in climate adaptation for state and local government.
- **Clearview Geographic –** Florida-based GIS & data solutions firm providing specialized expertise and experience with resilience planning and climate adaptation in the Florida marketplace.
- **Jacobs Engineering –** Global engineering solutions provider with a downtown Fort Lauderdale office, currently conducting roadway infrastructure inventory with LiDAR elevation survey technology for the City and providing technical expertise and strategic advisory support as needed.
- **Miller Legg –** Fort Lauderdale, Florida-based and award-winning consulting firm with deep engineering and landscape architecture experience across Broward County and the City, providing surveying expertise for elevation certificates for critical assets/facilities in the community.

Key Message

- ✓ We know vulnerability assessments in Florida and globally, for all scales. We understand how to operate in highly scrutinized projects. We manage the process efficiently and navigate challenges that can arise such as data collection, security, metadata, and compliance with state law.
- ✓ We bring the right team and tools to get the job done. We are technical experts in advanced hydrological evaluations and tools and know how to integrate data from existing complex modeling.
- ✓ We work in diverse communities of all sizes, and we are a diverse team. We work daily solving complex infrastructure challenges in dense areas like the City of Fort Lauderdale.
- ✓ We live out the mission of equitable climate adaptation in our work, and understand the importance of proactive communications and inclusiveness.
- ✓ We have been aligning disaster management and recovery with forward-looking resiliency and mitigation for nearly two decades.
- ✓ We know how important this project is especially in light of the historic rainfall of last week. Our key project management team and local office are located in the immediate area.

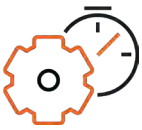
Section 03.

Experience and Qualifications

3. Experience and Qualifications

Arcadis offers the City forward-thinking, cost-effective and sustainable solutions that address today's challenges, and the community's economic and infrastructure future.

Years of Experience



Arcadis has been working with communities to live with, and adapt to, changing conditions **since our inception in 1888.** We bring expansive global-scale expertise while honoring the wisdom of the people we are serving. Each project is unique, and the needs of each community are different. We work in an integrated manner to explore and develop innovative, sustainable, adaptable, and equitable solutions, collaboratively. Our unmatched experience in planning, vulnerability assessment, and delivering resilience action plans in southeast Florida, nationally, and globally, demonstrates that Arcadis offers integrated, holistic planning approaches and resilient, adaptable, sustainable, and constructable design. Arcadis has successfully delivered resilience plans and projects in Miami-Dade County, Boston, New York City, Norfolk, New Jersey, Louisiana, Rotterdam, and more. Our Team will not only bring the expertise of experienced and thoughtful engineers, designers, planners, and scientists, but also the collaborative and partner-ship-building capabilities necessary to work with the City of Fort Lauderdale and its partners for a successful outcome. As a Dutch firm, our history is one founded upon assisting the public sector to meet the challenges of flooding risks and effective water management.

Integrated Team with Experience Working Together

Arcadis carefully selected a highly qualified team to meet the diverse needs of Fort Lauderdale. Our Team is united in our commitment to vibrant, accessible, resilient, and sustainable communities, with an approach rooted in place-based design and deep community engagement. We believe in social and environmental infrastructure, and multi-purpose investments that provide multiple benefits, enhance the environment and ecology, and bring joy to those benefitting. Combining local, national and global talent across all services, our team members, including **Jacobs, Miller Legg, Erin L. Deady P.A,** and **Clearview Geographics, LLC** have shaped precedent-setting places across the nation, including projects such as Climate Ready Boston, Seaport and Financial District Climate Resilience Master Plan (Lower Manhattan), the Louisiana Coastal Master Plan, the Louisiana Watershed Initiative, three different regions for Resilient New Jersey, and the Miami-Dade Sea Level Rise Strategy. Our integrated team is founded on established working relationships, and having worked on numerous projects together, we will seamlessly integrate our individual strengths to deliver for the City, carrying your visions and concepts through implementation. We will bring lessons learned from our collective work as we partner with you and your critical communities, to develop a comprehensive Vulnerability Assessment and Resilience Action Plan.

Florida Specifics

Arcadis' Florida practice is supported by 350 professionals among eight offices. We have a strong team of Florida and national professionals consisting of engineers and architects, scientists, financial and public management professionals, urban and transit planners, resilience planners, coastal modelers, Certified Floodplain Managers (CFMs), and disaster recovery professionals with intimate knowledge of federal recovery programs.

8 OFFICES ACROSS FLORIDA

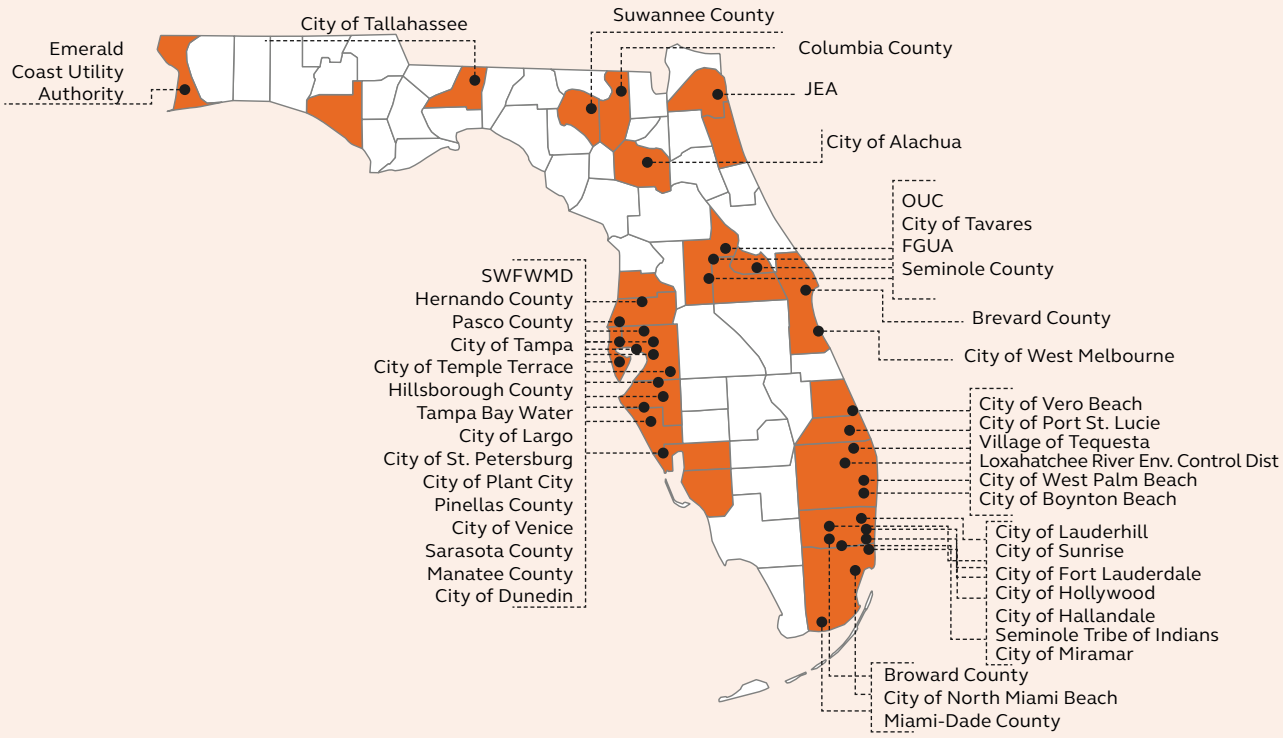
- Pensacola
- Sarasota
- Tallahassee
- Boynton Beach
- Jacksonville
- Plantation
- Tampa
- Maimi

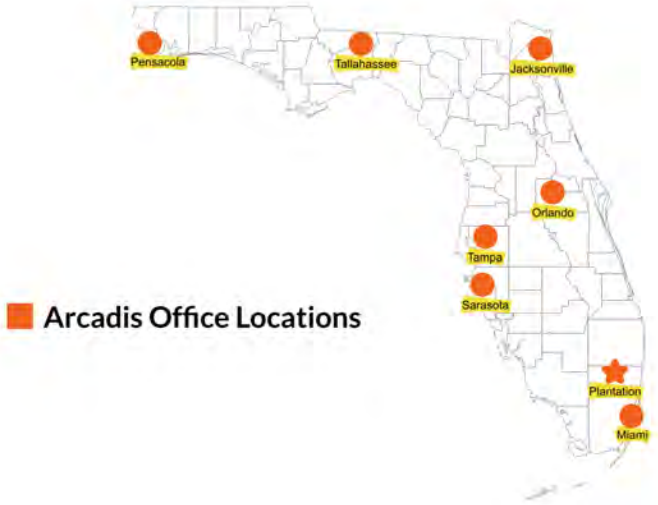
Florida Clients

The below graphic provides the City with an overview of examples of our local municipal clients as well as state level clients. In this sense, we are well-acquainted with local municipal clientele, and as such prepared to provide a high level of service to the City.

Our Team has completed climate change assessments, flood modeling and analysis, and provided planning services throughout the United States and across the globe. With our deep Dutch roots in working with water, our Team and resources are unmatched. Our Team has worked on dozens of projects throughout Florida. With offices across the state, this work hits close to home for the hundreds of team members that also call this region 'home'.

Arcadis Florida state & local clients past 5 years'





Past Project Experience

Experience, qualifications, and background for providing climate change vulnerability assessments and resilient action plans for local governments

The Arcadis team includes local and global leaders in climate resilience and mitigation specifically selected for their expertise, experience, and commitment to the objectives of PBC's resilience and climate mitigation efforts. Table 1 includes projects that staff proposed for this RFP have led and contributed to, while indicating which projects included the CDBG-MIT and Resilient Florida required deliverables. The table includes links to deliverables and more information about the projects. This submittal also includes printed deliverables (attached) and detailed descriptions for Miami Dade's Sea Level Rise Strategy and Resilient New Jersey projects. The projects listed below only include those that proposed team members have led or supported.

PROJECT EXAMPLE (LINKS FOR MORE INFORMATION) * Project description included	* Climate Ready Boston[1]	* Climate Ready South Boston[2]	Climate Ready East Boston[3] / Charlestown	* Resilient NENJ[4]	Resilient RRBC[5,6]	* NYC Stormwater Resilience / NYC Climate Adaptation	Miami Dade SLR Strategy[8]*	Louisiana Coastal Master Plan[10] / Louisiana Watershed Initiative[11]	Resilient Nantucket[13]	Thrive Indianapolis[15]	Resilient Wilmington[16]	Monroe County *	Martin County	City of West Palm Beach *	City of Pensacola *
Firms involved (A = Arcadis, E = Erin Deady Law, J = Jacobs). Role (L = lead, S = support)	A L	A L	A L	A L	A L	A L	A L	A L	A L	A L	A L	E S	E S	E S	E S
Project on time and on budget?	■	■	■	■	■	■		■	■	■	■	■	■	■	■
Data compilation	■	■	■	■	■	■	■	■	■	■	■	■	■	■	■
Data gap analysis				■	■	■		■				■	■	■	■
Asset Inventory	■	■	■	■	■	■	■	■	■	■	■	■	■	■	■
Storm surge flooding	■	■	■	■	■	■	■	■	■		■	■	■	■	■
Tidal flooding	■	■	■	■	■	■	■	■	■		■	■	■	■	■
Sea level rise	■	■	■	■	■	■	■	■	■		■	■	■	■	■
Stormwater flooding	■			■	■	■		■	■	■	■	■	■	■	■
Exposure Analysis, Sensitivity Analysis, and Focus Area Mapping	■	■	■	■	■	■	■	■	■	■	■	■	■	■	■
Vulnerability Assessment report	■	■	■	■	■	■	■	■	■	■		■	■	■	■
Adaptation Plan	■	■	■	■	■	■	■	■	■	■	■	■	■	■	■
Solutions for critical infrastructure	■	■	■	■	■	■			■		■	■	■	■	■
Implementation roadmap	■	■	■	■	■		■	■	■	■	■	■	■	■	■
Grant reporting compliance				■	■							■	■	■	■
A list of proposed projects to address flooding and sea level rise	■	■	■	■	■		■	■	■		■	■	■	■	■

[1] https://www.boston.gov/sites/default/files/embed/2/20161207_climate_ready_boston_digital2.pdf
[2] https://www.boston.gov/departments/environment/climate-ready-south-boston
[3] https://www.boston.gov/sites/default/files/file/2022/08/Coastal-Resilience-Solutions-for-East-Boston-and-Charlestown-Phase-II-August-2022.pdf
[4] https://www.resilient-nj.com/resource-library/
[5] https://resilientnewjersey.com/
[6] https://resilientnj-accr.com/
[7] https://climate.cityofnewyork.us/initiatives/adaptnyc/
[8] https://miami-dade-county-sea-level-rise-strategy-draft-mdc.hub.arcgis.com/
[9] https://www.chicago.gov/city/en/sites/climate-action-plan/home.html
[10] https://coastal.la.gov/our-plan/2017-coastal-master-plan/
[11] https://watershed.la.gov/
[12] https://www.boston.gov/environment-and-energy/heat-resilience-solutions-boston
[13] https://www.nantucket-ma.gov/DocumentCenter/View/40278/Nantucket-Coastal-Resilience-Plan-PDF
[14] https://www.bethlehem-pa.gov/Public-Works/Climate-Action-Plan
[15] https://static1.squarespace.com/static/5fd7a2f03c3ad531f41de6bb/t/61d34dbbce068324cc31cda6/1641237975129/2019CPSR001-ThriveIndianapolis-web.pdf
[16] https://www.wilmingtonde.gov/home/showpublisheddocument/10643/637846654834170000
[17] https://www.myoldsmar.com/1027/Climate-Resiliency-Plan

Past Project Experience Continued

New York City Climate Adaptation Roadmap

Mayor's Office of Resiliency, NY

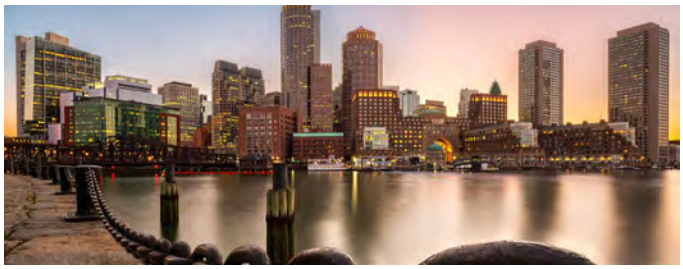
Arcadis led an assessment of climate impacts to guide the development of the NYC Climate Adaptation Roadmap, which serves as a guiding framework for both near-term City-led initiatives and long-term goals and prioritizing adaptation strategies for building a more resilient New York City. The impact assessment addresses a wide range of climate hazards, including extreme heat, coastal flooding, tidal inundation, heavy downpours, high winds, groundwater emergence—as well as identification and prioritization of resiliency strategies, and policymaking. Arcadis deployed a variety of analytical tools to assess the physical, social, and economic impacts of each hazard qualitatively and quantitatively, as well as cumulative and compounding risks. The analysis provided citywide and neighborhood-level results through 2100, to develop a comprehensive understanding of the climate risks NYC faces, and how to prioritize action from neighborhood to neighborhood, over time, and between hazards.

Ability to Meet Time & Budget:

The NYC Climate Adaptation Roadmap was completed on time and on budget due to our strong project management processes. Staff proposed for this assignment led this project. Completed 2021.

Climate Ready Boston and South Boston

City of Boston, MA



Arcadis, in collaboration with Sasaki Associates and HR&A Advisors (the CRB Team), and supported by the University of Massachusetts Boston and Woods Hole Group, was selected by the City of Boston Office of the Environment to lead the technical assessment, design and communications support for the Climate Ready Boston (CRB) Initiative. Building upon the City of Boston's Climate Action Plan, CRB has been described as game changer towards the City being better equipped to face the risks exacerbated by climate change. The report has also been used as a critical communication tool: providing radical transparency related to the risk and consequences of inaction and empowering the city and its stakeholders to take specific, implementable actions.

Arcadis subsequently worked with the City to create a detailed resilience plan for the South Boston neighborhood, working in coordination with key stakeholders to develop an understanding of the key risks and potential approaches for mitigation risk over time. The team was able to define and rank alternatives for the near- and long-term coastal flood defense, provide cost estimates and an implementation roadmap, articulate regulatory and permitting challenges along with possible solutions and next steps, and recommend funding and finance strategies for each project step. This work culminated in the release of the final report Coastal Resilience Solution for South Boston. Since project completion, multiple stretches of the project have been advanced to the next stage of implementation.

Ability to Meet Time & Budget:

Arcadis has completed multiple Climate Ready Boston assignments, including Climate Ready Boston, Climate Ready South Boston, Climate Ready East Boston Phase 2, and Climate Ready Charlestown Phase 2. Our team completed all projects on time and on budget due to our strong project management processes and client and stakeholder coordination. Staff proposed for this assignment led this project. Completed 2016, 2018, 2021.

Scan me

Link: https://www.boston.gov/sites/default/files/file/2019/12/02_20161206_executivesummary_digital.pdf

Scan me

Link: https://www.boston.gov/sites/default/files/embed/file/2018-10/climatereadysouthboston_final_report_v11.1s_web.pdf

Nantucket Coastal Resilience Plan

Town of Nantucket Natural Resources Department, MA

Arcadis led the development of the Nantucket Coastal Resilience Plan — the community's first island-wide resilience plan that will serve as a roadmap for capital investment and community engagement around sea level rise and related risks. Initial phases of the project included community engagement and an island-wide risk assessment for coastal and near-coastal areas that are threatened by coastal flooding and erosion, and how these threats will increase with projected sea level rise in the decades ahead. Community engagement included working with 20+ Town departments and private organizations and convening multiple public open houses. Based on detailed technical analysis and community input, Arcadis developed over 40 recommendations for structural, nature-based, and policy approaches for advancing coastal resilience and risk reduction, as well as implementation guidance to the assist the Town in delivering these projects over the next 15 years.

Ability to Meet Time & Budget:

The Nantucket Coastal Resilience Plan was completed on time and on budget due to our strong project management processes. Staff proposed for this assignment led this project. Completed 2022.

Resilient Northeastern New Jersey

New Jersey Department of Environmental Protection, NJ

Resilient NENJ's study area includes over 700,000 residents and millions of visitors, workers, and people who pass through the region every year. The area includes Newark, Bayonne, Jersey City, and Hoboken, which contain some of the oldest infrastructure in America. Over 46 million people fly through Newark's airport in a given year and more than that number cross the bridges to and from New York City. The area's ports alone employ over 200,000 people. The region is extremely diverse and rich in culture, with ten languages prioritized for translation of key outreach materials based on available language data, community-based organization feedback, and Steering Committee input. Despite all this, the region is also characterized by significant poverty, social vulnerability, and social and environmental injustice communities. Before the pandemic, over 30% of Newark's population lived below the poverty line.

There are over 1,800 known contaminated sites in the region, and the entire area is in the 90th to 100th percentile for cancer risk from air toxins. On top of this, the region is plagued with chronic flooding from stormwater and combined sewer overflows, significant impacts from urban heat island effect, and risk of coastal storm surge. In the first summer of the project assignment, some neighborhoods flooded at least four times.

The second summer, the region was hit with a drought and dangerous heat wave. Below are some key highlights about the engagement process and how the process included direct involvement from vulnerable populations and worked to bridge the digital divide, despite being entirely executed during the pandemic.

First, the process centered those who might affect or be affected by the planning process or its outcomes and brought in individuals to specifically ensure that the process continually evolved to keep people at its center. Figure 3 demonstrates a tool the program used to center the engagement process on intended project

beneficiaries. This tool came into play at the very beginning of the project and helped fill in gaps in the steering committee's initial list of known stakeholders. To help the process accomplish the goa l of reaching intended project beneficiaries, NENJ included two community-based organizations as part of the region team and steering committee, and also formed a community advisory council (CAC) to help oversee and steer the process.

The CAC consisted of 12 paid community members who represented the diversity of the communities represented, across age ranges (from high school to elderly retiree), ethnicities, races, and socioeconomic backgrounds, with deep connectivity to their communities and intended project beneficiaries (in addition to representing intended project beneficiaries, themselves). The project team also developed a relationship with ASL and Spanish translators who joined every community meeting and worked with them to help them understand key concepts to be discussed. Spanish speaking team members also participated to help increase dialogue with Spanish speaking community members, and the team conducted outreach to key Deaf and Hard of Hearing organizations in the region and State to engage them in the process. Meeting recordings, key project deliverables, and key engagement materials were translated into Spanish, with additional key engagement materials translated into ten languages (including Spanish).

Ability to Meet Time & Budget:
Resilient Northeastern NJ was completed on time and on budget due to our strong project management processes. Staff proposed for this assignment led this project. Completed 2022.

Jacobs Engineering Example CVAs and Adaptations Include:

JEA Wastewater/Water System Resilience Assessment Plan and Program, FL

Jacobs was program manager for a $1.4M Comprehensive Resilience Plan, an action-oriented guide for long-term reliability and resilience of JEA utilities. They identified flood risks, developed and prioritized adaptation and mitigation strategies for 176 high-risk facilities. We're now performing a vulnerability assessment and adaption plan for JEA's power facilities. Staff proposed for this assignment led this project.

South Florida Military Installation Resilience Review (MIRR)

Project included CVAs for the communities that surround the installations in Monroe, Miami-Dade, and Broward Counties. Staff proposed for this assignment led this project.

Miami-Dade County Water and Sewer Department (WASD), Ocean Outfall Legislation Program, FL

As delivery partner, Jacobs initiated this long-term, $2.6B program by modeling the extent of flood inundation due to sea level rise, storm surge and extreme rainfall, evaluating risk to WASD facilities, and developing design criteria for flood control elevations and capital projects for facility hardening. We're now managing more than 26 major utility improvement projects with the updated design standards. Staff proposed for this assignment led this project.

Completing vulnerability assessments for **Port Canaveral** and the **Historic Greynold's Park Sea Level Rise Flood Mitigation Strategy.** Staff proposed for this assignment led this project.

Erin L. Deady P.A. and Clearview Geographics, LLC Experience Includes:

Vulnerability Assessment, Monroe County, FL

ELDPA has led the County's resilience planning efforts supporting staff since 2013 and developed the Resilience Planning Grant R2111 awarded to Monroe County to update its original vulnerability assessment (VA) conducted in 2015. For this 2020-2021 work, ELDPA led the team, which also included Clearview, performing habitat analysis (one of the only VAs to perform that analysis to date) among other modeling efforts. Using a baseline GIS database containing building elevation certificates, planning-grade sea level adjusted floodplains, and local sea-level-rise tide projections, the team identified multiple climate-driven vulnerabilities and provided visualizations of potentially flooded infrastructure in 2040, 2070, and 2100. The team conducted the GIS analysis to identify potential vulnerabilities with consideration of natural areas, assets, and infrastructure, as well as the social fabric of the community.

Multiple modeling tools were used including SLAMM, Hazus and other GIS based tools. The project team also created a story map of the project methods and results. Modeling change in habitat and mangrove encroachment, the team identified habitats that are especially vulnerable to rising sea levels. These data served as a foundational component for identifying the County's adaptation action areas. Staff proposed for this assignment led this project.

City of Pensacola Vulnerability Assessment, FL

ELDPA and Clearview prepared the VA for the City of Pensacola through Resilience Planning Grant R2116. The VA presents an updated analysis of the City of Pensacola's vulnerabilities, with a particular focus on ecological and social vulnerabilities to guide future planning efforts. The project team developed stormwater project recommendations for the city, both to guide adaptation measures based on the VA and to improve the quality of future assessments. Clearview developed several map books and corresponding GIS data detailing the NOAA level rise projections. Using a 2040, 2070, and 2100 planning horizon and the NOAA Intermediate High and Intermediate Low flood projections in an analytical model that assigned a ranked priority based on timeline to impact and estimated water depth for the critical assets, areas, and infrastructure. Additionally, Clearview identified Priority Planning Areas and a stormwater project priorities list for retrofitting outfalls with tide valves. Staff proposed for this assignment led this project.

City of West Palm Beach Vulnerability Assessment, FL

ELDPA and Clearview are preparing the VA for the City of West Palm Beach through a Resilience Planning Grant. The VA presents the City's first Vulnerability Assessment that will comply with the new Resilient Florida criteria, with a particular focus on infrastructure readiness and social vulnerabilities to guide future planning efforts. The project team has also developed 6 successful Resilient Florida grant applications for the City over the last two years for drainage, lift station hardening, underground utilities hardening (2 phases), tidal valves and a supplemental planning to expand the outreach and other elements of its Vulnerability Assessment planning process. Through the grant application process, Clearview has already developed several map books and corresponding GIS data detailing the NOAA level rise projections. Using a 2040, 2070, and 2100 planning horizon and the NOAA Intermediate High and Intermediate Low flood projections in an analytical model that assigned a ranked priority based on timeline to impact and estimated water depth for the critical assets, areas, and infrastructure. Staff proposed for this assignment led this project.

Sustainable Business Practice

Sustainability is one of our core values and we are reducing our impact on the world and improving quality of life every day. We actively take steps to reduce our environmental footprint and have reduced our total carbon footprint by 25% per full time employee over the last five years. Our goal is to achieve carbon neutral operations globally. We measure and report our progress towards our sustainability goals on a yearly basis in our Integrated Annual Report and Carbon Disclosure Project disclosure.

As a design and consultancy firm, Arcadis recognizes that the biggest impact we can have on the world is through the projects we complete for our clients. Therefore, we seek to understand each client's sustainability objectives and integrate them into each of our projects. Our goal is to deliver innovative sustainable solutions to our clients, solving their most complex challenges. Arcadis is a Charter member of the Institute for Sustainable Infrastructure (ISI), as well a Platinum member of ISI's Envision Leadership Circle, and a Platinum member of the US Green Building Council. We currently employ over 60 Envision Sustainability Professionals (ENV SPs) and over 150 LEED Certified professionals who apply their knowledge of sustainable building and infrastructure practices to our projects.

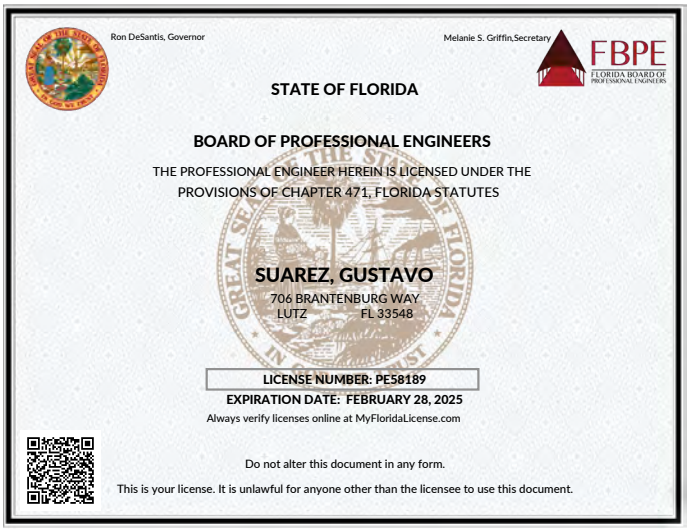
Business Structure

Arcadis U.S., Inc, is owned 100% by Arcadis North America, Inc., a Colorado corporation.

Contact Person. Leah K. Richter, PE
T. 954 525 2499
E. Leah.Richter@arcadis.com

ARCADIS U.S., INC. ENGINEERING FIRM:
License Registry No. 7917

PLEASE NOTE: Florida engineering laws changed on October 1, 2019 regarding firm licensure. Firms are no longer required to obtain a license; however, must qualify through a PE/Officer. Information on the company will appear under that individual's license through the FL DBPR's site. Gustavo Suarez is the PE qualifier for the firm.



Ron DeSantis, Governor

Melanie S. Griffin,Secretary

FBPE
FLORIDA BOARD OF PROFESSIONAL ENGINEERS

STATE OF FLORIDA

BOARD OF PROFESSIONAL ENGINEERS

THE PROFESSIONAL ENGINEER HEREIN IS LICENSED UNDER THE PROVISIONS OF CHAPTER 471, FLORIDA STATUTES

SUAREZ, GUSTAVO
706 BRANTENBURG WAY
LUTZ FL 33548

LICENSE NUMBER: PE58189
EXPIRATION DATE: FEBRUARY 28, 2025
Always verify licenses online at MyFloridaLicense.com

Do not alter this document in any form.

This is your license. It is unlawful for anyone other than the licensee to use this document.

State of Florida
Department of State

I certify from the records of this office that ARCADIS U.S., INC. is a Delaware corporation authorized to transact business in the State of Florida, qualified on February 26, 1998.

The document number of this corporation is F98000001104.

I further certify that said corporation has paid all fees due this office through December 31, 2022, that its most recent annual report/uniform business report was filed on January 18, 2022, and that its status is active.

I further certify that said corporation has not filed a Certificate of Withdrawal.

Given under my hand and the Great Seal of the State of Florida at Tallahassee, the Capital, this the Third day of June, 2022

Secretary of State

Tracking Number: 6909654938CU

To authenticate this certificate,visit the following site,enter this number, and then follow the instructions displayed.

https://services.sunbiz.org/Filings/CertificateOfStatus/CertificateAuthentication

Other Pertinent Information

Relative Firm Size

Arcadis At-a-Glance

Over
6,000
U.S. Employees

Working in
120+
Offices across U.S.

Over
35,000
team members worldwide

More than
$4.2
Billion in revenues

Firm Ownership
Arcadis U.S., Inc., is owned 100% by Arcadis North America, Inc., a Colorado corporation

Project Office
150 S. Pine Island
Suite 315
Plantation, FL 33324

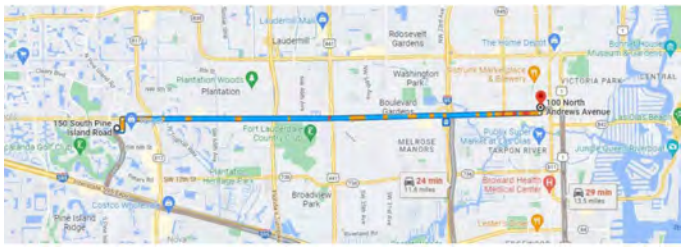
Corporate Headquarters
630 Plaza Drive
Highlands Ranch
Colorado, CO 80129

Contact Person
Leah K. Richter, PE
T: 954.525.2499
E: Leah.Richter@arcadis.com

Organizational Structure
Arcadis U.S., Inc. is a corporation registered in the State of Delaware, and a subsidiary of Arcadis N.V., a Dutch company (founded in 1888).

A Local, Responsive Office

Less than 8 miles from the City's offices and facilities, the Arcadis team located in our Plantation office includes 20 professionals backed by 350 in the State of Florida. Our Team has nearly 200 professionals in Broward County. Arcadis is an agile firm that can respond quickly and deliver projects efficiently.



Recently, Arcadis was selected by the City to lead the following projects: Lead and Copper Rule Revision (LCRR) Compliance and the Construction Engineering Inspection (CEI) Services contracts.

Flood Risk Calculator

Overview

There is a very real need to effectively clarify and communicate flood risk, the consequences of inaction, and the benefits of resilience actions, particularly considering that these benefits and costs tend to be realized over time. This communication need has expanded over time; what started as being central step in the federal decision-making process regarding funding local governments and private institutions has now become a holistic public and stakeholder communication tool, used to evaluate risk and vulnerability, loss avoidance, alternatives evaluations, and life-cycle analysis.

Users/Audience

The Flood Risk Calculator is a tool that facilitates Arcadis's resilience and water management service offerings, but can be used to evaluate a single site, facility, or campus and neighborhood, city, or regions with the same level of detail and confidence as a site-specific analysis.

Funding and Grant Management

We offer a proactive and innovative approach to funding and grant management that ensures proper expenditure of funding. Arcadis assists our state-level clients with the management of both state and federal pass-through grant funding, as well as with the application, management, and reporting of SRF loans. Grant management activities include technical assistance, eligibility reviews, project reporting and monitoring, processing agreements, requests for reimbursements, maintenance of records, and project/program closeouts. Arcadis is committed to helping our clients continually improve programs and processes. We offer methods to improve efficiency and effectiveness of state-level grant programs through the development of standard operating procedures.

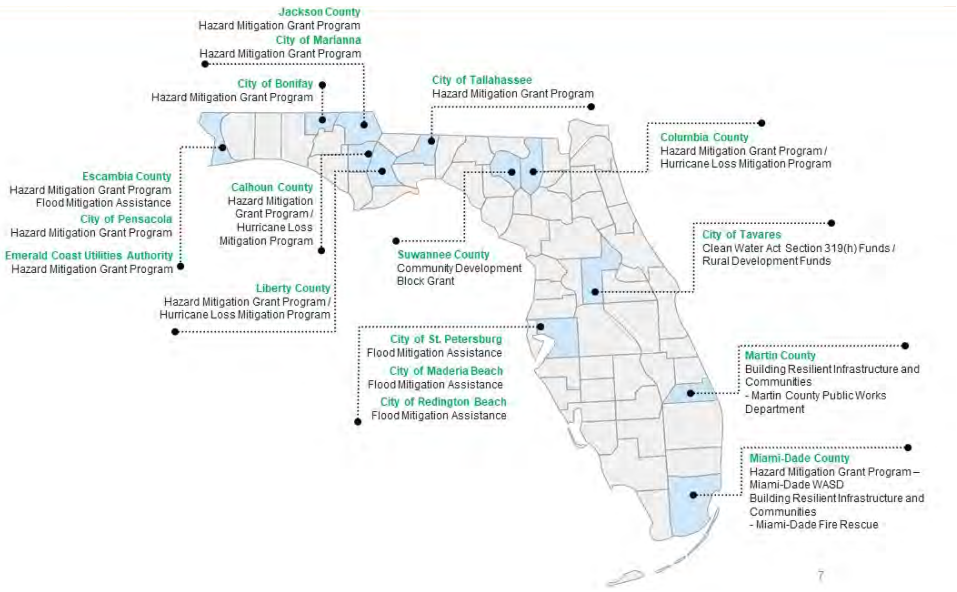
Over the past 10 years we have secured more than $10 billion in federal grant and programmatic funding for resilience related and infrastructure projects. As the figure below shows, we have secured over $100M in federal grants for our Florida clients in the past 10 years.

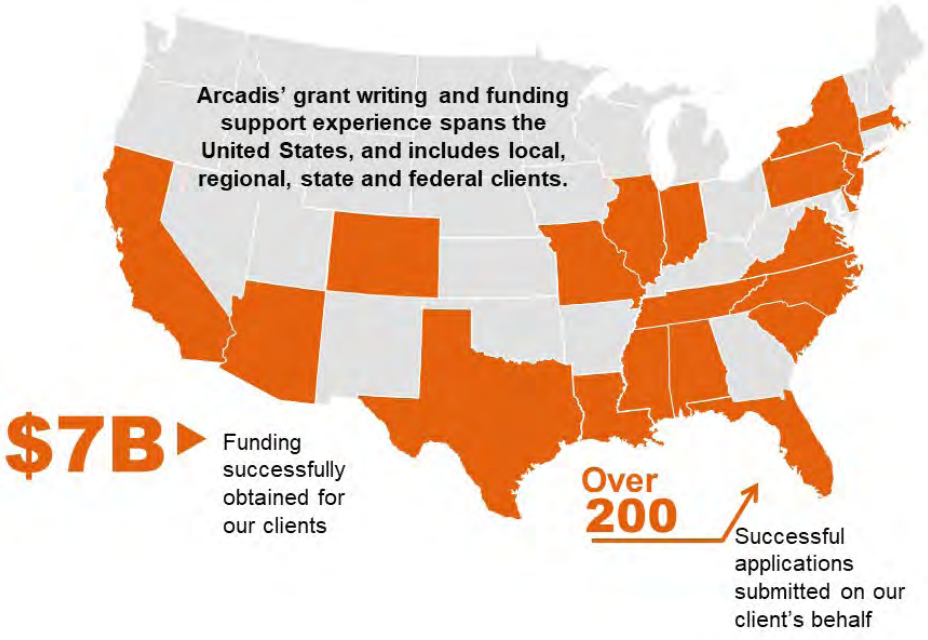
Florida Funding Expertise

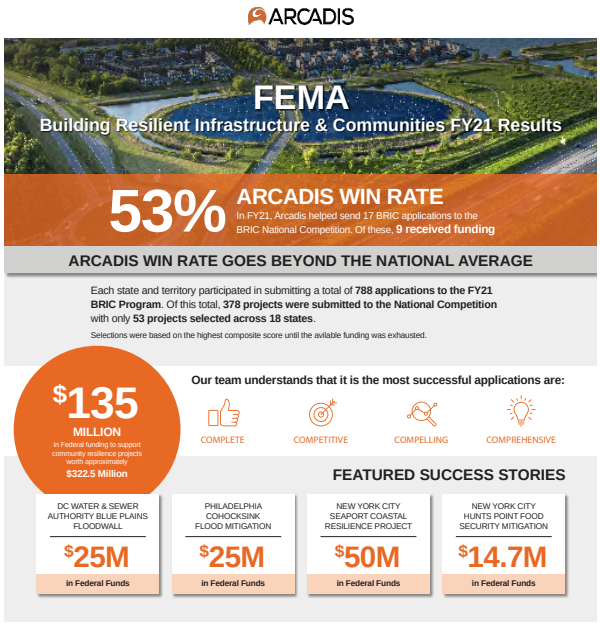
We have secured for our Florida clients

$100M+

in Federal Grants in the last 10 years







Additional Support We Can Provide

Advanced Data Capture, Analysis and Reporting

Arcadis maintains a multi-disciplinary Drone team consisting of over 20 FAA-certified pilots, surveyors, remote sensing specialists, data analysts, and GIS experts. Each of our Drones are registered with the FAA and fully insured. Drone technology allows our clients to enhance data analytics and expedite decision making and various applications can be relevant to the purpose of the vulnerability assessment, including data collection to cover data gaps and mapping and modeling of key infrastructure assets.

Advanced analytics and visualization can be supported through application of artificial technologies. During a workshop at the UN Water Conference in March 2023, Arcadis co-organized a workshop with leading international academic partners. The team assessed the impacted Flushing Creek neighborhood in New York during hurricane Ida and crafting resilience approaches by bringing multi-stakeholder planning strategies together to a high level integrated plan utilizing AI technologies (Figure A).

Figure A. Preparations for a digital twin by Arcadis of 2 emergency barriers. The use of a drone gives insight into the state of the object. Below, an AI generated resilience strategy visual of the Flushing Creek area in New York to mitigate extreme precipitation.

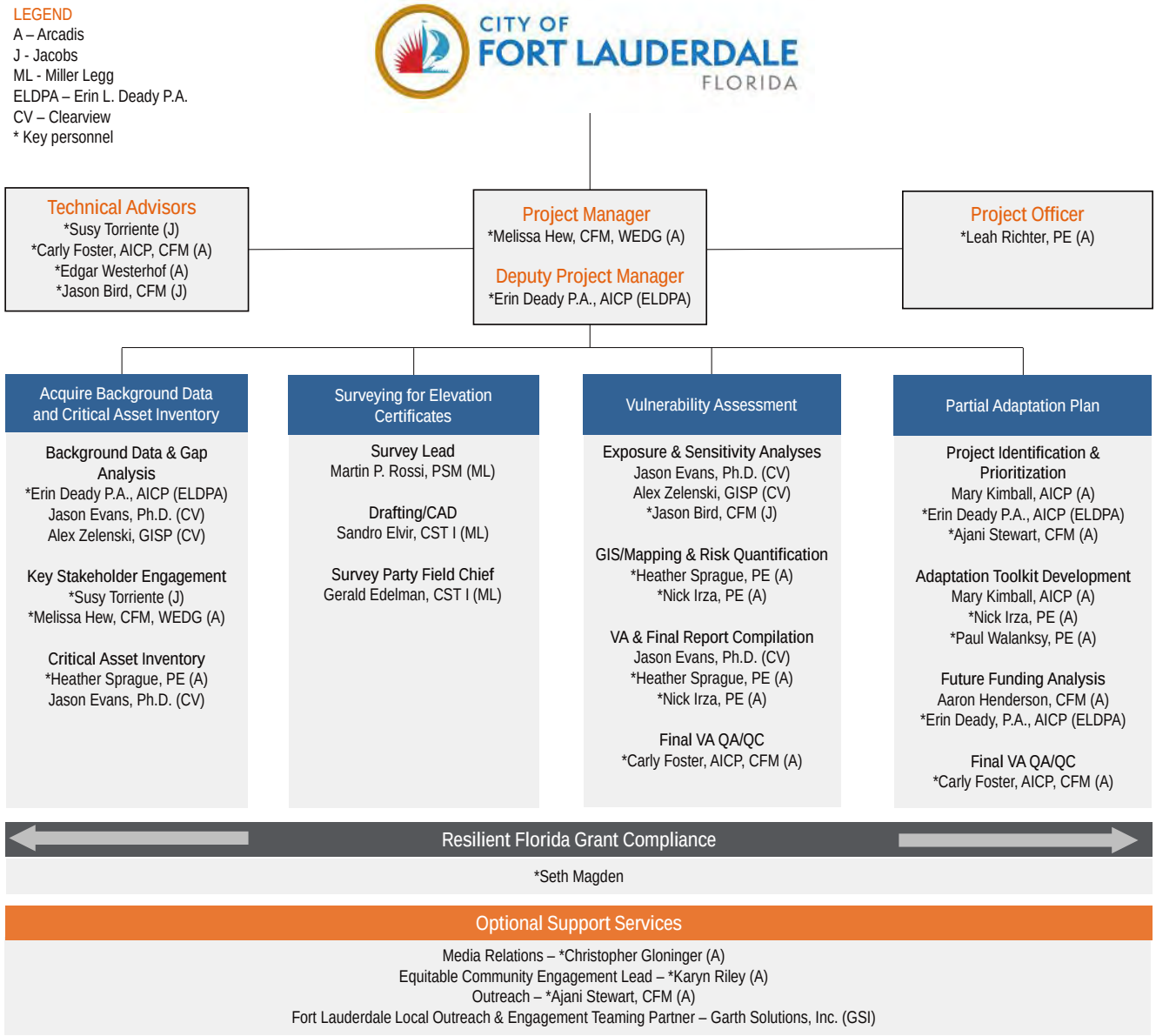
HydroNET

Arcadis brings the opportunity to implement HydroNET, a scalable web-based operations platform that enables water managers to solve pressing water issues related to floods, droughts, salination, water security, and water quality. HydroNET is a Software as a Service (SaaS) solution that empowers intelligent data processing, as well as tailored models and scripts based on our client's needs. The HydroNET decision support platform enables combining weather, water resources, and climate data with models and system knowledge to generate plans, personalized dashboards to track and monitor data and project progress, forecasts and warnings, all tailored to the needs of the City.

Examples of HydroNET applications to enhance operational control, emergency management, community communications, water resources planning, and flood risk management.

Team Organization

Below is an organizational chart for our Team followed by brief biographies of key personnel on the following page. Key Personnel Resumes can be found in Appendix A.

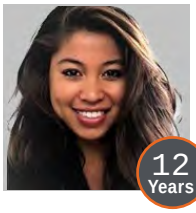


Key Personnel Summaries

Leah Richter, PE | Project Officer

Ms. Richter has a diverse background in program management, business advisory and more than 25 years of experience in utility consulting services and civil engineering. She specializes in assisting municipal clients with managing their planning, operational and capital program needs. Her experience includes project management and delivery, risk and resilience assessments, vendor procurement, contract compliance, regulatory permitting, public outreach, annual reporting to bondholders/ trustees, litigation support services, environmental compliance and operation and maintenance evaluation. Ms. Richter serves as project manager and project officer for several large utility management and financial consulting contracts, including for the preparation of multiple revenue bond issuances totaling more than $4 billion. Ms. Richter currently serves as Arcadis's Southeast Florida Operations Leader and is located in our Plantation office, just minutes from the City to provide rapid response to any request.

Key Personnel Summaries



Melissa Hew, CFM, WEDG | Project Manager

Ms. Hew is Senior Consultant with Arcadis' Urban and Coastal Resiliency practice, combining her technical background and leadership experience in the public sector for the City of Miami to provide robust project management and strategic advisory support to diverse clients. She has extensive experience in leading resilience planning and climate adaptation and mitigation projects and initiatives, partnership and capacity building, and equitable stakeholder engagement for projects and programs of all scales. She has been successful at managing and building relationships with internal and external stakeholders, community partners, elected officials, and residents to achieve strategic resilience goals. Her project experience includes the areas of watershed planning, vulnerability assessments, nature-based infrastructure, climate adaptation, sustainability, and environmental protection.

Erin L. Deady, Esquire, P.A., AICP | Deputy Project Manager (ELDPA)

Ms. Deady has significant management experience on numerous complex projects involving climate legal, policy and planning elements including vulnerability analyses and integration of adaptation responses into Comprehensive Plans. Ms. Deady has worked on numerous sustainability, climate and energy planning efforts around the state for large and small local governments. Ms. Deady has published numerous articles and resources related to the planning and legal issues surrounding resiliency and adaptation planning strategies. A cornerstone of this experience includes the development and implementation of public engagement and outreach strategies to support local government policy and decision-making processes.

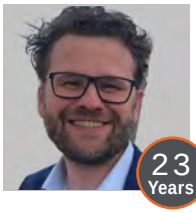
Susy Torriente | Technical Advisor (Jacobs)

Susy Torriente has experience directing and leading interdisciplinary teams as assistant county/city manager and chief resilience officer. She will be responsible for the integration of deliverables from our team of experts. Over the last ten years, Susy has led and coordinated seven city/county sustainability, climate change, strategic, vision plans and resilience strategies, as noted in her resume included in this proposal. As a founding member of the Southeast Florida Regional Climate Compact staff steering committee, she participated in both regional climate action plan development and a variety of regional climate resilience training opportunities.

Carly Foster, AICP, CFM | Technical Advisor

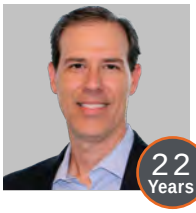
Ms. Foster is the Principal Resilience Planner for Arcadis North America's Water Management region. She is responsible for ensuring that Arcadis understands and is capable of responding to and proactively problem solve city, state, infrastructure, and private sector resilience needs. Carly has been integral to the funding of more than $4 billion in resilience-related projects and has helped create resilience programs from the ground up at scales from individual facility, to organization, to neighborhood, to city, to region, to state. Her expertise spans initial problem identification and risk quantification, stakeholder engagement, solution development—whether policy, programmatic, or physical in nature, implementation planning and support, benefit cost analysis, funding, program, grant, and project management, training and capacity building, curriculum development, and post-disaster loss avoidance assessment. She orchestrates project identification, implementation and grant management from early goal setting all the way through project close-out and evaluation.

Key Personnel Summaries



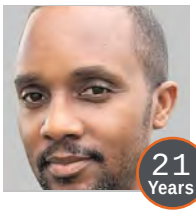
Edgar Westerhof | Technical Advisor

Mr. Westerhof is Vice President with Arcadis and serves as North America Adaptation Solution Lead. Edgar is a water engineer and planner with 23 years of experience in urban water management. Following his move to the US from the Netherlands in 2012, Edgar led the Arcadis participation in the international HUD Rebuild by Design competition post Sandy, including the winning BIG U plan for the protection of Lower Manhattan. Edgar was the Rockefeller Foundation 100 Resilient Cities participation and contributed to numerous city resilience strategies. He recently joined ASCE Foundation to lead the international Climate Adaptation Working Group. Edgar is a faculty member with Pratt Institute and is contributing author of the book Blue Dunes (Columbia) and Adapting Cities to Sea Level Rise (Island Press).



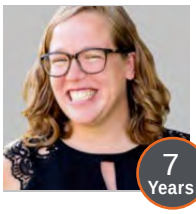
Jason Bird CFM | Technical Advisor (Jacobs)

Jason Bird, CFM is the Florida Resilience Leader and the US South Water Resources Regional Solutions Lead at Jacobs. Mr. Bird uses his 22+ years of experience to help communities reduce risk and improve their resilience to severe weather and climate threats. His experience ranges from developing climate scenarios, evaluating vulnerabilities and risk, and identifying adaptation strategies to protect critical infrastructure for coastal and inland communities, including buildings, utilities, stormwater management and transportation systems/facilities. As the former United Nations ARISE US Network Chair, Mr. Bird has been involved in development of tools to evaluate and promote disaster risk reduction and enhance collaboration between public and private organizations, to enhance broader system performance and build community resilience.



Ajani Stewart, CFM | Key Stakeholder Engagement; Project Identification & Prioritization

Mr. Stewart is experienced in project management and leading multi-disciplinary teams. He has been practicing in the areas of resilience, sustainability, and environmental protection in Florida for over 20 years. He also has extensive experience in partnership and capacity building, stakeholder engagement, and FEMA Hazard Mitigation Assistance (HMGP/FMA/BRIC) programs.



Heather Sprague, PE | Critical Asset Inventory; GIS/Mapping & Risk Quantification; VA & Final Report Compilation

Ms. Sprague specializes in hazard analysis and process automation in the Arcadis Resiliency group. Her educational background has provided her with a strong understanding of sustainable design practices and the importance of ecological reconciliation. While with Arcadis, Heather has focused on a variety of projects involving risk and vulnerability assessments, economic analyses, storm surge modeling, and levee overtopping analyses. She has co-authored numerous technical memoranda and reports and has utilized a variety of engineering software and programming languages throughout her academic and professional career.

Nick Irza, PE | GIS/Mapping & Risk Quantifications; VA & Final Report Compilation; Adaptation Toolkit Development

Mr. Irza has six years of professional experience encompassing coastal modeling, coastal resiliency, and water resource engineering projects for a variety of public- and private-sector clients. His water resource engineering project experience includes hydrologic, hydraulic and scour analyses for bridge replacement and construction projects; storm sewer design and modeling for roadway reconstructions; forensic analyses of historical flood events; flood forecasting systems; FEMA letter of map revisions and flood mapping; stormwater master planning; and hydrologic and hydraulic impact analyses for development projects. His coastal engineering project experience includes hydrodynamic and wave modeling for floodplain remapping and resiliency planning studies and scour analyses for coastal bridges and pipelines. Mr. Irza is proficient with a variety of software packages, including ADCIRC, SWAN, Delft 3D, HEC-HMS, HEC-RAS, XP-SWMM, Python, and the ESRI mapping suite.

Key Personnel Summaries

Paul Walansky, PE | Adaptation Toolkit Development

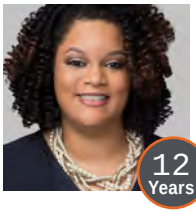
Mr. Walansky is a Principal Water Engineer with professional experience in the project management, design, and construction management of various coastal and water resource design projects. His engineering background includes inspection and condition assessment of marinas and water control structures, cost estimating, flood studies, pump station design, bridge scour analysis, economic analysis, port feasibility studies, port reconstruction, fishing pier design, retaining wall design, wetland restoration, reservoirs, stormwater treatment areas, flow equalization basins, public recreation area design and specifications. Niche expertise in water resources planning and design, and familiarity with relevant regulatory and environmental requirements.

Seth Magden | Compliance/Federal Funding

Based in New Orleans, Louisiana, Mr. Magden brings more than 17 years of experience working with federal funds supporting state and local government, community groups, nonprofit organizations, and private sector partners in developing, implementing, and leading planning, visioning, recovery and community development program initiatives. His work has predominantly involved FEMA (IA, PA, HMGP, BRIC) and HUD (CDBG-DR/MIT) funded programs as well as initiatives funded under the American Rescue Plan Act (ARPA). Seth was heavily involved in the HUD-funded National Disaster Resilience Competition with multiple (awarded) clients in the planning and visioning competition, as well as implementation. He has served the States of California, New York, Louisiana, Florida, and the Puerto Rico Department of Housing, where he led the team to design and implement $20.2 billion in recovery funding, providing full support on grant management and regulatory compliance. For the State of Florida Department of Economic Opportunity (DEO), he served as Principal/Program Director, leading the successful start-up and launch of the Rebuild Florida Michael Housing Repair and Replacement Program (HRRP) from 2020-2021 in the Florida Panhandle. From 2021-2022 he led the start-up and launch of the Homeowner Assistance Fund (HAF) program for the State of Louisiana Office of Community Development.

Chris Glonginger | Media Relations

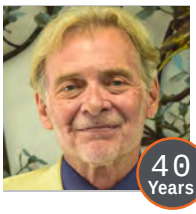
Mr. Gloninger has been a broadcast meteorologist for 16 years. He excels in taking complex subject matter and applying creative strategies to make it easy for the general public to relate to and understand. He has helped develop, implement and manage the special project, website and social media strategies for climate change coverage for multiple stations. He launched the country's first weekly news series on climate change and has developed, produced and hosted two 30-minute documentaries focused on environmental social justice communities and renewable energy. In 2018, he received his M.S. in Emergency Management with a focus on climate mitigation and adaptation. He is a board member on the broadcast board for the American Meteorological Society reviewing the critiquing the communication skills of meteorologists across the country.



Karen A. Riley, Esq. | Equitable Community Engagement Lead

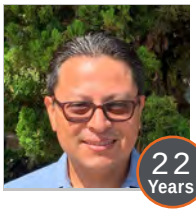
Ms. senior leader with a strong background in organizational leadership, Karyn A. Riley, Esq. is skilled at leading teams and developing creative solutions to proactively address complex problems. She has executive-level experience in administration and operations, stakeholder engagement, government relations, communications and corporate law. With broad competencies in program development, strategic planning and project management, Karyn has transformed organizations and processes. She has been recognized for her accomplishments while serving in highly visible professional and civic leadership roles and is a sought-after presenter on topics related to leadership, advocacy and equity.

Subconsultant Personnel Summaries



Martin Rossi, PSM | Survey Lead (Miller Legg)

Martin Rossi, PSM is a Senior Project Surveyor with more than four decades of surveying and subsurface utility engineering (SUE) experience. His principal areas of experience include surveys such as boundary, topographic, ALTA/ACSM land title surveys, elevation certifications for flood risk, quantity, environmental and wetland, condominium, construction layout, as-built, right-of-way, specific purpose and subdivisions and platting, as well as subsurface utility engineering (SUE). Mr. Rossi currently manages the South Florida survey department and field crews and is an Associate with the firm.



Sandro Elvir, CST I | Drafting/CAD (Miller Legg)

Sandro Elvir, CST I, Senior CAD Technician, has more than 22 years of professional surveying experience ranging from field crew chief to survey manager overseeing survey crews. His areas of expertise include land surveying, boundary, topographic, ALTA, control surveys, utility surveys, 3D Radar Tomography, GPS, route surveys, legal descriptions, laser scanning, elevation certifications for flood risk, and construction layout calculations. He is experienced in AutoCAD, Civil 3D, Cyclone and CloudWorx, and Trimble Geomatics Office. Prior to joining Miller Legg, Mr. Elvir was Survey Coordinator Manager with another South Florida surveying firm for 15 years.

Gerald Edelman, CST I | Survey Party Field Chief (Miller Legg)

Since joining Miller Legg, Gerald Edelman, CST I, Survey Party Chief/CAD Technician, worked his way up from Rod Person to Survey Party Chief. He has experience working with both surveying and subsurface utility engineering (SUE) projects for public entities throughout South Florida. His experience includes boundary, topographic, right-of-way, as-built, special purpose surveys, elevation certifications for flood risk, cross sections, drainage surveys, construction surveys, and a variety of other surveys.

Jason Evans PhD. | Background Data & Gap Analysis; Critical Asset Inventory; Exposure & Sensitivity Analysis; VA & Final Report Compilation (Clearview Geographic)

Mr. Evans is trained as a landscape and systems ecologist with a high level of expertise in dataset development, spatial modeling, and flood hazard vulnerability assessments using geographic information systems (GIS). Since 2011, Mr. Evans has served as principal investigator or co-principal investigator for fourteen separate projects that focus on coastal flooding vulnerability and adaptation across coastal Georgia, Florida, South Carolina, and North Carolina. Several of these projects have focused on identifying vulnerability of stormwater systems to sea-level rise and increasing precipitation.

Alex Zelenski, GISP | Background Data & Gap Analysis; Exposure Sensitivity Analyses (Clearview Geographic)

Mr. Zelenski has significant geographic information systems (GIS) and environmental consulting experience on numerous projects including resiliency, sustainability, vulnerability assessments, and public engagement to support local government planning initiatives both within and outside of Florida. Mr. Zelenski has direct experience creating climate-risk models to serve as the basis for vulnerability assessments, resiliency plans, and has leveraged them to identify both Priority Planning Areas and Adaptation Action Areas in at least three municipalities.
Mr. Zelenski has 8 years of experience developing geographic information systems to enhance resilience and climate planning.

Section 04.

Approach to Scope of Work

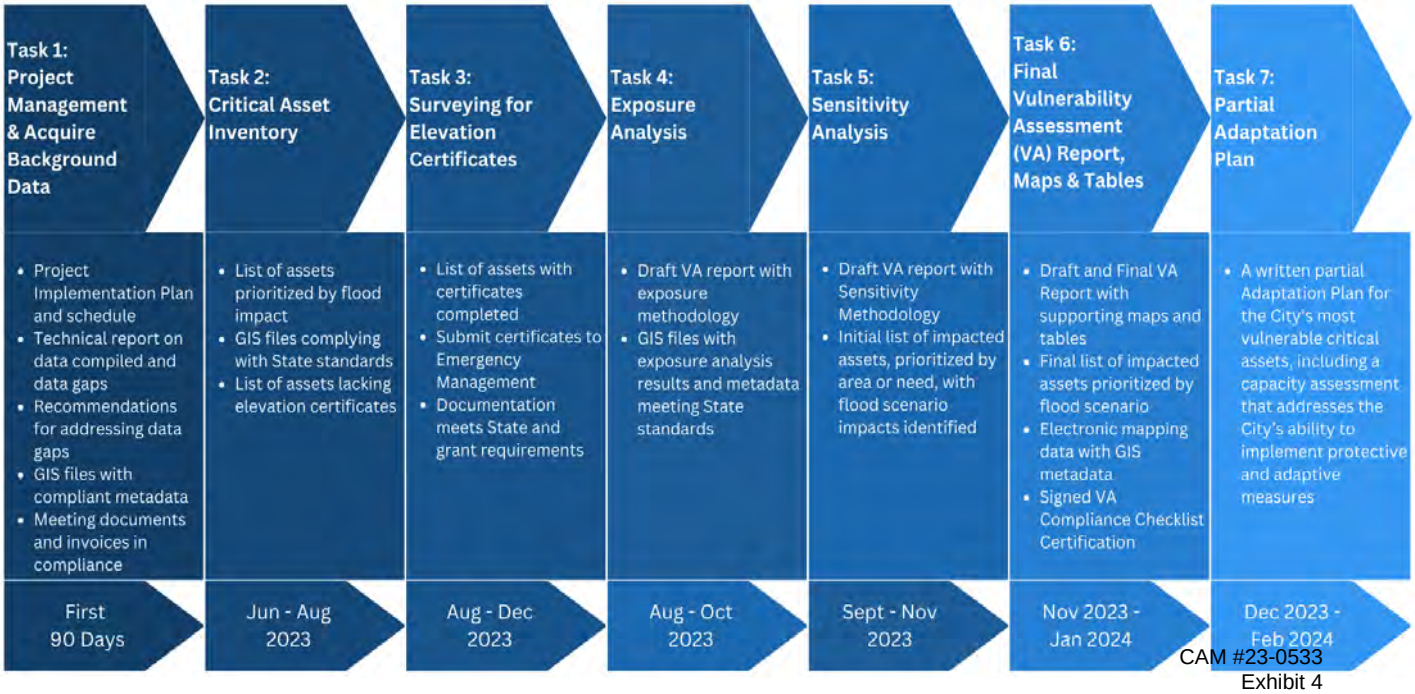
4. Approach and Scope of Work

Project Understanding

More than 24 inches of rain fell in 24 hours in Fort Lauderdale on Thursday, April 13, 2023. Prior to April 13th, Key West, Florida, held the official record for the most rain the state has seen in a consecutive 24-hour period. It was drenched by 23.28 inches on Nov. 11-12, 1980. It is likely that Fort Lauderdale holds a new record following the torrential rains on April 13th. The data will be analyzed by the National Oceanic and Atmospheric Administration (NOAA) to determine whether a new record was broken, but regardless of the outcome, it was truly a historic event for Fort Lauderdale. Roads turned to rivers and air travelers were grounded as the National Weather Service in Miami issued a rare Flash Flood Emergency calling for "life threatening flooding."

The scale of the April 13th flash flood event was beyond a 1-in-1000 year event, or a 0.1% chance of occurrence. In fact, if you take the amount of rain observed over 24-hours and spread it over a ten-day span of time, it would still be a 1-in-100 year event or a 1% chance of occurrence. What was an anomalous event will become increasingly likely in the future. As the atmosphere warms, it contains more moisture and manifests itself in heavier rain. For every degree of warming the atmosphere holds 7% more water vapor. The region also must prepare for sea level rise and storm surge flooding. About 10,500 residents live within 3 feet of sea level, jumping to over 103,000 within 6 feet. In addition, sea level rise is projected to accelerate through 2100, with increases of 9 to 24 inches expected in the next 50-years, thereby further exacerbating the risk from heavy precipitation, surge, and tidal flooding events. The impacts from these changes will extend far beyond damages to property and infrastructure and will adversely threaten the city's environment and water quality, social and cultural fabric, and the critical economic drivers emanating from Fort Lauderdale with far-reaching regional impacts. The mean average annual temperature in Fort Lauderdale has climbed by 2.7 degrees Fahrenheit since 1913. By 2030, it's expected that the area will average 90 days per year that the temperature reaches or exceeds 90 degrees. These increasing climate risks, coupled with ever-growing development and aging infrastructure that cannot cope with current, much less future conditions, places the city in an acutely vulnerable position unless appropriate and urgent action is taken.

Our proposed vision for this project is to provide the City of Fort Lauderdale with a comprehensive and accurate Vulnerability Assessment (VA) that meets the criteria in Section 380.093, F.S. as well as the requirements of the City's grant agreement with FDEP. In addition, we intend to deliver a VA that maximizes value to the City from the available budget; and ultimately identifies critical adaptation projects that qualify for further state funding but are also aligned where possible with the unprecedented levels of federal resilience and funding. The need to fund the implementation of such projects, and thereby reduce the city's risk from sea level rise and flooding, has never been more acute in the wake of April's historic flooding event. Our team also understands the critical importance of all project activities and deliverables must be conducted and developed with grant compliance at the forefront. We bring significant experience with state and federal



grant programs nationwide, both in securing and managing funds. Together, members of our team are currently managing close to $2 billion in federal and state grants, and therefore, it is understood that a meticulous project management and technical approach that incorporates expertise in complex grant management is critical to the success of this project.

Our methodology involves a multi-step process that includes gathering data, analyzing the information, identifying vulnerabilities and potential risks, and providing recommendations for adaptation strategies. To begin, the team will conduct a thorough review of all available data, including flood maps, historic flood data, critical asset data, building codes, and land-use plans. It may be necessary to conduct site visits to critical government facilities and infrastructure to gather additional information and assess their vulnerability.

Next, the team would analyze the data to identify areas of vulnerability and potential risks. This would include an assessment of infrastructure vulnerability and an evaluation of critical government facilities to determine their flood risk and need for mitigation.

Based on this analysis, the next step would be to develop a vulnerability assessment and an adaptation plan that compiles a partial list of priority City adaptation projects to address flooding risks in the future. This plan would include specific recommendations for infrastructure improvements, floodplain management strategies, and emergency response measures among other legal, policy and program responses.

Throughout the process, the Team will work closely with City staff, officials and stakeholders to ensure that the assessment is consistent with their needs and priorities. Regular communication and feedback sessions would be scheduled to ensure that the assessment meets their expectations.

Finally, we will deliver a comprehensive report that summarizes the findings of the vulnerability assessment and provide actionable recommendations for the City to reduce its vulnerability to flooding. The report would be accompanied by detailed maps and data sets, as well as an implementation roadmap that provides recommendations for critical next steps for the City and other stakeholders to take to implement the adaptation plan.

It is critical that the vulnerability assessment and action plan is equitable. The portions of Fort Lauderdale that are north of West Broward Boulevard and west of South Federal Highway are very diverse. We believe that a critical outcome for this VA are solutions that adequately address the needs of your most socially vulnerable populations with equitable and sustainable solutions, such as those in communities north of West Broward Boulevard and west of South Federal Highway. Our Team is intimately familiar with all of the City's communities and includes key members that led the creation of Fort Lauderdale's Vision Plan through comprehensive engagement, relationship building, and understanding of the issues germane to each community. We also bring significant expertise with federal funding initiatives, such as Justice 40, that prioritize funding for projects in environmental justice communities.

Environmental Justice Index	**Ranked** *(National Percentiles)*
People of Color	99%
Low Income	93%
Unemployment Rate	92%
Less Than High School Education	75%

Environmental Justice communities are hit first and worst by the impacts of climate change.

Task 1: Project Management and Acquire Background Data

Task Understanding

Task 1 involves project management best practices to ensure the successful completion of the project. The Team will create a project implementation plan and timeline for review and approval by the City. The task requires the compilation of data needed to perform a Vulnerability Assessment (VA) for the City of Fort Lauderdale, with a focus on three main categories of data: asset data, topographic data and flood scenario-related data. The data will be compiled in accordance with Resilient Florida Program's GIS Data Standards, and GIS files and associated metadata will be created for each of the four asset types as defined in s. 380.093(2)(a) 1-4, F.S. The consultant will identify data gaps and rectify any necessary data to the extent practicable. The value of this task to the City is the compilation of necessary data for the VA to accurately assess the city's vulnerabilities to flooding and sea level rise.

Deliverables

1. Written project implementation plan and timeline
2. A technical report to outline the data compiled and findings of the gap analysis in MS word and PDF electronic formats that covers:
   - 1) Topographic data
   - 2) Flood-scenario data
   - 3) Asset data

3. A summary report to include recommendations to address the identified data gaps and actions taken to rectify them, if applicable
4. GIS files with appropriate metadata of the data compiled. All GIS data will comply with standard outlined in the Resilient Florida Planning Grants GIS Data Standards guidance document.
5. All project meetings' agendas, meeting minutes, project documents (in original electronic format and PDFs), and invoices in appropriate form complying to City's consulting agreement and State's grant requirements

Task Delivery - Timeline

- **Task timeline:** The Team proposes a ten-month timeline, with Task 1 and associated due diligence, as well as the majority of the asset inventory completed over the first 90 days

		2023								2024		
Task	**Description**	**May**	**June**	**July**	**Aug**	**Sept**	**Oct**	**Nov**	**Dec**	**Jan**	**Feb**	**Mar**
1	*Acquire Background Data*											
2	*Critical Asset Inventory*											
3	*Elevation Certificates*											
4	*Exposure Analysis*											
5	*Sensitivity Analysis*											
6	*Final Vulnerability Assessment*											
7	*Adaptation Plan*											

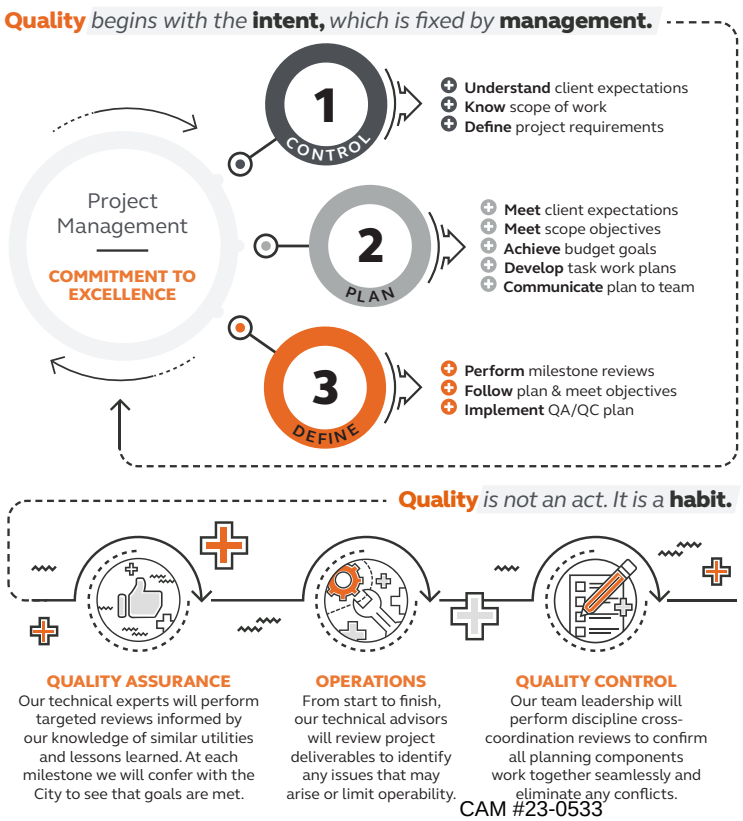
Task Approach

The Team will develop a Project Implementation Plan (PIP) in coordination with the City of Fort Lauderdale. The PIP will include project schedule, compliance requirements and milestones (e.g., Tasks included in the FDEP grant agreement). The PIP also includes the project purpose, paradigm, and mission, outlines and delineates roles and responsibilities and scope, schedule, budget management processes, includes decision trees, template and style guides, internal and external communications protocols, deliverable and quality management protocols (such as file and data naming and management conventions), file sharing conventions, deliverable review processes, and also includes invoicing and timekeeping templates in compliance with City and State requirements. The budget associated with project management in the budget provided in RFP is for both Project Management and data collection. The costs for the Project Management component of this Task will be integrated into the management of each task, as appropriate, and will be tracked accordingly.

About the Project Implementation Plan Deliverable

- Defines how the project will be executed, monitored and controlled.
- Describes the management protocols for scope, schedule, budget, resources, quality, communications, documents, and deliverables.
- The PIP is intended to be a living document, referred to and updated throughout the life of the Contract with additions and changes as the Contract progresses.
- This plan will be distributed to team members and updated by the Team, as appropriate, with input from the City of Fort Lauderdale.

Project Management Best Practices



Kickoff Meeting

We always begin all of our projects with a kick-off meeting with all project team members, including the project manager to confirm project goals and review the project scope, schedule, budget, and administrative procedures. This is also where we discuss identified project risks and possible mitigation actions. We understand that each project is unique and can quickly mobilize and have staff in the field and quickly engaged as quickly as possible.

Work Breakdown Structure + Workload Management

Upon receipt of the notice to proceed, the project team commences a planning meeting in which the appropriate Work Breakdown Structure (WBS) is determined, and the appropriate roles are assigned to meet the scope of work. Arcadis standard operating procedures require a Certified Project Manager (CPM) to be assigned to the project. The CPM is responsible for overall contractual oversight management and service delivery, monitoring burn rates, and project financial and resource management, as well as ensuring Task 1, Deliverable 5 compliance submitting invoices in compliance to the City's consulting agreement and State's grant requirements. Regarding firm workload, Arcadis is providing Fort Lauderdale with a consulting team with sufficient bandwidth to meet and exceed the City's expectations, inclusive of our strategically selected partners for this engagement. Should additional technical expertise be needed our Team will draw upon our local Florida bench (and National experts as needed). For reference, our Team serving Fort Lauderdale would be reinforced by over 350 Arcadis professionals within the State – and 6,000 nationwide. Our teaming partners provided additional support capabilities as well, should they be required.

Team Coordination and Communications Management

We will ensure objectives are achieved through ongoing communication between our Project Manager, Project Team, and the City's Project Manager. Interface can be through phone calls, virtual Teams calls, or in-person, messaging apps or the preferred methodology of City staff. Part of this function will include compliance with Deliverable 5 of Task 1 regarding provision of all project meeting agendas, meeting minutes, and project documents in desired formats.

Quality Assurance/ Quality Control (QA/QC)

Our **Project Management team** will be responsible for quality and grant-compliant deliverables on this project.

Their responsibilities include:

- Understanding, planning for and delivering the resources and activities needed to meet the City's expectations and compliance requirements.
- Engaging/disengaging the right resources at the right time on a limited project budget.
- Confirming the execution of QA/QC measures and activities via the PIP and schedule adherence.

To accomplish quality, we will strive to understand, plan for, and meet the City's needs and expectations while consistently conforming to the applicable standards of professional practice. Quality in our work is achieved through consistent application of QA/QC procedures by relevant subject matter experts.

Acquire Background Data

This task will acquire relevant critical asset and flood-related background data for the City of Fort Lauderdale. It will include:

- Performing the required data collection for the project
- Performing a data gap analysis to identify missing data or lesser quality data "gaps" that may be challenging for the vulnerability assessment to comply with Section 380.093 F.S., and
- Providing recommendations to rectify any identified data gaps.

Acquiring Data. Data collection efforts shall focus on available Federal, state, regional, county, and local data in the areas of asset/inventory data, hazard conditions and planning data based on the requirements defined in Section 380.093 F.S. The team will also review the most recent Local Mitigation Strategy (update currently in process); other existing studies, reports, and technical information; current and future land use; zoning ordinances; Advance Fort Lauderdale 2020 Comprehensive Plan; emergency operation plans; soil surveys; census data; local flood maps; survey data; LiDAR and DEM data; and county and local GIS data (including that being completed by Team Member Jacobs for roadways). Once data are collected, the team will identify existing data gaps needed to meet the requirements of Section 380.093 F.S.. We will identify existing data gaps, where missing data or low-quality information may limit the VA's extent or reduce the accuracy of the results and collect the necessary data to address those gaps to the extent the Team can under this scope and budget. Regardless of the ability to plug all data gaps identified in our analysis, the deliverable will be comprehensive in analyzing the quality of the data received.

The team will develop a technical report to outline the data compiled and findings in a Gap Analysis deliverable; this summary report will include recommendations to manage data in the future. We will also compile geographic and narrative data on assets consistent with relevant state requirements, assess data quality and usability, and prioritize asset data to be used for further analysis.

The Team already has a standard explanatory data collection document to collect the information and explain data sought prepared for use in this project. This document is structured around the FDEP Vulnerability Assessment Compliance Checklist and the requirements for critical assets, and regionally significant assets, as defined in Section 380.093(3), F.S. Our Data Request document has been used for many other vulnerability assessments and refined and organized for consistency with state law and can be easily distributed to relevant staff.

The Team suggests an internal-departmental discussion regarding the Data Request before its distribution to answer any key questions and underscore the importance of collecting timely quality data for the project.

The City has communicated some of the data sources already, such as Broward County Vulnerability Assessment data. This will be primarily useful in working with the County to determine the impacts on regionally significant assets, those that are not owned and maintained by the City, as opposed to City assets. **The LiDAR mapping of roadway infrastructure being performed by Team Partner Jacobs will also be helpful to verify digital elevation model information and other infrastructure information.**

The City's Stormwater Master Plan Modeling and Design Implementation Update conducted by Hazen and other partners in 2017 will also be helpful to identify initial project priorities and priority areas within the Critical Asset Inventory. Other capital planning processes will also be helpful to inform the identify the priorities in the Critical Asset Inventory. There are numerous other models either developed or in process that will help with prioritizing the hydrological impacts and scenarios defined for inclusion by Section 380.093(3), F.S. This project team is fully capable of reviewing, running and exporting data from all of those data sources and models to integrate into this Vulnerability Assessment process. Arcadis's modeling capabilities will be more fully discussed under Tasks 4 and 5.

Example data to be collected and reviewed include:

- GIS Asset layers and information
- Flood/other hazard models such as most recent Flood Insurance Rate Maps
- Elevation data

- Demographic data
- Location/extent of previous flood damages
- Economic Data (e.g. jobs, income, housing, economic output)
- Public health data
- Land use and land cover
- Assessor data
- Existing hydrologic and hydraulic modeling data
- Historic districts
- Parks and protected spaces
- Natural resource inventories and any critical habitat
- Water quality data
- Department of Homeland Security for banks, health center and other asset information

To be compliant with the FDEP's metadata standards geospatial data submitted must follow the Federal Geographic Data Committee Content Standard for Digital Geospatial Metadata (FGDC CSDGM). Minimum standards the metadata must provide include the following information:

- Name of Entity
- Unique ID
- Asset Name, Type and Class
- Asset Owners/Operators
- Asset Elevation
- Asset Size/Capacity

When collecting data to conduct the VA, the Team has experienced a lack of metadata in many instances for local governments, but this can exist even when using State or Federal datasets. If metadata associated with the provided asset information does not meet the required criteria, the project team is not responsible for supplying complete metadata due to the budget limitations for the project, and our Team has discussed this recurring issue with FDEP. For all work products generated for the project deliverables, the project team is obligated to provide metadata and will do so meeting FDEP's requirements. The Team has had multiple conversations with FDEP about this issue and all entities have agreed to strive to create the best metadata standards for each project. This will not impact the VA's compliance with the FDEP Checklist.

Analyzing the Data in a Gap Analysis. Once data are collected, the Team will identify existing data gaps based on the Section 380.093 F.S. requirements. We will identify existing data gaps, where missing data or low-quality information may limit the VA's extent or reduce the accuracy of the results and collect the necessary data to address those gaps to the extent it can be collected within this scope and budget.

In compliance with Deliverables 2-4 of Task 1, the Team will develop a technical report to outline the data compiled and findings of the gap analysis; this summary report will include recommendations to manage data in the future for the City to also manage future VA updates. We will also compile geographic (inclusive of metadata where applicable) and narrative data on assets that are consistent with relevant state requirements , assess data quality and usability, and prioritize asset data to be used for further analysis.

Task 2: Critical Asset Inventory

Task Understanding:

Task 2 will identify City-owned or maintained critical and regionally significant assets that may be impacted by flooding and sea level rise. As the recent rainfall flood events of the second week of April have demonstrated, the various scenarios are absolutely critical to run (albeit required) because different areas of the community can and will be affected differently by different types of flooding events. The VA will address flooding and sea-level rise risk to critical assets in all four categories: transportation assets and evacuation routes including airports and ports; critical infrastructure, including water and stormwater systems and facilities; critical community and emergency facilities, including schools, community centers, and emergency medical facilities; and natural, cultural and historical resources. The goal is to create a comprehensive list or spreadsheet of these assets, analyzed and prioritized by area or immediate need, and specifying the flood scenarios that impact each asset. This prioritized list will form the basis of a VA that meets all the requirements of Section 380.093 F.S. and that identifies adaptation projects for future grant applications namely, inclusion in the Statewide Flooding and Sea Level Rise Resilience Plan. The Task will also include identification of critical or regionally significant assets that lack elevation certificates where elevation certificates would be useful. Ultimately, this task will provide an understanding of critical assets and infrastructure specifying the scenarios for assets at risk, prioritizing and maximizing opportunities for reducing risk to regionally significant assets in support of community resilience building against flooding and sea level rise, and increasing chances of future state (and federal) funding to implement risk reduction projects for these key assets.

Deliverables:

1. A list or spreadsheet of critical and regionally significant assets that may be impacted by flooding and sea level rise, prioritized by area or immediate need, which contains the critical assets attributes required by Section 380.093, F.S and identifies which flood scenario(s) impacts each asset;

2. GIS files and associated metadata complying to State requirements; and
3. A list of regionally and critically significant assets which lack elevation certificates for asset types where elevation certificates are appropriate.

Task Delivery Timeline: *June to August, 2023*

Task Approach

Task 2 will focus on identifying critical and regionally significant assets meeting the definitions in Section 380.093, F.S. that are impacted by the required modeling scenarios. The Team will prepare a GIS-compatible database of critical and regionally significant assets (baseline asset map series).

To expand, assets can be categorized in many different ways. Aside from the statutory definition, assets are places or facilities where economic, environmental and social functions of the community occur or are affected; critical infrastructure required to support those functions; or features that the community values or wants to change. They may or may not be physical assets. Assets include facilities, institutions, or networks that are essential to day-to-day life, rapid disaster recovery, and long-term resilience of the community.

Assets may also include things like major events, vital employers, community-based services, and, on the negative side, contaminated sites. The Team will work directly with the City to identify community assets and build on existing asset identification from previous and concurrent studies and work performed and existing GIS data. This initial identification will be refined to gather feedback on what the City determines to be "critical". Understanding the community assets requires us to identify the asset and identify its role in the community. To do this, information on the location, beneficial use, and frequency of use for each asset will be important. Location data will help us understand hazard exposure and facilitate calculation of risk. Understanding the use of each facility will help quantify the impact of to the community if the asset is damaged or taken out of service.

The overall result is a greater understanding of risk and vulnerabilities.

The Team will work with the City to identify which assets are truly "critical" to meet the statutory intent. Our experience has shown that through data collection efforts, the assets obtained may yield far more (or less) information about assets than anticipated. For instance, in another Vulnerability Assessment project recently completed, the Team collected data from a jurisdiction including individual water meter data on structures and stop signs. This would be considered "all" assets, but it is not necessarily useful to collect and include in the Asset Inventory. This was far too granular to identify in a critical asset inventory. After discussions with FDEP, the Team's approach will be to focus 1) on assets that are truly "critical" to the community and 2) assets that the City might seek future adaptation projects for in terms of increasing resiliency. There is a level of flexibility the City and Team have to create a comprehensive, yet useful, inventory that meets the needs of the City to support future grant applications, adaptation priorities and provide a work product to FDEP that complies with the statute and their Compliance Checklist.

Due to the budget and scope of this project for the Asset Inventory, it will be critical to work with the Team conducting the Broward County resiliency planning effort as well particularly for the identification of regionally significant assets. Many of the regionally significant asset data sets and analysis should come from that ongoing work so that the budget for this task can be used to focus specifically on the City-owned and maintained assets.

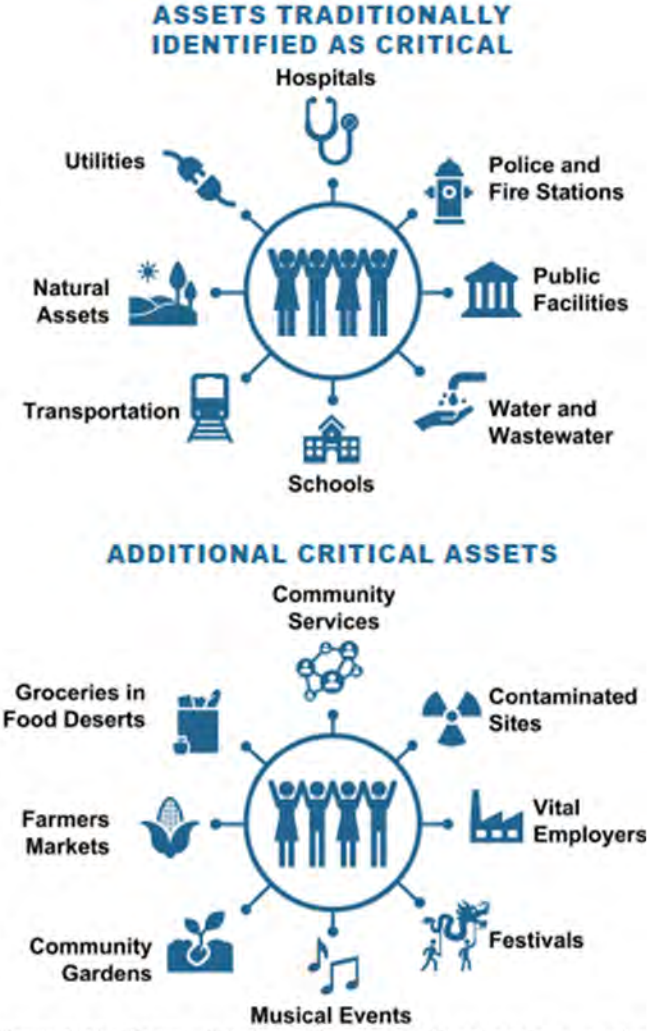


Figure 1 The Team will help clarify both traditional and community-centric critical assets as part of Task 2

The deliverables of Task 2 will include a list or spreadsheet of critical and regionally significant assets that may be impacted by the required scenarios, prioritized by area or immediate need, which contains the critical asset attributes required by Section 380.093, F.S and identifies which flood scenario(s) impacts each asset. GIS files and associated metadata complying to State requirements will also be provided. In addition, a list of regionally and critically significant assets which lack elevation certificates for asset types where elevation certificates are appropriate will be produced.

Task 3: Surveying for Elevation Certificates

Task Understanding

Task 3 will obtain elevation certificates for critical and regionally significant assets, consistent with federal floodplain management regulation, in a cost-effective manner that maximizes the use of available budget, while ensuring compliance with state and grant requirements. The City seeks to prioritize assets and work with the Consultant to develop a strategy to obtain prioritized and necessary elevation certificates that provide the most value to the community.

The Team has budgeted for 65 elevation certificates for the highest priority assets defined in Task 2 that currently lack elevation certificates.

Deliverables

1. Written list of the critical and regionally significant assets where elevation certificates were completed, to include the address, asset type, and asset class information
2. Documentation of transmittal of the copies of the Elevation Certificates submitted to the Florida Department of Emergency Management, as required by Section 472.0366(2), F.S. The completed elevation certificate documents will be signed and sealed by a Florida-registered Professional Surveyor and Mapper; and
3. All documentation to meet state and grant requirements.

Task Delivery Timeline: *August to December, 2023*

Task Approach

Miller Legg will be providing survey services for Task 3. Miller Legg is a highly experienced firm that specializes in surveying services, including land surveying, construction layout, and topographic surveys, among others. The Team selected Miller Legg as they have completed numerous municipal, county, state, and federal projects, ranging from neighborhood improvement and redevelopment projects to regional water and sewer utilities, complete street projects, and highways. Our team approach to interdisciplinary needs ensures that we provide responsive, personalized, quality service to meet the elevation certificate needs.

Miller Legg has successfully completed several thousand private sector projects including residential developments from two to 7,000 acres, industrial and office sites, hotels and theme park facilities, hospitals and medical office complexes, commercial properties, retail shopping centers and franchise properties. The firm has been involved with more than 100,000 acres of project design development in Florida.

For Task 3, under the $25,000 budget line item, Miller Legg Florida-registered Professional Surveyors and Mappers will obtain elevation certificates for up to 65 prioritized critical and regionally significant assets consistent with FEMA's floodplain management regulations. The elevation certificate must include certain components such as the property's location, identification, and flood zone determination, building characteristics and elevation data, and certification by a licensed surveyor. Miller Legg has extensive experience with FEMA-compliant elevation certificates and will ensure that all required information is included.

The firm's surveying capabilities, including laser scanning technology, will allow the team to quickly and accurately survey even inaccessible or complex projects. The Team will work closely with the City to develop a prioritized list of assets for which elevation certificates will be collected and has provided a per unit cost of $385 for any certificates required beyond the budgeted amount. The Team will ensure that all documentation meets state and grant requirements and provide the City with a written list of the critical and regionally significant assets where elevation certificates were completed, along with the required documentation for the Florida Department of Emergency Management. Overall, Miller Legg is well-equipped to provide high-quality and timely elevation certificates that meet FEMA's requirements for the Task 3 project.

Task 4: Exposure Analysis

Task Understanding

Task 4 is a critical component of the City's flood resilience planning efforts, as it will include an exposure analysis to identify the depth of water caused by different flood scenarios, including tidal flooding, storm surge flooding, rainfall-induced flooding, and compound flooding. By performing this analysis, the City will have a comprehensive understanding of the flood risks to its critical and regionally significant assets, allowing for informed decision-making and targeted adaptation efforts. The exposure analysis will comply with the Resilient Florida Program's GIS Data Standards, ensuring that the data is of high quality and can be easily integrated into the City's existing geographic information system including the metadata for all deliverables produced for the project. Finally, Task 4 will produce GIS files with results of the exposure analysis for each required flood scenario, as well as the appropriate metadata that identifies the methods used to create the flood layers, providing a comprehensive package of data that can be used by the City for years to come.

Deliverables

1. A written draft VA report produced in Task 6 and includes the Exposure methodology that provides details on the modeling process, type of models used, and resulting tables and maps illustrating flood depths for each flood scenario.
2. GIS files with results of the exposure analysis for each flood scenario as well as the appropriate metadata that identifies the methods used to create the flood layers. All GIS data will comply with standards as outlined in the Resilient Florida Planning Grants GIS Data Standards guidance document to the extent that it is created for this project.

Task Delivery Timeline: *August to October, 2023*

Task Approach

Due to the limited budgets for the Exposure and Sensitivity tasks, the analysis will leverage existing data, models and prior evaluations as much as possible. For instance, the results of the City of Fort Lauderdale's Stormwater Master Plan Modeling and Design Implementation Update can provide useful structure information and a source for ground truthing results; however, the requirements under state law for a Comprehensive Vulnerability Assessment involve significantly more than running a stormwater model and will require new evaluations. The Digital Elevation Model (DEM), key elevations, asset information and delineation of the watersheds are all important elements coming from that Stormwater Update. In addition, the sea level rise projections used in the Stormwater Update (from the Southeast Florida Regional Climate Compact) are no longer the projections used for many Federal (such as the NFIP Community Rating System program) and State programs (Always Ready or Resilient Florida), which have aligned around the use of the NOAA Intermediate High or Low (2017) sea level rise scenarios. Therefore, to comply with state law, new scenarios will need to be run including not just sea level rise, but rainfall, surge, high tides and the combination of various impacts to the extent practicable.

Because this is a broader vulnerability assessment for more critical assets than stormwater, with a relatively limited budget for the exposure and sensitivity analysis, the baseline modeling for this project will use ESRI's ArcGIS Pro, version 3.0, or other City-preferred GIS software, and leverage its spatial analysis extension as well as a proprietary streamlined workflow to complete the tasks. Cartographic representation will be developed primarily through layouts within ArcGIS Pro; however, some final deliverables may be expanded using a third-party graphic editor.

To align the project's modeling effort with Section 380.093, F.S., the approach for the Vulnerability Assessment will be to leverage the functionality within the best available GIS software to:

- Map potential future regular tidal inundation using a modified bathtub approach that accounts for local and regional tidal variability and is used by the NOAA Office for Coastal Management to map sea level rise as contemplated by FDEP; (https://coast.noaa.gov/data/digitalcoast/pdf/slr-inundation-methods.pdf); Map potential high tide flooding based on NOAA's Coastal High Tide Flooding methodology (https://coast.noaa.gov/data/digitalcoast/pdf/slr-high-tide-flooding.pdf);
- Map potential storm surge events using a combination of presently available data from both NOAA and FEMA and leverage readily available software methodologies to project multiple sea-level-adjusted designed storm events (particularly the 25-, 50-, 100- and 500-year events) choosing the best ultimate dataset because the FDEP VA Compliance Checklist requires that selection;
- Map likely areas of rainfall flooding using a model approach and coupled with potential storm surge and/or sea-level rise impacts for designed storm events (particularly a subset of the 25-, 50-, 100, and 500-year events); and
- Map combination flood scenarios based on key parameters decided upon by the Team and the City with best available data.

Our experience has shown that while FDEP wants extensive GIS files related to the various flood scenario outputs, it is not necessary to map every conceivable combined flooding or rainfall condition to provide meaningful output. Additionally, when mapping communities, to discern areas of flood risk, multiple maps or a "map book" must be produced that provides a scale that the viewer can determine what may be important about a certain area. Keeping this in mind, the team is already in conversations with FDEP about how to produce a manageable map series based on our significant project experience, but still meet all of the state's requirements for the required flood scenarios. To avoid mapping output that analyzes all 340+ possible combinations of inundation modeling that could be used to fully evaluate all conceivable scenarios, the Team has already been working on other projects and is in discussions with FDEP on 31 key inundation scenarios that will meet the requirements of the Vulnerability Assessment Compliance Checklist, Section 380.093(3), F.S. and provide the output needed for a Comprehensive Vulnerability Assessment.

Additionally, to build a more comprehensive Vulnerability Assessment and enrich the understanding of the City and other key stakeholders, we will:

1. Provide a detailed infrastructure specific map "baseline" series by type (such as stormwater, potable, emergency management, land use, etc.) ;
2. Assess the quality of geospatial datasets in terms of resiliency planning and disaster response within the gap analysis and provide recommendations for improving data quality;
3. Map vulnerable populations using the CDC's Social Vulnerability Index (https://www.atsdr.cdc.gov/placeandhealth/svi/index.html)

The information used to conduct the exposure analysis will include data collected in Task 1 and Task 2. Additionally, to meet the requirements of Section 380.093, F.S., the following data will be used in the Exposure Analysis:

- DEM will be obtained from the most recent LiDAR (some of which can be utilized from the work Jacobs is currently conducting for the City's roadways);
- The most recent NOAA and/or FEMA future and current storm surge data (at a minimum the initial storm surge even used will equal or exceed the current 100-year flood event and the FDEP Vulnerability Assessment Compliance Checklist asks which data set will be used);
- Local tidal data reported from the nearest or locally relevant NOAA tide gauge (NOAA's VDATUM tool may be used in conjunction with tidal gauge data);
- Tidal flooding, including future high tide flooding, which must use thresholds published and provided by the department. To the extent practicable, the analysis should also geographically display the number of tidal flood days expected for each scenario and planning horizon.

The 2017 NOAA Intermediate Low and Intermediate High sea level rise projections will be used and will include the planning horizons for the years 2040, 2070 and 2100. While 2100 is not required, the Team will produce some 2100 model runs because of the relationship with the required scenarios for a CRS Watershed Management Plan. All four avenues for assessing flood risk (SLR, tidal, storm surge and rainfall), briefly outlined above, will be included in a spatiotemporal analysis to determine what key assets and infrastructure within a community are vulnerable to flood scenarios and when that vulnerability may appear along the planning horizon timeline. Flood depth and extent for each flood scenario coupled with impacted critical assets will be provided in the VA report as a table and as a series of maps.

Other Modeling Capabilities

Arcadis is a leading global natural and built asset design and consultancy firm working in partnership with our clients to deliver exceptional and sustainable outcomes. Our experience and expertise are further enhanced through our experience nationally and globally. Arcadis has its roots in The Netherlands, a nation historically dependent on engineered water control structures, and we have proudly contributed to its safety and growth. With knowledge driven by over a century of flood defence and coastal engineering experience, we have a legacy of working with nature to develop innovative, non-intrusive and balanced solutions that reduce flooding, minimize erosion, and enhance habitat.

Arcadis is internationally recognized for developing, using and analyzing the output from sophisticated computer models for the simulation of a broad range of hydrodynamic scenarios under different climate conditions from large, comprehensive coastal analyses to riverine and channel scale projects, to small scale flows withing hydraulic structures and treatment plants. Our reputation is built upon in-depth understanding of the flow and circulation of oceans and rivers; waves dynamics; hurricane storm surge modeling; water quality, salinity and sediment transport; contaminant fate and much more. Arcadis' modeling capabilities include ICPR4, SWMM, HEC-RAS, ADCIRC, SWAN, D-Flow (the flexible mesh version of Delft3D), and FLOW-3D. These models represent the state of the practice for assessing the various, inter-related components of flood risk. One of our distinguishing strengths is our deep experience with an array of modeling and analysis tools that allows us to select the most appropriate model for each specific project. Often, a single tool is not adequate to calculate all of the diverse needs for a project, in which case,

integrated model coupling is performed. Arcadis has developed several unique model couplings that allow us to evaluate physical mechanisms un-resolvable with a single model. For the South Florida Water Management District, we have developed a coupled ADCIRC, SWAN, and D-Flow model to simulate how storm surge in Biscayne Bay will be affected by sea level rise. For the Department of Homeland Security, we combined ADCIRC with a rain-fall model to estimate the combined flooding impacts of hurricane surge, riverine flows, and precipitation on the St John's River near Jacksonville FL. Sophisticated coupled models such as these can provide insight to the inundation dynamics and flood risk for specific coastal locations.

In Miami-Dade, we conducted a **Comprehensive Impacts Analysis** of the sea level rise and other coastal hazards to various systems including people, housing, transportation, critical facilities, wastewater systems, freshwater resources, drainage systems, beached and natural areas. The system specific impacts analysis was paired with strategies for reducing risk to each identified system, and is being realized today in several policy changes Miami-Dade County has taken and is considering for reducing climate impacts to built and natural systems.

For this project in the City of Fort Lauderdale, there is much available data and hydrological & hydraulic analysis that already exists both with the City and regionally within Broward County. And while our Team includes some of the foremost modeling expertise in the world related to flood risk, this project is scoped and budgeted in a manner that will require any Team to be mindful of the large amount of assets the City owns and maintains, the criticality of those assets to create the Asset Inventory and the use of existing tools and models to economically address all of the requirements of Section 380.093(3), F.S. Simply put, our team is unparalleled in building models, running models and evaluating models. Where our Team prevails is that we pair that experience with our partners Clearview Geographic and Erin L. Deady, P.A. having some of the most extensive Vulnerability Assessment experience in the state. We can perform the Task 4 scope of work and we can exceed it.

Other Activities Necessary to Complete the Scope of Work and Comply with the Grants

As the work is completed under this scope of services, ongoing conversations with FDEP will need to occur to ensure that final work products will comply with the VA Compliance Checklist, Section 380.093, F.S. requirements but are logical and within reason to perform. Issues that have surfaced while conducting other VAs include the scale of the asset inventory and security concerns, mapping and deficiencies in metadata about the assets compiled among others. Additionally, future conditions rainfall data available from SFWMD is currently limited to the 200-year rain event, not the 500-year event, so this is a limitation in terms of future flood risk scenarios that can be performed. FDEP is aware of this limitation, but our interpretation of the statutory modeling criteria does not mandate the 500-year rainfall event to be modified for future boundary conditions. We do have some level of flexibility in how those requirements can be met.

Early conversations with FDEP have yielded a dialogue that not every asset must be included within the Asset Inventory. Only those deemed 1) critical to the community or 2) those that may be the subject of future grant applications.

This is important because developing the Asset Inventory can be extremely granular where neither the community may want to sort through an inordinately large dataset, nor does FDEP want to review information not deemed critical to the community or more broadly include that information in the statewide datasets they are creating. For instance, larger assets that can be identified and compiled would be included, but for example as previously mentioned, individual water meters on homes would be far too detailed to include in the Asset Inventory. Additionally, the community may not want certain sensitive data (due to security concerns) transmitted to the FDEP for inclusion in a statewide dataset accessible by the public at large. This conversation will happen early in the project to manage data collected and analyzed for the Asset Inventory.

To be compliant with the FDEP's metadata standards geospatial data submitted must follow the Federal Geographic Data Committee Content Standard for Digital Geospatial Metadata (FGDC CSDGM). Minimum standards the metadata must provide include the following information:

- Name of Entity
- Unique ID
- Asset Name, Type and Class

- Asset Owners/Operators
- Asset Elevation
- Asset Size/Capacity

When collecting data to conduct the VA, the team has experienced a lack of metadata in many instances even when using State or Federal datasets. If metadata associated with the provided asset information does not meet the required criteria, the project team is not responsible for supplying incomplete metadata because of the budget limitations for the project and we've discussed this with FDEP. But for all work products generated for the project deliverables, the project team is obligated to provide metadata for the climatic projections simulated and will do so meeting FDEP's requirements. After raising this issue to FDEP, they are currently formulating an approach to address this consistently across the Always Ready/Resilient Florida program so that all vulnerability assessment raw asset data has some information that FDEP is seeking. The Team has had multiple conversations with FDEP about this issue and all entities have agreed to strive to create the best metadata for each project. This will not impact the VA's compliance with the FDEP Checklist.

Finally, we know that the City of Fort Lauderdale has received a FDEM grant to conduct an Activity 452.b Community Rating System (CRS) Watershed Management Plan. To comply with the CRS criteria and achieve a Watershed Management Plan that is accepted for CRS credit, the City will need to provide an analysis of its stormwater that is more complex than that required for a Comprehensive Vulnerability Assessment under state law. A more advanced look at the City's stormwater operations and future impacts will be required that analyzes the stormwater infrastructure it owns and maintains as a participant in the CRS program. We know this because we are conducting a similar effort currently for the Village of Islamorada that combines the work of a Resilient Florida Vulnerability Assessment planning grant with a CRS Watershed Management Plan. The work products of these two grants should absolutely be harmonized to provide efficient data collection and modeling outcomes for use in both projects. The projects need "to talk to each other". Our experience can provide this support for the City- we are already doing it in Islamorada and one other jurisdiction and are about to launch similar combined planning efforts across the municipalities of, and including, unincorporated Monroe County. While this was not outlined in the City's RFP, this is a valuable project harmonization that can occur. The timelines for the completion of the City's Watershed Management Plan under this FDEM grant and the development of the Vulnerability Assessment need to align to make data collection and analysis for stormwater more efficient. The modeling output should also align to maximize and leverage both grant opportunities.

Task 5: Sensitivity Analysis

Task understanding

Task 5 involves conducting a sensitivity analysis to measure the impact of flooding on critical assets and prioritize them based on the level of risk. This analysis is crucial for the City's resilience building efforts as it will clarify the potential impact of flooding on prioritized critical assets with the relevant flood scenario. Task 5 will identify the most vulnerable assets and provide a basis to develop strategies to protect them against potential flood scenarios based on the sensitivity of that asset to the various flooding impacts.

Ultimately, Task 5 is a critical step in the City's efforts to build resilience to the impacts of flooding based on the issues related to that particular asset and its risk level, and the information generated through this task will be essential for the City to develop an effective flood mitigation strategy. The Team will perform the sensitivity analysis to measure the impact of flooding on assets, applying the data from the exposure analysis (Task 4) to the inventory of critical assets (Task 2) discussed above. The analysis will include an evaluation of the impact of flood severity on each asset type at each flood scenario and risk level. The output for this analysis will be in the form of both maps and narrative output and/or summary charts within the Vulnerability Assessment report. It should be noted that this Task is integrally related to Task 4 for the Exposure Analysis, and the sensitivity analysis builds upon that work be individually the risk factor associated with that asset.

Deliverables

1. A written draft VA report produced in Task 6 that includes the Sensitivity Methodology that provides details on the findings of the exposure analysis and the sensitivity analysis and includes visual presentation of the data via maps and tables, based on the statutorily required scenarios and standards; and
2. An initial list of critical and regionally significant assets that are impacted by flooding. The list of critical and regionally significant assets must be prioritized by area or immediate need and must identify which flood scenario(s) impacts each asset.

Task Delivery Timeline: *September to November, 2023*

Task Approach

As required for a Comprehensive Vulnerability Assessment, the sensitivity analysis will include an evaluation of the impact on each asset class for every flood scenario modeled and assign a risk level based on percentages of land area inundated and number of

critical assets affected. As allowed by available Budget, the City requests a sensitivity analysis of roadways, historical properties, and other assets not otherwise classified as critical assets per Section 380.093, F.S. For roadways the assessment will quantify location and square feet of roadways susceptible to flooding under different scenarios, to the extent there is ability in the budget to do so. While historical resources are included within the definition of a critical asset already, the Team can work with the City to develop an approach to extend the analysis to private properties if that is the intent of the sensitivity analysis of "historical properties". This would have scope and budgetary implications for Task 4, because that inventory of assets would likewise have to be extended beyond assets owned and controlled by the City to those owned by private property owners. One way to address the desire of the City is to focus on historic districts versus properties if those boundaries are identified specifically within GIS. Additionally, with our Teaming Partner Jacobs conducting the roads LiDAR for the City, this may provide a mechanism to meet the City's request for additional location and square footage susceptible to certain flood scenarios. Both requests on the part of the City can likely be accommodated in some form by the Team, but the budget for this Sensitivity Analysis Task, and the likely scale of the Critical Asset Inventory may limit the City's ability to accomplish these goals. A supplemental Resilient Florida Planning grant may provide an opportunity to capture this additional sensitivity analysis to the extent it is a necessary element of statutory compliance. The Team can have a strategic conversation with the City on where our Team has found success in doing just that.

One option the City may want to pursue beyond the Task 5 description and scope, which is limited to assigning a risk level based on percentages of land area inundated and number of critical assets affected, is a process where the sensitivity, criticality and adaptive capacity values can be assigned to each critical asset based on review of prior evaluations and our team's technical expertise. These values can be used to prioritize critical assets based on risk and identify those assets with high sensitivity to flooding, high flood exposure, high criticality, and low adaptive capacity that should be prioritized for the development of mitigation solutions. Additionally, demographic and socioeconomic overlays can be developed, enabling further prioritization based on impacts on vulnerable populations. Before the completion of this task, a meeting with key staff will be held to review the results of the sensitivity analysis and allow for feedback on selected criticality and adaptive capacity scores.

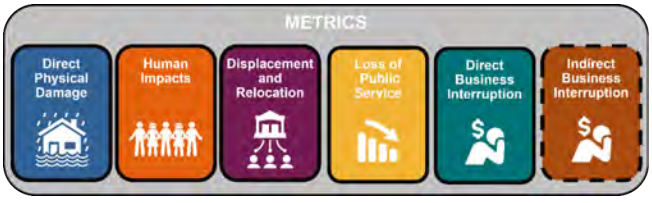
EXAMPLE SCORING CRITERIA (ASSET TYPE DEPENDENT)

ASSET TYPE	BREADTH OF IMPACT	SEVERITY OF IMPACT	EXPOSURE SCORE
Neighborhood Parks	Based on Population within ~0.25 miles of parcel boundary (assumes pedestrian access)	Dependent on Community Feedback	Exposure score is reflective of both frequency and depth of flooding
Large Parks	Based on Population within ~5 miles of parcel boundary (assumes car access)		
Child Care Centers	Square footage of facility (assumes larger facilities serve larger populations)		
Fire Stations	Distance to next nearest fire station		
Hospitals and Medical Centers	Number of beds		
Schools	Enrollment		
Bridges	Traffic Count data if available. Or road type (Fed/State/County roads)		

Breadth of impact criteria developed based on available data. While additional metrics may be available, if data were not asset specific (e.g. based on regional averages), other metrics are considered.

Region feedback would help define items such as distances associated with park usage.

Above Example Scoring Criteria - For Resilient NJ, Arcadis developed a methodology for risk scores that included breadth of impact (a measure of the asset's criticality and regional importance), the severity of the impact (a measure of the consequences if the asset was not functional

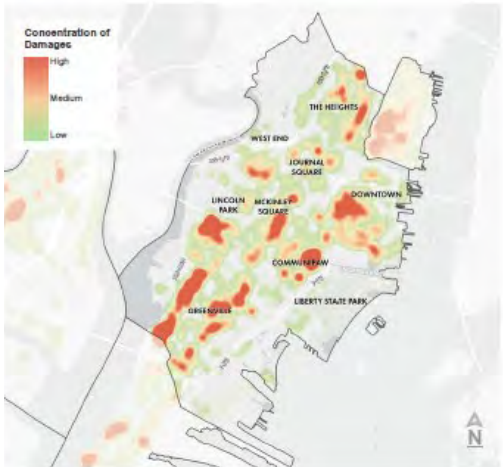


As an another option to the City, the Team can use Arcadis' Flood Risk Calculator as another means to understand the broad range of holistic impacts associated with flooding, dependent on the number of assets to be evaluated. This tool can be used to quantify losses from current and future flooding conditions based on coastal hazard modeling. Using this tool, the team will calculate a range of different types of environmental, health, economic impacts, including:

- **Direct damage to structures & contents:** Analysts will evaluate vulnerable assets, structures, and building contents using U.S. Army Corp of Engineers (USACE)-derived depth damage functions (DDFs). The DDFs consider the type of structure and the structure or contents replacement value as well as the expected flood depth of the structure to determine the dollar value of contents and structure damage.
- **Business Interruption:** Direct business interruption is based on the length of time an impacted business is unable to function, and the daily economic output of the business. Output includes employee compensation, as well as proprietor income, and taxes. Daily economic output is estimated based on data on businesses in the study area, as well as data from IMPLAN, an economic modelling software. Indirect business interruption is the impact on the regional economy due to loss of contributions from directly impacted businesses and can also be calculated through data provided by IMPLAN.
- **Loss of Public Service:** The impacts of flooding and damage to public services, such as public transportation assets, hospitals, utilities, schools, libraries and others, are calculated based on the estimated value of those services to the public, and the time that service would be lost for each flood scenario.
- **Lost productivity:** Work productivity can be lost due to mental illness and other mental health challenges post disaster. Research has described the impact of psychiatric disorders on work loss days. Similarly, research indicates that mental health issues will increase after a disaster, and this, paired with research related to lost productivity due to mental illness, indicates that economic productivity can be impacted in the post-disaster period.
- **Relocation costs:** Relocation costs refer to the costs associated with moving a household or business to a new location.
- **Injuries:** Injuries can occur as a result of evacuation, clean-up, or repair of damaged and destroyed structure. Injuries can be quantified based on estimated costs of medical treatment.
- **Mental stress:** Flooding and natural disasters can have an impact on mental health as disruption to health, social, and economic resources causes psychological stress. Property damage or displacement can also have mental health impacts. Mental health treatment costs are based on cost, prevalence, and course – the prevalence of mental health problems, course is the rate at which symptoms change over time, and cost is the cost of treatment.

The tool provides projected average annualized losses for each flood hazard for each structure and public facility assessed. The data can also additionally be combined with other, non-monetary methods of quantifying consequences such as those stemming from the results of the team's assessment of assets and infrastructure, social and economic systems, and mobility systems. These results can be used to understand the flood risks faced by specific buildings and sites within the study area, as well as specific property owners, tenants, and other stakeholders. These results will be leveraged in later phases of the project to assess the benefit-cost ratio for potential interventions and support federal funding applications.

If the City choses to pursue this option, we envision the opportunity to expand, refine, and customize the risk prediction functions of the flood risk calculator to gain input on additional impact categories that could be added to the tool, and calibrate model results and functions through interviews will with stakeholders directly impacted by flooding.



A heat map of asset risk based on Flood Risk Calculator results developed by Arcadis for Resilient New Jersey

Task 6: Final Vulnerability Assessment (VA) Report, Maps, and Tables

Task understanding

Task 6 will finalize the VA report in compliance with the requirements of Section 380.093, F.S. The final VA report will include all results from the exposure and sensitivity analyses, as well as a summary of identified risks. It will contain an inventory of critical and regionally significant assets that may be impacted by flooding and sea-level rise, specifying for each asset the flood scenario(s) impacting the asset.

The final VA report, maps, and tables will provide the City with an assessment of the risks associated with flooding and sea-level rise, allowing it to make more informed decisions regarding adaptation projects, implementation strategies and funding decisions. The identification of critical and regionally significant assets impacted by flooding will help the City prioritize its resources and take appropriate actions to protect these assets, ensuring the continued safety and resilience of its communities. The compliance certification will also ensure that the City meets all statutory requirements and is eligible for future funding opportunities under the Always Ready/Resilient Florida legislation. GIS files and associated metadata must adhere to the Resilient Florida Program's GIS Data Standards (FDEP Exhibit I), and raw data sources shall be defined within the associated metadata.

Deliverables

1. Draft and Final VA Report that provides details on the results and conclusions, including illustrations via maps and tables, based on the statutory-required scenarios and standards in s. 380.093, F.S. This deliverable also include a 1-hr presentation of the Draft VA report to City staff for comments;
2. A final list of critical and regionally significant assets that are impacted by flooding. The list of critical and regionally significant assets must be prioritized by area or immediate need and must identify which flood scenario(s) impacts each asset;
3. All electronic mapping data used to illustrate flooding and sea level rise impacts identified in the VA, to include the geospatial data in an electronic file format and GIS metadata; and
4. A signed VA Compliance Checklist Certification.

Task Delivery Timeline: *November 2023 to January 2024*

Task Approach

The results from the Vulnerability Assessment including critical asset identification, exposure and sensitivity analysis, and input (including City comments) will be summarized in a final Vulnerability Assessment report that assesses the flood risk vulnerability of assets in Fort Lauderdale. The report will present assessment results and conclusions and will include visualizations, maps, tables, and geospatial data that not only meet the requirements of Section 380.093, F.S., but also serve as a critical risk and vulnerability communication tool for all stakeholders.

We will begin writing this report on Day 1 and will continue to develop it through subsequent tasks from data collection to asset inventory to both the exposure and sensitivity analyses. This means there are no surprises and the City's project team has been provided much of the data and content that will be included in the final Vulnerability Assessment Report. Having written these work products for both small and large jurisdictions, we know how to meet the intent of the statute and at the same time provide something that is meaningful to fit the City's needs.

The Final VA will incorporate any comments, where applicable, received from the City. The Team will track the comments received and how they are addressed during the process. Relevant sections will include:

- Introduction and history of the City's resiliency efforts to date.
- Alignment of the Vulnerability Assessment with other City planning (including capital and strategic) processes.
- A methodology section outlining the data collected and tools utilized.
- A report detailing the findings of the assessment.
- Recommendations on prioritized critical assets.
- All electronic mapping data used to illustrate flooding and sea level rise impacts identified in the assessment in a format suitable for input to the Department's mapping tool.
- GIS data that has been incorporated into the appropriate Florida State Plan Coordinate System and suitable for the Department's mapping tool.
- Metadata using standards prescribed by the Department.

The Team understands how the Resilient Florida program will evaluate and rank future capital project submittals that will be included in the annual Statewide

Flooding and Sea Level Rise Resilience Plan or through other available funding sources. The modeling and analysis for the Vulnerability Assessment will be designed to bring the City into compliance with state requirements in Section 380.093, F.S. allowing the City's future projects to be identified and ranked according to Chapter 62S-8, Florida Administrative Code. The goal is to structure the VA around the statutory and rule requirements related to the Resilient Florida program so that the City's VA is deemed in compliance with the criteria, which will position the City's projects for higher ranking in future funding cycles. After 2024, currently under the Statute, projects must be identified in a Comprehensive Vulnerability Assessment, so a key goal of the deliverable is to do just that. But the Vulnerability Assessment must also be a living document with the ability to update the projects as priorities change and completion occurs. For instance it should be revisited at the beginning of the budget cycle each year well in advance of the grant application window opening for the Always Ready/Resilient Florida program to allow for adjustments and inclusion of projects in the VA as required by statute.

Drafts of the VA will be provided to the City for review and comment. The Team will provide revised drafts, based on the comments received. Our team also recommends sharing the draft VA, after review by the City, with the public to obtain their input before the final Vulnerability Assessment is prepared. This can be done at a City Commission briefing on the Draft Vulnerability Assessment. This is not included within the scope of services, but the Team will make one City Commission/Public presentation within the existing budget. The presentation will also inform the public of the results and future risk of sea level rise and increased flooding. Based on the input from that meeting, the Team will finalize the VA. As written, this scope of services may also benefit from a supplement to the existing Vulnerability Assessment planning grant to gain more public feedback on the planning process. These have been treated by FDEP as "amendments" to the underlying Vulnerability Assessment planning grant if awarded. Our Team can provide additional strategy on this effort if the City's is interested in having that discussion.

The Team suggests that the City consider a more expansive view of the Vulnerability Assessment that also acknowledges the multiple policy, legal and regulatory implications of the Vulnerability Assessment's output. In other projects, the Team has been asked to review the Comprehensive Plan and Code of Ordinances to determine where output from the Vulnerability Assessment should be considered. Examples of this analysis include considerations such as:

- City commitments to levels of service in the Goals, Objectives and Policies of the Comprehensive Plan that may not be able to be achieved under certain future conditions.
  - *Example: Is Policy SWS 6.1.4 sufficient to meet future flood risk impact data generated by the Vulnerability Assessment?*
- Road design exceptions to the FDOT Greenbook that need to capture future flood risk.
  - *Example: Article V. Sec. 47-25.2 Adequacy Requirements. For the regional transportation network and local streets, are improvements in accordance with city engineering standards and city, county and/or FDOT traffic engineering standards sufficient to address the future flood risk data generated by the Vulnerability Assessment?*

Additionally, the City will now have the best available information to address any Peril of Flood amendments previously processed in the Coastal Management, Community Health and Safety Element of the Comprehensive Plan as well as better detail any approach to adaptation action areas (Objective CM 2.3 of that Element). As such, this Element should be reviewed for implementation opportunities that arise through the development of the Vulnerability Assessment. For instance, Policy CM 2.3.4 should be modified to include this Vulnerability Assessment as a basis for integrating AAAs into existing and future City processes and city-wide plans and documents. Finally, the Team can better amplify research and recommendations related to funding strategies, updated resiliency-related grants and assist with strategy to bridge from planning to implementation for the Vulnerability Assessment. Our clients have benefitted from supplements to their Resilient Florida Planning Grants to expand the work they believe is necessary arising through their vulnerability assessment process. This past 2022-2023 Resilient Florida Grant cycle alone, Erin L. Deady, P.A. secured four (4) supplemental Resilient Florida Vulnerability Assessment planning grants for various local governments.

Task 7: Partial Adaptation Plan

Task understanding

Task 7 will complete a partial Adaptation Plan that assesses the adaptive capacities of the City, prioritizes adaptation needs, and identifies strategies to address the vulnerabilities of the City's most at-risk assets. The Team will begin the process by reviewing existing Master Plans and the Community Investment Plan to identify planned projects that address the vulnerability of the City's critical assets. The plan will include a list of prioritized projects for each asset class defined in subsection 380.093(2), F.S., for consideration and implementation. The goal of this task is to take key prioritized critical assets from the VA, and best position them for future implementation. With exposure, sensitivity and vulnerability of these key assets assessed in the preceding tasks – this task will focus on identifying and prescribing pathways to close any regulatory, administrative, funding and other gaps for the assets' adaptative capacities; building on findings from previous studies/plans and working closely with the City and key stakeholders to prioritize adaptation needs for a portion of the most important assets; and providing a toolkit of potential adaptation strategies that allows the City to assess and refine its options for adapting critical assets with focus on hazard protection and accommodation to remain in place.

The Team will provide a written partial Adaptation Plan that will serve as a roadmap to implement an estimated 10-30 adaptation projects to be refined in a future Comprehensive Adaptation Plan. The partial Adaptation Plan will be developed to align with state requirements, and also federal programs for hazard mitigation, to best position the City for funding to complete the future Comprehensive Adaption Plan itself, and for the implementation of the adaptation projects it identifies. By developing a partial Adaptation Plan, the City will be better equipped to secure funding and implement adaptation projects, ultimately reducing the risks and costs associated with future climate impacts.

Deliverables

A written partial Adaptation Plan for the City's most vulnerable critical assets, including a capacity assessment that addresses the City's ability to implement protective and adaptive measures.

Task Delivery Timeline: *December 2023 to February 2024*

Task Approach

The project list will include enough details to ensure the project package is capable of supporting grant funding applications. The Team understands the components of state and federal grant applications and can ensure the project list includes all appropriate details to meet grant application requirements, such as locations, construction duration, construction cost estimates, operation and maintenance cost estimates, and cost share percentage. Based on the data collection, modeling, and GIS analyses, the Team will identify potential projects and evaluate their effectiveness, ensuring recommended solutions are practical and cost-effective to help address the vulnerabilities identified. For 10 prioritized projects, our Team will provide preliminary concepts designs and class 5 estimated costs. The Team will develop concepts in ArcGIS that can become part of the City's database. As part of the Adaptation Plan development process, this will provide an opportunity to further develop out adaptation planning strategy and implementation recommendations such as performance-based design criteria or level of service recommendations.

The partial Adaptation Plan will:

- Review existing master plans such as the City's Comprehensive Plan and the Community Investment Plan to identify planned projects that will either address or affect the vulnerability of the City's critical assets.
- Assess the adaptive capacity of the City's critical assets and prioritize adaptation needs.
- Identify assets with planned adaptation or mitigation projects and vulnerable assets without adequate resilience strategies, to aid in prioritization.
- Further prioritize adaptation needs for each asset class as defined in subsection 380.093(2), F.S., for consideration and implementation.
- Identify and select a list of implementable adaptation strategies by providing a curated toolkit of solutions applicable to critical assets and associated risks in the City.
- Provide a preliminary implementation roadmap that articulates capacity, timing, funding, and other needs to address the projects identified and for completion of a comprehensive Adaptation Plan that builds on this deliverable.

To meet the requirements and best practices outlined in the RFP and FL Adaptation Planning Guidebook, respectively, we propose that the partial Adaptation Plan consist of three primary components:

1.) Adaptation Toolkit

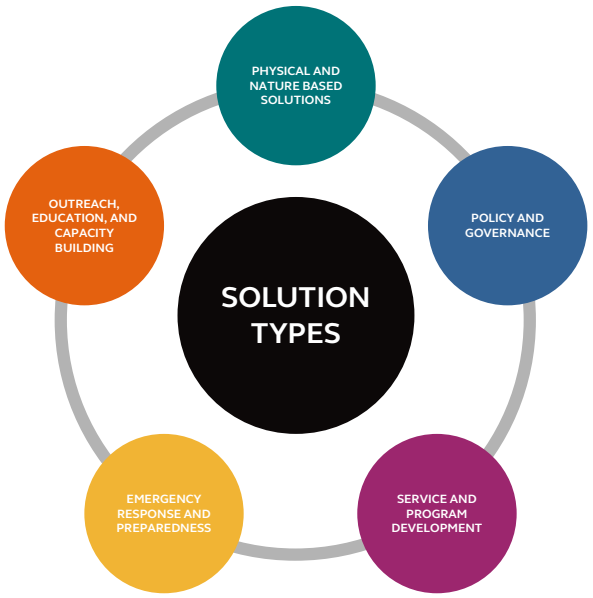
A toolkit of options will be developed with all asset classes in mind and will be based on the risk context of those assets, as well as evaluation and performance criteria to be developed in collaboration with the City. The toolkit will present a suite of mitigation and

adaptation measures that can be applied more broadly and will be tailored and further refined for key critical assets as part of the adaptation planning process. The toolkit will communicate the types and range of proven solutions that are appropriate to Fort. Lauderdale's conditions, as well as key considerations about the solutions, to include timing and resource requirements, co-benefits, limitations, and maintenance needs. Further, the toolkit will provide a framing tool for both the technical team and City stakeholders, to help us begin from similar places of understanding, about the technical considerations that often guide selection and implementation of adaptation projects.

Information provided in the toolkit may include:

- Hazard context addressed by the mitigation/ adaptation measure.
- The types of assets and areas in the City in which the solution can be applied.
- Opportunity to scale the intervention (individual site, across multiple sites, etc.).
- Possible co-benefits (benefits other than addressing the hazards).
- Level of potential disruption from construction or implementation.
- Typical cost, permitting, and constructability level of effort.
- Information of where these solutions have been deployed and worked.

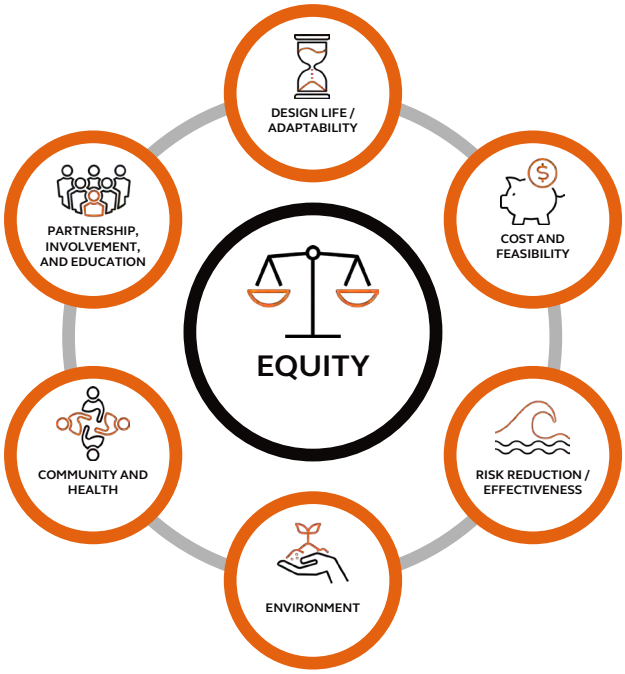
The diagram below illustrates the types of solutions/ adaptation measures that will be included in the toolkit.



The team will work with the City to define the parameters of the toolkit, which may include physical and nature-based solutions, policy and governance solutions, and interdependent and community-based actions. The value of the toolkit is that it will both be used as a baseline to begin the development of the action plan, and it provides information that can be used for decision making to support advancement and building upon the partial Adaptation Plan.

2) Prioritized Project List

A project list of at least 10 adaptation interventions will be developed. The project selection will be based on asset criticality and vulnerability. Assets with the highest level of criticality and vulnerability and the lowest level of existing protection and resilience measures may be given the highest priority. For the 10 projects, next steps for implementation will be articulated. Our Team will work closely with the City to select the priority projects and project options will be evaluated against a variety of factors to determine priority for implementation.



The diagram above highlights example considerations that will be factored into project selection and prioritization.

This portion of the work will require review of existing master plans such as the City's Comprehensive Plan and the Community Investment Plan to identify planned projects already in the pipeline that will impact the vulnerability of the City's critical assets. Based on the vulnerability assessment, we will identify the priorities for implementation. Prioritizing projects for each asset class under subsection 380.093(2), F.S., requires a comprehensive assessment of the criticality and vulnerability of the assets, the existing condition of the assets, and the feasibility and cost-effectiveness of proposed projects. This process ensures that the most critical and vulnerable assets are given the highest priority for consideration and implementation, while

also ensuring that proposed projects are technically feasible and cost-effective.

For the selected priority project list, our Team will:

- **Establish goals:** Establish clear project goals, such as intended level of service.
- **Identify strategies for addressing adaptive capacity needs:** Further develop specific recommendations to close any identified regulatory, planning, administrative, technical and fiscal/funding capacity gaps of the City or stakeholders responsible for implementing the adaptation measures.
- **Develop a timeline:** Develop a timeline for implementation that identifies key milestones and timelines for completion of specific activities. This will help to track progress and ensure that the adaptation measures are implemented in a timely manner.
- **Develop preliminary benefit-cost analysis (BCA):** Develop a preliminary BCA to help guide project design and articulate project benefits, and allow for early assessment of funding competitiveness for implementation under potential state and federal programs.
- **Identify funding needs:** Identify the funding required to implement the adaptation measures, including potential sources of funding such as grants, loans, or private financing. This may involve developing a detailed budget and financial plan that outlines the costs of the adaptation measures, as well as potential cost savings or benefits.
- **Engage with stakeholders:** Identify the stakeholders that will be involved in the implementation of the adaptation measures and develop a plan for engaging with them. This may include community members, local government officials, private sector partners, and other stakeholders.
- **Establish monitoring framework:** Establish a monitoring and evaluation framework to track progress and ensure that the adaptation measures are achieving their intended outcomes. This may involve developing performance metrics and reporting systems to measure progress and identify areas for improvement.

3) Implementation roadmap

The implementation roadmap will serve as an overall path forward and can be applied to protect all identified critical assets. The implementation roadmap will include recommendations based on our insights from the VA and will also include capacity assessment, preliminary policy, programs and services, engagement, physical solutions, emergency management recommendations and potential funding avenues. As part of early project orientation and beginning in Task 1, the team will catalogue and evaluate existing City-related plans, programs, and projects. The team will use this catalogue to identify opportunities to fill gaps, as well as build on the existing work the City is completing identify opportunities for adjustment to further increase resilience as they relate to identified critical assets and identify possible implementation pathways

A key goal for developing a partial Adaptation Plan is to have conceptual projects to fund and implement. An element of that funding is grants. Our Team has an unparalleled track record with securing grant funds. Arcadis brings significant experience with state and federal grant programs nationwide, both in securing and managing funds. Since 2012, Arcadis has helped our clients secure more than $7 billion in resilience related funding and are currently managing close to $2 billion in federal and state grants, including HUD Community Development Block Grants (DR/MIT) and programs with multiple funding sources layered together. Projects with multiple funding sources can be particularly complex, and our team has successfully delivered major CDBG-DR and MIT funded resilience projects, such as Resilient New Jersey and Nassau County's $1.2 billion resilience program, and provided grant programmatic and technical support to various state agencies including the two administering funding for this effort, Florida Department of Economic Opportunity and Florida Department of Environmental Protection, and well as for the Florida Division of Emergency Management bureaus of Recovery and Mitigation. The Adaptation Plan will be developed to align with federally and state recognized funding framework in mind that can steer development decisions; and drive prioritization of capital projects to maximize the chances of inclusion in the Statewide Flooding and SLR Plan, and for developing effective grant applications under the Bipartisan Infrastructure Law (BIL), Inflation Reduction Act (IRA), and other federal programs.

Our Team includes Erin L. Deady, P.A. who has been at the forefront of the Always Ready/Resilient Florida program prior to its inception having written numerous successful grant in the program before the statute was enacted. After the legislation was enacted in 2021, Erin has successfully authored 53 grants valued at $94 million. Erin also engaged heavily representing multiple local government clients in the rule development for Chapter 62S-8, F.A.C., the granting criteria for evaluating applications for projects to be included in the Statewide Flooding and Sea Level Rise Resilience Plan. She is intimately familiar with that grant application process having added significant clarification and language during that FDEP rule development process. The development of the Adaptation Plan will be greatly benefitted by her expertise to ensure the information about the projects is turnkey for successful grant applications under the Section 380.093, F.S. legislation. Therefore, it is understood that a meticulous project management

approach that incorporates expertise in complex grant management is critical to the success of this project.

To complete the work in task 7 there will be cross collaboration across our team. Our project identification & prioritization team will work in step-lock with the adaptation toolkit development team and the future funding analysis team develop to partial Adaptation Plan. The partial Adaptation Plan will be vetted by our technical advisors for quality assurance and control.

Grant Management and Compliance - Florida Statute § 380.093

With the City of Fort Lauderdale having secured funding from FDEP for this project under the Resilient Florida Program and under Florida Statute § 380.093, we understand that all project activities and deliverables must be conducted and developed with statutory and grant compliance at the forefront. In this sense, Arcadis begins with the end in mind, developing our project management workplan from a statutory and grant compliance perspective. Therefore, it is understood that a meticulous project management approach that incorporates expertise in complex grant management is critical to the success of this project.

As a firm priority, Arcadis compliance fundamentals incorporate a proactive and innovative approach to grant management that ensures (as applicable) the proper expenditure of funds, compliant procurement procedures, successful benefit-cost analyses, full reimbursement, and clean audits.

Arcadis will support the City with the following, as applicable:

- **Manage Scope, Schedule, and Budget.** Arcadis will manage grant project schedules, scope and budget to ensure that project begins and ends within the period of performance identified in the FDEP grant agreement and consulting contract.
- **Monitoring and Reporting.** Arcadis will support the City in monitoring the period of performance, and environmental and historic preservation requirements, as it relates to compliance and grant reporting requirements.
- **Record Keeping, Financial Reporting, Quarterly Performance Reporting.** State records retention requirements will be reviewed and incorporated into appropriate areas of project workflows.
- **Project Checklists + Regular File Reviews -> File Completion.** Arcadis will maintain and submit specific documentation as required such as the VA Compliance Checklist to the City to enable complete and accurate documentation for demonstration of statutory and grant compliance.
- **Record Keeping.** Arcadis uses Microsoft SharePoint and hard copy project files in accordance with applicable government regulations.
- **Quarterly Reporting.** Arcadis will support the City with maintaining records of work, schedule, and expenditures, as well as submitting regular progress and other information in the form of quarterly reports as required.
- **Audit Assistance.** Arcadis will assist the City with any audit finding resolutions as needed.

Optional Task 1: Media Relations, Direct Community Engagement, Outreach

Task Scope

The images of the devastation left behind from the April 12-13, 2023, flash floods are unforgettable. To ensure that every step is taken to mitigate future risk, it is important to gain the trust of the community and build relationships with the media with the purpose of being fully transparent. Should additional funding become available, we are prepared to support the City with local outreach and engagement and we have the commitment of Garth Solutions, a local minority and woman owned certified small business headquartered in Davie, FL. Garth Solutions has been leading community outreach and engagement and public relations efforts for capital improvement projects in south Florida for over 20 years.

We recommend working with the trusted voices in the community and utilizing a three-pronged approach: 1) building and proactively managing media relations; 2) direct community engagement; and 3) outreach strategies. First, conduct a needs assessment to identify the community's concerns and develop key messages that will resonate with them. Next, identify stakeholders and build relationships with the media by offering access to information and interviews with key stakeholders. Develop an outreach plan that includes events, workshops, and other opportunities to engage with the community. Finally, evaluate and adjust your approach as needed based on feedback from stakeholders and the community. Through careful planning, ongoing execution, and a commitment to building relationships, you can develop an effective strategy that will help you achieve your goals.

Deliverables

1. Media relations training and planning.
2. Stakeholder outreach plan: a detailed plan outlining outreach and key stakeholders, including community leaders, elected officials, and media contacts. This plan should include specific tactics and timelines for engagement.
3. Community events plan: a plan for community meeting, workshops, and other opportunities for engagement.
4. Key content: development of key educational and outreach materials used for meetings, community events and social media.
5. Evaluation report: a report outlining the effectiveness of the media relations, community engagement, and outreach strategies. This report should include feedback from stakeholders and the community and should recommend adjustments to approach as needed.

Task Delivery - Timeline

- **Task timeline:** Throughout the duration of the project.

Task Approach

Media Relations Strategy

Developing and implementing a media relations strategy for the City requires a structured approach that is tailored to the unique needs and challenges of this project. The first step is to conduct a thorough analysis of the target audience, including key stakeholders and media outlets that are relevant to the topic of the intersections of equity, diversity, and climate vulnerability and adaptation. Next, identify key messages that highlight the importance of the assessment and its potential impact on the community. Develop a comprehensive media kit that includes a press release, fact sheet, and other relevant materials that can be distributed to the media. We also provide Talking Points Memos for key city staff and/or elected officials to support speaking engagements or interview requests. Build relationships with journalists and influencers through regular outreach and engagement efforts, such as media briefings and interviews with key stakeholders involved in the assessment. Monitor media coverage and adjust the strategy as needed to stay responsive to emerging issues and community concerns. Finally, evaluate the effectiveness of the media relations strategy and adjust as needed to ensure continued success in communicating the importance of VA to the public and stakeholders.

Community Engagement – Meet People Where They Are

One approach is to organize public meetings and workshops that provide an opportunity for community members to learn about the assessment and provide input on the potential impacts of climate change on their neighborhoods. This can include panel discussions, expert presentations, and interactive activities that help residents understand the risks and opportunities associated with climate change. Another approach is to use social media and other digital tools to engage with the community, share information about the assessment, and encourage feedback and participation. This can include online surveys, virtual town hall meetings, and social media campaigns that leverage existing networks and online communities.

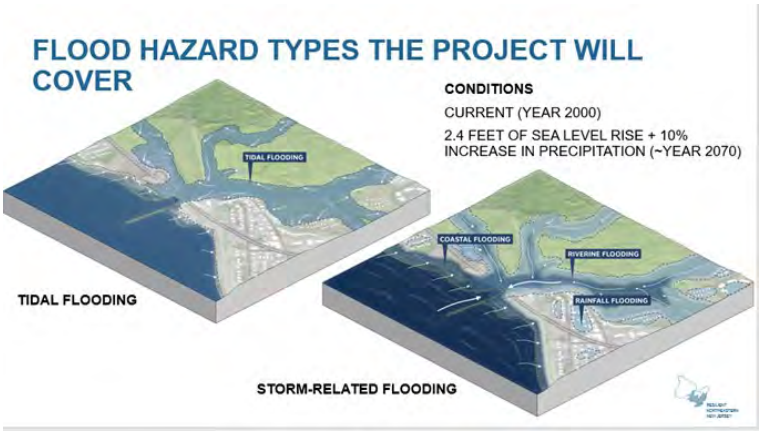


Figure 1: Meeting-in the-Box example is a way to increase climate resiliency and a method to keep the public informed. This strategy allows community members to learn at their own time and pace.

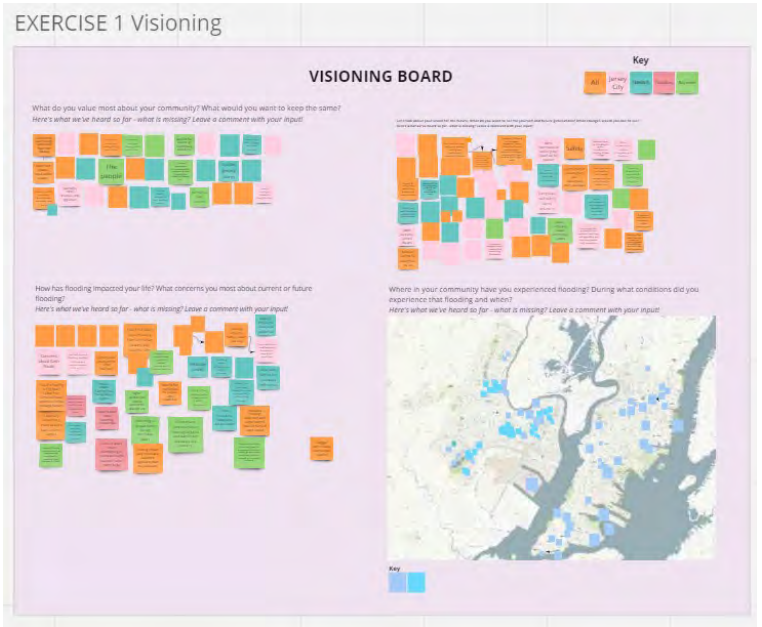


Figure 2: Used for Resilient New Jersey, the Arcadis team developed a "visioning board." This board is a space for the community to share things they love about their town, what they would like to see in the future, and what matters to them most. The goal of the board was to ensure the action plan aligns with the priorities of the community.

It is important for the community to understand their climate vulnerabilities. These three example videos were created in a similar project to help educate the community about flood risk:

What causes flooding in the region?

Know and understand your flood risk

How to protect your home and family from flooding

By combining direct and digital engagement options, we cast a wide net and ensure opportunities for all voices to be heard. These combined methodologies yield a comprehensive community engagement strategy that builds trust, promotes awareness, and fosters collaboration to address the challenges of climate vulnerability.

Outreach

Following the rain and flooding events of April 12-13, conversations are emerging around equity and priority and disadvantaged communities being left behind. In this sense, the outreach mission has never been more critical, and so a wide and innovative net must be cast. The approach to outreach must be comprehensive and utilize trusted mediums to reach intended audiences, and ultimately to ensure all members of the community are aware and informed of the planning process and have an opportunity to have their voice be heard. We understand that within a diverse community, citizens obtain or receive information through a variety of mediums. In this way we leverage existing partnerships and networks to spread the word about the assessment, including non-profits, faith-based organizations, community organizations, local businesses, academic community, environmental groups, elected official constituent lists, among others. We curate a digital outreach strategy to leverage social media and other online channels to share information about the vulnerability assessment and adaptation plan engage with stakeholders and the broader public. Examples of content in a social media campaign would include pop-ups, flyers/one-pagers, visual collateral (photos, video capsules), and targeted notices for public meeting notices. Social media can also be used to capture information through deployment of brief surveys or calls to action or directing to parent sites. By deploying a comprehensive outreach strategy that leverages a range of tactics and mediums, the City can maximize reach and impact to ensure an equitable process that acknowledges and responds to recent dialogue in a proactive manner, and building a broad coalition of support for the VA and partial adaptation plan.

Section 05.
References

5. References

1 Recurrent Flooding Analysis and Flood Resilience Strategy Development

Portsmouth, VA

Description. The City of Portsmouth retained the Arcadis team to provide resilience program planning and analysis with various City departments: Planning, Public Works, Public Utilities, Parks and Recreation, Information Technology, Public Safety, and others. The Arcadis team developed a resilience program approach, factoring in City priorities and the recently updated Comprehensive Plan. The three-phase approach consisted of: Phase 1 – Resilience Plan Development: Intake & Mapping, Phase 2 – Resilience Plan Development: Engagement & Evaluation and Phase 3 – Resilience Plan Development: Synthesize and Opportunity.

A preliminary gap analysis and an interview process involving key department and City leadership members were completed as part of Phase 1. Key findings from Phase 1 were used in the development of a project application and approach to fund remaining Phases of developing the City's Resilience Plan. This application was submitted to the Department of Conservation and Recreation's (DCR) Community Flood Preparedness Fund (CFPF), leading to an award for developing Portsmouth's Data-Driven and Equity-Driven Flood Resilience Strategy. Arcadis is currently developing the Flood Resilience Plan which will provide direction on key actions for the City to improve its resilience posture. All actions will be developed based on inclusive community engagement that will include community visioning, communication of risk and resilience alternatives, definition of evaluation criteria, and vetting and refinement of preliminary and final recommendations.

The scope of work includes the following tasks:

- Initial internal stakeholder engagement, review of precedent work and needs assessment
- Identify areas of concern based on flooding hazards
- Conduct Flood Risk and Vulnerability Assessment
- Develop Asset Inventory
- Conduct Quantitative Flood Risk Assessment
- Conduct Social Vulnerability Analysis
- Develop Resilience Toolkit and Identify Adaptation Strategies
- Develop Evaluation Criteria and Preliminary Recommendations
- Develop Adaptation Action Plan

Baseline review of The Flood Resilience Plan will identify and prioritize next steps for the City, such as the development of conceptual designs for selected projects; identification and development of additional grant applications for further planning, design, and construction; and the advancement of policy and governance recommendations.

In addition to providing flood resilience services, the Arcadis team is currently updating the City's stormwater masterplan.

Client
City of Portsmouth

Reference
James Wright, PE, CSM
City Engineer / Interim Deputy City Manager
801 Crawford Street, 4th Floor
Portsmouth, VA 23704
T. 757 393 8592, ext 4188
E. wrightj@portsmouthva.gov

Completion Date
Ongoing

Total Project Cost *(Estimated & Actual)*
$586,610 (fee)

2 Flood Risk and Resilience Program Support

Coastal, LA

Description. CPRA selected Arcadis to assist in developing the Flood Risk and Resilience Program as part of its 2017 Coastal Master Plan—which Arcadis also assisted in developing—to recommend nonstructural risk reduction projects and develop a framework and application process to distribute funding to parishes and incentivize flood risk reduction policies and practices. Building on the master plan, the Arcadis team generated policy recommendations to enhance resiliency efforts; summary statistics about parishes to better analyze their nonstructural needs; outputs from the Coastal Louisiana Risk Assessment model on the 32 recommended nonstructural project areas; and an applicant handbook, including application descriptions, instructions, details about program/project management, and program policies and procedures.

Arcadis further worked with CPRA in completing a capability and capacity assessment with 24 coastal parishes to better understand parish needs and further guide Flood Risk and Resilience Program development and State resource investment. The assessment, consisted of a comprehensive online survey, in-depth interviews, and in-person workshops, covered various topic areas relevant to effective flood risk management, including staffing, funding, projects, policy, education, coordination, and data. Based on the assessment, Arcadis developed a series of recommendations and strategies for state agencies to guide the Flood Risk and Resilience Program as well as the Louisiana Watershed Initiative. Arcadis also supports the Louisiana Coastal Master Plan.

Client
Coastal Protection and Restoration Authority (CPRA)

Reference
Sam Martin, PMP
Coastal Resources Senior Scientist | Planning and Research Division
Coastal Protection and Restoration Authority
The Water Campus
150 Terrace Avenue
Baton Rouge, LA 70802
T. 225 342 9025 C. 225 252 9913
E. sam.martin@la.gov

Start - Completion Date
2016 – 2018

Total Project Cost *(Estimated & Actual)*
$165,000 (flood risk and resilience program support only)

3 FEMA FY20-22 FMA Grant Management services for the City of St. Petersburg

St. Petersburg, FL

Description. Arcadis has provided Flood Mitigation Assistance (FMA) grant application and management services for the City of St. Petersburg for three years, to elevate severe repetitive loss properties in the Shore Acres community located in the coastal AE flood zone and impacted by tidal and storm surge flooding from nearby Tampa Bay. Services included engagement with homeowners, complete application development, benefit-cost analysis, and environmental and historic preservation (EHP) compliance.

The FY20 application was successfully awarded funding from FEMA, and all FY21 applications were deemed cost effective and technically feasible from FEMA's National Technical Review, and as encouraged by FEMA, were re-submitted under FY22 as program funds were exhausted in FY21.

Client
City of St. Petersburg

Reference
Dr. Shrimatee Ojah Maharaj, AICP
Grants Officer
One 4th Street N
City of St. Petersburg, FL 33701
T. 727 892 5180
E. shrimatee.ojah-maharaj@stpete.org

Start - Completion Date
2019 - Ongoing

Total Project Cost *(Estimated & Actual)*
$56,000

4 Ohio Creek National Disaster Resilience Competition and Design Services

Norfolk, VA

River shoreline post construction

Description. The City of Norfolk then selected the Arcadis team (an Arcadis and Waggonner and Ball partnership), to perform the technical design services for the Ohio Creek Watershed Transformation Plan ("NDRC Ohio Creek Project") to develop the application's conceptual design into permittable construction documents.

Through this project, the City seeks to not only reduce risk of flooding, but also to build a resilient community by implementing strategic approaches that address identified stresses such as nuisance flooding but also enhance the social fabric and economic vitality of the community. The team was tasked with developing replicable strategies that could be utilized throughout the region.

The Arcadis team utilized a series of design work sessions to engage government resources, technical experts and stakeholders in the development of the adaptation alternatives. The alternatives were modeled and vetted for effectiveness and community acceptance before proceeding with permitting and detailed design. The Arcadis team is implementing detailed design and development of construction documents in close coordination with the City's departments to ensure a successful transition will occur into the construction phase within the project schedule. Project is currently under construction.

"The city selected Arcadis not only because it's staffed with experts who understand the unique nature of our flooding challenges and bring innovative and sustainable ideas to the table, but because they believe in what we are trying to accomplish — a resilient coastal community for the future,"

Scott Smith, Coastal Resiliency Manager, City of Norfolk

Client
City of Norfolk

Reference
Scott Smith
Coastal Resiliency Manager
City of Norfolk
501 Boush Street,
Norfolk, VA 23510
T. 757 441 2602
E. Scott.Smith@norfolk.gov

Completion Date
2023 (estimate)

Total Project Cost *(Estimated & Actual)*
$750,0000 (winning competition)
$11.6 million (engineering)

Additional Subconsultant References - Jacobs

SOUTH FLORIDA MILITARY INSTALLATION RESILIENCE REVIEW (MIRR) | HOLLYWOOD, FL

Description. The South Florida MIRR spans three counties and four key installations, including U.S. Naval Air Station Key West (NASKW). The purpose of the MIRR is to identify the risks, hazards and vulnerabilities of concern related to the ability of the military to carry out its missions on the installation that could be mitigated through investments and solutions outside the fence line in the community. Jacob's uses the planning horizons of 2040 and 2070 for projections and forecasted vulnerabilities and shocks in addition to everyday stresses the installation faces.

The project kickoff and visioning session took place in May at the U.S. Southern Command Headquarters.

Over the summer, Jacob's team conducted four site visits with tours and work group meetings with installation planners, municipal leaders and utility providers for fact finding and data collection. Key West staff members were valuable contributors during the site visit. While NASKW assets are indeed vulnerable to climate change and sea level rise, they are also highly valuable and unique installations for homeland security and their regional economies. The vulnerability assessment is now complete. Jacob's entered 2023 gearing up for strategy development and project definition with a completion target date by summer 2023.

Client
South Florida Regional Planning Council

Reference
Isabel Cosio Carballo, MPA
Executive Director
1 Oakwood Boulevard, Suite 250
Hollywood, FL 33020
T. 954 924 3653
E. Isabelc@sfrpc.com

Completion Date
2023

Total Project Cost *(Estimated & Actual)*
$650,000

WASTEWATER/WATER SYSTEM RESILIENCE ASSESSMENT PLAN AND PROGRAM | CITY ST

Description. **Jacobs** developed a comprehensive Resilience Plan to serve as an action-oriented guide to position JEA for long-term reliability and resilience for potable water, wastewater, chilled water, and reclaimed water systems through identification of flood risk, development and prioritization of mitigation strategies, and the incorporation of aggressive design standards for future capital projects. They also provided program management, engineering and design services to improve system reliability and resilience during extreme weather events.

They initially reviewed and prioritized JEA facilities based on highest vulnerability and criticality. They then determined the benefits of resilience investments for each facility based on monetized risk, calculated as the product of consequences of flooding times the probability of flooding. The probability of flooding was determined for each asset based on the flood modeling scenarios. They then developed applicable strategies that provide varying levels of protection based on asset criticality and anticipated service life. The adaptation strategies developed fall into three categories: elevation, hardening, and flood barriers. They used the risk and strategy cost data to drive a cost/benefit analysis and prioritize facility investments based on return on investment. The plan was so well received by the water side of JEA that the power side of the house currently has Jacobs engaged for a similar and complementary energy resilience plan!

Client
JEA

Reference
Oliver C. Domingo
Project Manager
T. 904 665 6325
E. domioc@jea.com

Completion Date
2021

Total Project Cost *(Estimated & Actual)*
$1.4 million

Additional Subconsultant References - Jacobs

INTEGRATED WATER MANAGEMENT CONSULTANT | MIAMI BEACH, FL

Description. This multi-disciplinary flood mitigation program focuses on reducing flood risk through a comprehensive and integrated approach to managing water resources. It is a community-based flood mitigation and SLR adaptation plan to guide capital investment and project prioritization for immediate needs, near-term activities, and longer-term strategies to enhance the resilience of the City. This program will set the industry standard for integrated approaches to mitigate current flood risk and adapt to future flood risk in coastal communities. Work to date includes road elevation/ adaptation policy, capital budget reprioritization, and neighborhood design improvements.

Each project incorporates a complete street approach, including enhancements to pedestrian, bicycle, and vehicular access, streetscape aesthetics, traffic calming, and dry and wet utility replacement while improving the road surface durability elevation and resilience to flooding. The city's blue/ green infrastructure plan includes best practices, implementation strategies, concept plans and "Living with Water" renderings for not only the many challenging conditions across the city, but also incorporating blue/green strategies that blend road-raising efforts within their site-specific contexts around Miami Beach. Aside from the highly urbanized and dense context of Miami Beach, other constraints included historic building stock across the city, shallow groundwater levels with limited soil and storage capacity, rising sea levels, low topographic elevations, along with extreme and intensifying storm events.

Client
City of Miami Beach

Reference
Eric Carpenter
Deputy City Manager
1700 Convention Center Drive
Miami Beach, FL 33139
T. 305 673 7000 ext. 7080
E. ericcarpenter@ miamibeachfl.gov

Completion Date
2022

Total Project Cost *(Estimated & Actual)*
$1.1 million

TYNDALL AIR FORCE BASE REBUILD AND COASTAL RESILIENCE | FL

Description. After Hurricane Michael devastated the Tyndall AFB base in October 2018, Jacobs developed governance documents and a Program Management Plan to guide the Rebuild Program. The program incorporates planning and design strategies supporting operational readiness and efficiency; creating a secure, resilient environment; addressing flood and storm surge risks; and consolidating development to use land efficiently. Guiding principles included cost-saving resource efficiencies, improved environmental performance, personnel safety, and augmentation of severe weather and climate resilience performance through the pillars of sustainability, resilience, and smart technologies.

Jacobs evaluated coastal flood risk and other natural hazards to identify vulnerabilities to infrastructure, base operations, and mission readiness and to inform the development design guidelines for reconstruction. They used GIS to perform asset vulnerability assessments and provided map support and site characterization for USAF 1391 design package submittals and NEPA review. Robust stakeholder engagement played a critical role in project development and support. Their Kaleidoscope platform hosts interactive maps, and the viewing portal fostered alignment on a vision for the future and streamlined decision-making. Jacobs developed 42 capital infrastructure project descriptions and cost estimates focused sustaining the critical DoD mission at the base, with high priority projects including water, wastewater, stormwater, buildings, and roadways to maintain operational continuity of the base. Their work continued through 2022 focused on developing four nature based coastal projects, including securing $15M for design and construction. They just finalized and submitted a companion Coastal Resilience Implementation Plan for the installation.

Client
U.S. Air Force Program Management Office (PMO)

Reference
Traycee Verdun-Chapman
Community Planner and Partner Liaison
T. 314 737 3088
E. traycee.chapman@us.af.mil

Completion Date
2022

Total Project Cost *(Estimated & Actual)*
$1.6 million

Subconsultant References - Miller Legg

CITY OF MIAMI BEACH FLAMINGO & COLLINS HISTORICAL SURVEYING | MIAMI, FL

Description. **Miller Legg** was retained by the City of Miami Beach to conduct surveys in order to prepare FEMA elevation certificates for the Historic Buildings classification and Lifting Feasibility Guidelines Study of 444 structures in the Flamingo Park Historical District and 86 structures in the Collins Waterfront Historical District. This work was part of a project to evaluate the City's options for these structures (including elevation, remain in place, demolish, relocate, harden) in preparation for any future sea-level rise. GIS was used to efficiently collect and assemble project photos and data in the field.

Miller Legg worked in tandem with our structural engineering subconsultant in its structural lifting analysis assignment for this project.

Client
City of Miami Beach

Reference
Carmen Sanchez
Deputy Planning Director
City of Miami Beach
1700 Convention Center Drive
Miami Beach, FL 33139
T. 305 673 7550
E. csanchez@MiamiBeachFL.gov

Completion Date
2018

Total Project Cost *(Estimated & Actual)*
$144,000

THE CORRADINO GROUP, INC.


THE CORRADINO GROUP, INC.

MIAMI-DADE WATER & SEWER DEPARTMENT

Subconsultant References - Erin L. Deady, P.A.

VULNERABILITY ASSESSMENT | MONROE COUNTY, FL

Description. **ELDPA** has led the County's resilience planning efforts supporting staff since 2013 and developed the Resilience Planning Grant R2111 awarded to Monroe County to update its original vulnerability assessment (VA) conducted in 2015. For this 2020-2021 work, ELDPA led the team, which also included Clearview, performing habitat analysis (one of the only VAs to perform that analysis to date) among other modeling efforts.

Using a baseline GIS database containing building elevation certificates, planning-grade sea level adjusted floodplains, and local sea-level-rise tide projections, the team identified multiple climate-driven vulnerabilities and provided visualizations of potentially flooded infrastructure in 2040, 2070, and 2100. The team conducted the GIS analysis to identify potential vulnerabilities with consideration of natural areas, assets, and infrastructure, as well as the social fabric of the community.

Multiple modeling tools were used including SLAMM, Hazus and other GIS based tools. The project team also created a story map of the project methods and results. Modeling change in habitat and mangrove encroachment, the team identified habitats that are especially vulnerable to rising sea levels. These data served as a foundational component for identifying the County's adaptation action areas.

Client
Monroe County

Reference
Rhonda Haag
Chief Resilience Officer
1100 Simonton Street
Key West, FL 33040 / 102050 Overseas Hwy. Key Largo, FL 33037
T. 305 453 8774
E. Haag-Rhonda@MonroeCounty-FL.Gov

Completion Date
2021

Total Project Cost *(Estimated & Actual)*
$92,000

Highlights:

- Sea level rise analysis
- County-wide resilience planning
- Public outreach

MONROE COUNTY WATERSHED MANAGEMENT PLAN (2019) | KEY WEST, FL

Description. From January 25, 2017-August 6, 2019, during the work that Lori Lehr, Inc. was performing for Monroe County related to CRS Class certification, the County received a National Oceanic and Atmospheric Administration (NOAA) grant (written by Erin L. Deady and Dr. Jason Evans) to develop a Watershed Management Plan pursuant to Activity 452.b in the CRS program. The project included communities across four states. A Final Watershed Management Plan was presented to the Monroe County Board of County Commissioners in 2019.

The project was challenging because it was the first instance in Florida where a local government had undertaken a Watershed Management Plan under CRS utilizing new criteria related to sea level rise. There was extensive coordination with ISO/CRS led by Lori Lehr and supported by Dr. Jason Evans and Erin Deady. The scope of the modeling that needed to occur, scenarios for sea level rise and extent of stormwater infrastructure analyzed were all points of discussion with ISO and the analysis was led by Dr. Jason Evans and Alex Zelenski. Field data was collected to resolve issues of key structures to model.

Since the project was grant funded, there was no room for cost overruns and the budget was met on time for the County to incorporate the plan into its efforts to increase is Class score from a 5 to a 3, over performing on the County's original goal to secure a Class 4 rating. This was the first such project approved by ISO in the State of Florida and only the 2nd nationally to develop and receive approval for an Activity 452.b Watershed Management Plan.

Client
Monroe County

Reference
Christine Hurley
Executive Director
Monroe County Land Authority
1200 Truman Avenue, Suite 207
Key West, FL 33040
T. 305 295 5180
E. hurley-christine@monroecounty-fl.gov

Completion Date
2019

Total Project Cost *(Estimated & Actual)*
$100,000

Highlights:

- Scored CRS-Watershed Management Plan
- Sea level rise analysis
- Stormwater management system analysis

Subconsultant References - Erin L. Deady, P.A. | Clearview

ST. LUCIE COUNTY VA, ST. LUCIE COUNTY ENVIRONMENTAL RESOURCE DEPARTMENT | FORT PIERCE, FL

Description. **ELDPA** and **Clearview** led the development of the St. Lucie County Vulnerability Assessment (VA) as a product of Resilience Planning Grant R2133 as subcontractors to Tetra Tech. The project included the County and the municipalities within the County. The VA addresses (1) flood related impacts under various sea level rise scenarios and tidal flooding, (2) critical buildings and infrastructure, (3) natural resources, and (4) at-risk populations. The analysis forms the foundation of an evidence-based, strategic resilience plan that systematically prioritizes and develops adaptive strategies to address areas of vulnerability.

Development of the key findings and data analysis for the VA was led by ELDPA and Clearview Geographic. The first effort was initiated before the Section 380.093, F.S. legislation was enacted for the Resilient Florida program but serves as a basis to update that information in a forthcoming VA update and implementation of a CDBG-MIT resilience planning effort.

The ELDPA / Clearview team led the entire VA approach, all data collection efforts, a modeling strategy and significant mapping output. The team also conducted numerous elected official briefings and public outreach events in conjunction with Oxbow Eco-Center in St. Lucie County. The work has also served as the foundation for a supplemental Resilient Florida Grant and the County is currently engaged in efforts to develop a Stormwater Master Plan that will provide significant data for the next VA effort funded by the Resilient Florida program.

Client
St. Lucie County

Reference
Sandra Bogan, Resilience Navigator, St. Lucie County
2300 Virginia Avenue, Fort Pierce, FL 34982
T 772 462 1848
E. bogans@stlucieco.org

Completion Date
2021

Total Project Cost *(Estimated & Actual)*
$75,000

Highlights:

- Multi-jurisdictional with County and municipalities
- Sea level rise analysis
- County-wide resilience planning
- Public outreach

CITY OF PENSACOLA VULNERABILITY ASSESSMENT | PENSACOLA, FL

Description. **ELDPA** and **Clearview** prepared the VA for the City of Pensacola through Resilience Planning Grant R2116. The VA presents an updated analysis of the City of Pensacola's vulnerabilities, with a particular focus on ecological and social vulnerabilities to guide future planning efforts. The project team developed stormwater project recommendations for the city, both to guide adaptation measures based on the VA and to improve the quality of future assessments. Clearview developed several map books and corresponding GIS data detailing the NOAA level rise projections. Using a 2040, 2070, and 2100 planning horizon and the NOAA Intermediate High and Intermediate Low flood projections in an analytical model that assigned a ranked priority based on timeline to impact and estimated water depth for the critical assets, areas, and infrastructure. Additionally, Clearview identified Priority Planning Areas and a stormwater project priorities list for retrofitting outfalls with tide valves.

Client
City of Pensacola

Reference
Cynthia Cannon, AICP
Assistant Planning & Zoning Manager
222 W. Main St.
Pensacola, FL 32502
T. 850 435 1670
E. ccannon@cityofpensacola.com

Completion Date
2021

Total Project Cost *(Estimated & Actual)*
$85,000

Highlights:

- Sea level rise analysis
- Grant funding

Subconsultant References - Erin L. Deady, P.A. | Clearview

CITY OF WEST PALM BEACH VULNERABILITY ASSESSMENT | WEST PALM BEACH, FL

Description. **ELDPA** and **Clearview** are preparing the VA for the City of West Palm Beach through a Resilience Planning Grant. The VA presents the City's first Vulnerability Assessment that will comply with the new Resilient Florida criteria, with a particular focus on infrastructure readiness and social vulnerabilities to guide future planning efforts. The project team has also developed 6 successful Resilient Florida grant applications for the City over the last two years for drainage, lift station hardening, underground utilities hardening (2 phases), tidal valves and a supplemental planning to expand the outreach and other elements of its Vulnerability Assessment planning process. Through the grant application process, Clearview has already developed several map books and corresponding GIS data detailing the NOAA level rise projections. Using a 2040, 2070, and 2100 planning horizon and the NOAA Intermediate High and Intermediate Low flood projections in an analytical model that assigned a ranked priority based on timeline to impact and estimated water depth for the critical assets, areas, and infrastructure.

Client
City of West Palm Beach

Reference
Penelope Redford
Resilience & Climate Change Manager
City of West Palm Beach
401 Clematis Street
West Palm Beach, FL 33401
T. 561 804 4981
E. predford@wpb.org

Completion Date
Ongoing

Total Project Cost *(Estimated & Actual)*
$192,475

Highlights:

- Sea level rise analysis
- Grant funding

Section 06.

Minority/Women (M/WBE) Participation

6. Minority/Women (M/WBE) Participation

Arcadis implements a M/WBE program that creates value for our clients as well as benefits our employees and our communities through the enhanced economic environment that the success of these businesses brings. Arcadis fully subscribes to the proposition that a climate conducive to the development, growth, and expansion of M/WBE businesses is vital to the economic health. We also believe in being an active participant in the community by providing mentorship to its students, building relationships with its community leaders, and promoting community M/WBE firms to embody the Arcadis core value of entrepreneurship. To encourage and support this value, Arcadis aggressively pursues subcontracting opportunities with small, disadvantaged, woman-owned, minority-owned, and service-disabled veterans' concerns in accordance with the laws and regulations of the U.S. government, the State of Florida, and Broward County. Arcadis has partnered with the following minority subconsultant for this contract:

ERIN L. DEADY, P.A.

We have teamed with **Erin L. Deady, PA, (ELDPA),** a Delray Beach-based firm that has completed numerous planning, code, and resilience projects across Florida (and specifically South Florida) and has provided input and guidance to the Florida Department of Environmental Protection (DEP) for the Resilient Florida Program. The addition of Erin on the team provides a necessary and critical level of legal risk analysis for vulnerability and resiliency planning to help local governments navigate the complexity of prioritization of adaptation response. ELDPA continues to coordinate directly with agency staff on rule interpretation on several key aspects of the program. ELDPA has led the development of numerous vulnerability assessment statewide including numerous aspects of the policy implementation approach for resiliency in Monroe County, Martin County, and many municipalities throughout the State of Florida. Currently, ELDPA is leading vulnerability assessments (or updates) in Islamorada, Pensacola, West Palm Beach, Martin County and Lynn Haven. ELDPA led the development, with Clearview Geographic, of all of the vulnerability planning conducted in Monroe County in 2015 and 2021 and is a subconsultant on the Countywide Roads Adaptation planning. She has written over 20 successful grants in the Keys related to resiliency and vulnerability planning and project work. She recently authored a successful grant for the City of Key West awarded by the Division of Emergency Management to conduct a Watershed Management Plan under the NFIP CRS program.


State of Florida

Woman Business Certification

Erin L. Deady, PA

Section 07.

Subcontractors

7. Subcontractors

In addition to our subconsultant partners listed below, we have numerous relationships with other subconsultants that we could engage rapidly as specific project needs arise.

Jacobs has evolved from a one-person engineering consultant to a publicly traded Fortune 500 company. We lead the global professional services sector delivering solutions for a more connected and sustainable world.

Last year, Jacobs Engineering transitioned to Jacobs Solutions, to better align with our intelligence, infrastructure, cybersecurity, space portfolio, resilience, and sustainability. This move is the latest part of a deeper strategy change at our company. CEO Steve Demetriou is committed to global infrastructure modernization, climate response, and the digitization of the industry as three multi-decade growth opportunities for the firm.

We understand that resilience is more than planning for sea level rise and flooding. It is a new approach to infrastructure projects that develops a comprehensive solution to manage or mitigate the wide range of current and future risks while enhancing quality of life and public and private investment for long-term performance and the realization of the broader benefits to environmental and social systems.

Jacobs will channel its expansive capabilities in water, power, transportation, and environmental markets, and tap resiliency experts to bring forward bold solutions. Our 61,000+ multidisciplinary professionals in more than 400 communities around the globe are excited about these developments focused on the future. With more than 4,000 employees that call the Sunshine State home, the Jacobs Resilience Center of Excellence is located in Florida—supported by our firmwide top resilience leaders: Jason Bird, CFM, and Susy Torriente. We're bringing our top resilience leaders to your project and we will share best practices and lessons learned to date from other coastal and island communities. We are at the forefront of water and climate resilience, with over 3,000 specialists who work worldwide to help our clients' infrastructure and communities stay safe, resilient, and adaptable to change. We are committed to providing you with a long-term trusted partner that can help you get this important resilience implementation plan ready for future generations.

Climate Vulnerability Assessment (CVA) and Adaptation Planning

Climate-related resilience is more than suggesting sea walls, higher levees, bigger tunnels, and more reservoirs. The City requires a multi-pronged approach to tackle a host of challenges, while preserving its historic charm. Jacob's climate scientists, infrastructure designers, and public engagement experts collaborate on a vision, perform detailed risk assessments, and implement adaptations that bring the most protection and value to each community. Jacobs has **completed hundreds of climate change mitigation and adaptation projects** for national governments, state municipalities, and private clients globally. They've developed, and regularly use a number of industry leading analytical vulnerability assessment tools and models including the EPA Climate Ready Guide and the United Nations ARISE Buildings Resilience Scorecard. Their assessments identify and rank high-risk critical infrastructure, including human health risks (such as from power, water, and wastewater facility failures) to economic risks such as business continuity or supply chain issues.

Vulnerability Assessments and Adaptation Plan Experience

With an extensive portfolio of projects focused on building infrastructure and community resilience against the adverse effects of extreme weather events and climate change, Jacobs is at the forefront of developing and implementing long-term, adaptive solutions. The featured project experience table on the following page includes scope items similar to this project.

1. Climate Vulnerability Assessment
2. Adaptation Plans
3. Traditional Hardscape Engineering
4. Nature-Based Adaptation/GI/LID
5. Historic & Cultural Preservation
6. Economic Redevelopment
7. Community Adaptation (Housing/Health/Social Wellness)
8. Policy Writing/Guidance (LDRs & AAAs)
9. Public Facilitation/Engagement
10. Interactive Maps

Additional Project Experience										
Projects	Selection Criteria									
	1	2	3	4	5	6	7	8	9	10
South Florida Military Installation Resilience Review (MIRR) South Florida		✓	✓	✓		✓	✓	✓	✓	✓
Wastewater/Water System Resilience Assessment Program Jacksonville, FL	✓	✓	✓	✓				✓		✓
Integrated Water Management Consultant Miami Beach		✓	✓	✓	✓		✓	✓	✓	✓
Tyndall Air Force Base Rebuild and Coastal Resilience Panama City, FL	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓
Historic Greynold's Park Seal Level Rise Flood Mitigation Strategy Miami, FL		✓	✓	✓	✓		✓		✓	✓
Water Agency Climate Vulnerability Assessment and Adaptation Plan Sonoma County, CA	✓	✓	✓	✓		✓		✓	✓	✓
Electrical Resilience Plan Jacksonville, FL	✓	✓	✓			✓		✓		✓
Climate Change Vulnerability Assessment, Adaptation, and Mitigation Plan Prince George and Montgomery Counties, MD	✓	✓	✓	✓	✓	✓			✓	✓
Miami-Dade Ocean Outfall Legislation (OOL) Program Miami, FL		✓	✓	✓				✓		✓
San Francisco Waterfront Resilience Program San Francisco, CA		✓	✓	✓	✓	✓		✓	✓	✓
Hurricane Irma & Maria Response San Juan, PR; St. Croix, USVI			✓		✓		✓	✓		
Smithsonian Climate Change Adaptation Plan Fort Pierce, FL; Washington DC; New York, NY	✓	✓		✓	✓			✓	✓	
Confronting Climate Change and Population Growth Effects on Sewer and Wastewater Systems New York, NY	✓	✓	✓	✓					✓	✓
Facilities, Storm Drainage, Wastewater, and Climate Plan Boston, MA		✓	✓	✓	✓					✓
USEPA Drought Guide, Adaptation Planning, and Climate Resilience Evaluation and Awareness Tool (CREAT) Toolbox Nationwide		✓	✓	✓				✓	✓	✓
East Side Coastal Resiliency "Rebuild the Design" New York, NY		✓	✓	✓	✓	✓	✓	✓	✓	✓

MILLER LEGG
IMPROVING COMMUNITIES. CREATING ENVIRONMENTS.

Miller Legg is a state-wide award-winning consulting firm that brings together the elements of surveying, geographic information systems, engineering, planning, landscape architecture and urban design, and environmental wetlands consulting services. Miller Legg works successfully to improve communities and create environments for a variety of clients. Client sectors include transportation, municipal and county government, healthcare, education, federal and international. This offers their clients a firm of seasoned professionals who are leaders in the Florida consulting industry.

Miller Legg, established in 1965, employs a staff of 43 professionals and technicians. The firm has locations in Fort Lauderdale, Miami and Port St. Lucie. Miller Legg has been **collaborating with the City of Fort Lauderdale for more than 25 years** on a variety of projects including parks and recreation, streetscapes and roadway improvements, stormwater drainage as well as aviation projects including at the Executive Airport and its adjacent parcels.

The firm's surveying services include: land surveying such as boundary, land title, route, right-of-way, platting, design and control, topographic, Subsurface Utility Engineering (SUE), as-built, tree, and hydrographic surveys, construction

layout, Construction Engineering Inspection (CEI) surveys, field monumentation, sketches and descriptions for acquisitions and easements, GPS data collection and LIDAR scanning. In addition, they provide quantity (earthwork) surveys, condominium surveys, title document analysis, plot plans, and expert witness testimony.

In 2020, their Survey Department launched the use of laser scanning technology. As well as collecting data quickly, laser scanning is a perfect solution for projects which are relatively inaccessible, have complex detail or are unsafe to survey in the traditional way. Their market for this technology expanded as they also provided interior and structure scanning.

The firm has completed numerous municipal, county, state and federal projects ranging from neighborhood improvement and redevelopment projects, educational facilities, neighborhood parks, and golf course designs to regional water and sewer utilities, complete street projects, streetscapes, streets and highways, and cemeteries.

Additionally, the firm has successfully completed several thousand private sector projects including residential developments from two to 7,000 acres, industrial and office sites, hotels and theme park facilities, hospitals and medical office complexes, commercial properties, retail shopping centers and franchise properties. The firm has been involved with more than 100,000 acres of project design development in Florida.

Their approach to each project is best characterized by a “partnering relationship.” They dedicate themselves to learning the culture of their clients, their specific concerns, desires and needs, much like an extension of their own offices. They consistently strive to maintain time schedules and to provide factual and frequent communication.

Miller Legg prides itself on its team approach to the interdisciplinary needs unique to the project and client. They provide responsive, personalized, quality service to value-conscious private clients and select government agencies, who desire the very best in planning and design.

Miller Legg CIty of Fort Lauderdale Project Experience:

- City of Fort Lauderdale Executive Airport (FXE) Gopher Tortoise Plan
- City of Fort Lauderdale Mills Pond Park Environmental Construction Observation
- City of Fort Lauderdale Fire Station #35 ESA
- City of Fort Lauderdale Executive Airport (FXE) 5-Year EPD Drainage System Re-Certification
- City of Fort Lauderdale Executive Airport (FXE) Wildlife Hazard Management Plan (WHMP)
- City of Fort Lauderdale Executive Airport (FXE) Wildlife Hazard Assessment
- City of Fort Lauderdale FXE Parcel 21B NRA Native Vegetation Protection & Tree Inventory
- City of Fort Lauderdale Marina Lofts Traffic and Parking Reduction Studies
- City of Fort Lauderdale Aldi Foods Traffic and Parking Reduction Studies
- City of Fort Lauderdale Joseph C. Carter Park Improvements
- Fort Lauderdale Executive Airport (FXE) Mitigation Services Parcel 21B
- City of Fort Lauderdale Sailboat Bend Traffic Calming Improvements
- City of Fort Lauderdale Bayview Drive Stormwater & Drainage Improvement
- City of Fort Lauderdale SR A1A Mercedes River Bridge to Flamingo Avenue TDLC
- City of Fort Lauderdale New River Yacht Club West Traffic Study
- City of Fort Lauderdale FXE Parcel B C & D Engineering / Earthwork
- City of Fort Lauderdale Executive Airport (FXE) Parcels B, C & D Environmental Services
- City of Fort Lauderdale Development Review Services
- City of Fort Lauderdale Professional Traffic & Transportation Engineering Services
- City of Fort Lauderdale General Environmental Engineering Services
- City of Fort Lauderdale Environmental Master Continuing Services Contract
- Fort Lauderdale Housing Authority NEPA/Categorical Exclusion
- Las Olas Marina Expansion Environmental Feasibility Study
- City of Fort Lauderdale FXE Cypress Creek Preserve

Select Projects in Fort Lauderdale

- FXE Outparcels B, C, D - First Industrial - Cypress Creek Commerce Center Site Work | Client(s): First Industrial Realty Trust, Inc.
- City of Fort Lauderdale Las Olas Streetscape Design | Client(s): The Corradino Group
- Las Olas Boulevard Improvements CM at Risk | Client(s): SKANSKA USA Building, Inc.
- School Board of Broward County (SBBC) Sunland | Park Elementary School Surveying | Client(s): School Board of Broward County (SBBC)
- Westminster Academy Master Plan | Client(s): Westminster Academy
- Wingate Landfill Closure | Client(s): Shaw Environmental, Inc.
- Skylofts on 3rd Avenue Site Development | Client(s): Skyland Management, Inc.

We have teamed with **Erin L. Deady, PA, (ELDPA),** a Delray Beach-based firm that has completed numerous planning, code, and resilience projects across Florida (and specifically South Florida) and has provided input and guidance to the Florida Department of Environmental Protection (DEP) for the Resilient Florida Program. The addition of Erin on the team provides a necessary and critical level of legal risk analysis for vulnerability and resiliency planning to help local governments navigate the complexity of prioritization of adaptation response. ELDPA continues to coordinate directly with agency staff on rule interpretation on several key aspects of the program. ELDPA has led the development of numerous vulnerability assessment statewide including numerous aspects of the policy implementation approach for resiliency in Monroe County, Martin County, and many municipalities throughout the State of Florida. Currently, ELDPA is leading vulnerability assessments (or updates) in Islamorada, Pensacola, West Palm Beach, Martin County and Lynn Haven. ELDPA led the development, with Clearview Geographic, of all of the vulnerability planning conducted in Monroe County in 2015 and 2021 and is a subconsultant on the Countywide Roads Adaptation planning. She has written over 20 successful grants in the Keys related to resiliency and vulnerability planning and project work. She recently authored a successful grant for the City of Key West awarded by the Division of Emergency Management to conduct a Watershed Management Plan under the NFIP CRS program.


The American Institute of Certified Planners

The Professional Institute of the American Planning Association

hereby qualifies

Erin L. Deady

as a member
with all the benefits
of a Certified Planner and
responsibility to the
AICP Code of Ethics
and Professional Conduct.

Certified Planner Number: 022314

February 4, 2008


State of Florida

Women Business
Certification

Erin L. Deady, PA

Is certified under the provisions of
287 and 295.187, Florida Statutes, for a period from:
October 25, 2022 October 25, 2024


The Florida Bar

I CERTIFY THE FOLLOWING:

Membership records of The Florida Bar indicate that The Florida Bar number listed above was admitted to practice law in the state of Florida on October 2, 2000.

The Florida Bar number above is an active member in good standing of The Florida Bar who is eligible to practice law in the state of Florida.

Dated this 6th day of July, 2023.

Cynthia B. Jackson, CPO
Administration Division
The Florida Bar


GBCI

GREEN BUILDING CERTIFICATION INSTITUTE

Erin Deady

LEED® ACCREDITED PROFESSIONAL

Clearview Geographics, LLC (Clearview) has performed the geographic information system (GIS) VA modeling for the required projections on behalf of numerous counties and municipalities throughout Florida, from the Panhandle to the Keys, which will expedite the development of the Resilient Florida VA for the City of Ft. Lauderdale. Clearview supported the development of the Monroe County VA Update completed in 2021, which included the identification of adaptation action areas, data gap analysis, and sea level rise (SLR) projections for 2040, 2070 and 2100 planning horizons. Clearview also performed the habitat change modeling with the Sea Level Affecting Marshes Model (SLAMM), unique to any VAs conducted in the state, and lasting virtual public outreach via a production StoryMap.

Appendix A

Key Personnel Resumes

Due to page restrictions resumes have been limited to one page each; however, full versions are available to the City upon request.

Leah Richter, PE

Project Officer

Ms. Richter has a diverse background in program management, business advisory and more than 25 years of experience in utility consulting services and civil engineering. She specializes in assisting municipal clients with managing their planning, operational and capital program needs. Her experience includes project management and delivery, risk and resilience assessments, vendor procurement, contract compliance, regulatory permitting, public outreach, annual reporting to bondholders/ trustees, litigation support services, environmental compliance and operation and maintenance evaluation. Ms. Richter serves as project manager and project officer for several large utility management and financial consulting contracts, including for the preparation of multiple revenue bond issuances totaling more than $4 billion. Ms. Richter currently serves as Arcadis's Southeast Florida Operations Leader and is located in our Plantation office, just minutes from the City to provide rapid response to any request.

Key Information

Education/Qualifications

- MS, Civil Engineering, Florida Atlantic University, 2002
- BS, Environmental Engineering, University of Florida, 1997

Years of Experience

Total – 25
With Arcadis – 25

Professional Registrations/ Certifications

- Professional Engineer – FL

Office Location

Plantation, FL

Relevant Experience

County-Wide Sea Level Rise Adaptation Strategy
Miami-Dade County, Miami, FL

Project officer responsible for the development of a county-wide sea level rise strategy for Miami-Dade County. Phased project scope included conducting program gap analysis, comprehensive stakeholder engagement, risk analysis, scenario planning and visualizations, and a typology-based approach to developing and communicating options and alternatives for adapting to rising sea levels through 2060.

PortMiami Consulting Engineer's Reports and Certificates
Miami-Dade County, Miami, FL

Project manager and project officer responsible for the preparation of Consulting Engineer's Reports and Certificates in support of the issuance of the Series 2014 and Series 2021 Seaport Revenue Bonds in accordance with Bond Ordinance requirements. Activities included review of PortMiami organization, management structure, revenue characteristics (historical and budget), cargo and cruise contracts, five-year CIP, facilities inspection documents and other documentation provided to support revenue projections; developed comprehensive financial model to project net revenue for five-year period beyond bond issuance; and prepared a draft and final Consulting Engineer's Report.

Melissa Hew, CFM, WEDG

Project Manager

Ms. Hew is Senior Consultant with Arcadis' Urban and Coastal Resiliency practice, combining her technical background and leadership experience in the public sector for the City of Miami to provide robust project management and strategic advisory support to diverse clients. She has extensive experience in leading resilience planning and climate adaptation and mitigation projects and initiatives, partnership and capacity building, and equitable stakeholder engagement for projects and programs of all scales. She has been successful at managing and building relationships with internal and external stakeholders, community partners, elected officials, and residents to achieve strategic resilience goals. Her project experience includes the areas of watershed planning, vulnerability assessments, nature-based infrastructure, climate adaptation, sustainability, and environmental protection.

Key Information

Education/Qualifications

- MS, Environmental Science – Water Resource Management & Assessment, Towson University, 2014
- BA, Environmental Studies, Tulane University, 2011

Years of Experience

Total – 12

Professional Registrations/ Certifications

- Certified Floodplain Manager (CFM)
- WEDG Associate (WEDG)

Relevant Experience

Resilience Planning and Vulnerability Assessment Project Management
City of Portsmouth, VA

Lead the development of a Data-Driven and Equity-Driven Flood Resilience Plan that will provide key actions for the City to improve its resilience posture. Serve as the client point of contact for resilience planning and vulnerability assessment engagement. Provided strategic task project management for development of an asset inventory, conducting a flood risk and vulnerability assessment, identifying flood hazards, development of a resilience toolkit and adaption strategies, social vulnerability analysis and development of an adaption action plan. Developed inclusive community engagement and outreach strategy and leading stakeholder engagement for the City's Flood Resilience Plan development. Providing ongoing services to address the City's increasing risk from coastal storms, tidal flooding, and other hazards including comprehensive FEMA BRIC grant management services.

Resilience Program Manager
City of Miami Office of Resilience & Sustainability, Miami, FL

Co-author of Miami's first Climate Ready Strategy to reduce risks of flood, heat, and storms over the next 40 years, and maximizing co-benefits. Created policies and recommended policy amendments to mitigate climate risks including policies for the adoption of updated SLR projections for City projects, futureproofing infrastructure, and enhancing natural ecosystems and biodiversity. Provided technical expertise for the analysis, planning, and preparation for sea level rise and other climate hazards – and led community workshops, public meetings, design charrettes and other events on these topics. Lead public engagement efforts for Miami Forever Bond. Worked closely with City's Floodplain Administrator on enhancing the Community Rating System (CRS) program. Managed and engaged internal and external stakeholders, community partners and organizations, elected officials and residents to achieve programmatic and strategic goals for CRS and other programs.

Carly Foster, AICP, CFM

Technical Advisor

Ms. Foster is the Principal Resilience Planner for Arcadis North America's Water Management region. She is responsible for ensuring that Arcadis understands and is capable of responding to and proactively problem solve city, state, infrastructure, and private sector resilience needs. Carly has been integral to the funding of more than $4 billion in resilience-related projects and has helped create resilience programs from the ground up at scales from individual facility, to organization, to neighborhood, to city, to region, to state. Her expertise spans initial problem identification and risk quantification, stakeholder engagement, solution development—whether policy, programmatic, or physical in nature, implementation planning and support, benefit cost analysis, funding, program, grant, and project management, training and capacity building, curriculum development, and post-disaster loss avoidance assessment. She orchestrates project identification, implementation and grant management from early goal setting all the way through project close-out and evaluation.

Key Information

Education/Qualifications

- MSP, Urban Planning, Florida State University (Growth Management Specialization), 2010
- BS, Political Sciences, Florida State University, 2005

Years of Experience

Total – 17
With Arcadis – 12

Professional Registrations/ Certifications

- Certified Planner (AICP)
- Certified Floodplain Manager (CFM)
- FEMA Hazus Practitioner
- FEMA Hazus Professional

Relevant Experience

Expanding Boston's Capacity to Build Coastal Resilience Infrastructure
Innovation Network for Communities, South Boston, MA

Supported the development and analysis of implementation strategies for a district level plan to address sea level rise and recurrent flooding in the Seaport District of Boston. Worked directly with the client and stakeholders, including property owners and the City of Boston, to frame and refine financial, regulatory and governance approaches for funding and constructing shoreline infrastructure to reduce coastal flood risk.

Florida Division of Emergency Management
Public Facilities Flood Mitigation Initiative

Project Lead to develop a manual, workshop and training materials, State Hazard Mitigation Plan update, and proposed siting and prioritization criteria to mitigate public facilities in the state of Florida against flood hazard. Specific coordination is taking place at the state level to fund and implement mitigation projects for state-owned facilities. Conducted four workshops with over 150 participants.

$120-Million Winning National Disaster Resilience Competition Application
Norfolk, VA

Benefit cost analysis team lead and planner to support Norfolk in developing environmental, social, and economic development solutions that support adaptation to sea level rise and prevent repetitive loss in low to moderate income areas of the community.

Edgar Westerhof

Technical Advisor

Mr. Westerhof is Vice President with Arcadis and serves as North America Adaptation Solution Lead. Edgar is a water engineer and planner with 23 years of experience in urban water management. Following his move to the US from the Netherlands in 2012, Edgar led the Arcadis participation in the international HUD Rebuild by Design competition post Sandy, including the winning BIG U plan for the protection of Lower Manhattan. Edgar was the Rockefeller Foundation 100 Resilient Cities participation and contributed to numerous city resilience strategies. He recently joined ASCE Foundation to lead the international Climate Adaptation Working Group. Edgar is a faculty member with Pratt Institute and is contributing author of the book Blue Dunes (Columbia) and Adapting Cities to Sea Level Rise (Island Press).

Key Information

Education/Qualifications

- Post Graduate, Infrastructure Planning, Van Hall Institute Netherlands, 1999
- BS, Water Management, Larenstein University, 1998

Years of Experience

Total – 23

Relevant Experience

BIG U, Bridgeport Resilient and the Blue Dunes Research
Rebuild by Design

Edgar was leading the Arcadis participation in the international HUD Rebuild by Design competition, including the winning BIG U proposal for the protection of Manhattan and project initiation of the first phase, the East Side Coastal Resilience project.

Ohio Creek, NDRC + Portsmouth Climate Plan
City of Norfolk, VA

Lead and resilience advisor as part of the Norfolk National Disaster and Resilience Competition proposal.

Hurricane Sandy Flood Mitigation
New York, NY

Consulted on flood proofing two major confidential clients' telecommunication and office buildings in downtown Manhattan area. The study included measures to make both buildings water resilient for future storm surge and stormwater events.

BIG U and initiation of East Side Coastal Resilience Project (ESCR)
Rebuild by Design, Various Locations

Led the Arcadis participation in the HUD Rebuild by Design competition and multiple proposals, followed by the initiation of the $1.5 billion ESCR project for the protection of Manhattan's Lower East Side through a 2.5-mile-long multi-functional integrated flood protection plan. ESCR construction started in summer of 2021.

Ajani Stewart

Key Stakeholder Engagement; Project Identification & Prioritization

Mr. Stewart is experienced in project management and leading multi-disciplinary teams. He has been practicing in the areas of resilience, sustainability, and environmental protection in Florida for over 20 years. He also has extensive experience in partnership and capacity building, stakeholder engagement, and FEMA Hazard Mitigation Assistance (HMGP/FMA/BRIC) programs.

Key Information

Education/Qualifications

- MBA, Environmental Management, Florida Atlantic University, 2004
- BS, Environmental Studies, Florida International University, 2001

Years of Experience

Total – 21

Relevant Experience

County-wide Sea Level Rise Adaptation Strategy
Miami-Dade County, Miami FL

Project manager for Miami-Dade Sea Level Rise Strategy. Oversaw all tasks including data gap analyses, engagement and outreach, risk analyses, scenario and adaptation planning, implementation & funding roadmap development. Since launching in 2021, the Strategy has directly resulted in Miami-Dade receiving over $120M in additional federal and state grant funding for infrastructure and planning projects for hazard mitigation and resilience.

Shoreline Protection Alternatives Analysis & Funding Strategy
City of Tarpon Springs, FL

Project manager for technical feasibility analyses of several shoreline and flood mitigation alternatives for Whitcomb Bayou – which is experiencing increasing risk for tidal, surge, and heavy precipitation flood hazards. Analyzes technical/engineering, level of protection, community preferences and regulatory feasibility of alternatives, and developed strategy for alignment with appropriate state and federal funding programs for hazard mitigation and resilience.

Metro Houston Regional Watershed Assessment
U.S. Army Corps of Engineers, Galveston District (SWG)

Lead stakeholder engagement specialist for the development of a conceptual framework to assess active agencies and organizations with flood risk management (FRM) efforts within the region, identify capacity gaps and opportunities to improve coordination, prioritization, and effective execution of those efforts.

Flood Mitigation Assistance (FMA) Program Support
City of St. Petersburg, FL

Project manager leading comprehensive FEMA FY20/21 FMA grant management services for the City of St. Petersburg. Services included developing FMA application to elevate severe repetitive loss properties located in the coastal AE flood zone and impacted by tidal and storm surge flooding from nearby Tampa Bay.

Heather Sprague, PE

Project Manager

Ms. Sprague specializes in hazard analysis and process automation in the Arcadis Resiliency group. Her educational background has provided her with a strong understanding of sustainable design practices and the importance of ecological reconciliation. While with Arcadis, Heather has focused on a variety of projects involving risk and vulnerability assessments, economic analyses, storm surge modeling, and levee overtopping analyses. She has co-authored numerous technical memoranda and reports and has utilized a variety of engineering software and programming languages throughout her academic and professional career.

Key Information

Education/Qualifications

- MS, Civil and Environmental Engineering, University of California, Davis, 2017
- BS, Biosystems Engineering, Clemson University, 2013

Years of Experience

Total – 7

Professional Registrations/ Certifications

- Professional Engineer – LA

Relevant Experience

San Francisco Seawall Resiliency
Port of San Francisco, San Francisco, CA

Developed a geospatial inventory of structure attributes for over 12,000 buildings in the project area; upgrading and automating a spreadsheet-based economic impact model to evaluate the potential costs of inaction due to sea level rise; and leading a team of three on tasks above. The analysis will gauge potential damages to structures and critical infrastructure, as well as long-term regional economic impacts due to loss of major transportation systems, reduced tourism during restoration, and other revenue-generating assets on Port property.

New York City Climate Adaptation Roadmap
New York City Mayor's Office of Resiliency, New York, NY

Utilizing Python-based model for assessing economic damages to over 800,000 structures within the entire city of New York for present-day and future flood risk due to sea level rise. This project aims to develop the City's adaptation strategy for near- and long-term climate risk, including stormwater flooding, coastal flooding, and wind damage.

Automation of Model for Calculating Economic Damages
Arcadis, San Francisco, CA

Creating a Python-based tool to calculate and annualize economic damages and social impacts after flood events; primary software architect and developer; and leading team of three on model development. This tool is being developed to perform more accurate economic analyses for larger study areas and more flood events than permitted by limitations in previous spreadsheet models.

Nick Irza, PE

GIS/Mapping & Risk Quantification; VA & Final Report Compilation; Adaptation Toolkit Development

Mr. Irza has six years of professional experience encompassing coastal modeling, coastal resiliency, and water resource engineering projects for a variety of public- and private-sector clients. His water resource engineering project experience includes hydrologic, hydraulic and scour analyses for bridge replacement and construction projects; storm sewer design and modeling for roadway reconstructions; forensic analyses of historical flood events; flood forecasting systems; FEMA letter of map revisions and flood mapping; stormwater master planning; and hydrologic and hydraulic impact analyses for development projects. His coastal engineering project experience includes hydrodynamic and wave modeling for floodplain remapping and resiliency planning studies and scour analyses for coastal bridges and pipelines. Mr. Irza is proficient with a variety of software packages, including ADCIRC, SWAN, Delft 3D, HEC-HMS, HEC-RAS, XP-SWMM, Python, and the ESRI mapping suite.

Key Information

Education/Qualifications

- MS, Environmental Engineering, Rice University, 2017
- BS, Civil and Environmental Engineering, Rice University, 2014

Years of Experience

Total – 6

Professional Registrations/ Certifications

- Professional Engineer – TX

Relevant Experience

Seaport and Financial District Climate Change Master Plan
New York Economic Development Corporation, New York, NY

Oversaw the wave and hydrodynamic modeling for a proposed plan to provide coastal protection to the Seaport/Financial District of lower Manhattan. Evaluated the impact of proposed shoreline protection concepts on storm surge elevation and tidal circulation patterns using ADCIRC and D-Flow FM (Delft 3D) modeling. Used SWAN to characterize the present-day and future 100-year wave climate in the study area and used the results to perform an overtopping analysis to determine the design flood elevation of the proposed coastal protection.

Southern Mississippi FEMA Coastal Remapping Study
Southern Mississippi Planning and Development Corporation, Coastal Mississippi

Validated an ADCIRC+SWAN computational mesh to observed data for five historical storm events, including the studying the effect of different wind speed multipliers and wind-drag coefficient formulations. Managed the production model runs of the suite of 282 synthetic tropical cyclones used to compute updated FEMA costal return period elevations for the study area.

Biscayne Bay Storm Surge Modeling
South Florida Water Management District (SFWMD), West Palm Beach, FL

Evaluated the level of protection provided by the L-31E levee system against tropical cyclone storm surge for present- day conditions and with projected sea level rise using a coupled ADCIRC+SWAN and 2D D-Flow FM modeling system. Developed a post-processing scripting library to aggregate model output from several model runs.

Paul Walansky, PE

Adaptation Toolkit Development

Mr. Walansky is a Principal Water Engineer with professional experience in the project management, design, and construction management of various coastal and water resource design projects. His engineering background includes inspection and condition assessment of marinas and water control structures, cost estimating, flood studies, pump station design, bridge scour analysis, economic analysis, port feasibility studies, port reconstruction, fishing pier design, retaining wall design, wetland restoration, reservoirs, stormwater treatment areas, flow equalization basins, public recreation area design and specifications. Niche expertise in water resources planning and design, and familiarity with relevant regulatory and environmental requirements.

Key Information

Education/Qualifications

- BS, Ocean Engineering, Florida Atlantic University, 1998

Years of Experience

Total – 24

Professional Registrations/ Certifications

- Professional Engineer – FL, LA, MD, MI
- Engineer – VI, PR

Relevant Experience

C-139 Flow Equalization Basin Design
South Florida Water Management District, Hendry County, FL

Project Manager responsible for coordination of the design of a Flow Equalization Basin from the Conceptual Design through Ready to Advertise plans and specifications. The C-139 FEB project consists of an 11,000 acre-foot of water storage including perimeter embankments, interior berms, 690 cfs inflow pump station, internal inflow and outflow canals, out-flow structure, access roadway, canal improvements, land leveling and a gravity seepage structure. ICPR4 was used to model the flow around the FEB. The design included the site civil layout which includes a roadway relocation, demolition of existing structures, utility relocation, and erosion protection measures. The C-139 FEB is intended to assist in managing source basin runoff by attenuating peak flows and temporarily storing a portion of stormwater runoff prior to it being conveyed to STA-5/6. This project included permitting with the FDEP and USACE.

Biscayne Bay Storm Surge Modelling
South Florida Water Management District, Miami, FL

Project Manager responsible for development of a storm surge model for the structures and canals around Biscayne Bay. This model will be used to predict storm surge around the Miami area so that the SFWMD can better plan the need for future capital improvements in their water system. The goals of the project included the development and calibration of a hydrodynamic model using the DELFT3D system, to simulate and validate water level hydrographs at the structures downstream of the SFWMD structures in the bay for selected historical storms, and to simulate water level hydrographs near the structures under future conditions considering 3-4 ft sea level rise scenarios derived from the SE County Compact projections.

L-31E Levee Storm Surge Modelling
South Florida Water Management District, Miami, FL

Project Manager responsible for development of a modeling system and methodical approach to evaluate the level of protection provided by the L-31E levee.

Seth Magden

Compliance/Federal Funding

Based in New Orleans, Louisiana, Mr. Magden brings more than 17 years of experience working with federal funds supporting state and local government, community groups, nonprofit organizations, and private sector partners in developing, implementing, and leading planning, visioning, recovery and community development program initiatives. His work has predominantly involved FEMA (IA, PA, HMGP, BRIC) and HUD (CDBG-DR/MIT) funded programs as well as initiatives funded under the American Rescue Plan Act (ARPA). Seth was heavily involved in the HUD-funded National Disaster Resilience Competition with multiple (awarded) clients in the planning and visioning competition, as well as implementation. He has served the States of California, New York, Louisiana, Florida, and the Puerto Rico Department of Housing, where he led the team to design and implement $20.2 billion in recovery funding, providing full support on grant management and regulatory compliance. For the State of Florida Department of Economic Opportunity (DEO), he served as Principal/Program Director, leading the successful start-up and launch of the Rebuild Florida Michael Housing Repair and Replacement Program (HRRP) from 2020-2021 in the Florida Panhandle. From 2021-2022 he led the start-up and launch of the Homeowner Assistance Fund (HAF) program for the State of Louisiana Office of Community Development.

Key Information

Education/Qualifications

- MA, Latin American Studies, International Development & Global Health Focus, Tulane University
- BA, Political Science & Spanish, University of Arizona

Years of Experience

Total – 17
With Arcadis – 1

Professional Registrations/ Certifications

- IS-00319 Tornado Mitigation
- IS-00320 Wildfire Mitigation
- IS-00321 Hurricane Mitigation
- IS-00322 Flood Mitigation
- IS-00323 Earthquake Mitigation

Relevant Experience

Strategic Advisory Support – Resilience Sector
Multiple Locations

National Program Management Lead providing subject matter expertise across a variety of initiatives including resilience planning, infrastructure, hazard mitigation, economic development, housing, and emergency management, including FEMA PA, HMGP, BRIC; Community Development Block Grant Disaster Recovery (CDBG-DR), MIT. Jurisdictions include state and local clients in Louisiana, Florida, Texas, Puerto Rico, New York, California, Kentucky, Washington, DC, and others.

Coastal Jefferson Parish Long-Term Economic Recovery Study
Jefferson Parish

Project director providing guidance to Parish staff on development of a long-term economic recovery strategy for communities in Coastal Jefferson following Hurricane Ida, inclusive of the Town of Jean Lafitte, Barataria, Crown Point, Town of Grand Isle. Coordinate with elected officials and key stakeholders, develop and implement community engagement materials for business owners and workforce. Identify key case studies with comparable climate adaptation challenges and opportunities for building larger plan in following phase.

Chris Gloninger

Media Relations

Mr. Gloninger has been a broadcast meteorologist for 16 years. He excels in taking complex subject matter and applying creative strategies to make it easy for the general public to relate to and understand. Along with daily responsibilities to research, forecast and communicate vital information to thousands of households via various channels, he specifically has helped develop, implement and manage the special project, website and social media strategies for climate change coverage for multiple stations. He launched the country's first weekly news series on climate change and has developed, produced and hosted two 30-minute documentaries focused on environmental social justice communities and renewable energy. In 2018, he received his M.S. in Emergency Management with a focus on climate mitigation and adaptation. He is a board member on the broadcast board for the American Meteorological Society reviewing the critiquing the communication skills of meteorologists across the country. He is also an adjunct lecturer for Boston University and an instructor for the National Disaster Preparedness Training Center.

Key Information

Education/Qualifications

- BS, Meteorology, Plymouth State University, 2006
- MS, Emergency Management, Millersville University, 2018

Years of Experience

Total – 16

Professional Registrations/ Certifications

- Certified Broadcast Meteorologist (#235)
- Adjunct Lecturer – Boston University School of Medicine, Division of Graduate Medical Sciences
- Instructor – National Disaster Preparedness Training Center

Office Location

Milwaukee, WI

Relevant Experience

The Climate Project – A Green Future
NBC10Boston, Boston, MA

Developed, produced and hosted a 30-minute documentary looking at the switch to renewable energy, how nature-based solutions can be an important part in climate change adaptation and mitigation and a look at future green technology.

The Climate Project – Social Justice
NBC10Boston, Boston, MA

Developed, produced and hosted a 30-minute documentary looking at the nexus of the climate crisis and environmental justice communities. This documentary looked at the history of redlining and how the effects are still felt in environmental justice communities with climate change being a threat multiplier.

Coffee and Climate
NBC10Boston, Boston, MA

This 30-minute social media show was developed to help answer questions asked by the public regarding climate change. Subject matter experts were included in the conversation each week. This web-based show had strong engagement from the public, with dialogue between scientists and the public producing several thousand views each week.

Karen A. Riley, Esq.

Equitable Community Engagement Lead

A senior leader with a strong background in organizational leadership, Karyn A. Riley, Esq. is skilled at leading teams and developing creative solutions to proactively address complex problems. She has executive-level experience in administration and operations, stakeholder engagement, government relations, communications and corporate law. With broad competencies in program development, strategic planning and project management, Karyn has transformed organizations and processes. She has been recognized for her accomplishments while serving in highly visible professional and civic leadership roles and is a sought-after presenter on topics related to leadership, advocacy and equity.

Key Information

Education/Qualifications

- Juris Doctor, Syracuse University College of Law, Syracuse, NY
- BA, English, Hampton University, Hampton, VA

Years of Experience

Total – 12

Professional Registrations/ Certifications

- Licensed to Practice Law – DC, MD
- Certificate in Leadership and Coaching – University of Kansas/National Urban Fellows
- Certificate in Women's Entrepreneurship – Cornell University
- Certificate in Sustainable Business Strategy – Harvard University School of Business Online

Office Location

Hanover, MD

Relevant Experience

Intergovernmental Relations Director (5/2016 to Present) and Government Relations Manager (5/2015 to 5/2016)
WSSC Water (Washington Suburban Sanitary Commission), Laurel, MD

Member of the executive and senior leadership teams for Maryland's largest - the nation's 8th largest - water and wastewater utility with an annual budget of almost $2B. Oversaw stakeholder engagement and partnerships with diverse business, community, and industry groups, and manage relationships with 200+ elected officials. Created and implemented utility's legislative agenda and advocacy plans at the federal, state, county and municipal levels. Developed enterprise-wide plan for strategic engagement and drove decisions that promoted organizational effectiveness.

Select Representative Accomplishments:

- Directed WSSC Water's public policy efforts and managed employees and consultants that implemented public affairs campaigns, including creating the "This One Drop" advocacy framework which aligns water policy with policy for public health, environment, social justice and economic development.
- Led a cross-functional team that examined and implemented customer assistance and customer engagement programs and policies, resulting in an increase of over 50% in annual assistance of $3M and implemented internal policy changes that increased the number of eligible customers.
- Advised Congressional members and staff and agency leaders on federal policy, including the Infrastructure and Investment Act, WIFIA, and WRDA, and hosted engagement and education opportunities, such as the "Experts on Tap" event on Capitol Hill and on-site tours.

Erin L. Deady, Esquire, AICP

Attorney and Certified Land Planner

ERIN L. DEADY, P.A.

EXPERIENCE

Deady: 2011

Industry: 1995

AREAS OF EXPERTISE

Sustainability and Climate Planning

Energy Conservation

Land Use

Grant Funding

Environmental Restoration

PROFESSIONAL ASSOCIATIONS

American Institute of Certified Planners

Florida Chapter of the American Planning Association

PROFESSIONAL SUMMARY

Ms. Deady has significant management experience on numerous complex projects involving climate legal, policy and planning elements including vulnerability analyses and integration of adaptation responses into Comprehensive Plans. Ms. Deady has worked on numerous sustainability, climate and energy planning efforts around the state for large and small local governments. Ms. Deady has published numerous articles and resources related to the planning and legal issues surrounding resiliency and adaptation planning strategies. A cornerstone of this experience includes the development and implementation of public engagement and outreach strategies to support local government policy and decision-making processes.

QUALIFICATIONS

Education

- Juris Doctorate, Nova Southeastern University, Shepard Broad Law Center 2000
- Master Public Administration, Environmental Growth Management, Florida Atlantic University 1996
- Master of Public Administration, University of the Virgin Islands, 1995
- Bachelor of Arts, Marine Science Affairs, University of Miami, 1993

Registrations / Certifications / Licenses

- Florida Bar No. 367310
- AICP, American Institute of Certified Planners

Training / Professional Development

- Admitted to Florida Bar (2000), member of Executive Council for the Environmental and Land Use Law Section, 2002-Present. Chair 2012-Present

WORK EXPERIENCE

Erin L. Deady, P.A. | 2011 - Present
President

Lewis, Longman & Walker, PA. | 2008 - 2011
Shareholder

Audubon of Florida | 1997 - 2003
Environmental Counsel

Florida Atlantic University | 1995 - 1997
Fellowship-Urban and Environmental Solutions

Alex Zelenski, GISP

Environmental & GIS Consultant

CLEARVIEW GEOGRAPHIC

EXPERIENCE

ClearGeo: 2018

Industry: 2014

AREAS OF EXPERTISE

Geographic Information Systems

Environmental Sustainability

Geospatial Modeling

Climate Vulnerability Assessments

PROFESSIONAL ASSOCIATIONS

American Society of Adaptation Professional

Volusia County Association for Responsible Development

American Society of Floodplain Management Professionals

The Sierra Club Florida Chapter

The Environmental Council of Volusia and Flagler Counties

PROFESSIONAL SUMMARY

Mr. Zelenski has significant geographic information systems (GIS) and environmental consulting experience on numerous projects including resiliency, sustainability, vulnerability assessments, and public engagement to support local government planning initiatives both within and outside of Florida. Mr. Zelenski has direct experience creating climate-risk models to serve as the basis for vulnerability assessments, resiliency plans, and has leveraged them to identify both Priority Planning Areas and Adaptation Action Areas in at least three municipalities. Mr. Zelenski has 8 years of experience developing geographic information systems to enhance resilience and climate planning.

QUALIFICATIONS

Education

- Bachelor of Science, Environmental Science & Geography, Stetson University, 2016

Registrations / Certifications / Licenses

- GISCI, Geographic Information Systems Professional

WORK EXPERIENCE

Clearview Geographic | 2018 - Present
President

Zev Cohen & Associates | 2016 - 2018
Environmental Scientist & GIS Specialist

Kappa Map Group | 2015 - 2016
Digital Cartographer

Stetson University | 2014 - 2016
Research & Teaching Assistant

Jason Evans, Ph.D.

GIS Technical Advisor

CLEARVIEW GEOGRAPHIC

EXPERIENCE

ClearGeo: 2018

Industry: 11+ years

AREAS OF EXPERTISE

Geographic Information Systems

Landscape Ecology

Systems Ecology

Dataset Development

Spatial Modeling

PROFESSIONAL ASSOCIATIONS

Association of State Flood Plain Managers

American Ecological Engineering Society

Florida Native Plant Society

PROFESSIONAL SUMMARY

Mr. Evans is trained as a landscape and systems ecologist with a high level of expertise in dataset development, spatial modeling, and flood hazard vulnerability assessments using geographic information systems (GIS). Since 2011, Mr. Evans has served as principal investigator or co-principal investigator for fourteen separate projects that focus on coastal flooding vulnerability and adaptation across coastal Georgia, Florida, South Carolina, and North Carolina. Several of these projects have focused on identifying vulnerability of stormwater systems to sea-level rise and increasing precipitation.

QUALIFICATIONS

Education

- Ph.D. Interdisciplinary Ecology, with Area of Concentration in Environmental Engineering Sciences, University of Florida 2007
- M.S. Interdisciplinary Ecology, University of Florida 2002
- B.A. Philosophy, New College of Florida 1998

WORK EXPERIENCE

Clearview Geographic | 2018 - Present
Technical Advisor & Shareholder

Stetson University Institute for Water & Environmental Resilience | 2019 – Present
Executive Director

Elsevier Journal of Environmental Management | 2016 – Present
Co-Editor-in-Chief

Stetson University | 2014 – Present
Associate Professor of Environmental Science, Department of Environmental Science and Studies (promoted from Assistant Professor and tenured in August 2017)

University of Georgia | 2010 - 2014
Environmental Sustainability Analyst (Final Faculty Rank of Public Service Associate)

Jason Bird, CFM, Resilience
970.214.1495, Jason.Bird@jacobs.com

Education

Associates of Arts Degree, Central Florida Community College, 2001

Course Work, Civil Engineering with Construction Management focus, University of Central Florida, 2001 to 2004

Registrations

Certified Floodplain Manager, (US-19-10971)

Years of Experience

22 years

Office Location

Sarasota, FL

Jason is a seasoned civil engineering professional with experience in commercial, residential, public open space, utility, stormwater and transportation projects from feasibility studies to conceptual planning, through design, permitting, and construction administration. His focus includes water resources, water conservation, infrastructure assessment, green infrastructure and sustainability, including LEED and ENVISION evaluations for municipal, master planned communities, and US federal facilities. He has applied his knowledge of infrastructure planning and design including climate scenario development to risk and vulnerability evaluations and development and prioritization of adaptation strategies to mitigate current and future threats to inform capital investment and enhance the resilience of built and natural assets for our communities.

Relevant Project Experience

United Nations office of Disaster Risk Reduction, Resilient Buildings Scorecard, Co-Developer. Co-developer of new Resilience Scorecard and Tool for use by Building/Campus Owners, Operators and Managers. This tool is intended to be an open-sourced methodology and tool hosted on the UN website to promote disaster risk reduction and resilience for private sector and building/facility owners and operators. It is a complement to the City Scorecard and other scorecards on the UN website, all based on the UN 10 Essentials outlined in the Sendai Framework. *Dates: March 2020 to September 2020.*

City of Key West, Sea Level Rise Policy, Key West, FL, Resilience Lead. Performed climate science review and tidal conditions analysis to inform development of flood scenarios and boundary conditions for future conditions stormwater modeling and minimum design criteria for critical infrastructure like roads, sea walls, utilities, and broader City land development regulations. *Dates: February 2021 to August 2021*

City of Jacksonville, Resilient Stormwater Plan, Jacksonville, FL, Resilience Task Lead. As Resilience task lead, sub to CDM, supported development of evaluation methodology for asset flood vulnerability assessment and strategies for adaptation plan to protect critical assets from coastal and rainfall induced flood risk today and over their anticipated service life in the City of Jacksonville. The project entailed the selection of critical watersheds within the City based on a series of evaluation metrics including their overall flood vulnerability and the presence of critical facilities within the watershed. Once selected, a more in-depth analysis of specific critical facilities was conducted to identify asset level vulnerabilities and the application of adaptation strategies to mitigate flooding and to maintain operational continuity for those facilities. *Dates: September 2018 to December 2021*

Greynolds Park SLR and Flood Adaptation Plan, Miami Dade County, FL, Resilience Task Lead. As Resilience task lead, led the technical work to evaluate built and natural asset vulnerability to flooding and develop adaptation strategies to mitigate flood risk. Evaluation included current and future flood exposure from coastal and rainfall induced flooding to protect park assets and operations. Developed, costed and prioritized adaptation strategies to mitigate flood risk today and over asset service life to maintain park operations.
Dates: October 2020 to July 2021

City of Miami Beach, Integrated Sea Level Rise Mitigation and Stormwater Management Plan, Miami Beach, FL, Resilience Lead. Development of a multi-disciplinary flood mitigation plan and policy focused on reducing flood risk in the City of Miami Beach through a comprehensive and integrated approach to managing water resources. This project included updating the City's street raising policy to accommodate future sea levels while maintaining access to private properties, and development of a neighborhood project prioritization methodology that factored in numerous City infrastructure needs including improvements to critical services such as potable water distribution, sanitary sewer collection, stormwater management, transportation access, and environmental and social system improvements such as sidewalks, street trees and BGI for stormwater quality treatment. *Dates: July 2019 to March 2021*

Susy Torriente

Global Principal, City Resilience

Length of service in the profession: 32 years

Year joined Jacobs: 2020

Summary Biography

Susy is an accomplished organizational strategist more than 29 years of local government experience in South Florida. Her strength is breaking down complex issues into manageable solutions, fostering collaboration and integrating resilience and climate adaptation into interdisciplinary team and projects. As assistant city manager in Fort Lauderdale and Miami Beach her portfolio of departments included sustainable development (building, planning, zoning, economic development), transportation and mobility, environment and sustainability, public works and capital improvement, housing, and parks. She is bringing her expertise and experience to leverage Jacobs' broad base resilience skills to deliver integrated solutions to client cities. Susy was a founding member of the first of its kind regional climate collaborative, the Southeast Florida Regional Climate Change Compact, representing Miami-Dade, Fort Lauderdale and Miami Beach. She also served as Miami-Dade County's first sustainability director and Miami Beach's first chief resilience officer.

Education and Qualifications

- Master of Public Administration and Bachelor of Arts, English, University of Miami

Memberships and Affiliations

- Chair of the Orange County, Florida Mayor's Sustainability and Resilience Committee
- Member & Treasurer of the American Society of Adaptation Professionals (ASAP) board.

Project Experience

Project Director, Miami-Dade County Resilience Hubs, 2022 – to present

Through robust stakeholder engagement, data collection and a climate and social vulnerability assessment a resilience hub network framework is being developed. It will include hub prototypes, menu of services, governance models, site selection and three master plans for the top sites. A guidebook will also be published for other communities around the country.

Project Manager, South Florida Military Installation Resilience Review (MIRR), 2022 to present

Evaluating four installations in south Florida (from Key West to Broward County) and the communities they call home for climate vulnerabilities. Developing adaptation strategies, projects, and policies to assure military mission readiness by investing in critical community lifelines. Project will produce a resilience plan and funding strategy.

Resilience and Sustainability Lead, Miami-Dade County Downtown Redevelopment Project, 2022

Integrating resilience and sustainability requirements and goals in the county's request for proposal (RFP) for a master developer and the design criteria package (DCP).

Senior Resilience Advisor, City of Key West, Sea Level Rise Policy & Post Disaster Recovery Plan (PDRRP), 2021

Developed the city's first sea level rise policy to inform future city design and construction decisions. Produced the PDRRP plan to create a roadmap for the city post event covering land use, built and natural environment, mobility and transportation, and economic development.

Senior Resilience Advisor, Miami-Dade County Historic Greynolds Park Park Sea Level Rise Mitigation Study, Miami FL, 2020.

Developed evaluated and ranked flood mitigation strategies by reviewing data and field conditions; flood scenarios, modeling data, and risk and vulnerability assessment. Developing accompanying implementation roadmap.

Years of Experience: 44
Years With the Firm: 38

Registrations & Certifications:
Registered Professional Surveyor & Mapper, FL, 1998

Continuing Education:
Land Boundaries, 2018
Wetlands Delineation, 2018

Professional & Civic Activities:
Past Vice President, Florida Surveying & Mapping Society, Broward Chapter

Martin Rossi, PSM

Senior Surveyor

Professional Experience:

Mr. Rossi is a Senior Project Surveyor with more than four decades of surveying and subsurface utility engineering (SUE) experience. His principal areas of experience include surveys such as boundary, topographic, ALTA/ACSM land title surveys, quantity, environmental and wetland, condominium, construction layout, as-built, right-of-way, specific purpose and subdivisions and platting, as well as subsurface utility engineering (SUE). He currently manages the South Florida survey department and field crews and is an Associate with the firm.

Relevant Project Experience:

City of Lauderhill Municipal Complex - This 14-acre governmental complex was designed for a Broward County library, a municipal public facility for the relocated City of Lauderhill Police Department, a passive walkway along the lakefront, and a future two-acre parcel intended for use as a civic park owned by the City of Lauderhill. The site is part of a 30-acre master planned tract which includes a neighborhood retail complex to support the civic facilities, as well as, the nearby residents. This neighboring retail complex includes a supermarket, retail stores, outparcels and a wetland habitat area which continues the open space and passive walkway elements on the adjacent civic parcel. The civic, municipal portion of the project was completed as a 'design/build' project and specifically includes a one-story 13,000-SF Broward County library, a two-story, 26,000-SF Public Safety Building with associated parking, signage, fountain entries, expansive buffering along a major roadway corridor with pedestrian access, and is sited to afford viewing of the adjacent lake setting. The library ground includes artwork as part of the Broward County Art in Public Places Program. Services provided included: site planning, assistance with plat and non-vehicular access line amendments, landscape architecture and civil engineering for construction of the design-build municipal project. Additionally, Miller Legg designed and completed the adjacent neighborhood retail facility and open space components. Most recently, in November 2015 Miller Legg prepared a pro-bono engineer's certification of completion for the Oakland Park Boulevard driveway and turn lane improvements required by Broward County within the Phasing the Installation of Required Road Improvements agreement recorded in Official Records Book 29230, Page 1941 of the public records of Broward County, Florida and secured by a City of Lauderhill resolution. The certification was a required condition of termination of the aforementioned agreement.

City of Homestead Biscayne-Everglades Greenway Trail - Among the services Miller Legg provided for this 3.2 mile, 12-foot-wide Biscayne Everglades Greenway shared-use trail project are landscape architectural, engineering, surveying and environmental services including preparation of FDOT-approved construction documents, design of regulatory and wayfinding signs, pavement markings, safe pedestrian push button crossing and necessary drainage within the C-103 Canal right-of-way from East Mowry Drive to SW 137th Avenue in Homestead. The scope of services was based upon a 2017 Florida Shared-use Non-Motorized Trail Agreement between the City of Homestead and FDOT. Topographic and SUE services were delivered. The scope included engineering design and permitting services for the shared-use trail, associated drainage and roadway pedestrian crossings. The firm also carried out Preliminary Natural Resource and Protected Species Investigations and documents related to designation of the Project by FDOT as a Documented Categorical Exclusion.

City of Fort Lauderdale Las Olas Streetscape Design - As a subconsultant to The Corradino Group, Miller Legg has provided various landscape architecture services for the Las Olas Streetscape Project.

MILLER LEGG

Years of Experience: 26
Years With the Firm: 4

Registrations & Certifications:
Remote Pilot Certification, FL, 2020
Certified Survey Technician Level I, FL, 2021

Education:
Associate of Science, Drafting/CAD
ATI Career Training Center, 2002
, Civil Engineering (2 of 5 yrs completed for Bachelor's)
National Autonomous University of Honduras, 1997

Continuing Education:
AutoDesk Training
Leica Cyclone & Cloudworx for AutoCAD

Sandro Elvir, CST I

Senior CAD Technician

Professional Experience:

Sandro has more than 22 years of professional surveying experience ranging from a field crew chief to survey manager overseeing survey crews. His areas of expertise include land surveying, boundary, topographic, ALTA, control surveys, utility surveys, 3D Radar Tomography, GPS, route surveys, legal descriptions, laser scanning, and construction layout calculations. He is experienced in AutoCAD, Civil 3D, Cyclone and CloudWorx, and Trimble Geomatics Office.

Prior to joining Miller Legg, Sandro was Survey Coordinator Manager with another South Florida surveying firm for 15 years.

Relevant Project Experience:

City of Lauderhill Municipal Complex - This 14-acre governmental complex was designed for a Broward County library, a municipal public facility for the relocated City of Lauderhill Police Department, a passive walkway along the lakefront, and a future two-acre parcel intended for use as a civic park owned by the City of Lauderhill.The site is part of a 30-acre master planned tract which includes a neighborhood retail complex to support the civic facilities, as well as, the nearby residents.This neighboring retail complex includes a supermarket, retail stores, outparcels and a wetland habitat area which continues the open space and passive walkway elements on the adjacent civic parcel. The civic, municipal portion of the project was completed as a 'design/ build' project and specifically includes a one-story 13,000-SF Broward County library, a two-story, 26,000-SF Public Safety Building with associated parking, signage, fountain entries, expansive buffering along a major roadway corridor with pedestrian access, and is sited to afford viewing of the adjacent lake setting. The library ground includes artwork as part of the Broward County Art in Public Places Program. Services provided included: site planning, assistance with plat and non-vehicular access line amendments, landscape architecture and civil engineering for construction of the design-build municipal project. Additionally, Miller Legg designed and completed the adjacent neighborhood retail facility and open space components. Most recently, in November 2015 Miller Legg prepared a pro-bono engineer's certification of completion for the Oakland Park Boulevard driveway and turn lane improvements required by Broward County within the Phasing the Installation of Required Road Improvements agreement recorded in Official Records Book 29230, Page 1941 of the public records of Broward County, Florida and secured by a City of Lauderhill resolution. The certification was a required condition of termination of the aforementioned agreement.

City of Homestead Biscayne-Everglades Greenway Trail - Among the services Miller Legg provided for this 3.2 mile, 12-foot-wide Biscayne Everglades Greenway shared-use trail project are landscape architectural, engineering, surveying and environmental services including preparation of FDOT-approved construction documents, design of regulatory and wayfinding signs, pavement markings, safe pedestrian push button crossing and necessary drainage within the C-103 Canal right-of-way from East Mowry Drive to SW 137th Avenue in Homestead.The scope of services was based upon a 2017 Florida Shared-use Non-Motorized Trail Agreement between the City of Homestead and FDOT. Topographic and SUE services were delivered.The scope included engineering design and permitting services for the shared-use trail, associated drainage and roadway pedestrian crossings. The firm also carried out Preliminary Natural Resource and Protected Species Investigations and documents related to designation of the Project by FDOT as a Documented Categorical Exclusion.

City of Fort Lauderdale Las Olas Streetscape Design - As a subconsultant to The Corradino Group, Miller Legg has provided various landscape architecture services for the Las Olas Streetscape Project.

Gerald Edelman CST I

CAD Technician / Survey Party Chief

Years of Experience: 19
Years With the Firm: 16

Registrations & Certifications:
FDOT Intermediate Maintenance of Traffic, FL, 2021
Underground Utility Locate Certification, FL, 2022
Certified Survey Technician Level I, FL, 2021

Education:
High School GED
Killian Senior High School, 2001

Professional Experience:

Since joining Miller Legg, Mr. Edelman worked his way up from Rod Person to Crew Chief. He has experience working with both surveying and subsurface utility engineering (SUE) projects for public entities throughout South Florida. Experience includes boundary, topographic, right-of-way, as-built, special purpose surveys, cross sections, drainage surveys, construction surveys, and a variety of other surveys.

Relevant Project Experience:

City of Coconut Creek Copans Road Median Landscape Architecture Plans - For this median improvement project along Copans Road between Lyons Road and the Florida Turnpike Overpass, Miller Legg provided landscape, hardscape and irrigation design plans, tree inventory, surveying, permitting, pre-construction and construction observation services to the City. Tree, streets and highway permitting was coordinated with Broward County.

Broward County Sheriff's Office New Training Center Garage Design/Build - Miller Legg is part of the ANF Group Design Build Team contracted to develop the Broward County Sheriff's Office (BSO) planned new Training Center Parking Garage in Fort Lauderdale. The project consists of an 80,000 SF 7-story structure, 2 stories for training and 5 stories for 700+ parking spaces. Miller Legg's scope of services includes site surveying, site civil and utility infrastructure engineering, landscape architecture and permitting assistance. Survey services include topographic and tree surveying as well as underground utilities designation and mapping. Landscape architecture services include landscape planting and irrigation design. The firm's certified arborists collected site data/inventory to prepare tree disposition, permitting and mitigation construction documents. Permitting is coordinated with Broward County Environmental Management Division, Fire Department, Health Department and with SFWMD. The firm is responsible for civil, landscape and irrigation, construction observation and administration. This project is being pursued for LEED Silver Certification.

City of Miramar Forzano Park Improvements Phase I - The City of Miramar improved an existing 13-acre active park to convert sport usage and improve operating conditions. The existing baseball clay infields, outfield and football field grass were removed and modified to provide additional football/soccer field space. Park amenities included volleyball courts and a community center. As a subconsultant to R.J. Behar, Miller Legg provided planning, landscape architecture, irrigation design and topographic survey.

United States Department of Veterans Affairs South Florida National Cemetery Phase 2 Design-Build - Miller Legg is providing civil, survey, landscape architecture, irrigation design and environmental services for Phase 2 of this Design Build project located in Lake Worth. Survey services consist of boundary and topographic surveys and surveyor title review. Environmental tasks include wetland mitigation assistance and threatened and endangered species coordination in addition to annual mitigation monitoring over 5 years and gopher tortoise survey, permitting and relocation. The firm is providing landscape and irrigation design development, construction and record drawing documents. Civil construction document preparation including signing and pavement marking, pre-construction and construction period services are also being provided. Miller Legg was the prime consultant for the master planning, design, and construction for the development of the 313-acre national cemetery in Palm Beach County.

Miami Dade College (MDC) Kendall Makers Lab - Miami Dade College built a new, highly visible 8,548 SF makers lab constructed as an addition and renovation to Building N to promote the use, development, and recruitment of digital fabrication courses at the MDC Kendall Campus.

MILLER LEGG

About Arcadis

Arcadis is the leading global Design & Consultancy firm for natural and built assets. Applying our deep market sector insights and collective design, consultancy, engineering, project and management services we work in partnership with our clients to deliver exceptional and sustainable outcomes throughout the lifecycle of their natural and built assets. We are more than 35,000 people, active in over 70 countries that generate $4.2 billion in revenues. We support UN-Habitat with knowledge and expertise to improve the quality of life in rapidly growing cities around the world.

www.arcadis.com

Supporting our clients in their quest to become Fit-for-Future.

Utilities must plan for unprecedented scenarios while navigating a changing workforce, but where should leaders focus?

Use the QR code below to explore the five fundamentals of becoming a fit-for-future water utility and the common thread that unites them.

Section 08.

Required Forms

CITY OF FORT LAUDERDALE BID/PROPOSAL CERTIFICATION

Please Note: It is the sole responsibility of the bidder/proposer to ensure that their response is submitted electronically through the City's on-line strategic sourcing platform prior to the bid opening date and time listed. Paper bid submittals will not be accepted. All fields below must be completed. If the field does not apply to you, please note N/A in that field.

If you are a foreign corporation, you may be required to obtain a certificate of authority from the department of state, in accordance with Florida Statute §607.1501 (visit http://www.dos.state.fl.us/).

Company: (Legal Registration) Arcadis U.S., Inc. EIN (Optional): _____

Address: 150 S. Pine Island Road Suite 315

City: _____ State: FL Zip: 33324

Telephone No.: 954 761 3460 FAX No.: N/A Email: Leah.Richter@arcadis.com

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Delivery: Calendar days after receipt of Purchase Order **(section 1.02 of General Conditions)**: N/A

Total Bid Discount **(section 1.05 of General Conditions)**: N/A

Check box if your firm qualifies for DBE **(section 1.09 of General Conditions)**: ❑

ADDENDUM ACKNOWLEDGEMENT - Proposer acknowledges that the following addenda have been received and are included in the proposal:

Addendum No.	Date Issued	Addendum No.	Date Issued	Addendum No.	Date Issued	Addendum No.	Date Issued
1	4/4/2023						

VARIANCES: If you take exception or have variances to any term, condition, specification, scope of service, or requirement in this competitive solicitation you must specify such exception or variance in the space provided below or reference in the space provided below all variances contained on other pages within your response. Additional pages may be attached if necessary. No exceptions or variances will be deemed to be part of the response submitted unless such is listed and contained in the space provided below. The City does not, by virtue of submitting a variance, necessarily accept any variances. If no statement is contained in the below space, it is hereby implied that your response is in full compliance with this competitive solicitation. If you do not have variances, simply mark N/A.

The below signatory hereby agrees to furnish the following article(s) or services at the price(s) and terms stated subject to all instructions, conditions, specifications addenda, legal advertisement, and conditions contained in the bid/proposal. I have read all attachments including the specifications and fully understand what is required. By submitting this signed proposal, I will accept a contract if approved by the City and such acceptance covers all terms, conditions, and specifications of this bid/proposal. The below signatory also hereby agrees, by virtue of submitting or attempting to submit a response, that in no event shall the City's liability for respondent's direct, indirect, incidental, consequential, special or exemplary damages, expenses, or lost profits arising out of this competitive solicitation process, including but not limited to public advertisement, bid conferences, site visits, evaluations, oral presentations, or award proceedings exceed the amount of Five Hundred Dollars ($500.00). This limitation shall not apply to claims arising under any provision of indemnification or the City's protest ordinance contained in this competitive solicitation.

Submitted by:

Leah K. Richter, PE — Leah K. Richter

Name (printed)

April 20, 2023 — Vice President

Date — Title

City of Fort Lauderdale • Procurement Services Division
100 N. Andrews Avenue, Suite 619 • Fort Lauderdale, Florida 33301
954-828-5933 • Fax 954-828-5576 • purchase@fortlauderdale.gov

ADDENDUM NO. 1

RFP No. **Event 69**
TITLE: **Vulnerability Assessment for the City of Fort Lauderdale**

ISSUED: 04/05/2023

This addendum is being issued to make the following change(s):

1. In Section 4.2.4 Approach to Scope of Work the following language shall be stricken:
   - ~~NOTE: The project must be completed and accepted within 120 days from the City Notice to Proceed.~~

All other terms, conditions, and specifications remain unchanged.

Laurie Platkin
Senior Procurement Specialist

Company Name: Arcadis u.S., Inc.
(please print)

Bidder's Signature: Leah K. Richter

Date: April 20, 2023

SECTION VI - COST PROPOSAL PAGE

Proposer Name: Arcadis U.S., Inc.

Proposer agrees to supply the products and services at the prices bid/proposed below in accordance with the terms, conditions and specifications contained in this RFP.

Cost to the City: Contractor shall quote firm, fixed, costs for all services/products identified in this request for proposal. These firm fixed costs for the project include any costs for travel and miscellaneous expenses. No other costs will be accepted.

Notes:

Attach a breakdown of costs including but not limited to labor, equipment, materials, and parts.

1. Vulnerability Assessment for City of Fort Lauderdale		$ 135,000.00
2. Number of Elevation Certificates being provided for the $25,000 allocation.	65	
3. Additional Elevation Certificates (Cost per Certificate)		$ 385.00
Total Project Cost		**$ 160,000.00**

Submitted by:

Leah K. Richter	Leah K. Richter
Name (printed)	Signature
April 20, 2023	Vice President
Date	Title

NON-COLLUSION STATEMENT

By signing this offer, the vendor/contractor certifies that this offer is made independently and *free* from collusion. Vendor shall disclose below any City of Fort Lauderdale, FL officer or employee, or any relative of any such officer or employee who is an officer or director of, or has a material interest in, the vendor's business, who is in a position to influence this procurement.

Any City of Fort Lauderdale, FL officer or employee who has any input into the writing of specifications or requirements, solicitation of offers, decision to award, evaluation of offers, or any other activity pertinent to this procurement is presumed, for purposes hereof, to be in a position to influence this procurement.

For purposes hereof, a person has a material interest if they directly or indirectly own more than 5 percent of the total assets or capital stock of any business entity, or if they otherwise stand to personally gain if the contract is awarded to this vendor.

In accordance with City of Fort Lauderdale, FL Policy and Standards Manual, 6.10.8.3,

> 3.3. City employees may not contract with the City through any corporation or business entity in which they or their immediate family members hold a controlling financial interest (e.g., ownership of five (5) percent or more).
>
> 3.4. Immediate family members (spouse, parents, and children) are also prohibited from contracting with the City subject to the same general rules.

Failure of a vendor to disclose any relationship described herein shall be reason for debarment in accordance with the provisions of the City Procurement Code.

NAME	RELATIONSHIPS
N/A	

In the event the vendor does not indicate any names, the City shall interpret this to mean that the vendor has indicated that no such relationships exist.

Leah K. Richter

Authorized Signature

Leah K. Richter

Name (Printed)

Vice President

Title

April 20, 2023

Date

CONTRACTOR'S CERTIFICATE OF COMPLIANCE WITH NON-DISCRIMINATION PROVISIONS OF THE CONTRACT

The completed and signed form should be returned with the Contractor's submittal. If not provided with submittal, the Contractor must submit within three business days of City's request. Contractor may be deemed non-responsive for failure to fully comply within stated timeframes.

Pursuant to City Ordinance Sec. 2-17(a)(i)(ii), bidders must certify compliance with the Non-Discrimination provision of the ordinance.

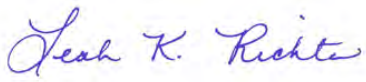
A. Contractors doing business with the City shall not discriminate against their employees based on the employee's race, color, religion, gender (including identity or expression), marital status, sexual orientation, national origin, age, disability, or any other protected classification as defined by applicable law.

Contracts. Every Contract exceeding $100,000, or otherwise exempt from this section shall contain language that obligates the Contractor to comply with the applicable provisions of this section.

The Contract shall include provisions for the following:

(i) The Contractor certifies and represents that it will comply with this section during the entire term of the contract.

(ii) The failure of the Contractor to comply with this section shall be deemed to be a material breach of the contract, entitling the City to pursue any remedy stated below or any remedy provided under applicable law.



Authorized Signature

Leah K. Richter | Vice President

Print Name and Title

April 20, 2023

Date

LOCAL BUSINESS PREFERENCE CERTIFICATION STATEMENT

The Business identified below certifies that it qualifies for the local business price preference classification as indicated herein, and further certifies and agrees that it will re-affirm its local preference classification annually no later than thirty (30) calendar days prior to the anniversary of the date of a contract awarded pursuant to this ITB. Violation of the foregoing provision may result in contract termination.

(1) _____ is a **Class A** Business as defined in City of Fort Lauderdale Ordinance No. C-17-26, Sec.2-186. A copy of the City of Fort Lauderdale current year Business Tax Receipt **and** a complete list of full-time employees and evidence of their addresses shall be provided within 10 calendar days of a formal request by the City.
Business Name

(2) _____ is a **Class B** Business as defined in the City of Fort Lauderdale Ordinance No. C-17-26, Sec.2-186. A copy of the Business Tax Receipt **or** a complete list of full-time employees and evidence of their addresses shall be provided within 10 calendar days of a formal request by the City.
Business Name

(3) Arcadis U.S., Inc. is a **Class C** Business as defined in the City of Fort Lauderdale Ordinance No. C-17-26, Sec.2-186. A copy of the Broward County Business Tax Receipt shall be provided within 10 calendar days of a formal request by the City.
Business Name

(4) _____ requests a **Conditional Class A** classification as defined in the City of Fort Lauderdale Ordinance No. C-17-26, Sec.2-186. Written certification of intent shall be provided within 10 calendar days of a formal request by the City.
Business Name

(5) _____ requests a **Conditional Class B** classification as defined in the City of Fort Lauderdale Ordinance No. C-17-26, Sec.2-186. Written certification of intent shall be provided within 10 calendar days of a formal request by the City.
Business Name

(6) _____ is considered a **Class D** Business as defined in the City of Fort Lauderdale Ordinance No. C-17-26, Sec.2-186 and does not qualify for Local Preference consideration.
Business Name

BIDDER'S COMPANY: Arcadis U.S., Inc.

AUTHORIZED COMPANY PERSON: Leah K. Richter | Leah K. Richter | April 20, 2023
PRINT NAME | SIGNATURE | DATE

DISADVANTAGED BUSINESS ENTERPRISE (DBE) PREFERENCE

Section 2-185, Code of Ordinances of the City of Fort Lauderdale, provides for a disadvantaged business preference.

In order to be considered for a DBE Preference, a bidder must include a certification from a government agency, as applicable to the DBE Preference class claimed **at the time of bid submittal**.

Upon formal request of the City, based on the application of a DBE Preference the Bidder shall, within ten (10) calendar days, submit the following documentation to the DBE Class claimed:

A) Copy of City of Fort Lauderdale current year business tax receipt, **or** Broward County current year business tax receipt, **or** State of Florida active registration **and/or**

B) List of the names of all employees of the bidder and evidence of employees' residence within the geographic bounds of the City of Fort Lauderdale or Broward County, as the case may be, such as current Florida driver license, residential utility bill (water, electric, telephone, cable television), or other type of similar documentation acceptable to the City.

Failure to comply at time of bid submittal shall result in the bidder being found ineligible for the disadvantaged business preference.

THE COMPLETE DBE PREFERENCE ORDINANCE MAY BE FOUND ON THE CITY'S WEB SITE AT THE FOLLOWING LINK: https://www.fortlauderdale.gov/home/showpublisheddocument?id=56883

Definitions

a. The term "disadvantaged class 1 enterprise" shall mean any disadvantaged business enterprise that has established and agrees to maintain a permanent place of business located in a non-residential zone, staffed with full-time employees within the limits of the city, and provides supporting documentation of its City of Fort Lauderdale business tax and disadvantaged certification as established in the City's Procurement Manual.

b. The term "disadvantaged class 2 enterprise" shall mean any disadvantaged business enterprise that has established and agrees to maintain a permanent place of business within the limits of the city with a full-time employees and provides supporting documentation of its City of Fort Lauderdale business tax and disadvantaged certification as established in the City's Procurement Manual.

c. The term "disadvantaged class 3 enterprise" shall mean any disadvantaged business enterprise that has established and agrees to maintain a permanent place of business located in a non-residential zone, staffed with full-time employees within the limits of the Tri-County area and provides supporting documentation of its City of Fort Lauderdale business tax and disadvantaged certification as established in the City's Procurement Manual.

d. The term "disadvantaged class 4 enterprise" shall mean any disadvantaged business enterprise that does not qualify as a Class A, Class B, or Class C business, but is located in the State of Florida and provides supporting documentation of its disadvantaged certification as established in the City's Procurement Manual.

DISADVANTAGED BUSINESS ENTERPRISE CERTIFICATION STATEMENT

The Business identified below certifies that it qualifies for the disadvantaged business enterprise price preference classification as indicated herein, and further certifies and agrees that it will re-affirm its preference classification annually no later than thirty (30) calendar days prior to the anniversary of the date of a contract awarded pursuant to this solicitation. Violation of the foregoing provision may result in contract termination.

(1) _____ is a disadvantaged class 1 enterprise as defined in the City of Fort Lauderdale Ordinance Section 2-185 disadvantaged business enterprise that has established and agrees to maintain a permanent place of business located in a non-residential zone, staffed with full-time employees within the limits of the city, and provides supporting documentation of its City of Fort Lauderdale business tax and disadvantaged certification as established in the City's Procurement Manual.

Business Name

(2) _____ is a disadvantaged class 2 enterprise as defined in the City of Fort Lauderdale Ordinance Section 2-185 disadvantaged business enterprise that has established and agrees to maintain a permanent place of business within the limits of the city with a full-time employee(s) and provides supporting documentation of its City of Fort Lauderdale business tax and disadvantaged certification as established in the City's Procurement Manual.

Business Name

(3) _____ is a disadvantaged class 3 enterprise as defined in the City of Fort Lauderdale Ordinance Section 2-185 disadvantaged business enterprise that has established and agrees to maintain a permanent place of business located in a non-residential zone, staffed with full-time employees within the limits of the Tri-County area and provides supporting documentation of its City of Fort Lauderdale business tax and disadvantaged certification as established in the City's Procurement Manual.

Business Name

(4) _____ is a disadvantaged class 4 enterprise as defined in the City of Fort Lauderdale Ordinance Section 2-185 disadvantaged business enterprise that does not qualify as a Class A, Class B, or Class C business, but is located in the State of Florida and provides supporting documentation of its disadvantaged certification as established in the City's Procurement Manual.

Business Name

(5) Arcadis U.S., Inc. is not considered a Disadvantaged Enterprise Business as defined in the City of Fort Lauderdale Ordinance Sec.2-185 and does not qualify for DBE Preference consideration.

Business Name

BIDDER'S COMPANY: Arcadis U.S., Inc.

AUTHORIZED COMPANY PERSON: Leah K. Richter (PRINT NAME) Leah K. Richter (SIGNATURE) April 20, 2023 (DATE)

Note: this form was listed in 4.2.8 Required Forms, item G; however, it was not included in Required City Forms made available for download. We have included a form from prior city solicitations, in order to be complete.

CONTRACT PAYMENT METHOD

The City of Fort Lauderdale has implemented a Procurement Card (P-Card) program which changes how payments are remitted to its vendors. The City has transitioned from traditional paper checks to credit card payments via MasterCard or Visa as part of this program.

This allows you as a vendor of the City of Fort Lauderdale to receive your payments fast and safely. No more waiting for checks to be printed and mailed.

In accordance with the contract, payments on this contract will be made utilizing the City's P-Card (MasterCard or Visa). Accordingly, bidders must presently have the ability to accept the credit card or take whatever steps necessary to implement acceptance of a card before the start of the contract term, or contract award by the City.

All costs associated with the Contractor's participation in this purchasing program shall be borne by the Contractor. The City reserves the right to revise this program as necessary.

By signing below, you agree with these terms.

Please indicate which credit card payment you prefer:

✔ MasterCard

✔ Visa

Arcadis U.S., Inc.
Company Name

Leah Richter, PE
Name (Printed)

Leah K. Richter
Signature

Vice President
Title

April 20 2023
Date

E-VERIFY AFFIRMATION STATEMENT

Solicitation/Bid /Contract No: Event 69

Project Description:

The City of Fort Lauderdale (City) seeks an experienced consulting firm (Consultant) to develop a Vulnerability Assessment (VA) for the City of Fort Lauderdale to meet the State criteria in FS 380.093, to generate elevation certificates of prioritized critical government facilities, to assess roadway vulnerability, and to prepare an adaptation plan which compiles a list of City adaptation projects to address flooding risks in the future. It is expected that Consultant awarded this contract will deliver a Vulnerability Assessment consistent with this scope of work, the requirements of FS 380.093, the terms of the City's grant agreement, and the State of Florida's Standardized Vulnerability Assessment: Scope of Work Guidance.

Contractor/Proposer/Bidder acknowledges and agrees to utilize the U.S. Department of Homeland Security's E-Verify System to verify the employment eligibility of,

A. all persons employed by Contractor/Proposer/Bidder to perform employment duties within Florida during the term of the Contract, and,

B. all persons (including subcontractors/vendors) assigned by Contractor/Proposer/Bidder to perform work pursuant to the Contract.

The Contractor/Proposer/Bidder acknowledges and agrees that use of the U.S. Department of Homeland Security's E-Verify System during the term of the Contract is a condition of the Contract.

Contractor/Proposer/ Bidder Company Na: Arcadis U.S., Inc.

Authorized Company Person's Signature: Leah K. Richter

Authorized Company Person's Title: Vice President

Date: April 20, 2023

CERTIFICATE OF LIABILITY INSURANCE

DATE(MM/DD/YYYY)
09/22/2022

THIS CERTIFICATE IS ISSUED AS A MATTER OF INFORMATION ONLY AND CONFERS NO RIGHTS UPON THE CERTIFICATE HOLDER. THIS CERTIFICATE DOES NOT AFFIRMATIVELY OR NEGATIVELY AMEND, EXTEND OR ALTER THE COVERAGE AFFORDED BY THE POLICIES BELOW. THIS CERTIFICATE OF INSURANCE DOES NOT CONSTITUTE A CONTRACT BETWEEN THE ISSUING INSURER(S), AUTHORIZED REPRESENTATIVE OR PRODUCER, AND THE CERTIFICATE HOLDER.

IMPORTANT: If the certificate holder is an ADDITIONAL INSURED, the policy(ies) must have ADDITIONAL INSURED provisions or be endorsed. If SUBROGATION IS WAIVED, subject to the terms and conditions of the policy, certain policies may require an endorsement. A statement on this certificate does not confer rights to the certificate holder in lieu of such endorsement(s).

PRODUCER
Aon Risk Services South, Inc.
Franklin TN Office
501 Corporate Centre Drive
Suite 300
Franklin TN 37067 USA

CONTACT NAME:
PHONE (A/C. No. Ext): (866) 283-7122 **FAX (A/C. No.):** 800-363-0105
E-MAIL ADDRESS:

INSURER(S) AFFORDING COVERAGE		NAIC #
INSURER A:	Hartford Fire Insurance Co.	19682
INSURER B:	Hartford Casualty Insurance Co	29424
INSURER C:	Hartford Accident & Indemnity Company	22357
INSURER D:	Twin City Fire Insurance Company	29459
INSURER E:		
INSURER F:		

INSURED
Arcadis U.S., Inc.
630 Plaza Drive
Suite 200
Highlands Ranch CO 80129 USA

COVERAGES **CERTIFICATE NUMBER:** 570095470055 **REVISION NUMBER:**

THIS IS TO CERTIFY THAT THE POLICIES OF INSURANCE LISTED BELOW HAVE BEEN ISSUED TO THE INSURED NAMED ABOVE FOR THE POLICY PERIOD INDICATED. NOTWITHSTANDING ANY REQUIREMENT, TERM OR CONDITION OF ANY CONTRACT OR OTHER DOCUMENT WITH RESPECT TO WHICH THIS CERTIFICATE MAY BE ISSUED OR MAY PERTAIN, THE INSURANCE AFFORDED BY THE POLICIES DESCRIBED HEREIN IS SUBJECT TO ALL THE TERMS, EXCLUSIONS AND CONDITIONS OF SUCH POLICIES. LIMITS SHOWN MAY HAVE BEEN REDUCED BY PAID CLAIMS.

Limits shown are as requested

INSR LTR	TYPE OF INSURANCE	ADDL INSD	SUBR WVD	POLICY NUMBER	POLICY EFF (MM/DD/YYYY)	POLICY EXP (MM/DD/YYYY)	LIMITS	
A	X **COMMERCIAL GENERAL LIABILITY** CLAIMS-MADE X OCCUR X Contractual Liability GEN'L AGGREGATE LIMIT APPLIES PER: POLICY X PRO-JECT X LOC OTHER:			20ECSOL5318 SIR applies per policy terms & conditions	10/01/2022	10/01/2023	EACH OCCURRENCE DAMAGE TO RENTED PREMISES (Ea occurrence) MED EXP (Any one person) PERSONAL & ADV INJURY GENERAL AGGREGATE PRODUCTS - COMP/OP AGG	$1,000,000 $1,000,000 $10,000 $1,000,000 $2,000,000 $2,000,000
A	**AUTOMOBILE LIABILITY** X ANY AUTO OWNED AUTOS ONLY HIRED AUTOS ONLY SCHEDULED AUTOS NON-OWNED AUTOS ONLY			20 UEN OL5319	10/01/2022	10/01/2023	COMBINED SINGLE LIMIT (Ea accident) BODILY INJURY (Per person) BODILY INJURY (Per accident) PROPERTY DAMAGE (Per accident)	$1,000,000
B	X **UMBRELLA LIAB** X OCCUR **EXCESS LIAB** CLAIMS-MADE DED X RETENTION $10,000			20XHUOL5322	10/01/2022	10/01/2023	EACH OCCURRENCE AGGREGATE	$5,000,000 $5,000,000
C D	**WORKERS COMPENSATION AND EMPLOYERS' LIABILITY** Y/N ANY PROPRIETOR / PARTNER / EXECUTIVE OFFICER/MEMBER EXCLUDED? N **(Mandatory in NH)** If yes, describe under DESCRIPTION OF OPERATIONS below	N / A		20WNOL5323 AOS 20WPROL5321 MA, WI	10/01/2022 10/01/2022	10/01/2023 10/01/2023	X PER STATUTE OTH-ER E.L. EACH ACCIDENT E.L. DISEASE-EA EMPLOYEE E.L. DISEASE-POLICY LIMIT	 $1,000,000 $1,000,000 $1,000,000

DESCRIPTION OF OPERATIONS / LOCATIONS / VEHICLES (ACORD 101, Additional Remarks Schedule, may be attached if more space is required)
Evidence of Insurance.

CERTIFICATE HOLDER

Arcadis U.S, Inc.
630 Plaza Drive, Suite 200
Highlands Ranch CO 80129 USA

CANCELLATION

SHOULD ANY OF THE ABOVE DESCRIBED POLICIES BE CANCELLED BEFORE THE EXPIRATION DATE THEREOF, NOTICE WILL BE DELIVERED IN ACCORDANCE WITH THE POLICY PROVISIONS.

AUTHORIZED REPRESENTATIVE

Aon Risk Services South Inc.

Holder Identifier :

Certificate No : 570095470055

Form **W-9**
(Rev. October 2018)
Department of the Treasury
Internal Revenue Service

Request for Taxpayer Identification Number and Certification

► **Go to *www.irs.gov/FormW9* for instructions and the latest information.**

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

Print or type. See **Specific Instructions** on page 3.

1 Name (as shown on your income tax return). Name is required on this line; do not leave this line blank.

Arcadis U.S. Inc.

2 Business name/disregarded entity name, if different from above

3 Check appropriate box for federal tax classification of the person whose name is entered on line 1. Check only **one** of the following seven boxes.

☐ Individual/sole proprietor or single-member LLC ☑ C Corporation ☐ S Corporation ☐ Partnership ☐ Trust/estate

☐ Limited liability company. Enter the tax classification (C=C corporation, S=S corporation, P=Partnership) ► _____

Note: 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 **not** 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.

☐ Other (see instructions) ►

4 Exemptions (codes apply only to certain entities, not individuals; see instructions on page 3):

Exempt payee code (if any) _____

Exemption from FATCA reporting code (if any) _____

(Applies to accounts maintained outside the U.S.)

5 Address (number, street, and apt. or suite no.) See instructions.

630 Plaza Drive, Suite 200 Fax: 720.344.3535

Requester's name and address (optional)

6 City, state, and ZIP code

Highlands Ranch, CO 80129

7 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.

Social security number

			–			–				

or

Employer identification number

5	7	–	0	3	7	3	2	2	4

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.

Sign Here Signature of U.S. person ► Jessica Neiva Date ► 1/3/2023

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.*

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.*

Detail by Entity Name

Foreign Profit Corporation
ARCADIS U.S., INC.

Filing Information

Document Number	F98000001104
FEI/EIN Number	57-0373224
Date Filed	02/26/1998
State	DE
Status	ACTIVE
Last Event	NAME CHANGE AMENDMENT
Event Date Filed	01/04/2007
Event Effective Date	NONE

Principal Address

630 PLAZA DRIVE, SUITE 200
HIGHLANDS RANCH, CO 80129

Changed: 04/30/2019

Mailing Address

ATTN: KIM LASNICKI
110 West Fayette St.
Suite 300
SYRACUSE, NY 13202

Changed: 04/30/2017

Registered Agent Name & Address

C T CORPORATION SYSTEM
1200 SOUTH PINE ISLAND ROAD
PLANTATION, FL 33324

Officer/Director Detail

Name & Address

Title VP/FIN OFF

TAYLOR, STEVE
630 PLAZA DRIVE, SUITE 200
HIGHLANDS RANCH, CO 80129

Title VP, Officer

STEWART, STEPHEN
1301 Riverplace Blvd., Suite 700
JACKSONVILLE, FL 32207

Title VP

SUAREZ, GUS
4300 W Cypress St.
Suite 450
TAMPA, FL 33607

Title Asst. Secretary

Callahan, James
44 South Broadway
Suite 1200
White Plains, NY 10601

Title Asst. Secretary

Lasnicki, Kimberly A
110 WEST FAYETTE ST., SUITE 300
SYRACUSE, NY 13202

Title Secretary

Fairchild, Aren
200 S. Michigan Ave
Suite 2000
Chicago, IL 60604

Title Asst. Secretary, SR VP

SERRETTE, CARLTON
4300 W Cypress St.
Suite 450
TAMPA, FL 33607

Title Asst. Secretary

Richter, Leah
150 S Pine Island Road
Suite 300
PLANTATION, FL 33324

Title Assoc VP

Kappes, Rich
1500 Gateway Blvd, Suite 200
Boynton Beach, FL 33426

Title Assistant Secretary

Dawkins, Errol
44 South Broadway
Suite 1200
White Plains, NY 10601

Title Director, President

McCarthy, John M
44 South Broadway
Suite 1200
White Plains, NY 10601

Title Director

Selman, Wassim
2839 Paces Ferry Road
Suite 900
Atlanta, GA 30339

Title Director

Bonkoski, Brooke
111 SW Columbia St.
Suite 670
Portland, OR 97201

Title VP

Pomales, Melissa
701 Waterford Way, Suite 770
Miami, FL 33126

Title Director

Parmar, Nilesh
1st Floor Cornerblock 2
Cornwall St.
Birmingham, UK B3 2DX GB

Title Treasurer

Luten-Bellin, Anita
445 South Figueroa Street, Suite 3650
Los Angeles, CA 90071

Annual Reports

Report Year	Filed Date
2021	04/14/2021

2021	11/05/2021
2022	01/18/2022

Document Images

01/18/2022 -- ANNUAL REPORT	View image in PDF format
11/05/2021 -- AMENDED ANNUAL REPORT	View image in PDF format
04/14/2021 -- ANNUAL REPORT	View image in PDF format
08/20/2020 -- AMENDED ANNUAL REPORT	View image in PDF format
06/08/2020 -- ANNUAL REPORT	View image in PDF format
09/13/2019 -- AMENDED ANNUAL REPORT	View image in PDF format
04/30/2019 -- AMENDED ANNUAL REPORT	View image in PDF format
01/30/2019 -- ANNUAL REPORT	View image in PDF format
04/10/2018 -- ANNUAL REPORT	View image in PDF format
04/30/2017 -- ANNUAL REPORT	View image in PDF format
05/04/2016 -- AMENDED ANNUAL REPORT	View image in PDF format
05/01/2016 -- ANNUAL REPORT	View image in PDF format
06/02/2015 -- AMENDED ANNUAL REPORT	View image in PDF format
04/27/2015 -- ANNUAL REPORT	View image in PDF format
05/01/2014 -- ANNUAL REPORT	View image in PDF format
04/25/2013 -- AMENDED ANNUAL REPORT	View image in PDF format
02/28/2013 -- AMENDED ANNUAL REPORT	View image in PDF format
01/10/2013 -- ANNUAL REPORT	View image in PDF format
11/14/2012 -- ANNUAL REPORT	View image in PDF format
10/16/2012 -- ANNUAL REPORT	View image in PDF format
04/24/2012 -- ANNUAL REPORT	View image in PDF format
05/01/2011 -- ANNUAL REPORT	View image in PDF format
03/30/2010 -- ANNUAL REPORT	View image in PDF format
03/13/2009 -- ANNUAL REPORT	View image in PDF format
02/27/2009 -- ANNUAL REPORT	View image in PDF format
09/25/2008 -- ANNUAL REPORT	View image in PDF format
05/02/2008 -- ANNUAL REPORT	View image in PDF format
05/31/2007 -- ANNUAL REPORT	View image in PDF format
04/18/2007 -- ANNUAL REPORT	View image in PDF format
01/04/2007 -- Name Change	View image in PDF format
01/06/2006 -- ANNUAL REPORT	View image in PDF format
06/27/2005 -- ANNUAL REPORT	View image in PDF format
01/04/2005 -- ANNUAL REPORT	View image in PDF format
01/12/2004 -- ANNUAL REPORT	View image in PDF format
01/15/2003 -- ANNUAL REPORT	View image in PDF format
05/24/2002 -- ANNUAL REPORT	View image in PDF format
06/12/2001 -- Name Change	View image in PDF format
02/01/2001 -- ANNUAL REPORT	View image in PDF format
04/11/2000 -- ANNUAL REPORT	View image in PDF format
03/25/1999 -- ANNUAL REPORT	View image in PDF format
02/26/1998 -- Foreign Profit	View image in PDF format

SECRETARY CERTIFICATE

I, Kimberly Lasnicki, Assistant Secretary of Arcadis U.S., Inc. (the "Corporation"), a corporation organized under the laws of the State of Delaware, certify that the following is a full and correct copy of a resolution adopted by written consent of the Board of Directors of said Corporation, dated February 24, 2022:

> *"RESOLVED, the President and each Business Area Director are authorized and empowered, in accordance with the Bylaws and other operating policies and procedures of the Corporation, to enter into proposals for fees and other contracts and obligations in the name and on behalf of the Corporation, upon such terms and conditions as may be agreed upon between the other party or parties and the Corporation, as evidenced by the approval of the President or Business Area Director. The President and Business Area Directors also are empowered to delegate such authority to other employees of the Corporation in such amounts and on such other terms as they shall determine from time to time in accordance with the Bylaws and other operating policies and procedures of the Corporation."*

AND I DO FURTHER CERTIFY that pursuant to the above resolution that contracts, amendments, and required documentation for the **City of Fort Lauderdale Event 69 – Vulnerability Assessment** may be signed by **Leah K. Richter** in her capacity as **Vice President** of the Corporation.

AND I DO FURTHER CERTIFY that the above resolution has not been in any way altered, amended or repealed and is now in full force and effect.

IN WITNESS WHEREOF, I have signed this Certificate this 25th day of April, 2023.

ARCADIS U.S., INC. CORPORATE SEAL 1997 DELAWARE (SEAL)

Kimberly Lasnicki

Name: Kimberly Lasnicki
Title: Assistant Secretary
Arcadis U.S., Inc.

BROWARD COUNTY LOCAL BUSINESS TAX RECEIPT

115 S. Andrews Ave., Rm. A-100, Ft. Lauderdale, FL 33301-1895 – 954-831-4000

VALID OCTOBER 1, 2022 THROUGH SEPTEMBER 30, 2023

DBA:
Business Name: ARCADIS US INC

Receipt #: 315-250191
Business Type: ENGINEER (ENGINEERING FIRM)

Owner Name: ARCADIS US
Business Location: 150 S PINE ISLAND RD
PLANTATION
Business Phone: 954 761 3460

Business Opened: 08/03/2012
State/County/Cert/Reg: 228201301653
Exemption Code:

Rooms	Seats	Employees	Machines	Professionals
		1		

For Vending Business Only
Number of Machines: Vending Type:

Tax Amount	Transfer Fee	NSF Fee	Penalty	Prior Years	Collection Cost	Total Paid
30.00	0.00	0.00	0.00	0.00	0.00	30.00

THIS RECEIPT MUST BE POSTED CONSPICUOUSLY IN YOUR PLACE OF BUSINESS

THIS BECOMES A TAX RECEIPT

WHEN VALIDATED

This tax is levied for the privilege of doing business within Broward County and is non-regulatory in nature. You must meet all County and/or Municipality planning and zoning requirements. This Business Tax Receipt must be transferred when the business is sold, business name has changed or you have moved the business location. This receipt does not indicate that the business is legal or that it is in compliance with State or local laws and regulations.

Mailing Address:

ARCADIS US, INC C/O: LEGAL DEPT
110 W FAYETTE ST STE 300
SYRACUSE, NY 13202-1199

Receipt #WWW-21-00263170
Paid 09/28/2022 30.00

2022 - 2023

BROWARD COUNTY LOCAL BUSINESS TAX RECEIPT

115 S. Andrews Ave., Rm. A-100, Ft. Lauderdale, FL 33301-1895 – 954-831-4000

VALID OCTOBER 1, 2022 THROUGH SEPTEMBER 30, 2023

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Exemption Code:

Rooms	Seats	Employees	Machines	Professionals
		1		

Signature

For Vending Business Only
Number of Machines: Vending Type:

Tax Amount	Transfer Fee	NSF Fee	Penalty	Prior Years	Collection Cost	Total Paid
30.00	0.00	0.00	0.00	0.00	0.00	30.00

Receipt #WWW-21-00263170
Paid 09/28/2022 30.00

PRESENTATION INTERVIEW

City of Fort Lauderdale Vulnerability Assessment Solicitation Event 69

May 12, 2023

Today's Presenters - Introductions

Melissa Hew

Project Manager
(Arcadis)

Erin L. Deady, Esquire, AICP

Deputy Project Manager
(Erin L Deady P.A.)

Joining Remotely

Susy Torriente

Technical Advisor
(Jacobs)

Leah Richter, PE

Project Officer
(Arcadis)

Magden Seth

Compliance, Strategic Communications
(Arcadis)

Joining Remotely

Nick Irza, PE

GIS/Mapping
(Arcadis)

Joining Remotely

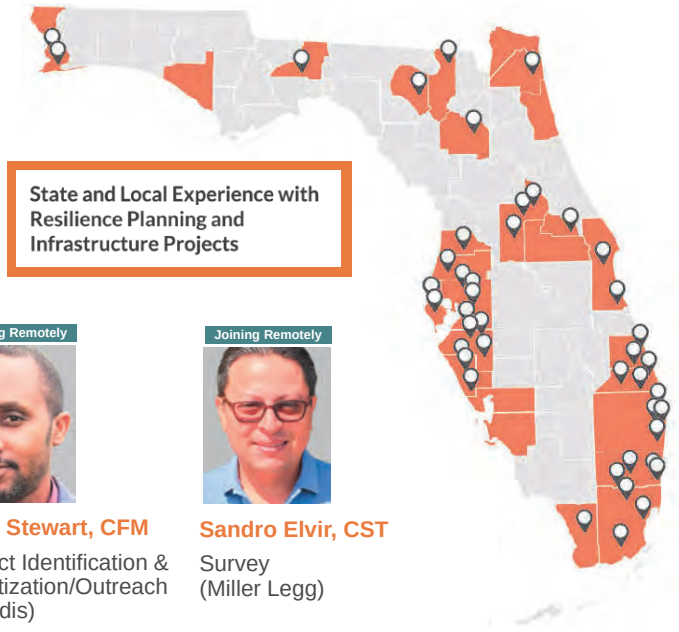
Ajani Stewart, CFM

Project Identification & Prioritization/Outreach
(Arcadis)

Joining Remotely

Sandro Elvir, CST

Survey
(Miller Legg)



Why the Arcadis Team, and why now?

- Must be a best-in-class selection with deep expertise, and defensible to your taxpayers.
- April 13th provides an opportunity for the City to revisit its vulnerability planning goals, achieve grant compliance and expand the reach of this effort to meet emerging community needs.
- Arcadis has been working on vulnerability and climate adaptation globally for decades and in the South Florida region for over thirty years. Team partners have extensive Florida VA experience.
- We are a diverse team that understands how to operate in highly scrutinized projects, working with diverse communities to solve complex challenges.

https://www.local10.com/

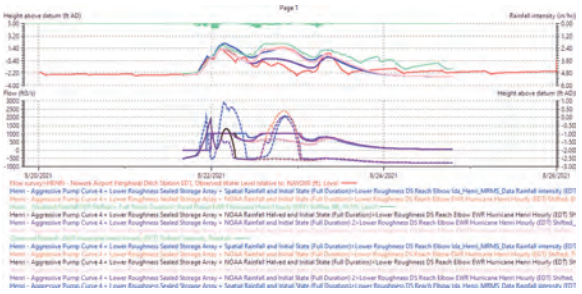
What is a Vulnerability Assessment and What is Not a Vulnerability Assessment?

A Vulnerability Assessment:

- Identifies natural or built assets that may be vulnerable to projected changes in the environment and the sensitivity or adaptability to handle those changes.
  - Vulnerability is a function of exposure, sensitivity, and adaptive capacity.
- In Florida, it also serves to meet a specific need: a direct pathway for funding under Section 380.093, F.S.

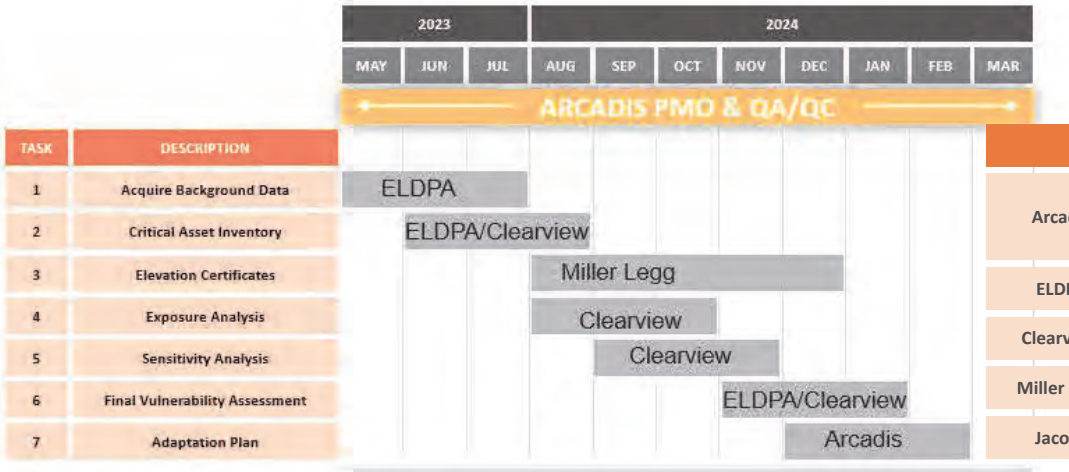
A Vulnerability Assessment is not:

- A Stormwater Plan (the State requires more than this)
- An Engineering-only Study (need cross-disciplinary expertise to conduct VA)
- Based on one Model or Tool
- A Hydrologic and Hydraulic Model
- A Sustainability Plan



Q1: Please elaborate how you're planning to manage this project's subtasks among your subconsultants to adhere to a final project schedule and submittal deadlines.

Q7: Clearly identify the staff that will perform the tasks in the current scope of work and specify the tasks they will perform



TASK	DESCRIPTION
1	Acquire Background Data
2	Critical Asset Inventory
3	Elevation Certificates
4	Exposure Analysis
5	Sensitivity Analysis
6	Final Vulnerability Assessment
7	Adaptation Plan

STAFFING ROSTER		TASK
Arcadis	Melissa H., Leah R., Seth M., Heather S. , Nick I., Carly F., Paul W., Aaron H., Mary K., Ajani S.	1-7
ELDPA	Erin D.	1,2,6
Clearview	Alex Z, Jason E.	2, 4, 5, 6
Miller Legg	Martin R., Sandro E. , Gerald E.	3
Jacobs	Jason B. Susy T.	As-needed

Q2: Please elaborate how existing City and County data, including ArcGIS Pro and the 2023 LIDAR done by City, will be used for this project and could reduce project costs.

With a 3/31/24 grant schedule, efficiency is key:

- Existing City and County asset data, supplemented with multiple State and Federal sources reduces project costs by decreasing the staff time required to coordinate across departments to inventory available assets. Our extensive initial data request is pre-filled with publicly available data the Team can easily obtain. County VA data can also help identify regionally significant assets.
- The Team will start with the existing Citywide High Density LiDAR used in the 2018 SWMP and best available LiDAR from the USGS National Elevation Dataset. Any 2023 LiDAR data collected by the City **in time for the project** will be "appended/merged" into the dataset with priority on the most recent, highest resolution, and highest accuracy project deliverables.
- Even use of existing models is challenging due to meeting new flood scenario requirements in Section 380.093, F.S. But, County existing and in process VA modeling data can help frame boundary conditions and flood depths to be used in the City's VA.
- Efforts are focused to fill data gaps, find updates to data sources, including non-public data, and minimize staff time via the data collection and Gap Analysis processes.

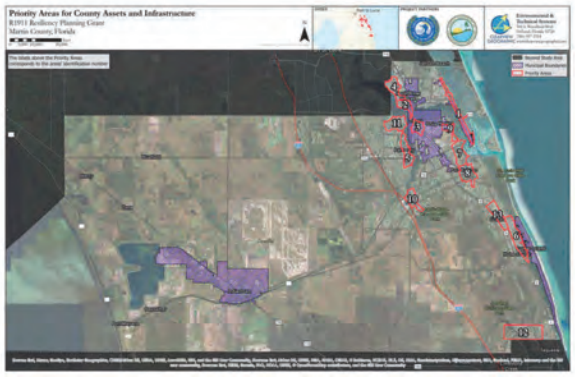
Q3: Please identify any potential tasks required by Section 380.093, F.S. that may not be covered by the project budget or scope.

Basic VA Content Requirements:

- Methods
- Results from Exposure and Sensitivity Analysis
- Summary of identified risks
- Critical and regionally significant asset inventory impacted by flooding and sea level rise specifying the flood scenario
- GIS / Metadata

Components to Further Address:

- Focus Area/Prioritization of Response
- Implementation Mechanisms
  - ✓ Policy Review- Comp Plan / Code to incorporate outcomes
  - ✓ Funding (including grant strategy for project implementation)
- Full Adaptation Plan with conceptual projects (design/cost)
- Outreach



Q3 Con't. : Please identify any potential tasks required by Section 380.093, F.S. that may not be covered by the project budget or scope.

Required Task Comments:

- Development of the critical asset inventory is low at $15,000. This can be extensive and requires a vetting process with the City to determine the "criticality" threshold of the assets. Also requires organization into asset category baseline maps.
- The Vulnerability Assessment Final Report budget at $12,000 is extremely low. This will limit the comprehensiveness of the document to meeting only the requirements in the VA Compliance Checklist Certification.
- The exposure & sensitivity analysis tasks are limited to geospatial analysis due to the schedule and budget. No advanced modeling can occur for $72,000. Can't set up, run and calibrate a more complicated model in 9 months. April storm elevates this component's importance.

Task No.	Task Title	Budget Category	DEP Amount	Match Amount	Total Amount	Task Start Date	Task Due Date
1	Acquire Background Data	Contractual Services	$11,000	$0	$11,000	7/1/2021	3/31/2024
2	Critical and Regionally Significant Asset Inventory	Contractual Services	$15,000	$0	$15,000	7/1/2021	3/31/2024
3	Match Contribution – Survey for Elevation Certificates	Contractual Services	$0	$25,000	$25,000	7/1/2021	3/31/2024
4	Exposure Analysis	Contractual Services	$40,000	$0	$40,000	7/1/2021	3/31/2024
5	Sensitivity Analysis	Contractual Services	$32,000	$0	$32,000	7/1/2021	3/31/2024
6	Final Vulnerability Assessment Report, Maps, and Tables	Contractual Services	$12,000	$0	$12,000	7/1/2021	3/31/2024
7	Partial Adaptation Plan	Contractual Services	$25,000	$0	$25,000	7/1/2021	3/31/2024
		Total:	$135,000	$25,000	$160,000		

Non-Required Task Comments:

- No identification of Focus or Priority Planning Areas, we use concept to drill down on project priorities and seek public input
- Full Adaptation Plan with Project Priorities (conceptual costs, etc.)
- No Outreach

Q4 - List all vulnerability assessments completed and in progress that are fully compliant with Section 380.093, F.S. and identify the role of team members on each one.

	New Start or Updating	Compliant	Pre –Section 380.093, F.S.	Team Member	Team Member Role
Martin County	✓		✓	ELDPA Clearview	Leading VA Grant Project
Monroe County	✓		✓	ELDPA Clearview	Leading VA Grant Project
City of Pensacola	✓		✓	ELDPA Clearview	Leading VA Grant Project
Lynn Haven	✓			ELDPA Clearview	Leading VA and Comprehensive Plan tasks
Village of Islamorada	✓			ELDPA Clearview	Leading VA and Comprehensive Plan tasks
City of West Palm Beach	✓			ELDPA Clearview	Leading VA Grant Project
Key Colony Beach & Layton	✓			ELDPA Clearview	Leading VA Grant Project
Palm Beach County				ELDPA Clearview	Subcontractor Leading VA and Policy Development
City of Key West	✓			ELDPA Clearview	Subcontractor Leading VA and Policy Development
Coastal Resources Partnership Multi-jurisdictional CCVA		✓	✓	ELDPA Clearview	Subcontractor / Policy & Strategy Development

Q5: What percentage of City roadways are included in your proposed vulnerability assessment?

What percentage of historical properties are included in your proposed vulnerability assessment?

- All roads within the municipal limits that are captured within a GIS database provided by the Florida Department of Transportation, City or County (for City-owned roadways) will be analyzed.
- Linear road miles potentially impacted will be quantified.
- Regionally significant roadways (not City-owned or maintained) will be separately identified. Data likely to be coordinated with County VA process for Regionally Significant roadways.

Table 24: Vulnerable Transportation Networks (Linear Miles)

Transportation Infrastructure	Infrastructure Impacted by Year at MHHW			Total Length of Features in Dataset
	2040 (16")	2070 (38")	2100 (70")	
Roadways	0.79 (0.13%)	3.56 (0.57%)	13.98 (2.22%)	628.68
Rail Roads	0.10 (0.19%)	0.33 (0.63%)	4.10 (7.83%)	52.34

Table 25: Vulnerable Transportation Networks (Square Miles)

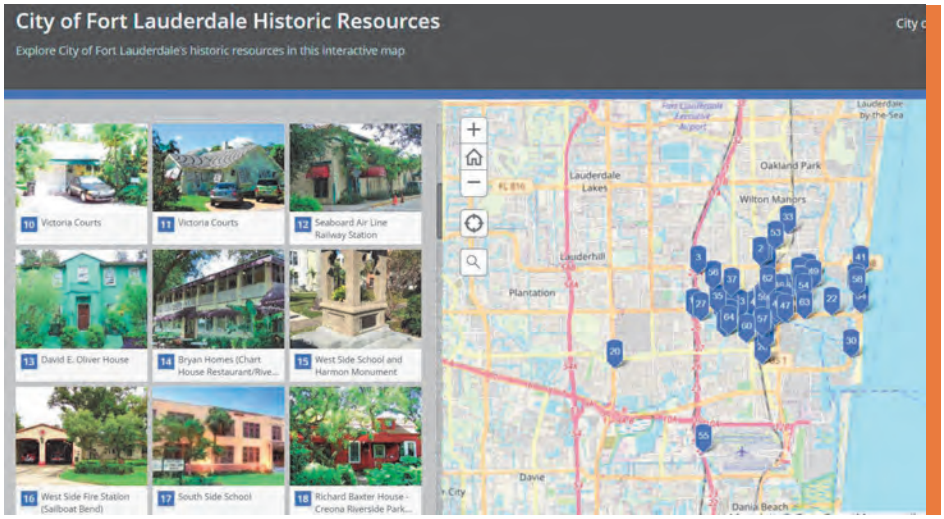
Transportation Infrastructure	Total Area Impacted by Year at MHHW			Total Area of Features in Dataset
	2040 (16")	2070 (38")	2100 (70")	
Major Pavement	0.001 (0.05%)	0.016 (0.77%)	0.084 (4.06%)	2.07

10. FEMA Floodplain and Sea Level Rise Comparison

The FEMA Floodplain and Sea Level Rise Comparison map series focuses on identifying the differences between the FEMA floodplain and the sea level rise projections by each year. Table 26 below summarizes the area that is inside the sea level rise projection years and outside the current FEMA floodplain. This map series can be helpful in identifying potential areas for consideration in future planning events that may not have been previously considered due to the fact that they may be outside the floodplain.

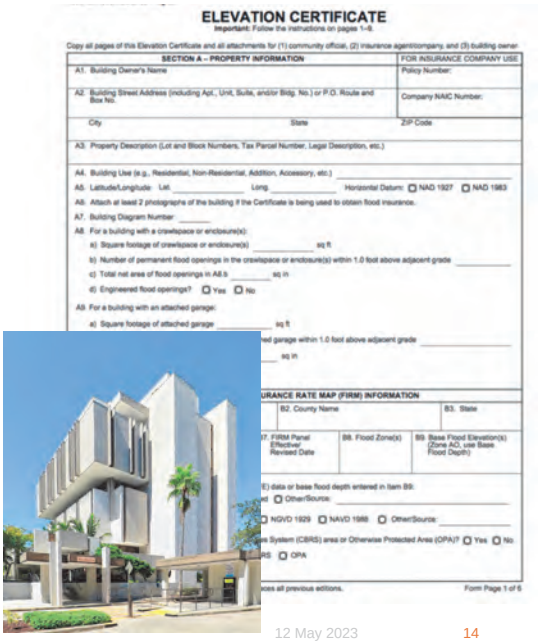
Q5 Con't . : What percentage of City roadways are included in your proposed vulnerability assessment? **What percentage of historical properties are included in your proposed vulnerability assessment?**

- Percentage of historical "properties" to be analyzed is dependent on data sources for historic "properties".
  - City-owned historic sites and/or properties within the municipal limits that are identified by the **Florida Master Site File administered by the Bureau of Historic Preservation**, Division of Historical Resources, under the Florida Department of State or within city and county provided GIS data sources will be analyzed and conveyed without disclosing sensitive information contained within the Master Site File.
  - Displaying historic districts or structure heat maps without identifying the exact location of the historic resource is one way the project team can protect this information within the assessment.



Q6:You have proposed 65 elevation certificates in your proposal. How many certificates do you anticipate needing for the City of Fort Lauderdale?

- 65 elevation certificates represent an estimate based on unit cost per survey for the allotted $25,000 budget for the survey task – and based on our team's considerable local survey experience .
- Based on our team's extensive Section 380.093 F.S. experience, we have established an effective data request process to extract the asset, risk, and other pertinent data needed to inform this question, and to quickly identify gaps pertaining to elevation certificates for critical and regionally significant assets in the City.
- We anticipate conducting analysis of general inundation data overlayed with available asset inventory data to identify assets needing elevation certification that will be prioritized for survey within the available budget for this task.
- From our team's considerable experience in this space, municipalities generally struggle to maintain current elevation certificates for the majority of their assets. So - we will apply this assumption where needed and pair it with data gathered to make decisions with the City on prioritizing assets for survey to maximize the available budget for this task.



Q8: Provide examples of key deliverables including tables and maps that would be produced as part of this scope of work.

TABLE 10: VULNERABLE PARCEL INVENTORY

Parcel	Infrastructure Impacted by Year at MHHW			Total Features in Dataset
	2040 (17")	2070 (40")	2100 (74")	
Parcels	25051 (36.32%)	40177 (61.46%)	45865 (70.17%)	65,366
Tarvenier Historic District Parcels	55 (18.52%)	93 (31.31%)	190 (63.97%)	297

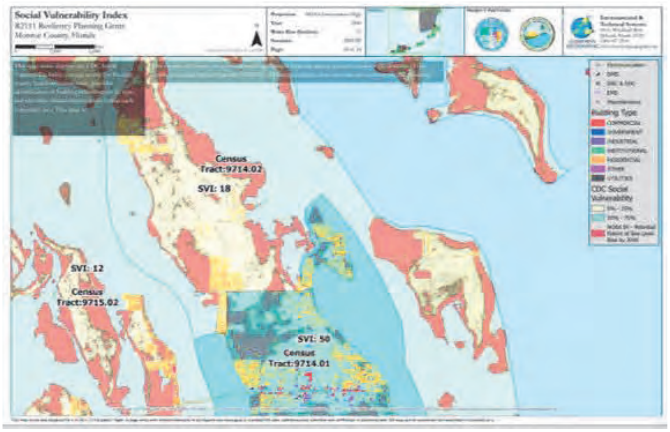


TABLE 11: VULNERABLE BUILDING INVENTORY

Building Type	Infrastructure Impacted by Year at MHHW			Total Features in Dataset
	2040 (17")	2070 (40")	2100 (74")	
Accesory	5 (2.73%)	95 (51.91%)	154 (84.15%)	183
Commercial	52 (5.45%)	299 (31.31%)	587 (61.47%)	955
Government	9 (2.00%)	174 (38.67%)	336 (74.67%)	450
Industrial	7 (4.38%)	53 (33.13%)	121 (75.63%)	160
Institutional	4 (0.70%)	56 (37.84)	100 (67.57%)	148
Residential	1113 (5.30%)	10653 (50.75%)	17869 (85.12%)	20,992
Utility	3 (3.30%)	2 (22.18%)	72 (79.12%)	91

TABLE 12: LANDS IN PUBLIC OWNERSHIP

Public Land	Total Area (Sq Mil) Impacted by Year at MHHW			Total Features in Dataset
	2040 (17")	2070 (40")	2100 (74")	
County	1.65 (35.48%)	3.00 (64.52%)	3.84 (82.58%)	4.65
Federal	317.78 (30.09%)	631.33 (59.79%)	634.82 (60.12%)	1055.98
Municipal	0.39 (17.33%)	0.73 (32.44%)	1.30 (57.78%)	2.25
State	15.20 (50.45%)	21.57 (71.59%)	24.34 (80.78%)	30.13

Q8: Provide examples of key deliverables including tables and maps that would be produced as part of this scope of work.

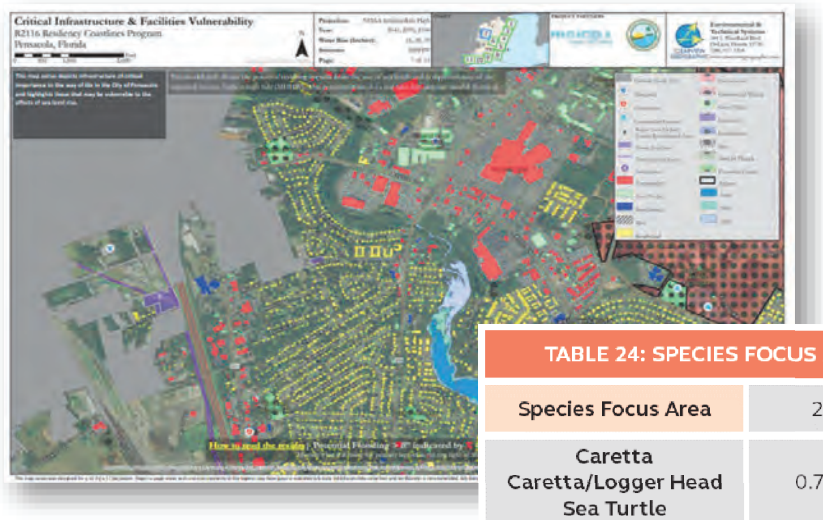
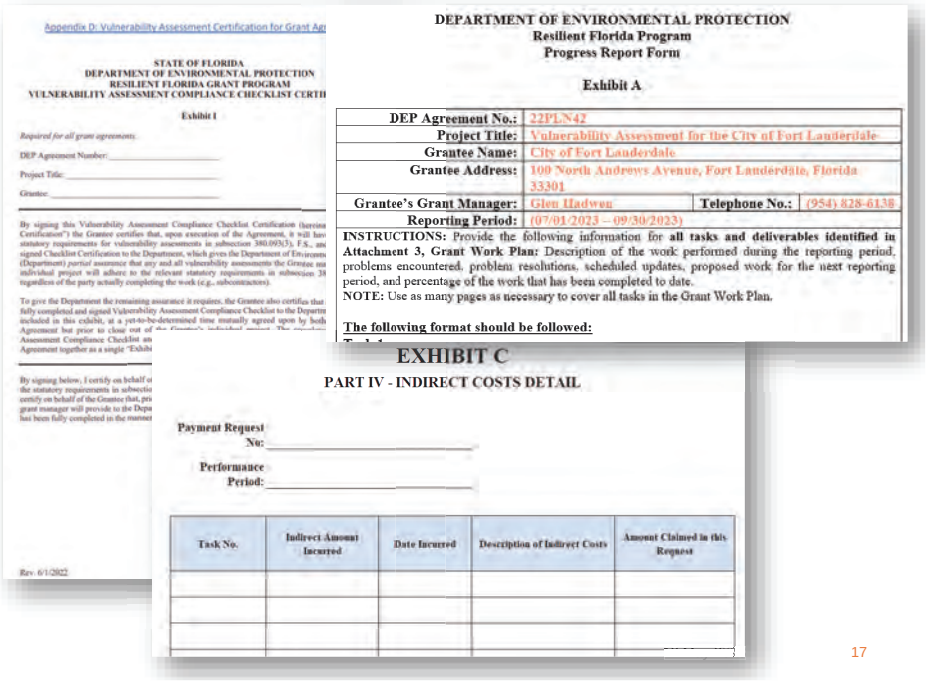


TABLE 24: SPECIES FOCUS AREAS (LINEAR MILES OF COASTAL BEACH HABITAT)[17]

Species Focus Area	2040 (17")	2070 (40")	2100 (74")
Caretta Caretta/Logger Head Sea Turtle	0.724 (2.25%)	21.037 (65.43%)	22.156 (68.91%)

Q9: How will you ensure compliance with the terms and conditions of the FDEP grant?

- Project management and project controls – begin with the end in mind
- Deep experience with grant funded projects and strong track record of compliant delivery on time, on budget with no audit findings or recapture
- State of Florida DEP Grant Terms and Conditions
  - Utilizing RF tools/exhibits and adhering to standards defined by Program for project deliverables
- Fully reimbursable costs – utilizing robust IT tools for invoicing and completion of FDEP Exhibit A



Appendix D: Vulnerability Assessment Certification for Grant Ag

STATE OF FLORIDA
DEPARTMENT OF ENVIRONMENTAL PROTECTION
RESILIENT FLORIDA GRANT PROGRAM
VULNERABILITY ASSESSMENT COMPLIANCE CHECKLIST CERTIF

Exhibit I

DEPARTMENT OF ENVIRONMENTAL PROTECTION
Resilient Florida Program
Progress Report Form

Exhibit A

DEP Agreement No.:	22PLN42
Project Title:	Vulnerability Assessment for the City of Fort Lauderdale
Grantee Name:	City of Fort Lauderdale
Grantee Address:	100 North Andrews Avenue, Fort Lauderdale, Florida 33301
Grantee's Grant Manager:	Glen Hadwen — Telephone No.: (954) 828-6138
Reporting Period:	(07/01/2023 – 09/30/2023)

INSTRUCTIONS: Provide the following information for **all tasks and deliverables identified in Attachment 3, Grant Work Plan:** Description of the work performed during the reporting period, problems encountered, problem resolutions, scheduled updates, proposed work for the next reporting period, and percentage of the work that has been completed to date.
NOTE: Use as many pages as necessary to cover all tasks in the Grant Work Plan.

The following format should be followed:

EXHIBIT C
PART IV - INDIRECT COSTS DETAIL

Payment Request No: _____
Performance Period: _____

Task No.	Indirect Amount Incurred	Date Incurred	Description of Indirect Costs	Amount Claimed in this Request

Q9 Con't.: How will you ensure compliance with the terms and conditions of the FDEP grant?

Experience Matters:

- 9-month timeframe limits the approach to flooding scenarios and output- which scenarios do you run out of a possible 340+ when combination flooding is included? We have a defined set of scenarios that meets and exceeds statutory requirements
- Efficiency in deliverable acceptance
  - Example: Asset Inventory Deliverables (List v. GIS)
- Metadata Requirements for deliverables v. assets
- Security Concerns for Asset Data
- Determining Assets' Criticality

Q10: Will you incorporate a flooding scenario like the April flash flood in this vulnerability assessment, and if so, how?

- H&H modeling specific to flash flooding like that experienced in April is not included within this assessment, but the Team proposes to use a GIS-intense approach to meet the schedule that attempts to somewhat "calibrate" outputs as follows:
  - Where practicable we will identify flood levels in the scenarios for the VA (compound) and compare to those experienced in April's flood based on available data
  - Additionally, to the extent practicable and data are publicly available for this purpose, we will attempt to locate satellite imagery post storm from open-source data providers like Global Imagery Browse Services (GIBS) | Earthdata (nasa.gov) to map and visually validate modeled flood coverage.
  - We will also use other photos, images, gage data (such as from DB HYDRO) and/or County data in the area to help verify outputs.
  - The Team will also review any relevant output from the SFWMD FPLOS program.
- This can form the basis of a supplemental planning grant request.

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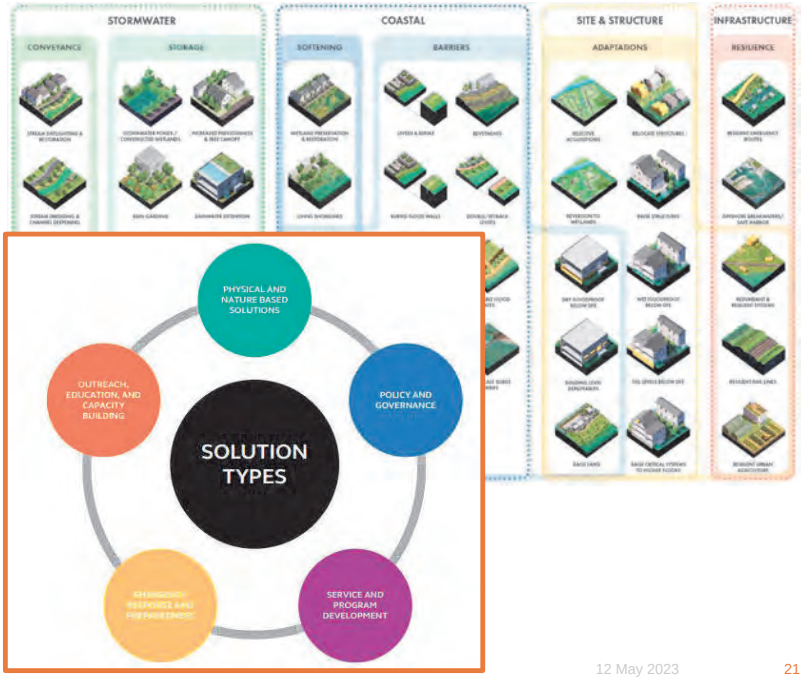
Q11 - How will you address inputs for your compound flooding models for future scenarios? For example, if you are changing the sea level input for future projections are you also changing groundwater table elevations and tidal heights?

- Sea levels will be analyzed using a GIS-based modified bathtub approach
- Compound flooding will be addressed via GIS operations to "join/add" compounding flood stages in the modeling environment. Tidal heights will be adjusted by NOAA IH/NOAA IL based on available tide gauge records.
- Due to budgetary and schedule constraints, groundwater analysis will be limited to 1) use of Broward's groundwater coverages as a starting elevation for future conditions of waterbodies and 2) existing ICPR output from the 2018 SWMP.
- However, during this project we do intend to locate and compile groundwater table elevation data sources for consideration in future projects.
- More advanced H&H modeling and evaluation (and more time) can better account for changing groundwater table elevations.

Q12: Describe the value-added services that will be included without additional cost

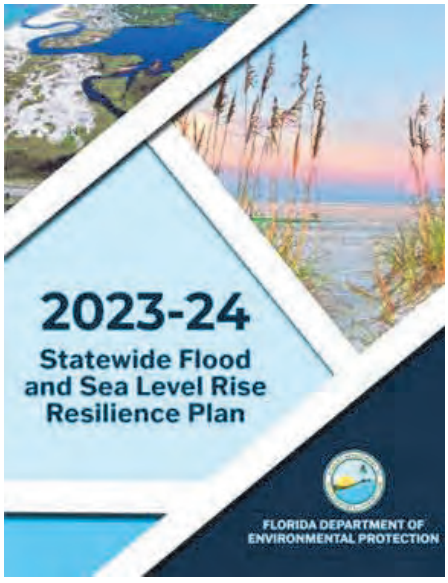
- **Project briefing**
  - Conduct a briefing presentation to City commission or general public
- **Outreach and engagement framework**
  - Strategic communications support: briefing documents, talking points memos
  - Tools to gather public feedback
- **Adaptation Toolkit**
  - Timing and resource requirements, co-benefits, limitations, and maintenance needs
  - Begin from similar places of understanding, about the technical considerations that guide selection and implementation of adaptation projects
- **Preliminary funding tracker**
- **Supplemental planning grant writing support to further this VA effort**



Why is a supplemental VA planning grant important? April flooding changed the community needs and goals of this effort.

Additional considerations to note supporting value added components:

- Funding cycle opens July 1. Don't leave money on the table.
- If project conceptual designs and cost estimates are not included – you can get left behind (Hollywood: 50 projects - $800K VA budget)
- Without a more robust planning process that identifies Focus or Priority Planning Areas and identifies potential adaptation projects, the City cannot pursue further capital project grant funding in the Resilient Florida program
  - Subsection 380.093(5), F.S. requires that projects are identified in vulnerability assessments by 2024 for funding eligibility.
- Conceptual cost estimates and conceptual design are important for higher ranking grant applications in the Statewide Flooding and Sea Level Rise Resilience Plan funded each year.
- Helpful for other grant programs as well.
- We know how to strategically position projects for funding.



Additional Value-Added Services to Consider

- **Shovel-ready project development and positioning**
  - BCAs, conceptual designs, in-depth funding plan, project costing, strategic project funding, Flood Risk Calculator
- **Equitable Community Engagement Support**
  - Media relations training and planning
  - Evaluation report: a report outlining the effectiveness of the media relations, community engagement, and outreach strategies
- **Direct Community Engagement**
  - Community events plan: a plan for community meeting, workshops, and other opportunities for engagement.
- **Outreach**
  - Stakeholder outreach plan: a detailed plan outlining outreach and key stakeholders, including community leaders, elected officials, and media contacts. This plan should include specific tactics and timelines for engagement
  - Development of key educational and outreach materials used for meetings, community events and social media

Our Team provides the most Value to the City

- We have experience with Section 380.093, F.S.
- We can execute on time / budget in 10 months
- We have the right resources to work with you and the community in a dynamic and adaptive recovery process
- We have national and global experience that we will tailor for the City's needs – best in class selection with global expertise and intimate understanding of Florida landscape and the City

30 YEARS **WORKING IN S. FLORIDA**

Arcadis has secured for our Florida clients **$100M+** in Federal Grants in the last 10 years

Erin L. Deady, P.A. has written 53 successful Resilient Florida applications totaling over $94 million of grant awards since program inception

ARCADIS

Rainfall Data + Calibrated Models > Flood Alert System for City Staff (Operators and Managers) Enhanced Resilience