



Village of Estero Vulnerability Assessment RFQ #100125

Selection Presentation

February 24, 2025



PROJECT MANAGER



SAMANTHA DANCHUK, PhD, PE

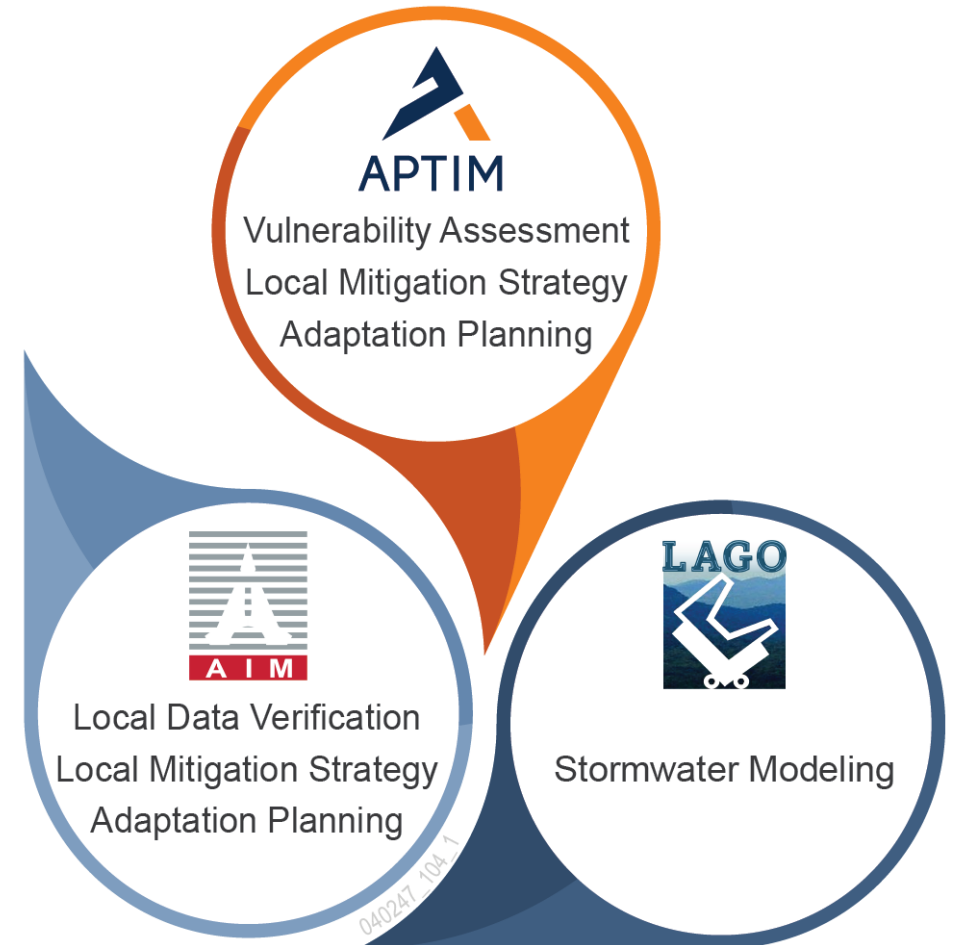
17

Years of Experience

- Coastal Engineering
- Sea Level Rise Modeling
- Resilience Planning

- ▶ Former County Resilience Officer
- ▶ Former FDEP staff
- ▶ 15 National Association of Counties Awards for resiliency policies and initiatives
- ▶ Chair, Unified Sea Level Rise Projection Committee
- ▶ Chair, NOAA Climate Marine Task Force
- ▶ LEED, WEDG, Critical Infrastructure Certifications
- ▶ Trained Facilitator

THE APTIM TEAM



Q1. What are the two most relevant examples of your team's experience with Vulnerability Assessment & Stormwater Modeling?

Explain how each project is similar to what might be expected within the Village of Estero.



APTIM IN PURSUIT OF BETTER



\$1.1B
Annual Revenue

3,500+
Employees

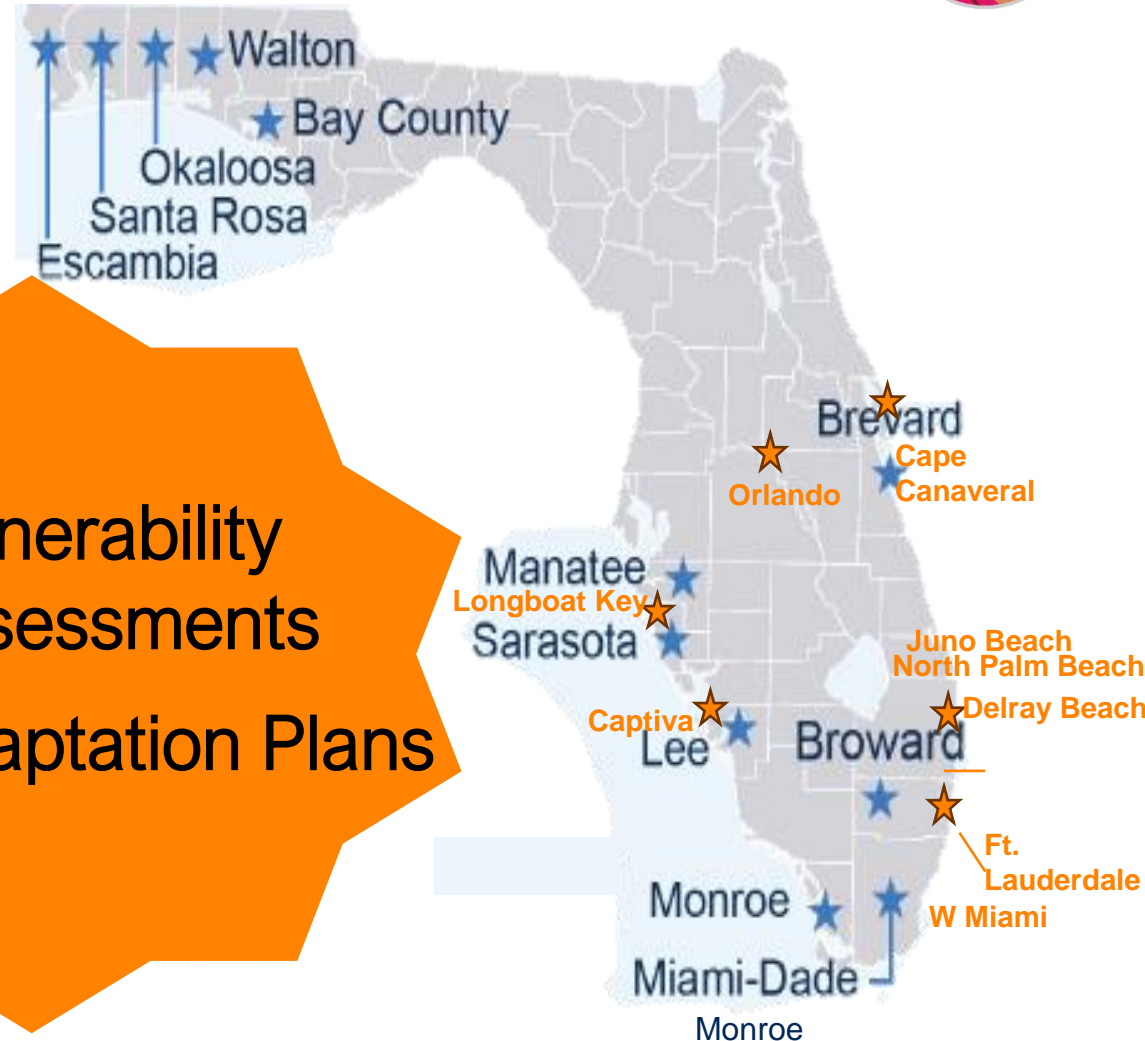
5 Florida Offices
50 Locations Worldwide

\$30B
Resilience Funding for Clients

Platform Partner
100 Resilient Cities
National Disaster Resilience Competition

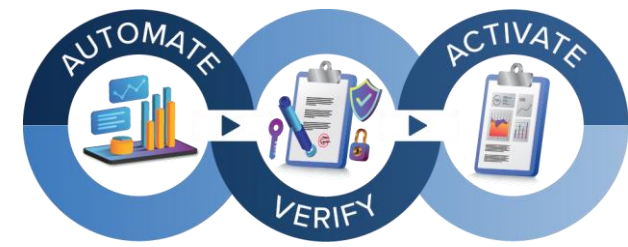
16 Vulnerability Assessments

17 Adaptation Plans



WORKING TO MAKE OUR NATURAL WORLD MORE RESILIENT AND THE BUILT ENVIRONMENT MORE SUSTAINABLE AND RELIABLE

EXPERIENCE IN VULNERABILITY ASSESSMENTS



WEST MIAMI



VULNERABILITY ASSESSMENT

- ▶ Exposure and sensitivity analyses
- ▶ High-risk areas and assets
- ▶ Project list and funding plan
- ▶ **Relevance:** sea level rise impacts on canal capacity, surge propagation
- ▶ Dependence on swales
- ▶ Focus on critical community assets

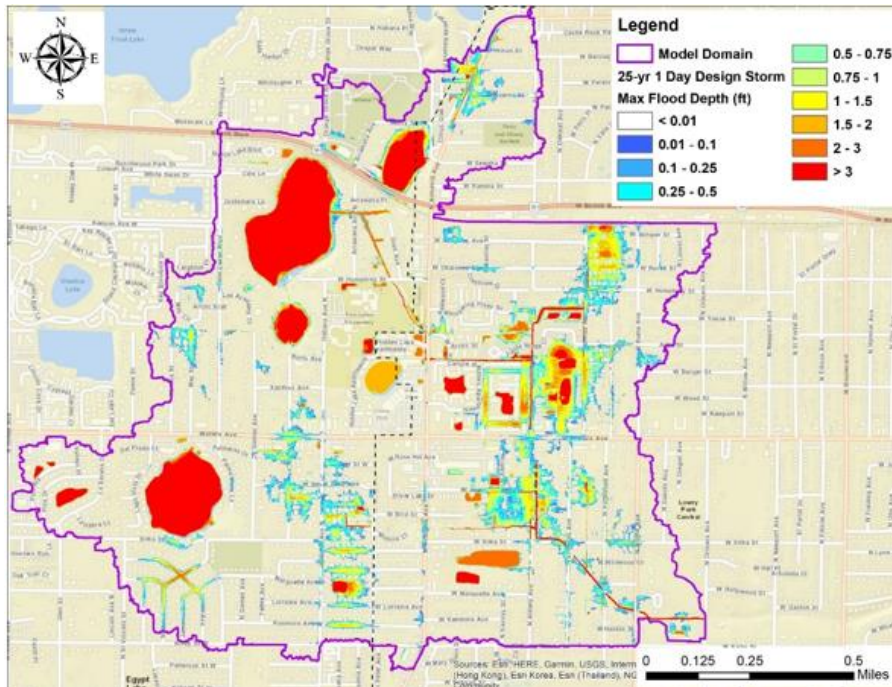
LONGBOAT KEY



VULNERABILITY ASSESSMENT & ADAPTATION PLAN

- ▶ Detailed asset inventory and stormwater atlas
 - ▶ Surveyed stormwater infrastructure and elevations of electrical panels
- ▶ Direct connection to adaptation plan and capital program/ recovery projects
- ▶ **Relevance:** vulnerable bayfront, association assets
- ▶ Redevelopment policy opportunities

STORMWATER MODELING LEAD



MARCELO LAGO, PhD, GISP, CFM |
LAGO Consulting

20

Years of Experience

- Integrated H&H modeling
- Numerical Modeling
- Extensive Local Knowledge



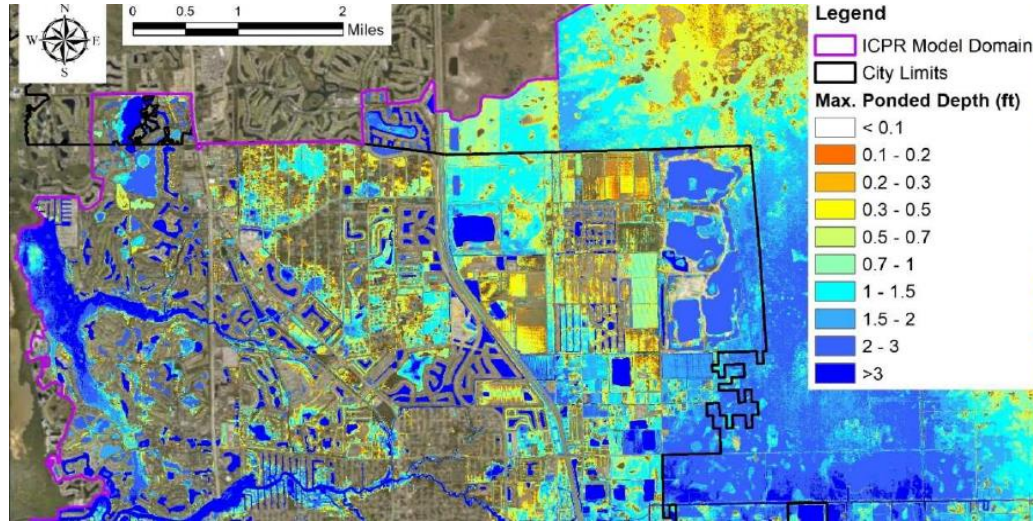
- Author of original studies used in **Village of Estero SWMP**
- Modeler for **Atlas 15** updates
- MIKE SHE/ MIKE 11 for Boundary Conditions
- Coastal boundary for surge and sea level rise
- StormWise (formerly known as ICPR4) to evaluate existing model

EXPERIENCE IN STORMWATER MODELING



CITY OF BONITA SPRINGS

SOUTH LEE COUNTY WATERSHED



- ▶ Upgraded existing model from 2010
- ▶ Calibrated with high water marks and data from Hurricane Irma
- ▶ **Relevant lesson:** Modeling as a “clean system,” debris/sedimentation in the system
- ▶ **Outcome:** Reduced depth and duration of flooding, simulated pump operations

- ▶ Developed MIKE SHE regional model
- ▶ Evaluated proposed projects
 - ▶ Wetland conservation
 - ▶ Future land use
- ▶ **Relevant lesson:** Addressing uncertainties in rainfall and evapotranspiration forecasts
- ▶ **Benefit:** Save time in Estero model update using downscaled data

Q2. Provide examples of vulnerabilities your team identified within other municipalities and some of the recommendations that were made to address those vulnerabilities?

Focus on vulnerabilities that would likely impact Village of Estero



LOCAL MITIGATION STRATEGY LEAD



DANIEL SCHROEDER, PE, MSE | **AIM**
JAMIE WILSON, PE, CFM

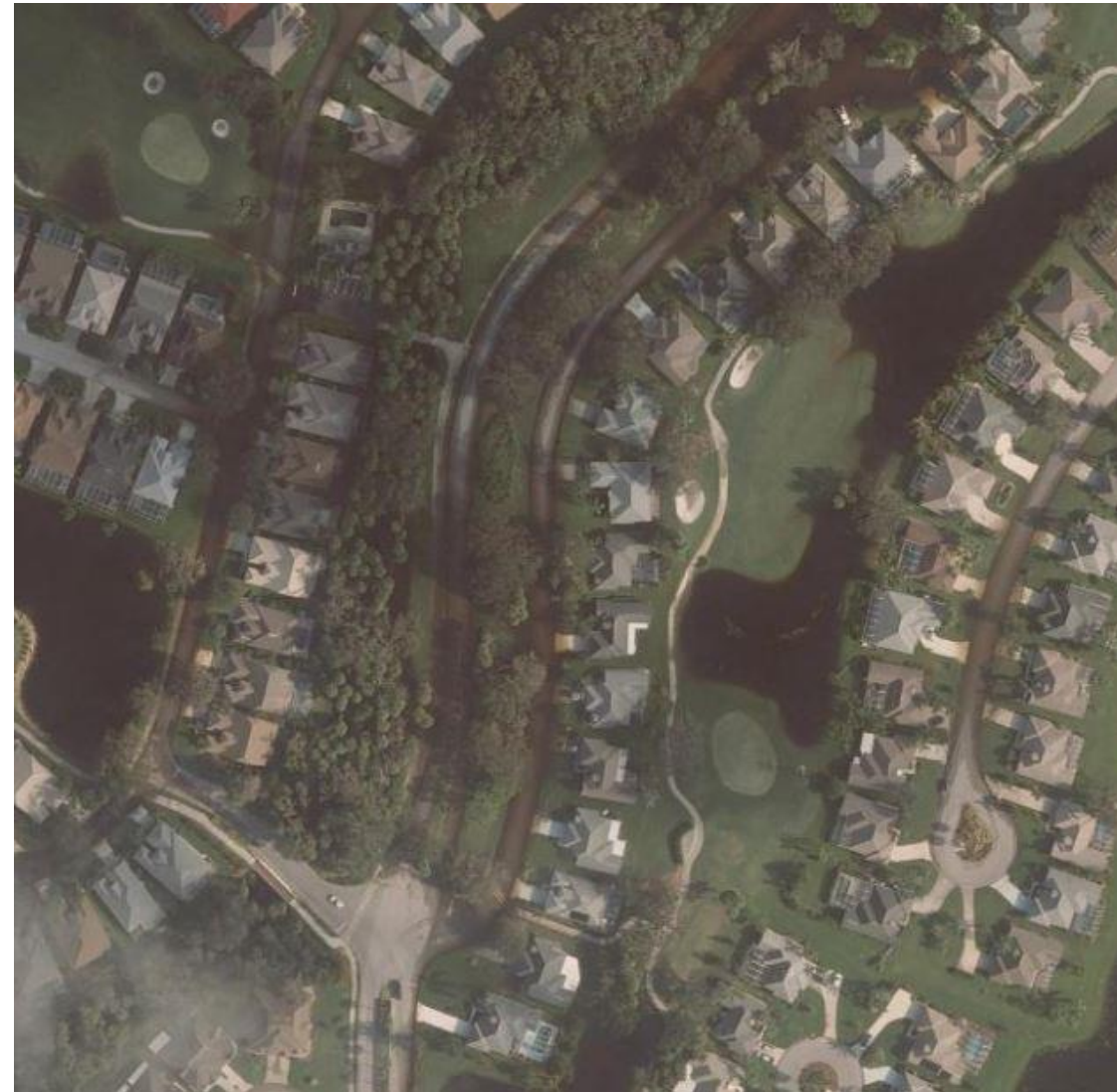
Local Liaison and Local Mitigation Strategy Lead

16

Years of Experience

- Stormwater Modeling & Management
- HEC-RAS
- ArcGIS
- Nature-Based Solutions

- ▶ Highly skilled civil engineer
- ▶ Multiple stormwater master plan and mitigation projects in region
- ▶ StormWise (ICPR) modeling, road/ drainage mitigation
- ▶ Project manager for Estero projects
 - ▶ Neighborhood drainage, sidewalks
 - ▶ Southern Lee County Flood Mitigation Plan
 - Post-Irma Flood Mitigation Evaluation/Plan



An aerial view of flooding from Hurricane Irma in 2017 of the Estero River Country Creek Drive (Image courtesy of AIM Engineering)

EXPERIENCE IN STORMWATER MITIGATION



CAPE CORAL CAPITAL PROJECTS



- ▶ Comprehensive weir maintenance and upgrade action plan
 - ▶ GIS database
- ▶ City stormwater master plan
 - ▶ Water quality management plan (TMDL)
- ▶ **Relevance:** inspections, evaluation, ranking planning, budgeting, implementation schedule

COLLIER COUNTY INLAND WATERWAY



- ▶ Waterway conveyance and seasonality analysis
- ▶ Regulatory compliance
- ▶ Federal funding requests for post-storm cleanouts
- ▶ **Relevance:** conveyance systems, multiple benefits and uses of evaluation reports

HOW WE IDENTIFY VULNERABILITIES IN ESTERO



Utility & Data Owner Interviews



- Meetings and Interviews with Data Owners and Stakeholders
- Critical thresholds for stakeholders

Site Visits & Surveys



- Site visits to identify low points
- Site surveys to obtain accurate elevation and location information for critical assets & electrical panels on those assets.

Flood Map Review

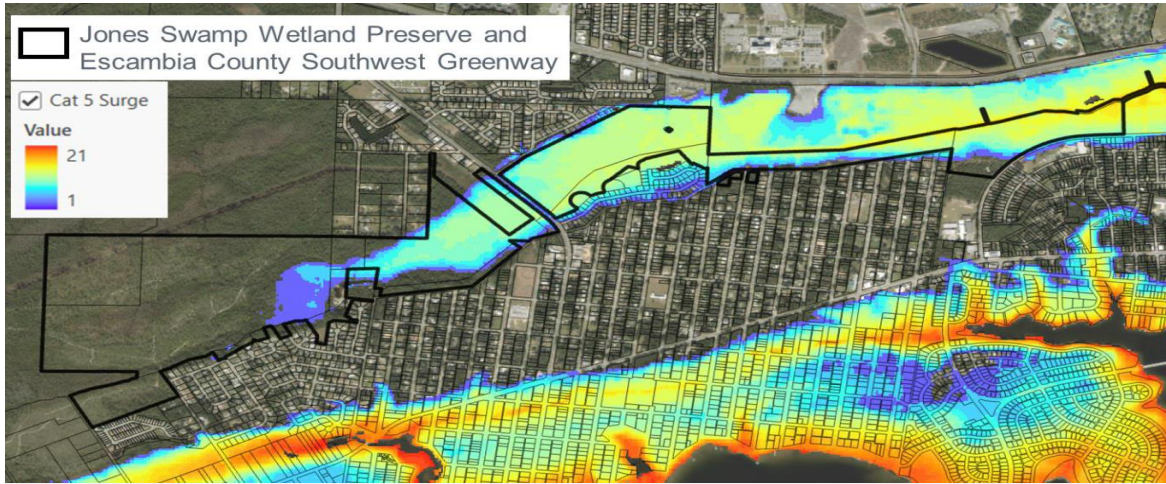


- Utilizing printed FIRM maps to digitize Base Flood Elevations to fill GIS data gaps
- Hydraulic model analysis to verify flood zones
- Satellite image verification

VULNERABILITIES & RECOMMENDATIONS IN OTHER COMMUNITIES



ESCAMBIA COUNTY



IDENTIFIED VULNERABILITIES & RECOMMENDATIONS

- ▶ **Flooding sources:** Tidal, rainfall-induced, storm surge, and sea level rise
- ▶ **Vulnerable Assets:** Fire stations, wastewater & stormwater assets, parks, and roadways
- ▶ **Recommendations:** Prioritized & phased adaptation
 - ▶ Land use management strategies
 - ▶ Flood proofing
 - ▶ Green infrastructure
 - ▶ Power redundancy for critical infrastructure

DELRAY BEACH



IDENTIFIED VULNERABILITIES & RECOMMENDATIONS

- ▶ **Major Hazards:** Storm surge, sea level rise, strong wind
- ▶ **Recommendations:** Elevation updates for public and private sea walls.
 - ▶ 10+ adaptation strategies
 - ▶ Adaptation action areas
 - ▶ Cost estimates for strategies

Q3. Describe your experience preparing State-compliant assessments, allowing clients for future State funding.

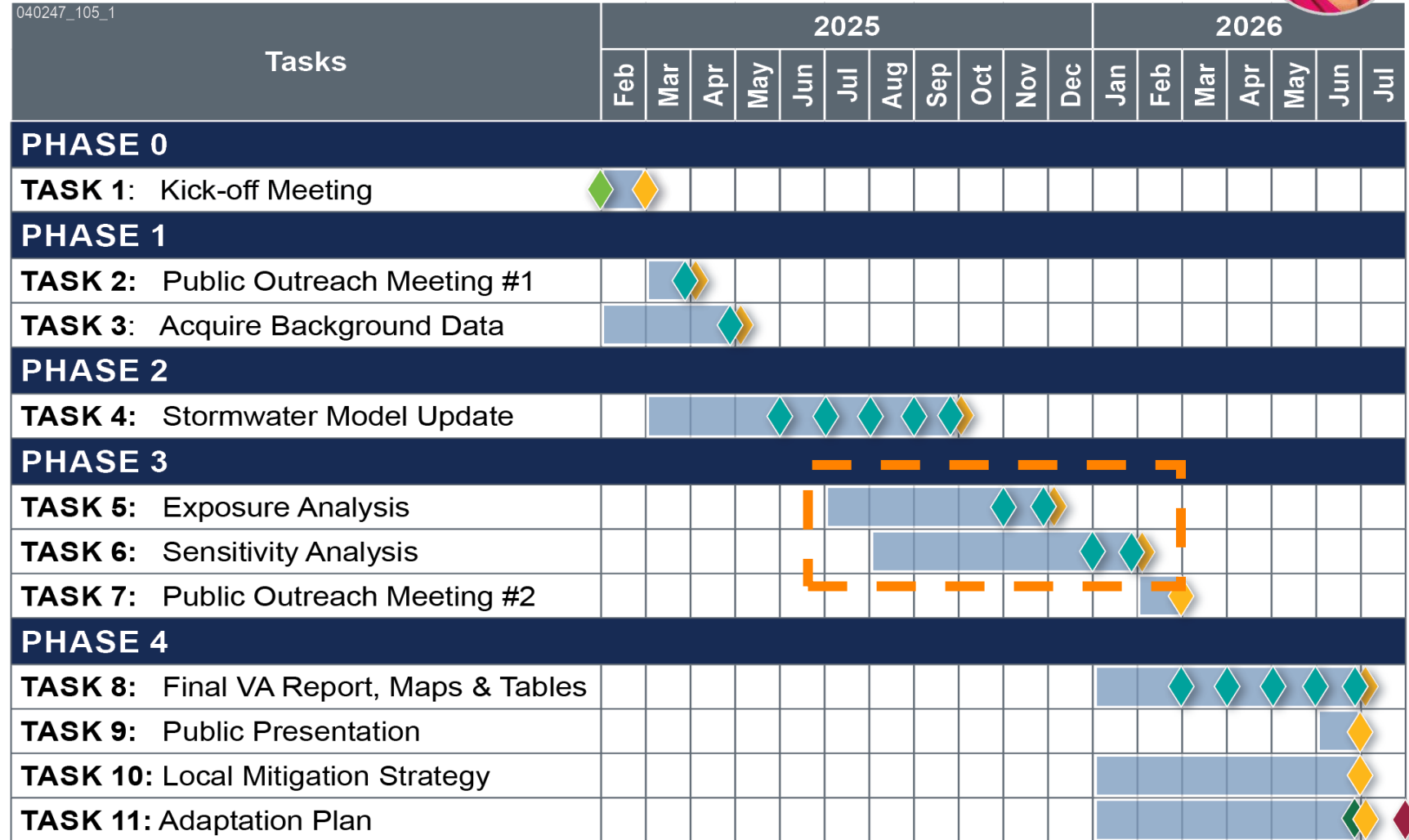
Include a discussion of the reporting requirements to meet State standards.





PROJECT TIMELINE

- Outlined per CDBG-DR Grant Management Plan
- Apply for Resilient Florida Implementation Grant in July 2025
 - Identify permit needs to get partial points



LEGEND:

- ◆ Anticipated Mobilization
- ◆ Deliverable Completed
- ◆ Monthly Progress Meetings
- ◆ Project Completion (Targeted June 2026)
- ◆ Grant End Date (7/30/2026)

CDBG-DR GRANT COMPLIANCE

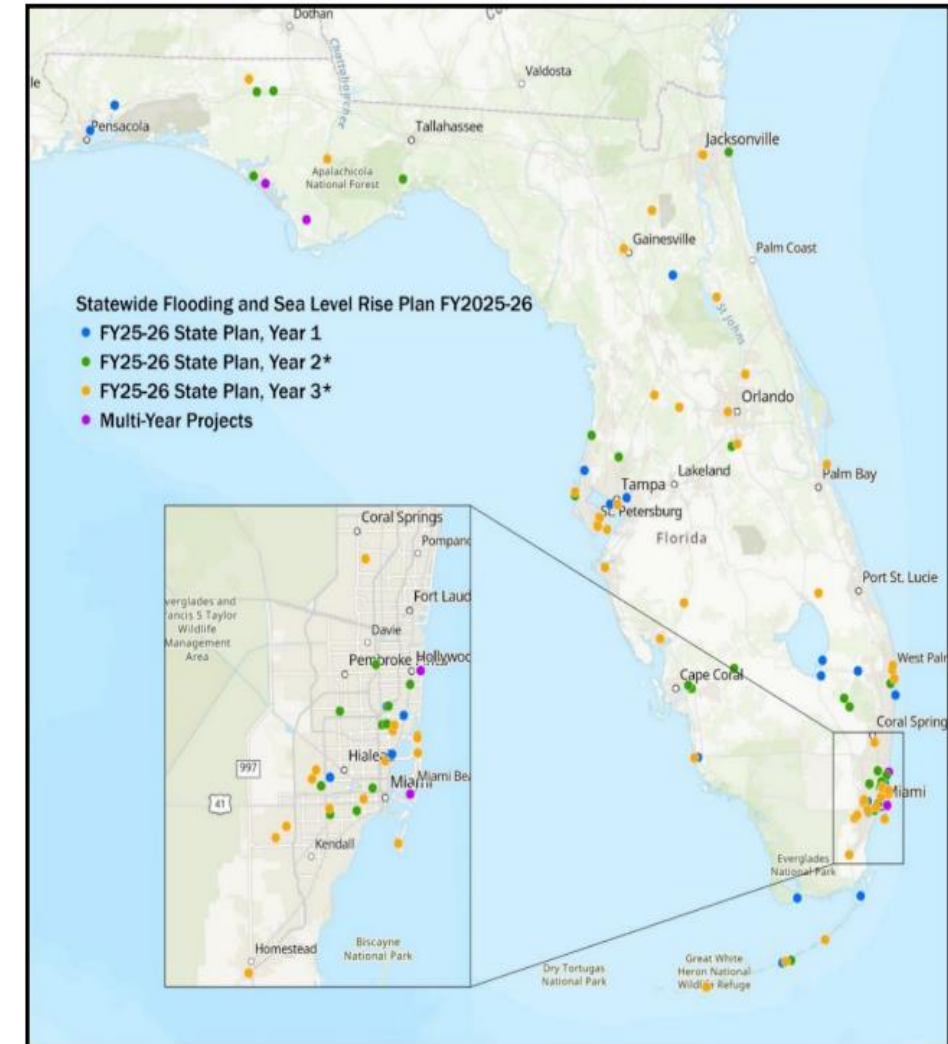


- **Meet National Objectives:** Align with LMI, Urgent Need, and Slum & Blight requirements.
- **HUD Compliance:** Follow 24 CFR 570.208 and (88 FR 32046) guidelines.
- **Grant Management:** APTIM's *Program Delivery System* for budgeting, progress tracking, and reporting.
- **Documentation:** Provide agendas, sign-in sheets, presentations, and reports.
- **Community Engagement:** Use **English and Spanish materials** and inclusive outreach.
- Reporting of all outcomes to Lee County

STATE COMPLIANCE: RESILIENT FLORIDA PROGRAM



- Set the Criteria for Adaptation Planning – Grant Work Plan
- Successfully completed numerous FDEP grant funded projects.
 - All projects adhered to grant requirements.
 - Worked with various FDEP grant managers on Resilient Florida grants (planning and implementation projects)
 - Ensured grant specifics and timelines are met and FDEP deliverables are tracked.
 - Submitted timely **Quarterly Progress Reports**
- Generated deliverables consistent with the 380.093, F.S. and **FDEP Standardized Scope of Work Guidance** and the **New GIS Data Standards**





FUNDING OPPORTUNITIES

Resilient Florida Program and Others

- Elevate Florida and other State Hazard Mitigation funds
- Home Energy HERO Program
 - Allows roof replacements to mitigate risks
- Federal Grant Applications in coordination with Lee County
- West Coast Inland Navigation District (WCIND) Funding
- USACE Technical Assistance Grants



ELEVATE FLORIDA

APPLICATION PORTAL OPEN



WCIND

West Coast Inland Navigation District



**US Army Corps
of Engineers®**

Q4. What additional information should the Village know about your team?

TECHNICAL LEAD - VULNERABILITY ASSESSMENT, ADAPTATION PLANNING, AND PUBLIC OUTREACH



CIGDEM OZKAN, PhD, PE, WEDG | APTIM

Resilience Engineer

10

Years of Experience

- H&H Modeling
- Vulnerability/Risk Assessment
- Community Engagement
- FEMA LOMR/CLOMR

- ▶ Climate adaptation and infrastructure resilience
 - ▶ Nature-based solutions
- ▶ Coastal and stormwater modeling & bridge hydraulics
- ▶ Strategic planning and public outreach
- ▶ Energy resilience framework



Estero Recreation Center

Image courtesy of Google Maps user Jeremy Graves

WHY THE APTIM TEAM?



APTIM
Vulnerability Assessment
Local Mitigation Strategy
Adaptation Planning



Local Data Verification
Local Mitigation Strategy
Adaptation Planning

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Captiva Bayside Adaptation Plan



Southern Lee County Flood Mitigation Plan



Flood Mitigation



Stormwater Modeling

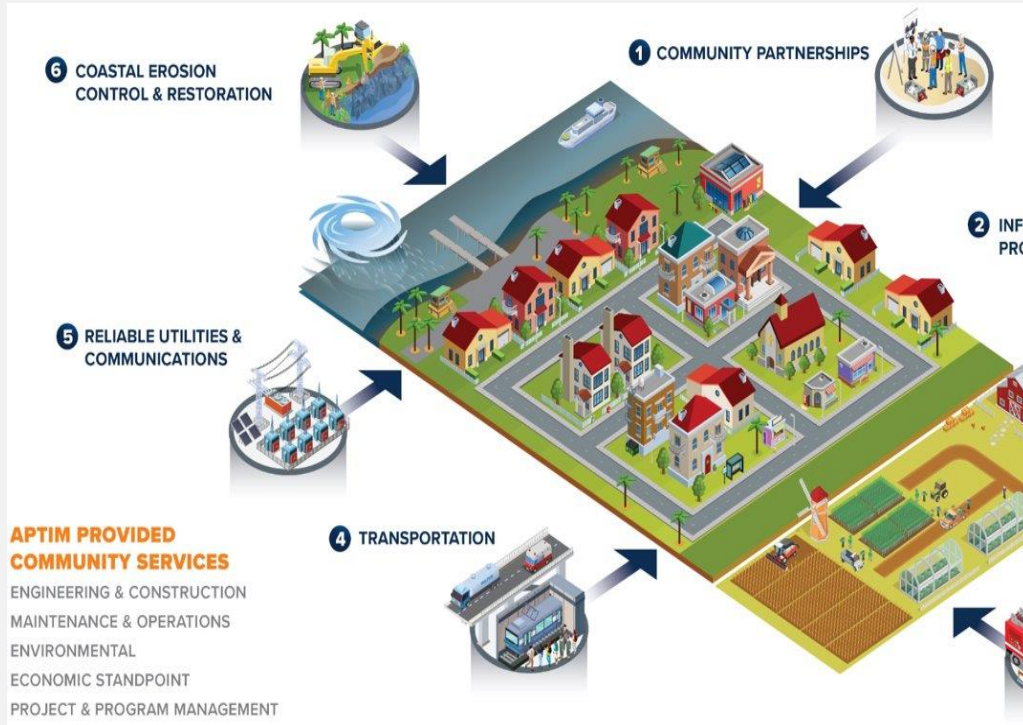
EFFECTIVELY COMMUNICATING COMPLEX FINDINGS



SIMPLIFIED MESSAGING

VISUAL STORYTELLING

INTERACTIVE TOOLS



Captiva Resident Story Map

Bayside Adaptation Plan

Welcome | Project Conceptual Designs | Site Design Feedback | Strategy Options | Shoreline Types | Resilient Captiva | Participation | Stay Connected

species, 97% of bayfront shorelines are a Mangrove Dominant Shoreline Type.

Mangrove shorelines help to build and maintain land over time, however, small areas of mangroves have been lost due to construction activities.

Click the Button below to view where these shorelines exist on Captiva.

Mangrove Bayfront Shorelines on Captiva

What strategies exist to prevent flooding?

Click the Mangrove Shoreline Strategy to view applicable solutions for the Mangrove Dominant Shoreline Type:

Strategies for Mangrove Shoreline

DOMINANT SHORELINE TYPE - MANGROVES

Existing Shoreline

Shoreline with Proposed Strategies (Example)

Additional Strategies

FLOOD MITIGATION STRATEGIES

WAVE MITIGATION STRATEGIES

STATE-OF-THE-ART EQUIPMENT AND SOFTWARE

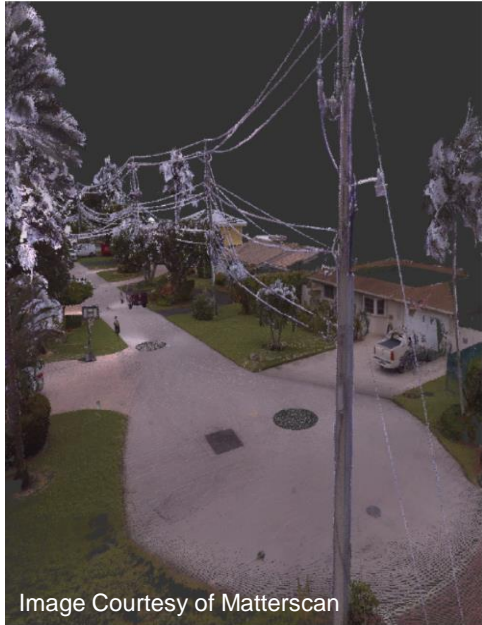
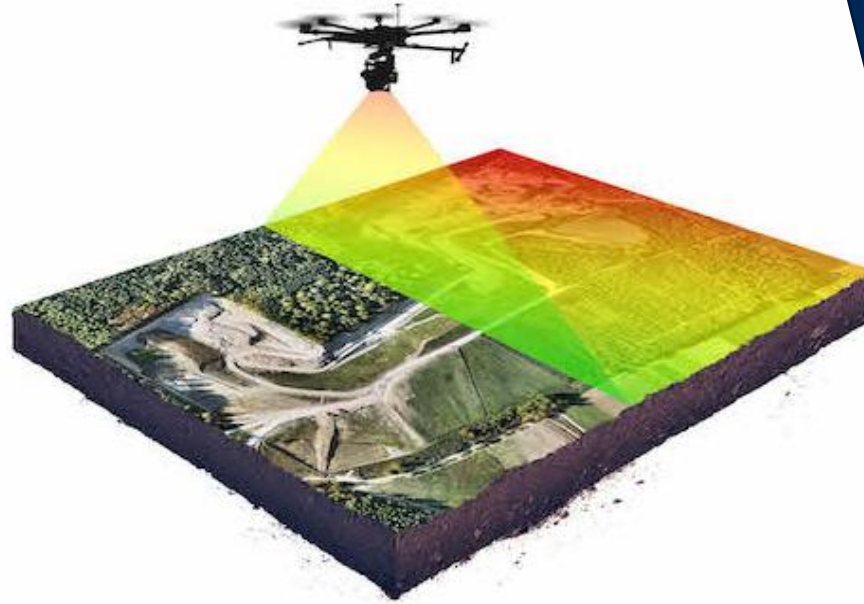


Image Courtesy of Matterscan



Value Add

- 3D Scanning Survey & modeling
- LiDAR enabled remote control boats for benthic surveys
- Cloud-based data collection
- Proven automated GIS risk model system
- Post-storm satellite imagery to calibrate the H&H models ★
- Integration of coastal processes and habitat evolution





2DFORM City of Clean Water

Municipal Maintenance

To Do | **Data** | Insights & Trends

Category: Catch Basins

628

City of Clean Water

Modified: 9/20/22, 9:48 PM PDT

Add New Bulk Clean

LAYERS LEGEND

- Drainage Area
- Landuse
- Maintenance Zones
- MS4 Boundary
- Flow Routing
- Outfalls
- Storm Drains
- Streams
- Catch Basins
 - Cluster

Topographic

2000 ft

The screenshot displays a web-based GIS application interface. At the top, the header includes the '2DFORM' logo and the title 'City of Clean Water'. Below the header, there are navigation tabs for 'To Do', 'Data' (which is currently selected), and 'Insights & Trends'. A user profile for 'Buster' is visible in the top right corner. The main content area is a map of a city area, overlaid with a network of catch basins represented by green circular markers. The map also shows various geographical features like roads, water bodies, and drainage areas. On the left side, there is a 'Zones' sidebar with a list of maintenance zones such as 'Corralitos Creek', 'Harkins Slough', and 'Watsonville Slough'. On the right side, there is a 'LAYERS' and 'LEGEND' panel with several checked options, including 'MS4 Boundary', 'Flow Routing', 'Streams', and 'Catch Basins'. The 'Catch Basins' layer is further detailed with a 'Cluster' sub-option. At the bottom right of the map, there are zoom controls and a scale bar indicating 2000 feet.

LET'S GET STARTED



APTIM – YOUR WELL-ROUNDED HIGH-CAPACITY TEAM



Aligned Goals

1

Corporate Philosophy of Sustainability & Resilient Solutions

Accessible Team

2

Florida- based team

Regional Flood Control Expertise

3

Subject matter experts in flood control projects, flood risk mitigation policy and programming, wetland and nearshore habitat mitigation, and recovery and mitigation programs

Vulnerability Assessment Ready

4

16 vulnerability assessments, 17 resilience plans successfully completed. Staff is not assigned to another long-term County contract for a vulnerability assessment at this time.

Adaptation Leaders

5

100+ coastal restoration projects, \$30B in resilience funding for state and local governments, institutional knowledge based on constructing nation's largest flood control projects



APTIM

In Pursuit of Better.