PLANNING FOR COMMUNITY RESILIENCE AND HISTORIC PRESERVATION IN THE NATION'S OLDEST CITY:

Jessica Beach – Stormwater Engineer

Jenny Wolfe – Historic Preservation Officer

Isabelle Lopez - City Attorney

1000 Friends of Florida Webinar February 20, 2019

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PRESENTATION OVERVIEW:

- **Part 1** – History, Planning and Implementation of Mitigation Projects - Jessica

- **Part 2** –Resilient Heritage in the Nation's Oldest City - Jenny

- **Part 3** – Funding Sources and Legal Aspects - Isabelle

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CITY OF SAINT AUGUSTINE:

- St. Augustine is the oldest continuously occupied settlement of European and African-American origin in the United States
- 6 million visitors each year; $1 Billion in tourism
- Historical buildings, architecture and archaeology, rich history
- City population, less than 15,000 past 50 years; small tax base

Photo sources: kaleidoscopeadventures.com; luxetravel.com

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CITY OF SAINT AUGUSTINE:

- Flooding is not new to the city.

- However, the frequency of "sunny day" flooding is on the rise.

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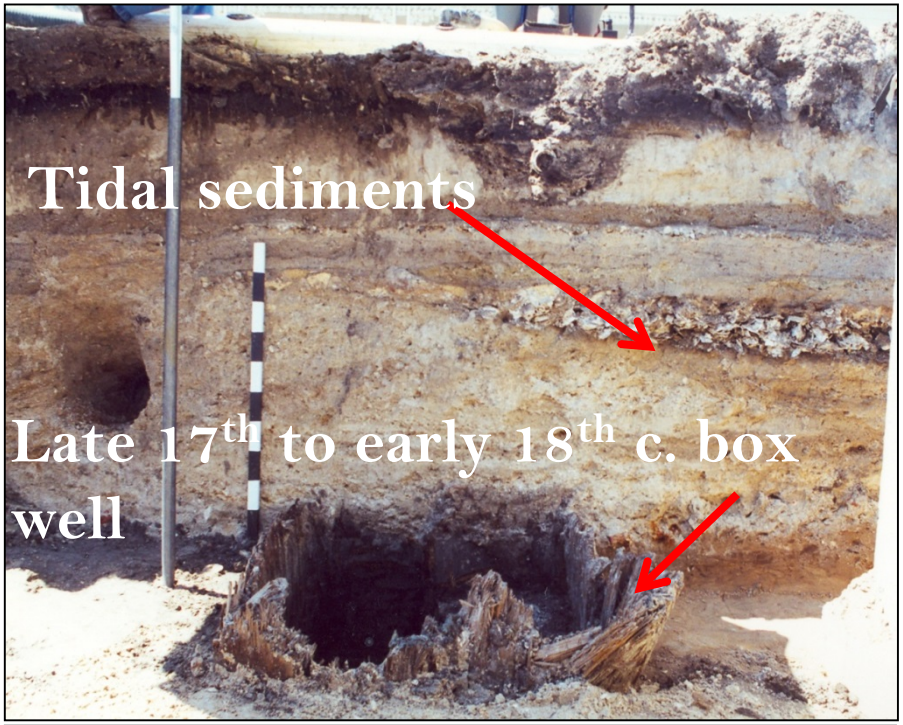
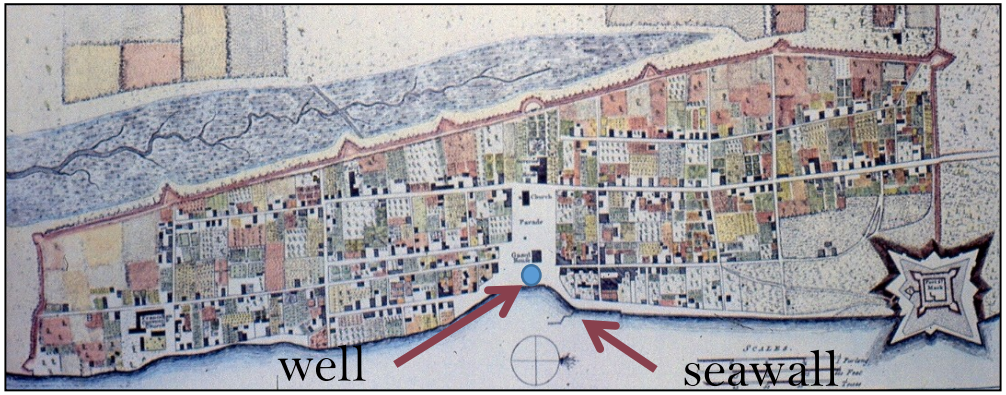
Flood adaptation is documented in the archaeological record





De Solis Map AD 1764

Wooden Posts are remnants of ca. 1800 Spanish bulk head

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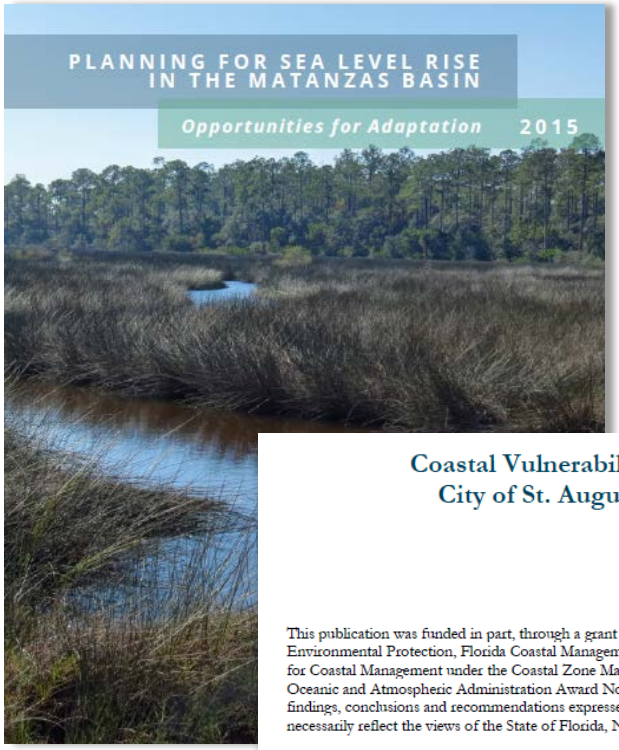
PLANNING EFFORTS:

- Planning for Sea Level Rise in the Matanzas Basin (2015)
- Community Resilience Initiative – Pilot Project (2016 – 2017)
  - Coastal Vulnerability Assessment
  - Strategic Adaptation Plan



Coastal Vulnerability Assessment:
City of St. Augustine, Florida

This publication was funded in part, through a grant agreement from the Florida Department of Environmental Protection, Florida Coastal Management Program, by a grant provided by the Office for Coastal Management under the Coastal Zone Management Act of 1972, as amended, National Oceanic and Atmospheric Administration Award No. NA13NOS4190052. The views, statements, findings, conclusions and recommendations expressed herein are those of the author(s) and do not necessarily reflect the views of the State of Florida, NOAA or any of their sub-agencies.

June 24, 2016

Florida Community Resiliency Initiative Pilot Project

Adaptation Plan

***for* St. Augustine, Florida**

May 2017

UF UNIVERSITY of FLORIDA

NATIONAL ESTUARINE RESEARCH RESERVE SYSTEM SCIENCE COLLABORATIVE

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PLANNING EFFORTS:

- Coastal Vulnerability Assessment evaluated 3 types of coastal flooding:
  - Mean Higher High Water (MHHW)
  - ***Nuisance flooding***
  - 1% annual chance (i.e. 100-year flood)

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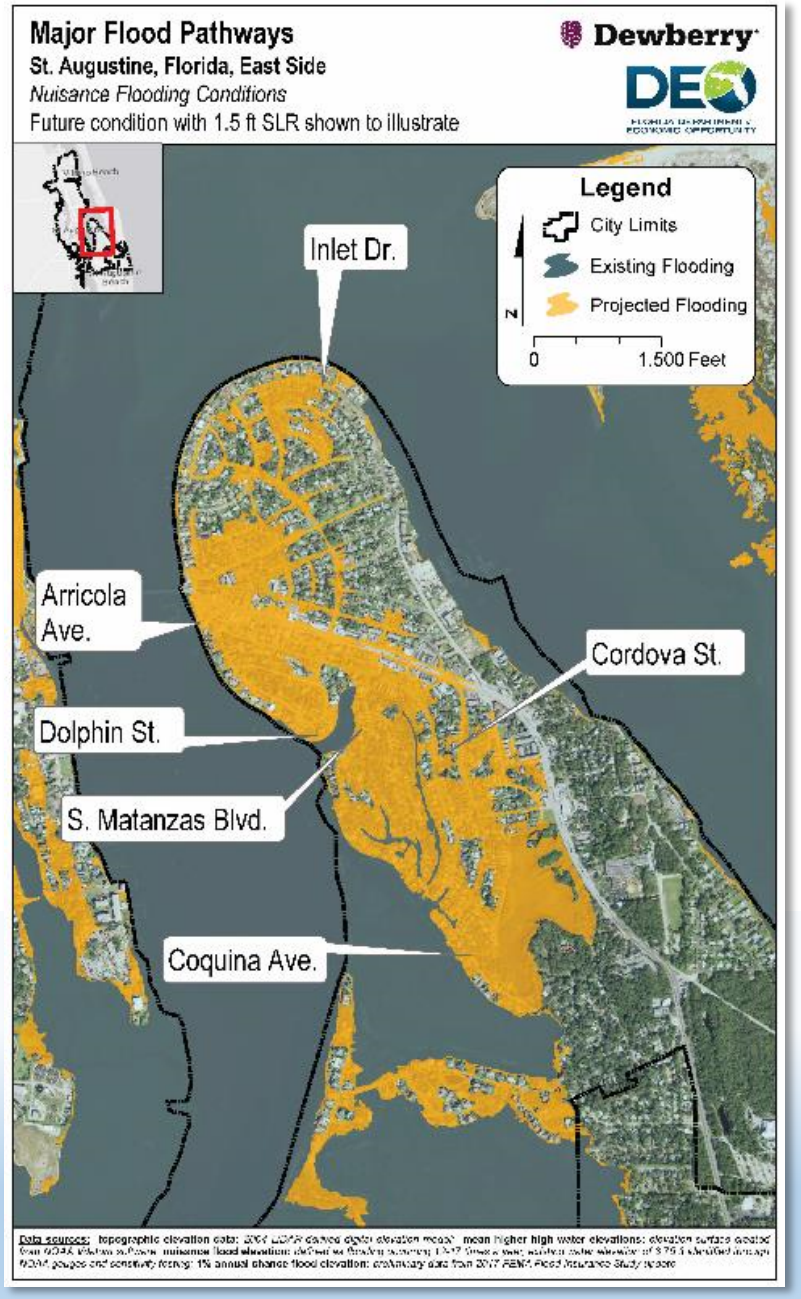
PLANNING EFFORTS:

Strategic Adaptation Plan:

- Educate the public about SLR & policy responses
- Develop baseline budgets
- Adopt policies that limit spending in areas where retreat or re-design are more effective
- Base decisions on FEMA's updated FIRMs
- Install LID/Green infrastructure
- Targeted upgrades to City's stormwater system
- WWTP options
- FDOT roadway improvements for resiliency
- Historic Preservation Comprehensive Plan



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HURRICANES MATTHEW AND IRMA (2016, 2017)

Hurricane	Category	High Water Mark*	Impact to Avenida Menendez Seawall
Matthew 10/7/2016	3	7 NAVD88 (5:48 PM)	Crested (as designed), reduced flooding impacts, no damages reported to the wall
Irma 9/11/2017	1 /TS	6.75 NAVD88 (5:26 AM)	Crested (as designed), reduced flooding impacts, flap gate was removed from outfall (minimal damage)

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HURRICANE MATTHEW

- Photograph taken in Davis Shores neighborhood – post Hurricane
- Map showing FEMA Claims from Hurricane Matthew

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HURRICANE IRMA

- High water mark, 45 inches above St. Francis Street
- Entry of surge through south (Lake Maria Sanchez)
- Less damage (flood) but more debris (widespread)

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IMPLEMENTATION – MITIGATION PROJECTS

Project Name	Project Type	Schedule
Avenida Menendez Seawall*	**Flood Mitigation (Category 1 storm surge)**	**Completed**
Davis Shores Tide Check Valves	**Flood Mitigation (nuisance flooding)**	**FY 2018-19**
Macaris Stormwater Outfall Resiliency Retrofit	Flood Mitigation (nuisance flooding)	FY 2018-19
Master Stormwater Outfall Resiliency Retrofit Plan	Flood Mitigation (nuisance flooding)	FY 2018-19 – Master Plan 10 Years (80+ Outfalls)
Lake Maria Sanchez Flood Mitigation and Drainage Improvement Project*	**Flood Mitigation (Category 1 storm surge), nuisance flooding and SLR (2050)**	**Phase 1 (design and permitting) – 2018/2019 Phase 2 (construction) – 2020-2021**

*** Denotes FEMA funded Project**

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IMPLEMENTATION – MITIGATION PROJECTS

Project Name	Project Type	Schedule
Pump Station Flood Proofing*	Flood Mitigation	Design – 2018-2019 Construction – 2019-2023
Resiliency Scorecard	Resiliency Planning	FY2018
WWTP Flood Proofing/Hardening*	**Flood Mitigation (in preliminary design)**	**Design – 2018 Construction – 2019-2020**
Flood Mitigation at Avenida Menendez – Connectivity Project*	Flood Mitigation (Category 1 storm surge)	HMGP Application – 2018 Design – 2019 Construction – 2020-2021
Comp Plan Update (Perils of Flood category - Historic Preservation – SLR)	Flood mitigation and resiliency	Update currently underway, 2 year process

*** Denotes FEMA Project**

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FLOOD MITIGATION PROJECTS - SEAWALL

- Constructed to elevation 7.1 (NAVD) = Cat. 1 (view shed limit)
- 1200 linear feet, with promenade and stormwater treatment
- Historic preservation of original seawall (constructed 1830s)

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FLOOD MITIGATION PROJECTS – DAVIS SHORES

- 23 stormwater outfalls retrofitted with tide check valves (WaPro and Tideflex Checkmate Inline Check Valves)
- Elimination of “sunny day” flooding

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FLOOD MITIGATION PROJECTS – LAKE MARIA SANCHEZ

- Stormwater infrastructure upgrades around City Hall (conveyance)
- Stormwater pump station
- Bulkhead system (elev. 7.1 NAVD)
- Tide check valves
- FY2019-2021
- HMGP Funded (estimated $):
  - FEMA ($8,625,000)
  - COSA ($2,875,000)

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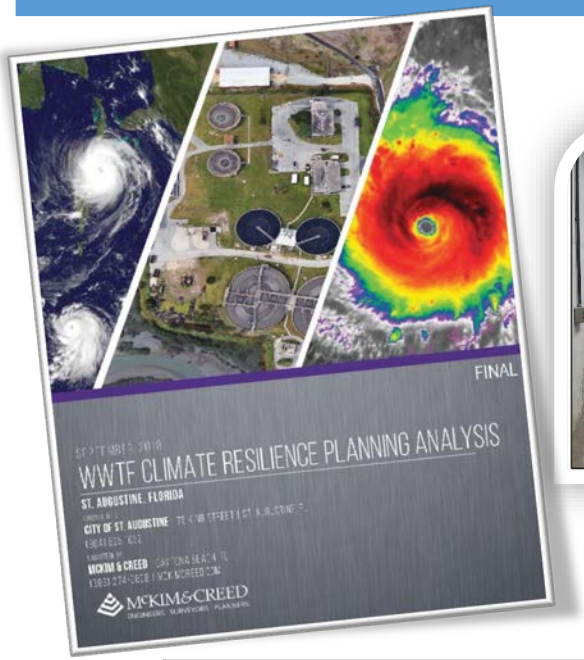
Wastewater Treatment Plant Options for Resiliency



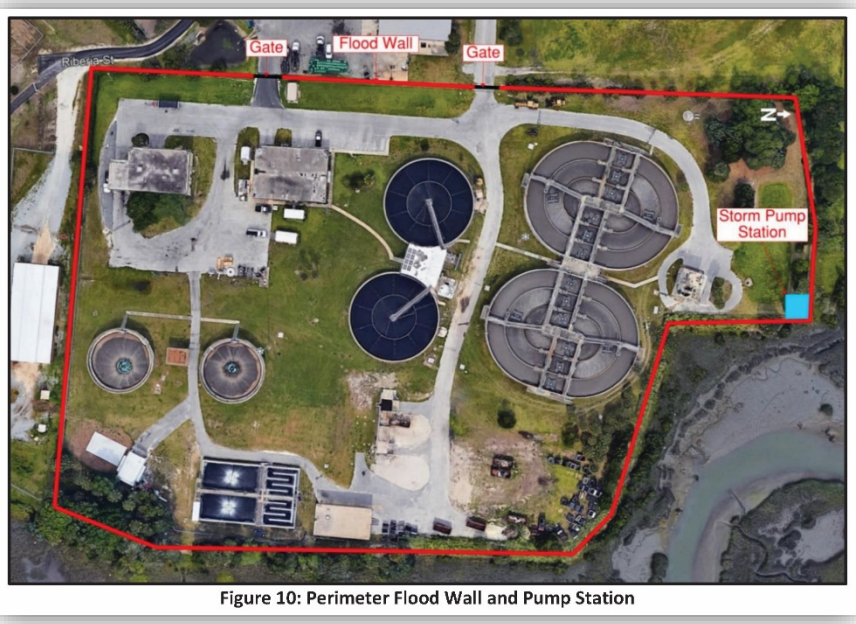


Figure 10: Perimeter Flood Wall and Pump Station

Perimeter Wall and Pump Station Estimated Costs at Multiple Heights for Year 2030 (2018 dollars)

Type of Wall	Top Elevation (feet NAVD)	Average Height of Wall (feet)	Protection Cost	Category of Hurricane Protection Level (2030)	Preventable Damage Cost	Benefit/Cost Ratio
Sheet Pile	18	11	**$ 3,700,000**	3	$16,000,000	4.3
	20	13	**$ 4,200,000**	4	$21,000,000	5.0
	25	18	**$ 5,300,000**	5	$21,000,000	4.0

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RESILIENT HERITAGE IN THE NATION'S OLDEST CITY:

A survey of the immediate and long term impacts of flooding in historic St. Augustine

Jenny Wolfe, Historic Preservation Officer

1000 Friends of Florida Webinar February 20, 2019

DISCUSSION OVERVIEW:

- Define *Cultural Resources* and identify partners
- Survey the impacts of flooding and mitigation
- Identify vulnerabilities
- Local Planning and Regulatory Resources
  - ✓ Code of Ordinances: Building, Zoning, Preservation
  - ✓ Comprehensive Plan: new 'Peril of Flood' component, HP Element
  - ✓ County's Local Mitigation Strategy
  - ✓ Historic Preservation Master Plan: identify resources and risk, disaster recovery, protection and mitigation

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MITIGATION DESIGN FOR HISTORIC BUILDINGS:
Building Elevations

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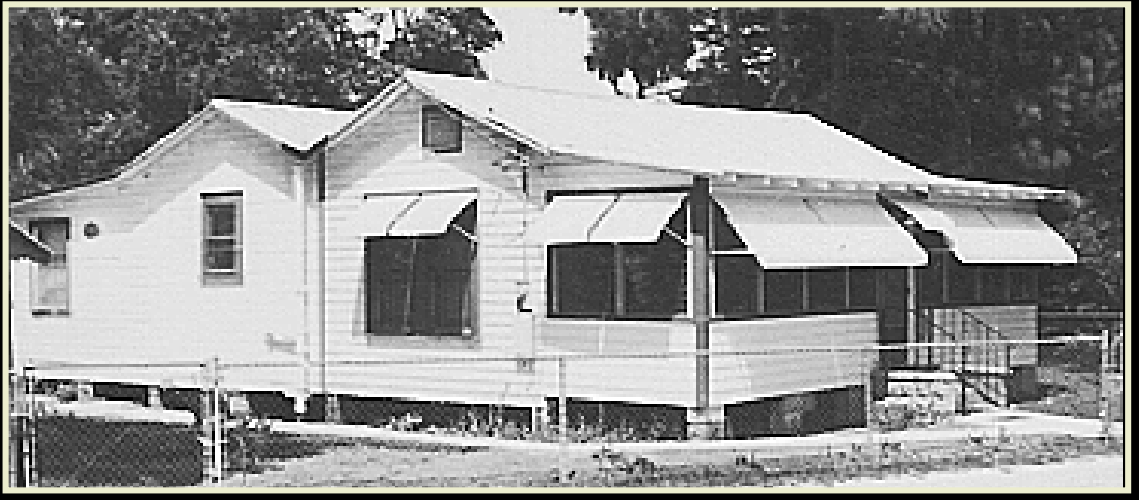


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MITIGATION DESIGN FOR HISTORIC BUILDINGS: Building and/or Site Alterations

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MITIGATION FOR HISTORIC INTERIORS:

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MITIGATION FOR HISTORIC INTERIORS:

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MITIGATION FOR HISTORIC INTERIORS:

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MITIGATION DESIGN FOR HISTORIC BUILDINGS:
Demolition

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Cemeteries...

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Impacts of Trees...

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Historic wall features…

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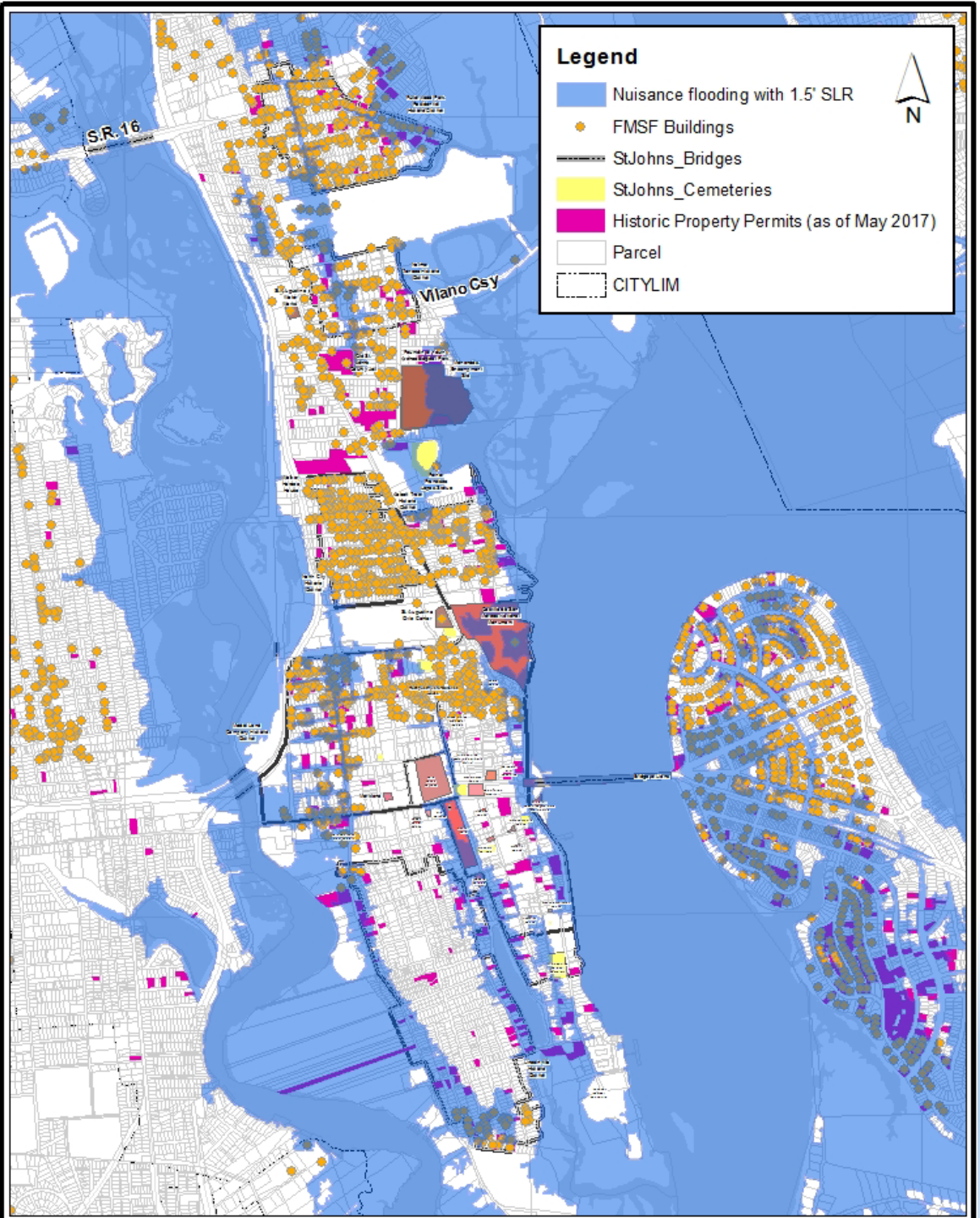

Vulnerability of Historic Resources and Projected Flooding:

- Archaeological sites captured in zones across city
- 3,581 recorded structures on the state inventory
- 7 National Register Historic Districts
- 27 Individual NR and NHL resources

Scenario projected to occur between 2040 to 2100

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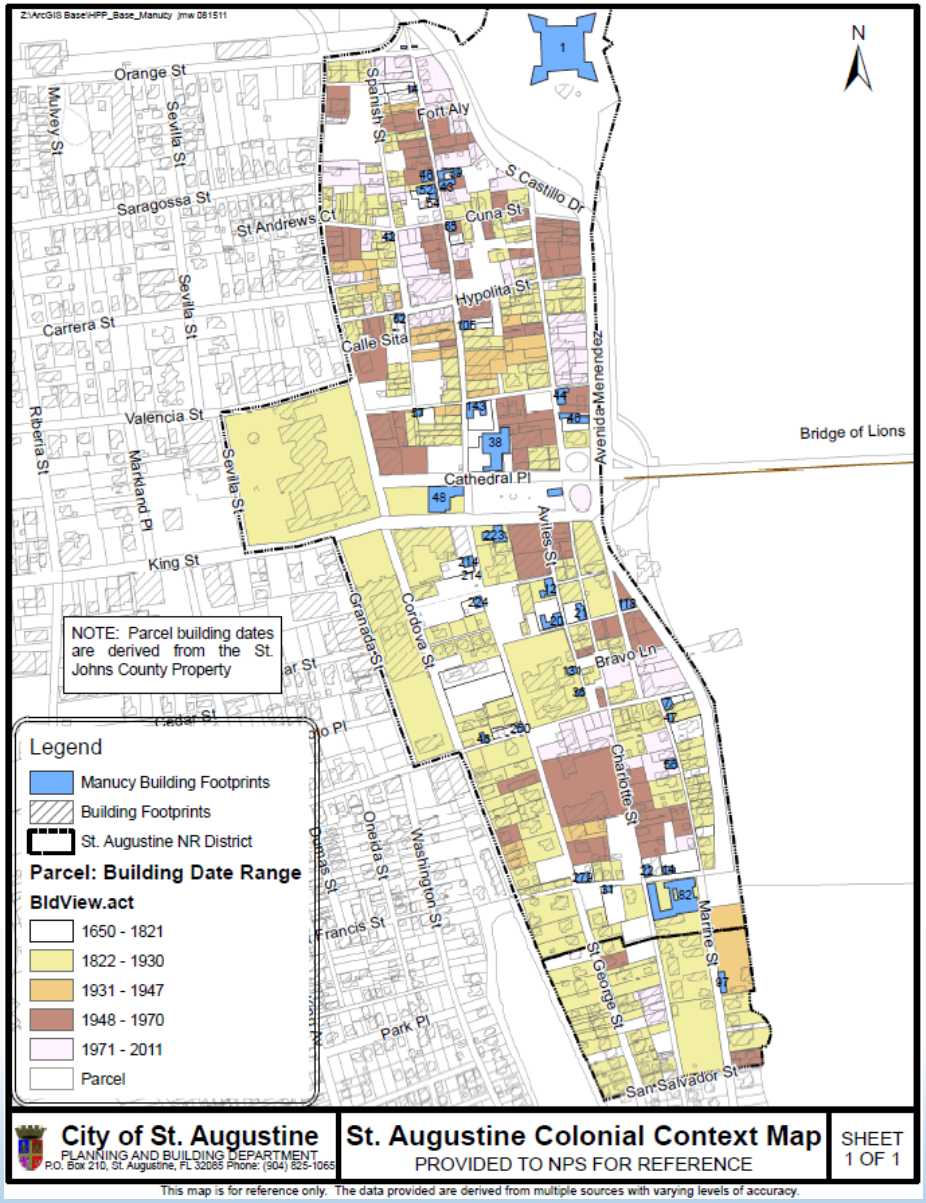
37 Spanish (1British) Colonial historic buildings and structures



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LOCAL PLANNING AND REGULATORY RESOURCES:

- Local Planning and Regulatory Documents:
  - ✓ Building Code and Flood Plain Management
  - ✓ Zoning Code and Preservation Ordinances
  - ✓ Comprehensive Plan: Peril of Flood Act, Historic Preservation Element

- County's Local Mitigation Strategy

- Historic Preservation Master Plan Hazard Mitigation Chapter

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LOCAL REGULATIONS: BUILDING, ZONING, PRESERVATION CODES

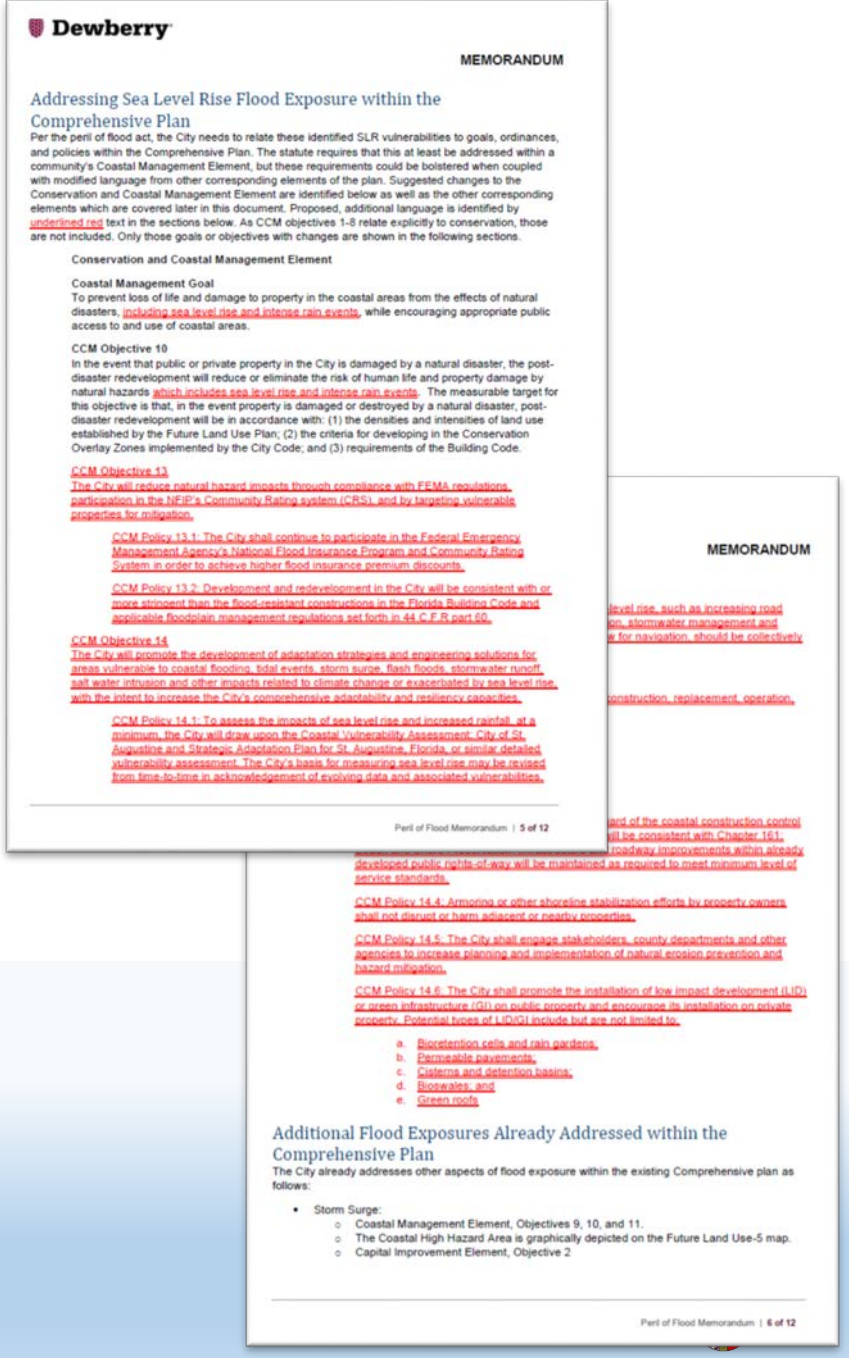
- Base flood elevations affects building design
- Variances for rehabilitations at existing BFE
- Maximum building heights set by zoning code
- In-kind replacement materials for historic properties vs. insurance allowance
- Economic incentives for preservation: tax credits, property tax exemptions, tourism

COMPREHENSIVE PLAN:

- Currently undergoing Evaluation and Appraisal Report for updates

- Peril of Flood Act: Draft language reviewed would add language related to sea level rise and flooding adaptation in the Conservation and Coastal Management Element at a minimum and recommends draft language in the Future Land Use, Transportation, Housing, Infrastructure, Intergovernmental Coordination, and Historic Preservation Elements

- Historic Preservation Element: currently undergoing Evaluation and Appraisal Report process for future updated Comprehensive Plan



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MEMORANDUM

Addressing Sea Level Rise Flood Exposure within the Comprehensive Plan

Per the peril of flood act, the City needs to relate these identified SLR vulnerabilities to goals, ordinances, and policies within the Comprehensive Plan. The statute requires that this at least be addressed within a community's Coastal Management Element, but these requirements could be bolstered when coupled with modified language from other corresponding elements of the plan. Suggested changes to the Conservation and Coastal Management Element are identified below as well as the other corresponding elements which are covered later in this document. Proposed, additional language is identified by underlined red text in the sections below. As CCM objectives 1-8 relate explicitly to conservation, those are not included. Only those goals or objectives with changes are shown in the following sections.

Conservation and Coastal Management Element

Coastal Management Goal

To prevent loss of life and damage to property in the coastal areas from the effects of natural disasters, including sea level rise and intense rain events, while encouraging appropriate public access to and use of coastal areas.

CCM Objective 10

In the event that public or private property in the City is damaged by a natural disaster, the post-disaster redevelopment will reduce or eliminate the risk of human life and property damage by natural hazards which includes sea level rise and intense rain events. The measurable target for this objective is that, in the event property is damaged or destroyed by a natural disaster, post-disaster redevelopment will be in accordance with: (1) the densities and intensities of land use established by the Future Land Use Plan; (2) the criteria for developing in the Conservation Overlay Zones implemented by the City Code; and (3) requirements of the Building Code.

CCM Objective 13

The City will reduce natural hazard impacts through compliance with FEMA regulations, participation in the NFIP's Community Rating system (CRS), and by targeting vulnerable properties for mitigation.

CCM Policy 13.1: The City shall continue to participate in the Federal Emergency Management Agency's National Flood Insurance Program and Community Rating System in order to achieve higher flood insurance premium discounts.

CCM Policy 13.2: Development and redevelopment in the City will be consistent with or more stringent than the flood-resistant constructions in the Florida Building Code and applicable floodplain management regulations set forth in 44 C.F.R part 60.

CCM Objective 14

The City will promote the development of adaptation strategies and engineering solutions for areas vulnerable to coastal flooding, tidal events, storm surge, flash floods, stormwater runoff, salt water intrusion and other impacts related to climate change or exacerbated by sea level rise, with the intent to increase the City's comprehensive adaptability and resiliency capacities.

CCM Policy 14.1: To assess the impacts of sea level rise and increased rainfall, at a minimum, the City will draw upon the Coastal Vulnerability Assessment: City of St. Augustine and Strategic Adaptation Plan for St. Augustine, Florida, or similar detailed vulnerability assessment. The City's basis for measuring sea level rise may be revised from time-to-time in acknowledgement of evolving data and associated vulnerabilities.

Peril of Flood Memorandum | 5 of 12

MEMORANDUM

developed public rights-of-way will be maintained as required to meet minimum level of service standards.

CCM Policy 14.4: Armoring or other shoreline stabilization efforts by property owners shall not disrupt or harm adjacent or nearby properties.

CCM Policy 14.5: The City shall engage stakeholders, county departments and other agencies to increase planning and implementation of natural erosion prevention and hazard mitigation.

CCM Policy 14.6: The City shall promote the installation of low impact development (LID) or green infrastructure (GI) on public property and encourage its installation on private property. Potential types of LID/GI include but are not limited to:

a. Bioretention cells and rain gardens;
b. Permeable pavements;
c. Cisterns and detention basins;
d. Bioswales; and
e. Green roofs

Additional Flood Exposures Already Addressed within the Comprehensive Plan

The City already addresses other aspects of flood exposure within the existing Comprehensive plan as follows:

- Storm Surge:
  - Coastal Management Element, Objectives 9, 10, and 11.
  - The Coastal High Hazard Area is graphically depicted on the Future Land Use-5 map.
  - Capital Improvement Element, Objective 2

Peril of Flood Memorandum | 6 of 12

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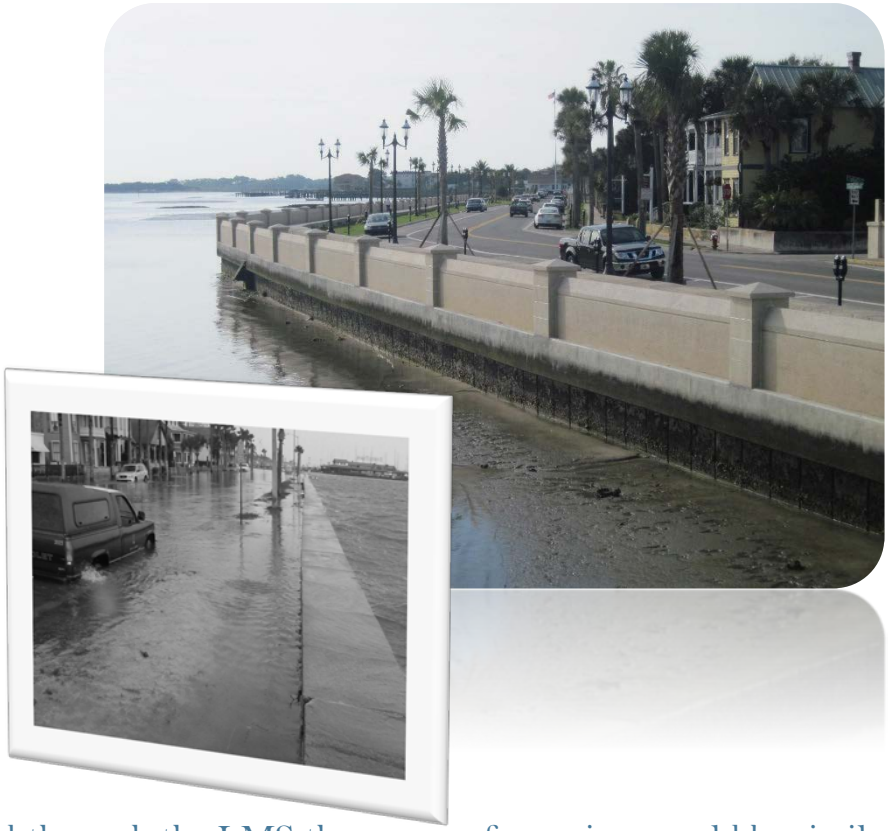
County's Local Mitigation Strategy

St. Johns County Local Mitigation Strategy (https://www.sjcemergencymanagement.com/lms.html)

Recognizes value of significant cultural resources

LMS include project lists so when hazard mitigation funding becomes available there is a prioritized list of projects that can be recommended forward

Federally funded projects must consider impacts to cultural resources



2013 Sea Wall Project: While this was not initiated through the LMS the process for review would be similar. Projects that receive federal hazard mitigation funds will require a Cultural Resource Review in accordance with the National Historic Preservation Act. Additionally, the local preservation board reviewed the project in accordance with the local preservation ordinance.

Mitigation for the historic seawall included archaeological investigation, documentation, and selective design for the new wall. The local review board considered impacts to the streetscape as well as the design elements.

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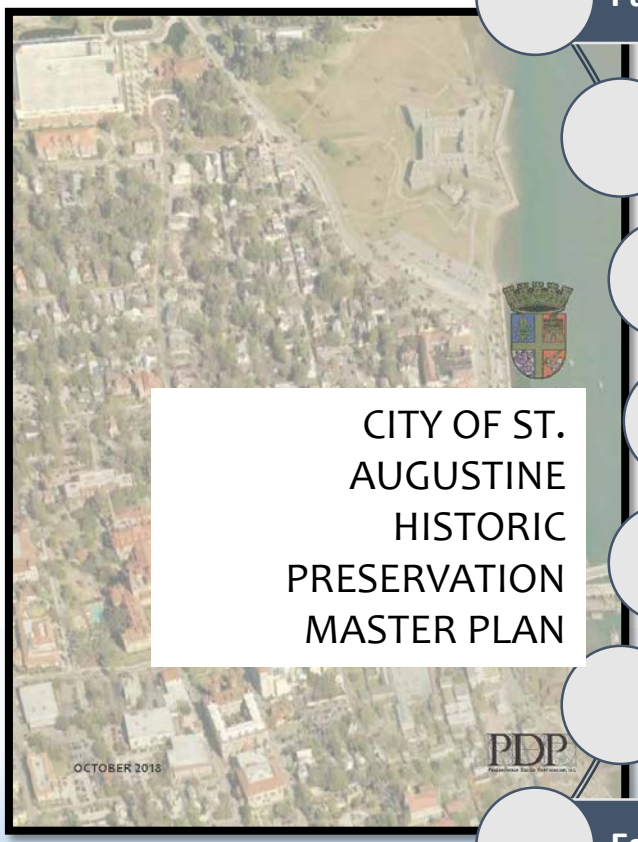
HISTORIC PRESERVATION MASTER PLAN: Hazard Mitigation Chapter



- Participate in Disaster Mitigation Planning
- Document Historic and Cultural Resources most vulnerable
- Implement design guidelines for flood mitigation and provide information to property owners
- Protect city-owned historic and cultural resources
- Provide flexible administrative review procedures/expedited review
- Identify Preservation Partners to Assist in Post-Flood Review Process
- Establish a debris management plan for historic building materials

Adopted October 2018

Partially implemented. Major projects and any code revisions will require additional public input

http://www.citystaug.com/government/planning_and_building/HistoricPreservationMasterPlan.php

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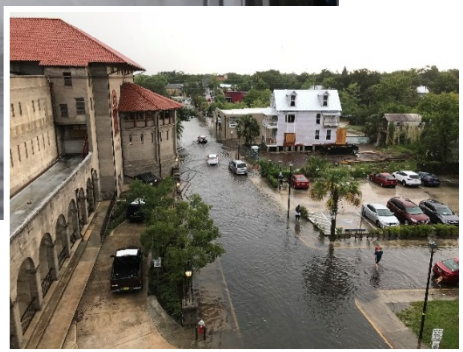
HP MASTER PLAN: Identify Resources and Risk



2019 Grant: Resilient Heritage In The Nation's Oldest City

- Analyze permit valuations for flood mitigation/recovery
- Recommend mitigation strategies for select buildings
- Develop communication/visualization program
- Propose future policy considerations

Grant application ranked #1 in Florida Division of Historical Resources Small Matching Grant Program

- Document historic and cultural resources at risk recognizing broader resources such as streetscapes

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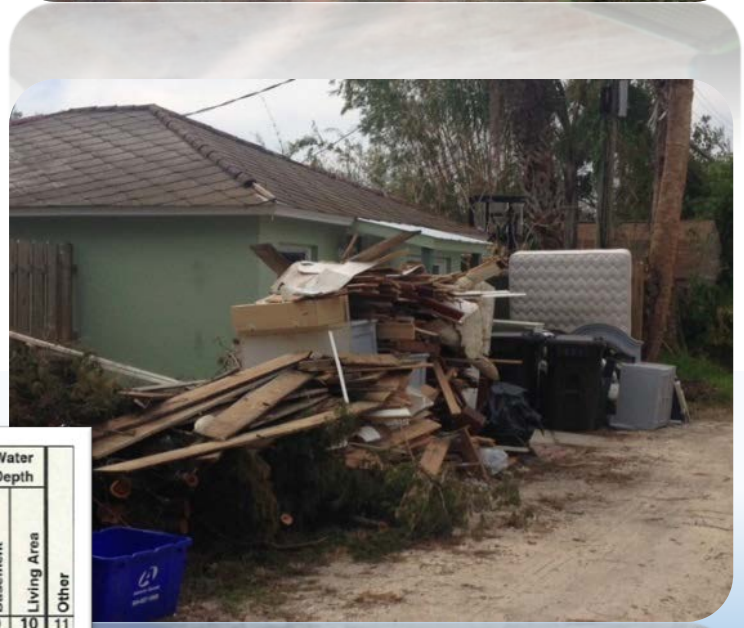
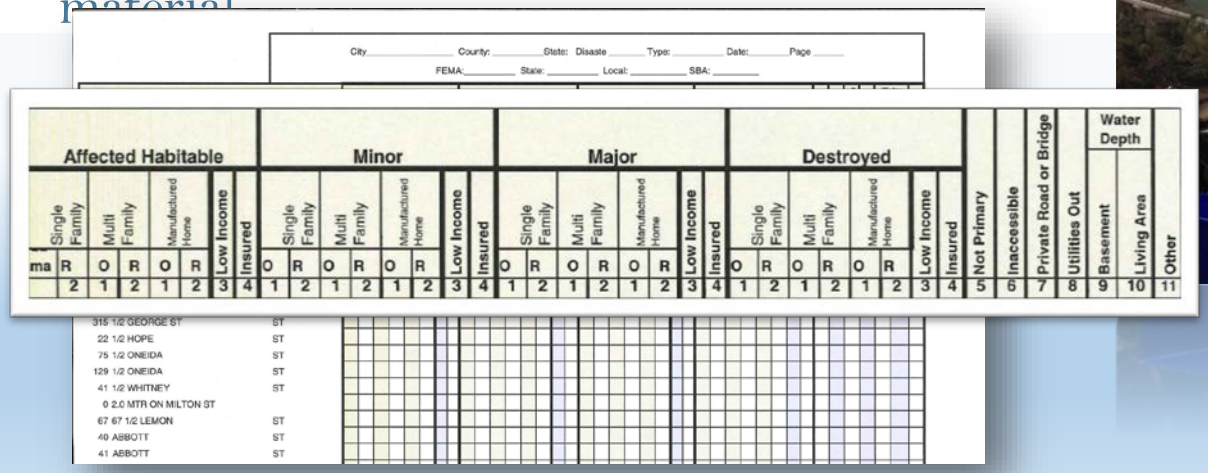
HP MASTER PLAN: Disaster Recovery

- Have a disaster response plan in place and know requirements and expectations
- Identify preservation partners to assist in post-flood review process
- Create an expedited review process for disaster response and allow more staff approvals which meet local design standards
- Establish a debris management plan to promote preservation and reuse of historic material


Photo courtesy UF Historic Preservation

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FEMA: State: Local: SBA:

	Affected Habitable							Minor							Major							Destroyed											
	Single Family		Multi Family		Manufactured Home		Low Income	Insured	Single Family		Multi Family		Manufactured Home		Low Income	Insured	Single Family		Multi Family		Manufactured Home		Low Income	Insured	Single Family		Multi Family		Manufactured Home		Low Income	Insured	Not Primary	Inaccessible	Private Road or Bridge	Utilities Out	Water Depth		
ma	R	O	R	O	R			O	R	O	R	O	R			O	R	O	R	O	R			O	R	O	R	O	R							Basement	Living Area	Other
	2	1	2	1	2	3	4	1	2	1	2	1	2	3	4	1	2	1	2	1	2	3	4	1	2	1	2	1	2	3	4	5	6	7	8	9	10	11

315 1/2 GEORGE ST	ST
22 1/2 HOPE	ST
75 1/2 ONEIDA	ST
129 1/2 ONEIDA	ST
41 1/2 WHITNEY	ST
0 2.0 MTR ON MILTON ST	
67 67 1/2 LEMON	ST
49 ABBOTT	ST
41 ABBOTT	ST

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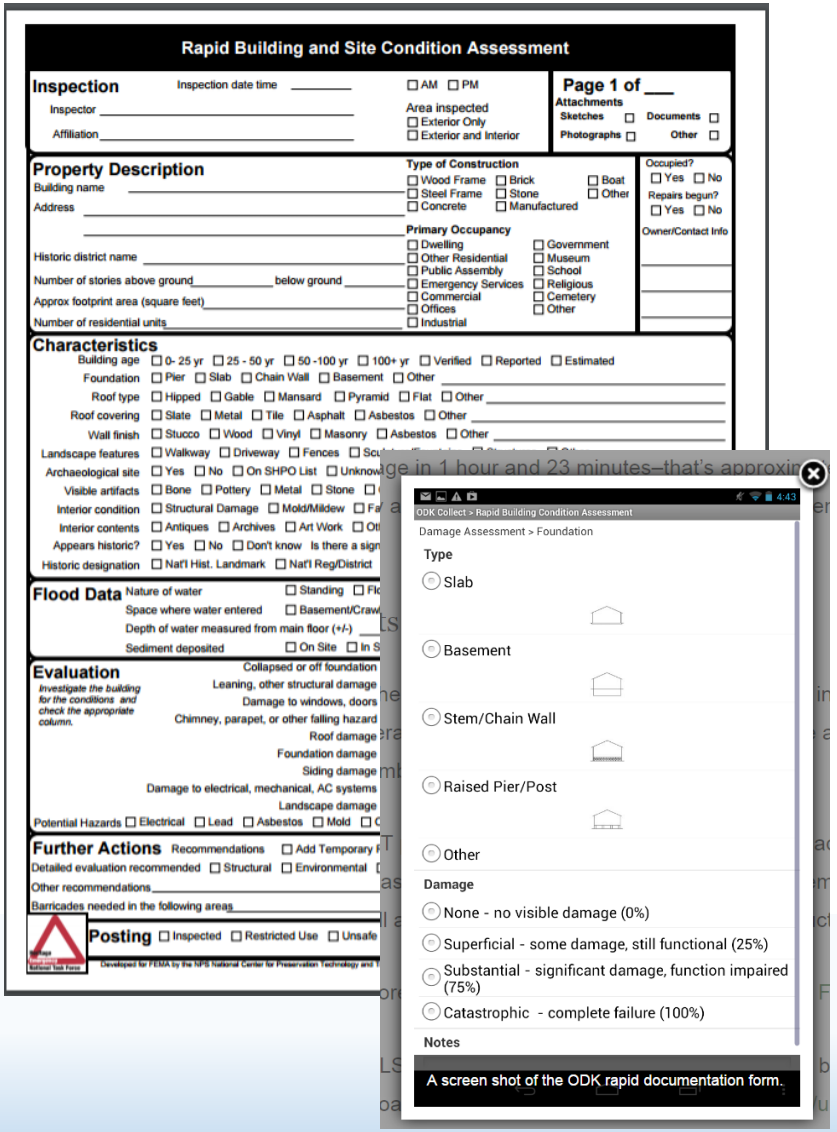
RESPONDING TO DISASTER: Document Historic Buildings

- Contacted each property owner of most individually listed (NR/NHL) historic buildings and conducted site visits
- NCPTT rapid assessment form and mobile program considered along with other methods. *See also 'HMS Florida' mobile monitoring tool by FPAN*
- Detailed form used for 10 original Davis Shores buildings (ca. 1926 vs. 1940s-60s)



A screen shot of the ODK rapid documentation form.

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RESPONDING TO DISASTER: Florida Trust and FPAN assess impacts of Hurricane Michael

Florida Trust for Historic Preservation
P. O. Box 11206 Tallahassee, Florida 32302
(850) 224-8128

DISASTER REPORT FORM

Property Name: First Presbyterian Church
Property Address Wewahitchka
Reviewer: Carter Quina, AIA Date of Review: 11.5.18

General Observations	Flood Damage	Wind Damage	Impact Damage	Comments
Foundation		X		BUILDING SHIFTED
Walls		X		WALLS ARE LEANING
Porches		X		TOWER IS SEPERATING
Windows and Doors		X		PARTIAL DAMAGE
Soffits and Trim		X		PARTIAL DAMAGE
Gutters and Flashing		X		PARTIAL DAMAGE
Roofing		X		PARTIAL DAMAGE
Chimney				
Landscaping				

If the interior was available for inspection, then complete the following items:

General Observations	Water Damage	Wind Damage	Impact Damage	Comments
Walls and Doors				
Floors and Ceilings				
Electrical Systems				
Mechanical Systems				

Observations and problems which need to be addressed: The old wood carpenter gothi
is leaning heavily to the north. The structure is still resting on the brick foundation bu
shifted. The bell tower has a crack where the nave pulled away from it. Appears that if strapped
and lifted, it could be reset onto a stabilized foundation. We need to try to contact Owner and
offer technical assistance before this church is demolished. I am sure the insurance company
would suggest demolition. This is a beautiful little church building and due to its small size is
fully restorable in my opinion.

Signature: Date 11.7.18

\\STRAUS12\Render Documents\General\Forms

First Presbyterian Church (Wewahitchka), courtesy C. Quina

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HP MASTER PLAN:
Protection and Mitigation

- Provide protection for City-owned Historic and Cultural Resources including submerged resources and the archaeology lab
- Engage in hazard mitigation planning with county and other local agencies
- Develop information for property owners
- Prepare design guidelines for flood mitigation:
  - ❑ Balance flood mitigation and historic neighborhood character by defining acceptable building elevation heights/set a design flood elevation
  - ❑ Identify appropriate materials and design considerations for new ground floor spaces and access from front door; see new first floor garages and stairways
  - ❑ Identify acceptable water-resistant materials for flood-prone areas

The Historic Preservation Master Plan is a planning tool and none of its provisions will be binding upon properties located within the City of St. Augustine without first being adopted as part of the City's Comprehensive Plan and Code of Ordinances following required public hearings. However, the City is actively pursuing comprehensive plan amendments and code changes related to the Plan, and may invoke the pending ordinance doctrine. Furthermore, both federal and state law provide certain legal protections from government regulations, including new regulations affecting someone's pre-existing private property rights. These legal protections could include vested rights, also known as grandfathering. They could also include compensation if the new regulation impacts a property owner's reasonable, investment backed expectation under our existing regulations. When considering various strategies in this planning document, the City must evaluate the potential benefits of any new or amended regulation against the risks involved in future private property rights' litigation.

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QUESTIONS AND DISCUSSION

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