

# St. Augustine, Florida Back Bay Coastal Storm Risk Management (CSRM) Feasibility Study

**USACE PLANNING TEAM PRESENTATION  
AUGUST 2023**

**PLEASE MUTE YOUR PHONE AND COMPUTER  
TO AVOID BACKGROUND DISRUPTIONS.**

**WE WILL START PROMPTLY AT 1:05**

**Presented by:**

Jason Harrah, Senior Project Manager (Jacksonville District, USACE)

Marty Durkin, Planning Technical Lead (Jacksonville District, USACE)

Jessica Beach, Chief Resiliency Officer (City of St. Augustine)





# AGENDA



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- Opening Remarks
- Study Overview / Schedule & Budget
- Alternatives Overview
- G2CRM Model & Plan Formulation Strategy
- Discipline Specific Study Updates
- Schedule Updates (90-Day Window)
- Upcoming Public Engagements
- Sponsor Remarks
- Agency Questions/Comments
- Public Comments
- Closing Remarks



Environmental  
Justice (EJ)  
Communities

## House Resolution 2646 (June 21, 2000): St. Johns County, Florida

Resolved by the Committee on Transportation and Infrastructure of the United States House of Representatives, That in accordance with Section 110 of the River and Harbor Act of 1962, the Secretary of the Army, acting through the Chief of Engineers, is **requested to survey the shores of St. Johns County, Florida**, with particular reference to the advisability of providing beach erosion control works in the area north of St. Augustine Inlet, the shoreline in the vicinity of Matanzas Inlet, and adjacent shorelines, as may be necessary in the interest of **hurricane protection, storm damage reduction, beach erosion control, and other related purposes**.

### Non-Federal Sponsor: City of St. Augustine (COSA)

POC: Jessica Beach, P.E., Chief Resilience Officer, [jbeach@citystaug.com](mailto:jbeach@citystaug.com)

### Study Area

- Entire COSA Municipal Boundary
- 17 Distinct Neighborhoods
- 3 Separate Land Masses
- Interconnected Water Bodies

**Objectives** to be achieved within the City of St. Augustine over a 50-year period of analysis from 2035-2085 are to...

1. Manage risk of coastal flood damages.
2. Manage risk to health and life-safety.
3. Manage risk to cultural and natural resources.
4. Manage flooding impacts to the local economy.

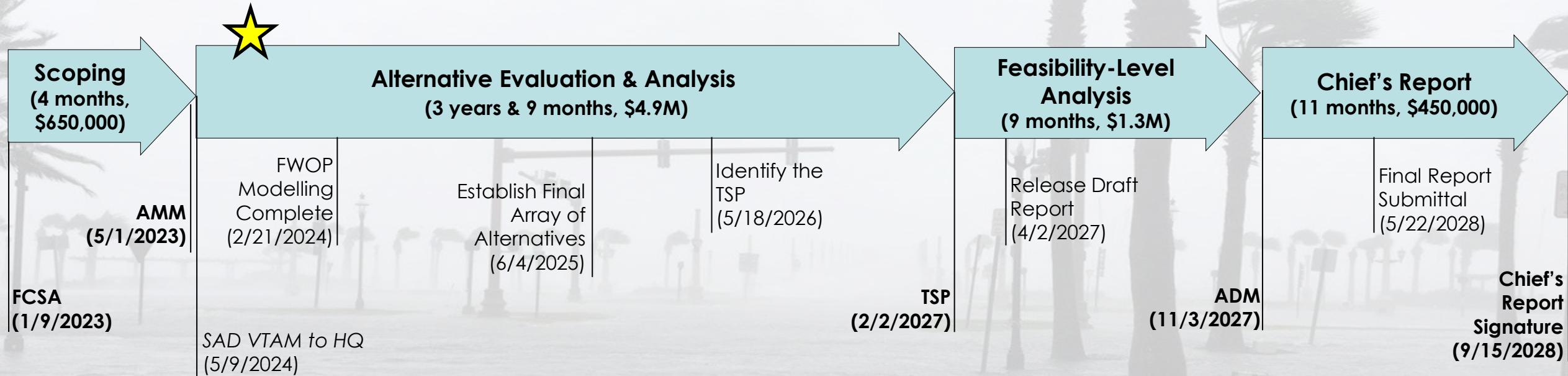


# SCHEDULE & BUDGET ★ We Are Here



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Schedule & Budget Overview: 5 years & 9 months, \$7.3M



## Key Components of the Study Scope:

- Entire City of St. Augustine (COSA)
- Compound Flooding
- Full Array of Alternatives & Comprehensive Benefits
- Environmental Impact Statement (EIS) Likely
- Robust Community Outreach

## 3x3 (WRDA 14 Section 1001) Exception Request:

- 2 years & 9 months (over the Section 1001 3-year limit)
- \$525,000 (over the Section 1001 \$3 million Federal limit which does not include IEPR)



# INITIAL ALTERNATIVES



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## Measure Function

## Initial Array of Alternatives

Wall/Levee/Dune features stop flooding at the back bay shoreline.

Surge Barrier/Gate features stop flooding before it gets into the back bay waters.

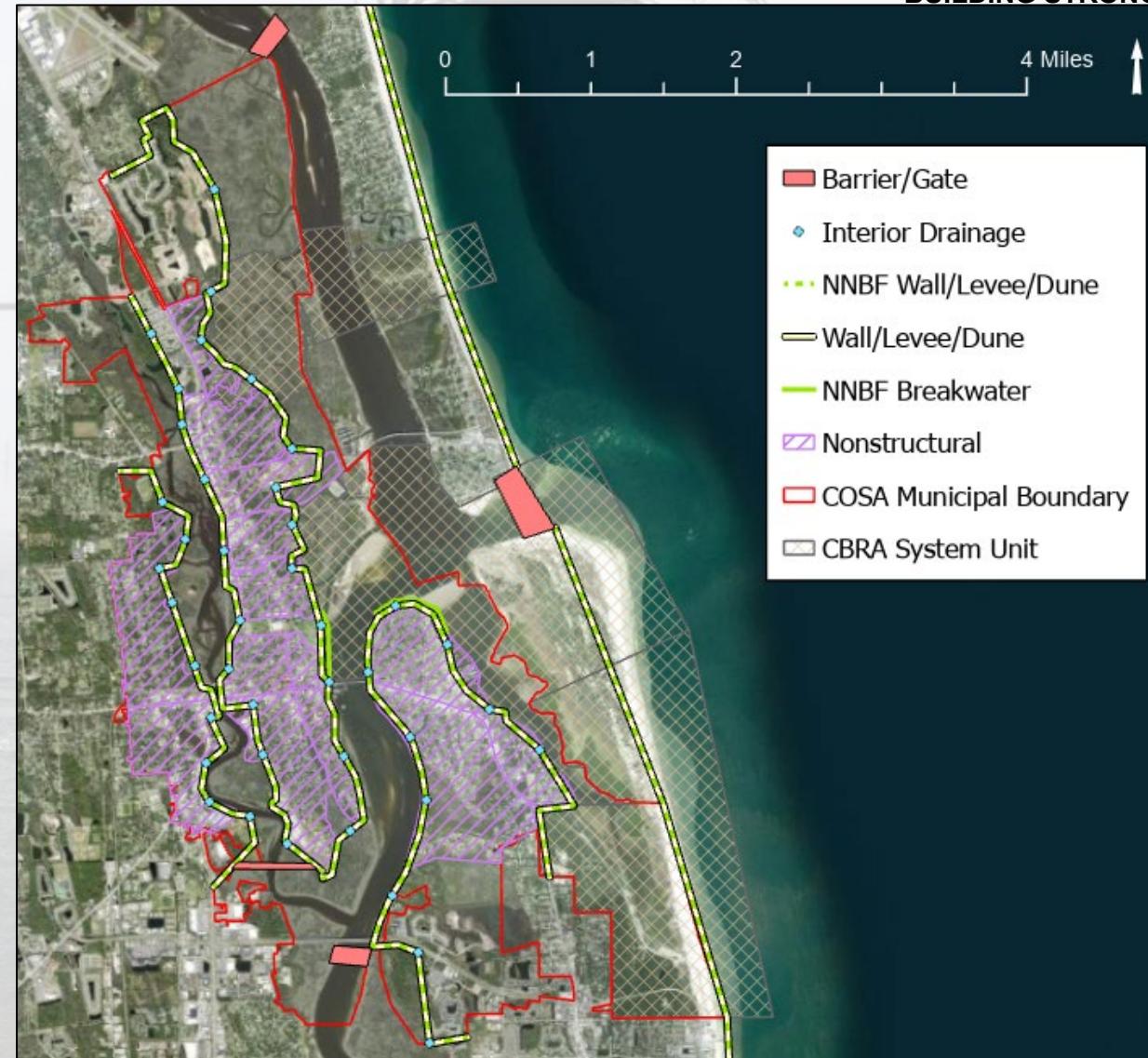
Interior Drainage features get flooding out of upland areas.

Nonstructural features reduce flood risk without directly effecting flooding processes.

Breakwaters/NNBFS can reduce wave energy before it gets to the back bay shoreline.

### 0. No Action

1. Wall/Levee with Interior Drainage Features & Breakwaters/NNBFS
2. Storm Surge Barrier at Inlet(s)/IWW with Wall/Levee/Dune tiebacks
3. San Sebastian River Flood Gate with Wall/Levee & Interior Drainage Features & Breakwaters/NNBFS
4. All Nonstructural
5. Wall/Levee with Interior Drainage Features & Breakwaters/NNBFS & Nonstructural
6. Storm Surge Barrier at Inlet(s)/IWW with Wall/Levee/Dune tiebacks & Nonstructural





# G2CRM MODEL SETUP

ENGINEERING AND ECONOMIC MODELS WORKING TOGETHER



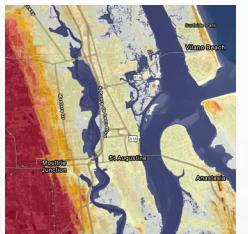
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The **Generation II Coastal Risk Model (G2CRM)** is a probabilistic life-cycle model used to evaluate the interaction between the driving forces (storms) and economic assets (infrastructure) over the 50-year period of analysis:

ENGINEERING



Database of storms, along with tide, waves, and sea level change



Existing physical conditions (shorelines, ground elevations, first floor elevations of structures)

ECONOMIC



Spatial location of critical infrastructure, structures, vehicles with estimated values  
Image: <https://staug.maps.arcgis.com/>



Array of Proposed Alternatives

## CONCEPTUAL MODELING FRAMEWORK

### PROBABILISTIC LIFE-CYCLE MODEL – G2CRM

Economic Damages:  
Without Project Alternative &  
With Project Alternatives

Final Array of Alternatives

Tentatively Selected Plan



# PLAN FORMULATION STRATEGY



U.S. ARMY

## Flooding

Coastal (Storm Surge + Wave) Flooding

Sea Level Rise

Tidal Flooding

Rainfall Flooding

Riverine Flooding

## Objectives

1. Manage risk of flood damages in the City of St. Augustine over 50-year period of analysis from 2035-2085.

2. Manage health and life-safety risk in the City of St. Augustine over 50-year period of analysis from 2035-2085.

3. Manage risk to cultural and natural resources in the City of St. Augustine over 50-year period of analysis from 2035-2085.

4. Manage flooding impacts to the local economy in the City of St. Augustine over 50-year period of analysis from 2035-2085.



HEC RAS

Structure & Content Damage (\$)

Vehicle Damage (\$)

Life Loss (Count)

Temporary Displacements (Count)

Permanent Displacement (Count)

High Frequency Flood Impacts (Count)

Emergency Facility Access Impacts (Count)

Damage to Historic Structures (\$ and/or Count)

Affected Archeological Sites (Count)

Habitat Acreage (Count)

Business Revenue impacts from Storm Events (\$)

G2CRM

GIS

NED Benefits

OSE Benefits

EQ Benefits

RED Benefits

Sponsor & Local Input

USFWS Input

IWR Planning Suite - MCDA

NED Plan

Locally Preferred Plan

All Accounts Benefits Plan

CBRA Compliant Plan

Identify TSP



# DISCIPLINE SPECIFIC UPDATES/ACTIONS



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- **Planning Technical Lead:** Marty Durkin
- **Engineering Technical Lead:** Patrick Snyder
- **Environmental Lead:** Darren Pecora
- **Economics Lead:** Vongmony Var
- **Cultural Resources Lead:** Zuzana Chovanec
- **Real Estate Lead:** Chris Bukolt
- **Office of Counsel:** Katie Gwin



# PATH FORWARD

## 90-DAY SCHEDULE WINDOW



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AMM Milestone Meeting	5/1/2023	5/1/2023
Complete/Review/Send SAD VTAM (to cover 3x3x3 exception package) to Headquarters (HQ)	5/2/2023	5/9/2023
TENTATIVELY SELECTED PLAN (TSP) PHASE	5/9/2023	2/2/2027
TSP Phase Supervisor Support	5/9/2023	2/2/2027
General PDT Coordination & Participation	5/9/2023	2/2/2027
Neighborhood Outreach Meetings	5/9/2023	2/2/2027
Ongoing Draft Report Writing and Preparation to have complete draft report and appendices by the TSP.	5/9/2023	2/2/2027
Environmental Surveys	5/9/2023	2/2/2027
GIS Support (Web Mapper, Figures, Story Map, etc) through	5/9/2023	2/2/2027
Future Without-Project (FWOP) Hydrologic Engineering Center's River Analysis System (HEC RAS) Modeling for Generation 2 Coastal Risk Model (G2CRM) Hydrographs	5/17/2023	10/5/2023
Characterize Systems Protective System Elements (PSEs)	5/17/2023	10/19/2023
Coordinate with H&H as needed to characterize storms and any other H&H data	5/17/2023	10/27/2023
Delineate Study Area into Model Areas	5/17/2023	10/27/2023
Develop Modeling Strategy for Comprehensive Benefits	5/17/2023	10/27/2023
Engineering Inputs for G2CRM (including Coastal Hazards System (CHS) based storm suite from Engineer Research and Development Center (ERDC))	5/17/2023	12/5/2023
Characterize Assets	8/1/2023	11/17/2023
Develop First Floor Elevations	8/14/2023	11/17/2023
Develop/Verify/Update Structure & Content Values	9/5/2023	11/17/2023
Develop/ Verify Damage Functions	9/11/2023	11/17/2023
Develop/ Verify Damage Function Matrix	9/18/2023	11/17/2023
Populate G2CRM Model Representation	10/2/2023	11/17/2023
Public Input/Discussion Session #1	10/4/2023	10/4/2023



# UPCOMING PUBLIC ENGAGEMENT



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Dates	Events
September 21 <sup>st</sup> , 2023	Monthly Planning Webinar
October 4 <sup>th</sup> , 2023	Public Workshop (6:30 pm, Lightner Museum - Alcazar Room)
October 19 <sup>th</sup> , 2023	Monthly Planning Webinar
November 16 <sup>th</sup> , 2023	Monthly Planning Webinar
December 21 <sup>st</sup> , 2023	Monthly Planning Webinar
January 18 <sup>th</sup> , 2024	Monthly Planning Webinar



# CLOSING REMARKS/QUESTIONS



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- Sponsor Remarks
- Federal Agency Questions/Comments
- State Agency Questions/Comments
- Local Agency Questions/Comments
- Public Comments

*Presentations and notes from past month's webinars at*  
<https://www.saj.usace.army.mil/Missions/Civil-Works/Shore-Protection/St-Johns-County/City-of-St-Augustine-Florida-Back-Bay-Feasibility-Study/>