



City-wide Vulnerability Assessment

Public Outreach Meeting

January 24, 2024 | 5:30 PM-7 PM



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YEARS 1974-2024

 TAYLOR ENGINEERING, INC.

 **WILDWOOD**
CONSULTING INC.



CITY OF
ST AUGUSTINE
EST. 1565

Agenda

- Review Project Background, Goals, and Scope
- Review Data Collection Task
- Review Inundation Modeling/Mapping Approach
- Feedback from City Residents (Public Comment)



Project Goals

- Complete a City-wide Vulnerability Assessment that satisfies FDEP Resilient Florida Program guidelines and State Statutes (F.S. 380.093).
- Identify vulnerable critical community infrastructure.
- Develop grant-fundable adaptation projects to protect the City's most vulnerable prioritized infrastructure.

ably with risk when measuring hazard impacts. NOAA provides a useful definition of vulnerability that informs the follow-on actions described later in this chapter (2010):

*"The potential for loss of or harm/damage to exposed assets largely due to complex interactions among natural processes, land use decisions, and community resilience."*⁶

Why do you need a Vulnerability Assessment?

A Vulnerability Assessment helps a community determine which structural and social assets are likely to be impacted by future coastal flooding and sea level rise.

FDEP = Florida Department of Environment Protection

SLR = Sea Level Rise

VA = Vulnerability Assessment



Resilient Florida Program Overview

Florida Senate Bill 1954 (May 12, 2021)

- Established Resilient Florida Grant Program.
- Directs FDEP to create a statewide Vulnerability Assessment.
- Directs FDEP to create a Statewide Flooding and SLR Resilience Plan.

Resilient Florida Grant Program

- Planning Grants - \$19M (2021-22) / \$28M (2022-23)
- Implementation Grants - \$400M (2021-22) / \$275M (2022-23)



F.S. 380.093 Overview

Established Requirements for FDEP Funded VAs

- Must encompass the entire county or municipality.
- Must include all “critical assets” owned or maintained by the applicant.
- Include the depth of future high tide flooding.
- Include depth of current and future storm surge flooding (100-year event).
- Include depth of current and future rainfall-induced flooding (100-year and 500-year events).
- Use the National Oceanic and Atmospheric Administration’s (NOAA) 2017 intermediate-low and intermediate-high sea-level-rise projections.
- Include 2040 and 2070 planning horizons.



Funding Overview

Other Relevant Vulnerability Assessments

- St. Johns County FDEP VA (Kicked-off in November 2022)
- City of St. Augustine Army Corp of Engineers Back Bay Study (Kicked-off Feb. 2023 / Approx. Finish - 2028)
- City of St. Augustine Beach FDEP VA (Kicked-off in December 2023)

Implementation Grants

- Comprehensive VA required for the 2024 funding cycle (Next Year)
- COSA awarded ~\$27M in 2021 cycle



Other On-Going Resilience Initiatives

- Avenida Menedez Seawall Improvements (FDOT/COSA/NPS)
- Court Theophelia Drainage Improvements (COSA)
- Lake Maria Sanchez Drainage Improvements (COSA)
- King Street Drainage Improvements (FDOT)
- King Street Bridge Replacement (FDOT)
- South Davis Shores Flood Mitigation (COSA)
- Resilient Shoreline Ordinance (COSA)
- Inlet Drive Shoreline Resiliency (COSA)
- City-wide Groundwater Monitoring (COSA)
- City-wide Tide Check Valves (COSA/FDEP Grant Funding)
- South Whitney/West King Street (COSA)
- Fullerwood Neighborhood Drainage Study (COSA)
- Flood Mitigation Assistance Program (FEMA/COSA)



Other On-Going Resilience Initiatives

Flood Resilience

Resilience is the ability of individuals, communities, institutions, businesses, and system within St. Augustine to survive, adapt, and grow no matter what kinds of acute shocks (a sudden, sharp event that can threaten the city) and chronic stresses (stresses weaken the fabric of the city on a day-to-day basis) they experience.


The City of St. Augustine faces many challenges when it comes to both coastal and rain driven flooding, as a majority of the city is located in a flood plain. The City of St. Augustine is proactively identifying areas of risks as it relates to the inevitable effects of sea level rise.

Visit Arkly.com to search for your property and learn about your flood risk.

[View Mitigation Strategies PDF here.](#)

Resiliency Review Newsletter

[Subscribe](#) [Here](#)

	Resiliency Review	The City of St. Augustine's resiliency e-newsletter provides information on completed and upcoming projects, planning, programs, and more!
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Resiliency Updates Packet (PDF)



[Subscribe Today!](#)



Contact Us

Jessica Beach, P.E.

Chief Resilience Officer

[Send an email](#)

[More Information](#)

October 4, 2023
[Flooding Public Workshop Recording](#)

Stormwater Updates

For the latest updates given to commission regarding resiliency and upcoming and ongoing projects, [Click Here](#).



Army Corps Back Bay Feasibility Study Next Virtual Meeting:
Thursday, January 18



CITY OF ST. AUGUSTINE

Resilience Initiatives



[COSA Resilience Homepage: http://www.citystaug.com/resiliency](http://www.citystaug.com/resiliency)



Other On-Going Resilience Initiatives



"Resiliency Review" Newsletter:

- Provides overall program updates (Quarterly)
- Most recent was December 15, 2023
- Helps facilitate important information regarding flood related and resilience topics



Friday, December 15, 2023
Winter Updates

As 2023 comes to a close, the City of St. Augustine would like to highlight accomplishments of the last year for the resiliency efforts currently underway that will continue to ultimately make the City more resilient against flooding!



cascading nor'easter

Report Flooding

Call, Email, or Place a Work Order Online
St. Augustine is forecasted to experience continued coastal flooding and high winds through the weekend

Flood-prone areas of the City of St. Augustine will experience higher-than-usual street flooding related to the astronomical and king tides combined with a

Next newsletter will be sent out
March 2024.

Resilience Program Updates

E-Version sent automatically to
700+ subscribers

Hard copy of newsletters available around city hall, handed out at public meetings, emailed to residents, available on website, etc..

CITY OF ST. AUGUSTINE FLOOD RESILIENCE

Winter Updates

As 2023 comes to a close, the City of St. Augustine would like to highlight accomplishments of the last year for the resiliency efforts currently underway that will continue to ultimately make the City more resilient against flooding!

PROJECT STEPS:

- Design: All projects are either under contract (or in the process of procuring) with engineering firms for design of the project.
- Permitting: Before construction all local, state, and federal permits will need to be in place.
- Construction: Contractors will need to be procured to get contracts in place, and then construction can begin to make the City more resilient to help protect against future flooding!

Vulnerability Assessment Update

The City of St. Augustine has been awarded funding from the Resilient Florida Grant Program for \$500,000 for a vulnerability assessment (VA), a study focused on identifying critical assets (such as roads, infrastructure, and buildings with cultural heritage importance) within the City that are vulnerable to flooding, and come up with potential flood mitigation projects to protect these critical assets.

On November 15, 2023 the City held a steering committee meeting with local state, and federal partners to map out critical infrastructure and assets prone to flooding. Currently, the VA is on schedule to be completed by Spring 2024.

The VA is a state statute requirement and by completing the VA, the City qualifies for up to 50% cost-share for projects through the Resilient Florida Grant Program. To learn more visit: www.CityStAug.com/VA

PROJECTS STATUS

Lake Maria Sanchez: Currently under design, approvals & easements are being finalized. Permits must be acquired before a contractor is procured for construction, which will be split into 2 phases of north & south of the project. To learn more visit: www.CityStAug.com/LakeMariaSanchez

South Whitney/West King Street: Design is completed. Engineering and electrical agreement with St. Johns County underway. Easements and permits are required before construction can begin. Remediation is currently underway.

Inlet Drive: Design will begin in 2024.

South Davis Thorne Neighborhood: Design will begin in 2024.

Court Theophania Neighborhood: Design is currently underway.

Avenida Hernandez Seawall: Design is completed. Permitting is completed. The project is awaiting FEMA approval for construction which is anticipated sometime 2024.

Groundwater Monitoring: Design will begin in 2024.

City-Wide Tide Check Valves: Stormwater outfall evaluations are taking place currently. Next steps will include selecting for a contractor to install tide-check valves, or completing installation by City storm operations staff.

www.CityStAug.com/Resiliency | 904.825.1040 | stormwater@CityStAug.com

page 1

CITY OF ST. AUGUSTINE FLOOD RESILIENCE

Back Bay Feasibility Study with the Army Corps of Engineers

On October 4, 2023 representatives from the Army Corps of Engineers held a public informational meeting at City Hall to discuss the ongoing Feasibility Study to look at flood mitigation strategies for the entire boundary of the City of St. Augustine.

Residents had the opportunity to discuss one-on-one with Corps team members about flooding challenges in their neighborhoods, ask questions about the Study, and to give their opinions on what future solutions should look like.

Another in person public meeting will be scheduled for the Spring of 2024, and public comments are accepted for the life of the study.

Please visit: www.CityStAug.com/BackBay for more information

Resilient First Coast: A Regional Collaboration

Resilient First Coast (RFC) is the regional resiliency collaborative for Northeast Florida, which includes Baker, Clay, Duval, Flagler, Nassau, Putnam, and St. Johns counties. It is a formal partnership to work together to improve the resilience of the region. Vice Mayor Roxanne Hurrell is Chair of Resilient First Coast while Chief Resiliency Officer Jessica Beach serves as Co-Chair. Learn more about the regional resiliency efforts at www.ResilientFirstCoast.com

FMA Program

The 2023 application cycle for the Flood Mitigation Assistance Program has officially closed. Next year's application cycle will open in late summer of 2024. Please email FMA@CityStAug.com if you are interested in learning more about the home elevation grant program, or visit www.CityStAug.com/FMA.

Fullerwood Drainage Study

This past summer, City Commissioners approved a neighborhood drainage study for the Fullerwood area to look at current drainage and come up with a strategy to help make the neighborhood more resilient against flooding. The cost of this study is \$50,000 and the City has had a preliminary project scoping meeting with Black & Veatch, who will complete the study with a continuing services contract. To learn more, visit www.CityStAug.com/FullerwoodStudy

www.CityStAug.com/Resiliency | 904.825.1040 | stormwater@CityStAug.com

page 2



Public Works Quarterly Update: <https://staugustinefl.portal.civicclerk.com/event/815/files/4784>

City of St. Augustine Vulnerability Assessment Public Meeting



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Grant Work Plan Tasks

- Public Outreach and Steering Committee Meetings
- Acquire Background Data
- Exposure Analysis
- Sensitivity Analysis
- Identify Focus Areas
- Preliminary Adaptation Plan
- Final Report, Maps, and Tables



Study Products/Outcomes

- Inventory of Critical Community Assets
- Existing/Future Extreme Event Flood Mapping
- Identification of Critical Community Assets Vulnerable to Flooding (Existing/Future)
- Prioritization of Vulnerable Critical Community Assets
- Identification of Focus Areas for Adaptation
- Preliminary Identification of Adaptation Strategies/Projects
- Summary Report, Tables, and Maps



Steering Committee Purpose/Goals

Review Project Goals

Review Draft Materials

Provide Input on Study Direction

Identify Geographic Context

Review Modeling Methods

Identify Available Data and Resources

Identify Relevant Assets

Review Findings and Recommendations

Committee Participants

COSA Fire

COSA Police

COSA Communications

SJC Emergency Management

COSA/SJC Utilities

COSA/SJC Public Works

COSA Solid Waste

COSA General Services

COSA Mobility

COSA GIS

City of St. Augustine Beach

Florida Department of Transportation

COSA Parks

COSA Environmental

COSA Land Management

COSA Planning/Building

COSA Cultural Resources

St. Johns River Water Management District

GTM NERR

National Parks Service

UF Historic

Flagler College

Florida School for Deaf and Blind

U.S. National Guard



Data Collection: Critical Community Assets

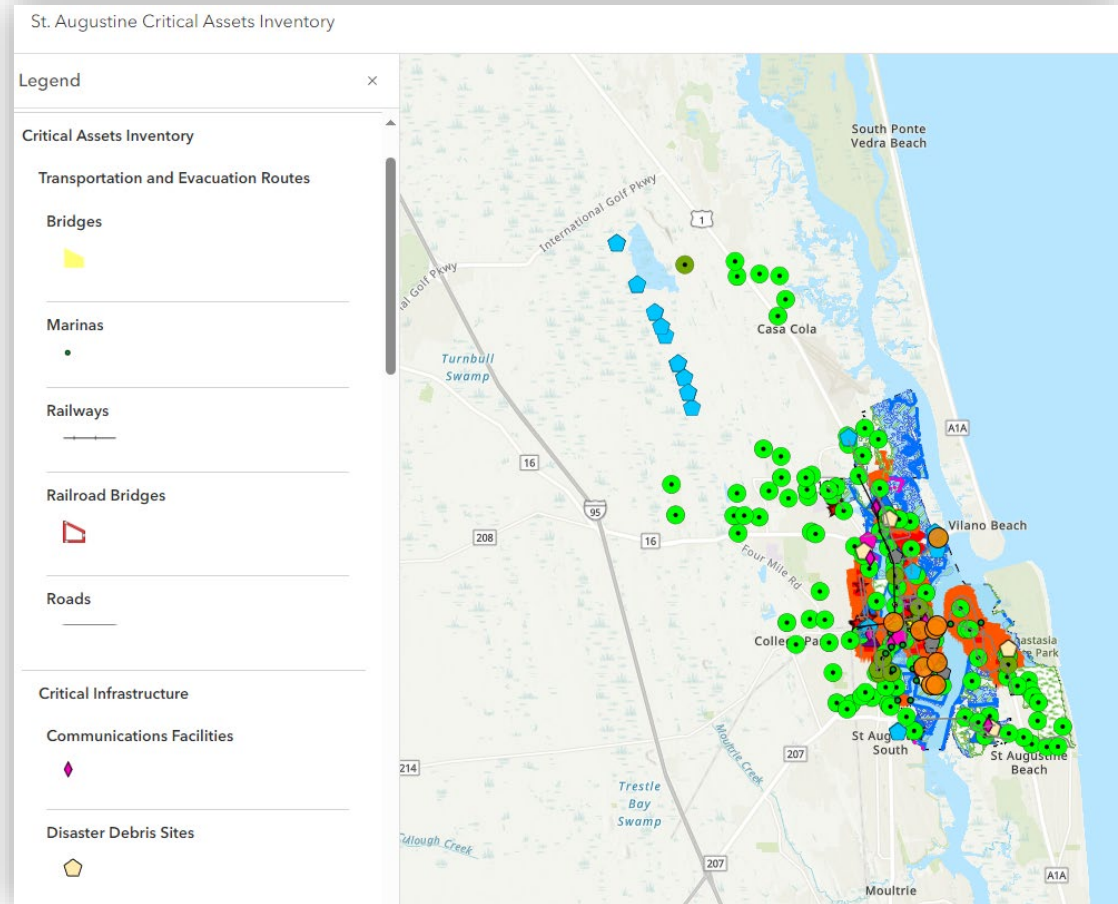
<u>Asset Type</u>
Affordable Public Housing
Airports
Bridges
Bus Terminals
Colleges and Universities
Communications Facilities
Community Centers
Conservation Lands
Correctional Facilities
Disaster Debris Management Sites
Disaster Recovery Centers
Drinking Water Facilities
Electric Production and Supply Facilities
Emergency Medical Service Facilities
Emergency Operation Centers
Fire Stations
Health Care Facilities
Historical and Cultural Assets
Hospitals

<u>Asset Type</u>
Law Enforcement Facilities
Local Government Facilities
Logistical Staging Areas
Major Roadways
Marinas
Military Installations
Parks
Ports
Rail Facilities
Railroad Bridges
Risk Shelter Inventory
Schools
Shorelines
Solid and Hazardous Waste Facilities
State Government Facilities
Stormwater Treatment Facilities and Pump Stations
Surface Waters
Wastewater Treatment Facilities and Lift Stations
Water Utility Conveyance Systems
Wetlands



Data Collection: Critical Community Assets

- Mined from City, County, State, and Federal data sources.
- Inventory includes ~6,200 critical community assets.



Exposure Analysis

Purpose: Identify the depth of water (at each critical asset) caused by each sea level rise, storm surge, rainfall, and/or compound flood scenario.



Exposure Analysis: Requirements

Scenarios/Planning Horizons

- Intermediate-low and Intermediate-high SLR Projections
- Existing, 2040, and 2070 planning horizons

Tidal/Sunny Day Flooding

- Existing and future high tide flooding
- Number of expected tidal flood days

Current and Future Storm Surge Flooding

- Use existing storm surge data
- Include 100-year flood event at a minimum

Current and Future Rainfall Induced Flooding

- Include 100-year and 500-year rainfall event
- Vary future boundary conditions based on SLR projections



Exposure Analysis: Scenarios

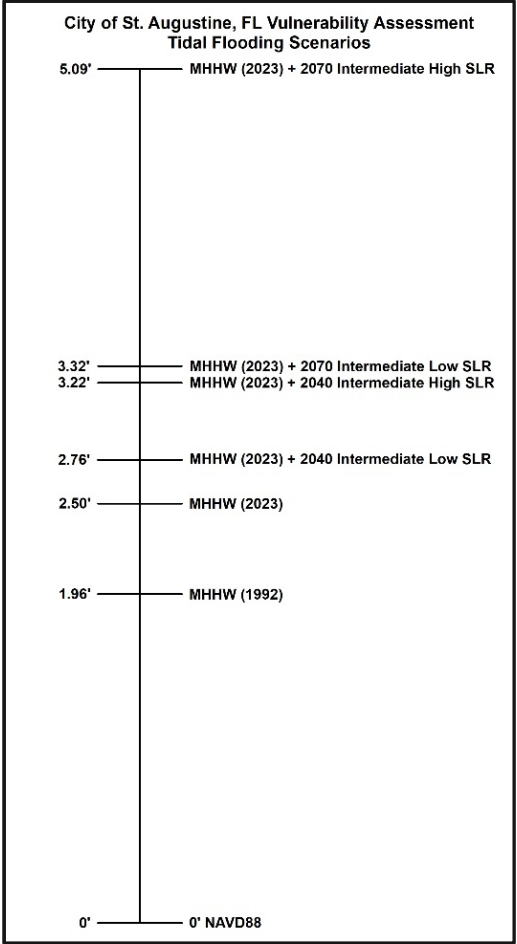
- 20 scenarios are required by State Statute.
- The City is providing additional scenarios to help prioritize more vulnerable areas.

Notes: **Orange** highlighted cells indicate required scenarios. MHHW = Mean Higher High Water

Flooding Type	MHHW	10-Year	25-Year	100-Year	500-Year
Tidal/Sunny-Day Flooding					
Existing	X				
2040 Int-Low	X				
2040 Int-High	X				
2070 Int-Low	X				
2040 Int-High	X				
Rainfall Induced Flooding					
Existing			X	X	X
2040 Int-Low			X	X	X
2040 Int-High			X	X	X
2070 Int-Low			X	X	X
2040 Int-High			X	X	X
Storm Surge Flooding					
Existing		X	X	X	
2040 Int-Low		X	X	X	
2040 Int-High		X	X	X	
2070 Int-Low		X	X	X	
2040 Int-High		X	X	X	



Exposure Analysis: SLR Projections



Red shaded areas represent MHHW inundation for corresponding planning horizon.



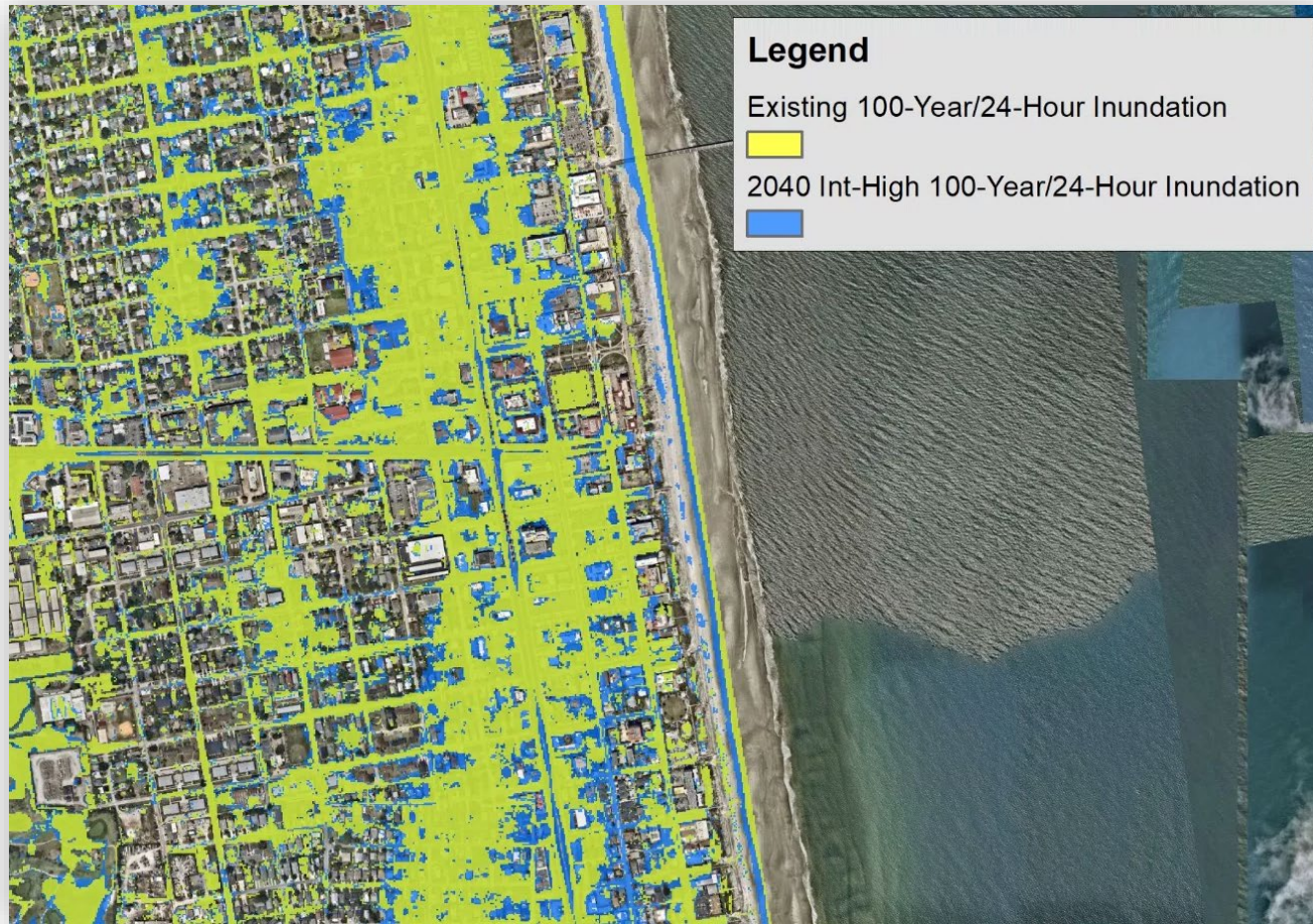
Rainfall Flooding: Model Approach

City-wide Stormwater Model

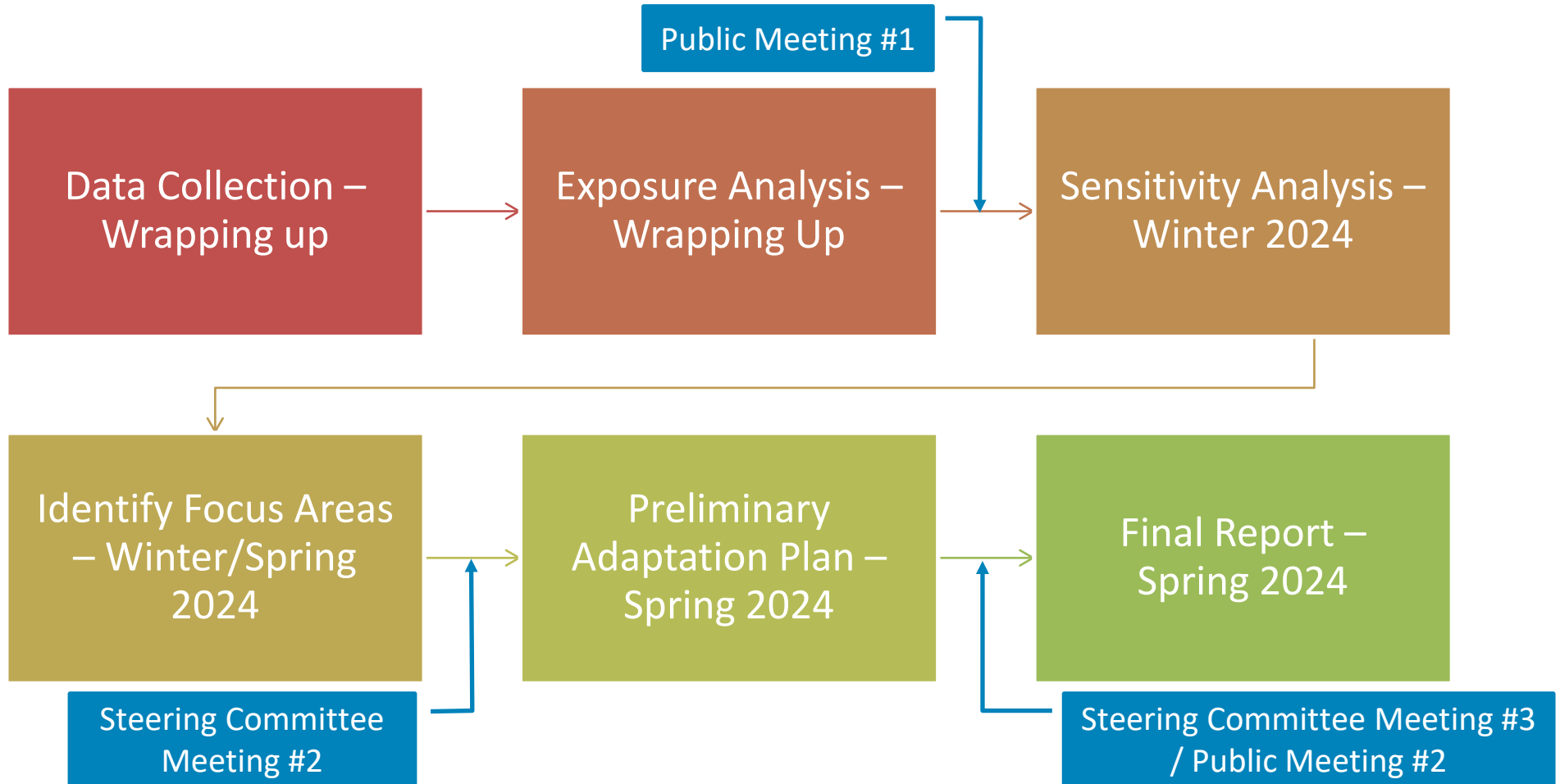
- 25-, 100-, and 500-year/24-Hour Design Storm Events
- Modify Rainfall Depths for Future Conditions
- Modify Boundary Conditions for SLR
- Modify Runoff Parameter for Reduced Soil Storage



Rainfall Flooding: Inundation Example



Path Forward



Survey Feedback

Goals/Purpose

- Identify Most Important Critical Asset Types
- Identify Specific Areas of Concern Relative to Flooding
- Determine How Flooding is Currently Impacting the Community
- Results Will be Used to Identify Focus Areas and Assets for Adaptation

Please provide feedback by 2/7/2024

Provide feedback through a web survey by scanning the QR code on the meeting agenda or by filling out a paper survey at the meeting.



Please Complete the Survey by Wednesday February 7, 2024



<https://www.surveymonkey.com/r/BMQCP6T>



Public Comment Period

Three Minutes Per Speaker

Meeting minutes and presentation will be
posted at:

<http://www.citystaug.com/VA>

www.citystaugtv.com

