



City of Alexandria Flood Resilience Plan

Community Meeting #1

Patrick Henry Recreation Center
November 10, 2025
7:00 – 8:30 PM





Agenda

- ▶ Welcome and introductions
- ▶ Flooding in Alexandria
- ▶ What Alexandria is doing to address flooding
- ▶ Flood Resilience Plan purpose, objectives and timeline
- ▶ Status of the Flood Resilience Plan
 - Flood modeling and assessing flood vulnerability
 - Community outreach and online survey
- ▶ How public input will be used in the plan
- ▶ Next steps and how to engage with project team
- ▶ Q&A



Welcome

▶ Introductions

▶ Q&A

- ▶ Live Audience

- ▶ Online Audience, type question in the Q&A on Zoom

▶ Housekeeping

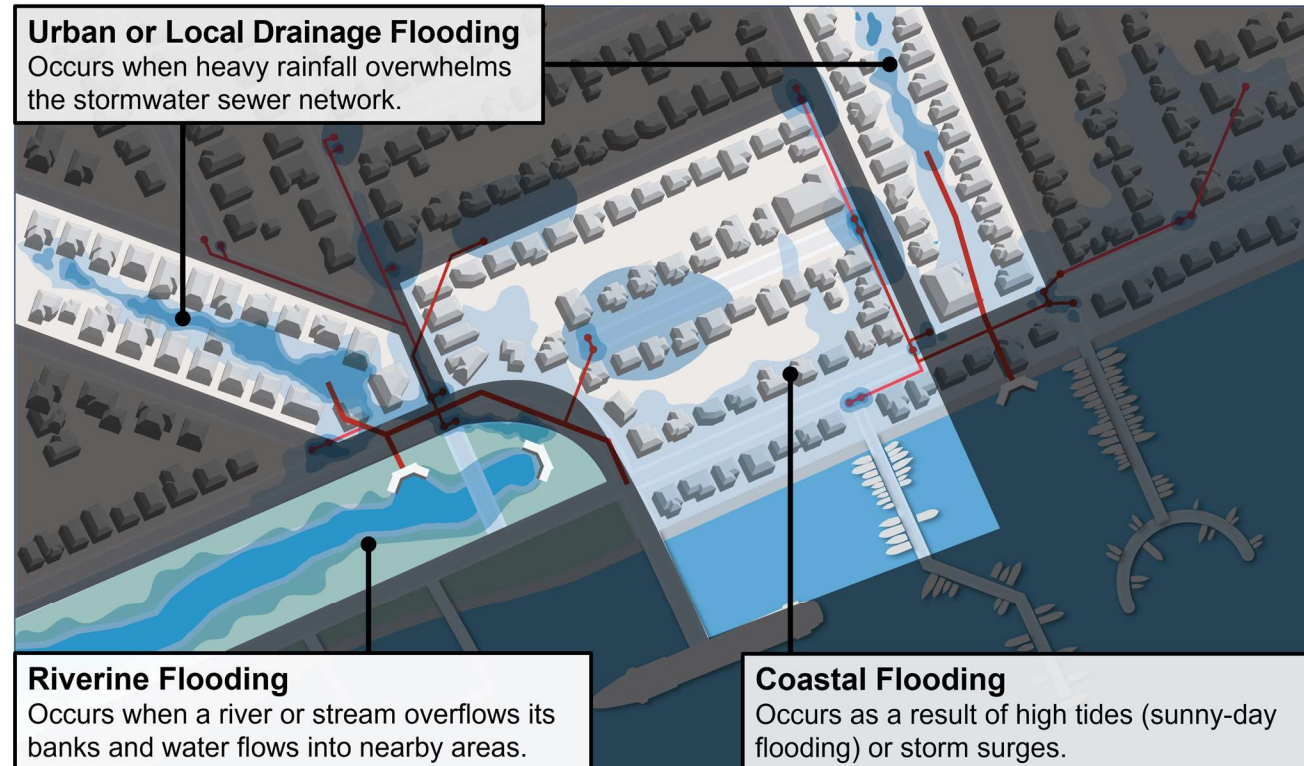
- Exits

- Restrooms



What Types of Flooding Occur in Alexandria?

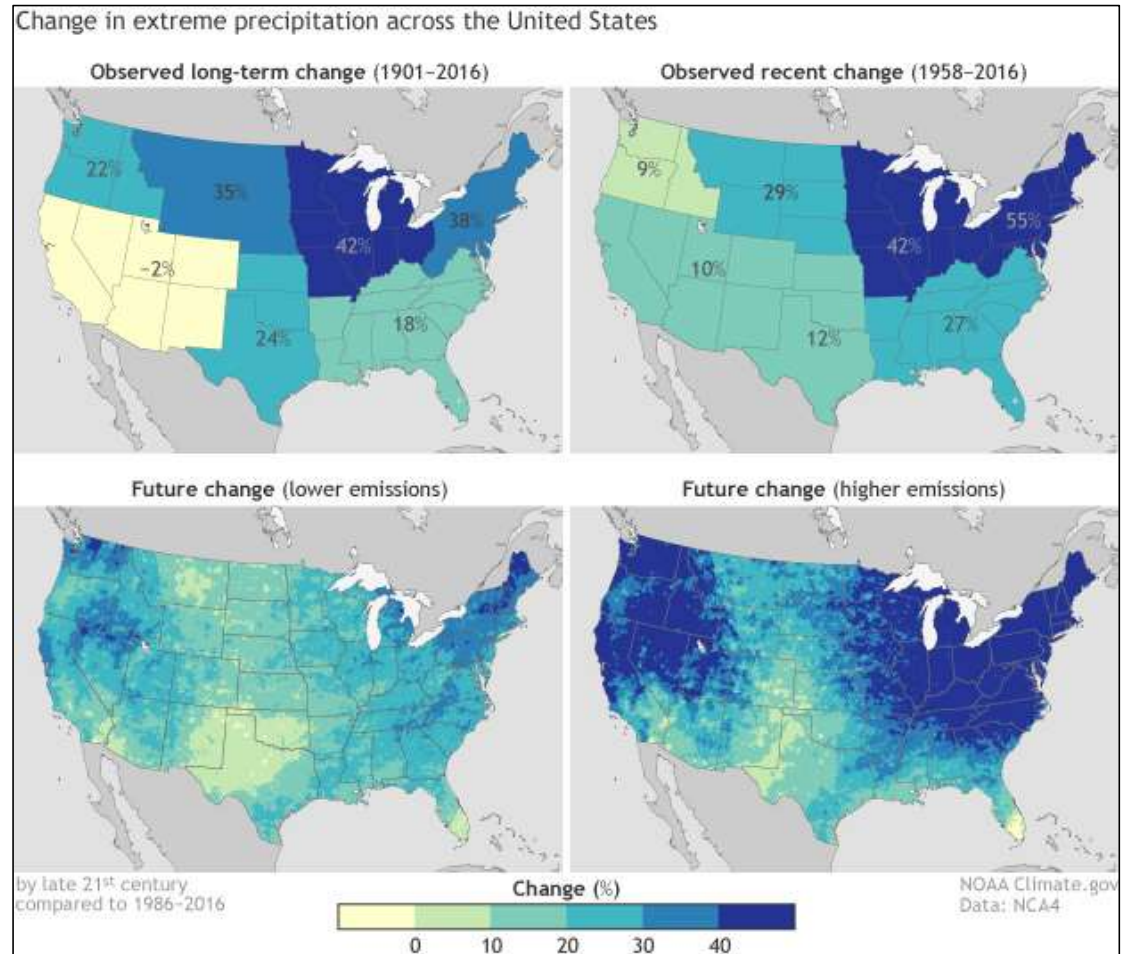
- ▶ **Urban flooding**
 - Flash flooding
 - Sewer/Sanitary backups
- ▶ **Riverine flooding**
- ▶ **Coastal flooding (Potomac River)**
 - High tides
 - Storm surges





Flooding is becoming more Frequent and Severe

- ▶ More frequent and intense rainfall events due to climate change
- ▶ Warmer air holds more moisture which leads to heavier rainfall





Flood Action Alexandria



- ▶ Flood Action Alexandria launched in 2021
- ▶ Comprehensive initiative to address flooding

Major Capacity
Capital Projects

Spot
Improvement
Capital Projects

Data Collection &
Early Warning
System

Sanitary Sewer
Improvements

Enhanced
Maintenance

Enhanced
Communications

Legislative
Process and
Flood Mitigation
Grant

Alternative
Funding



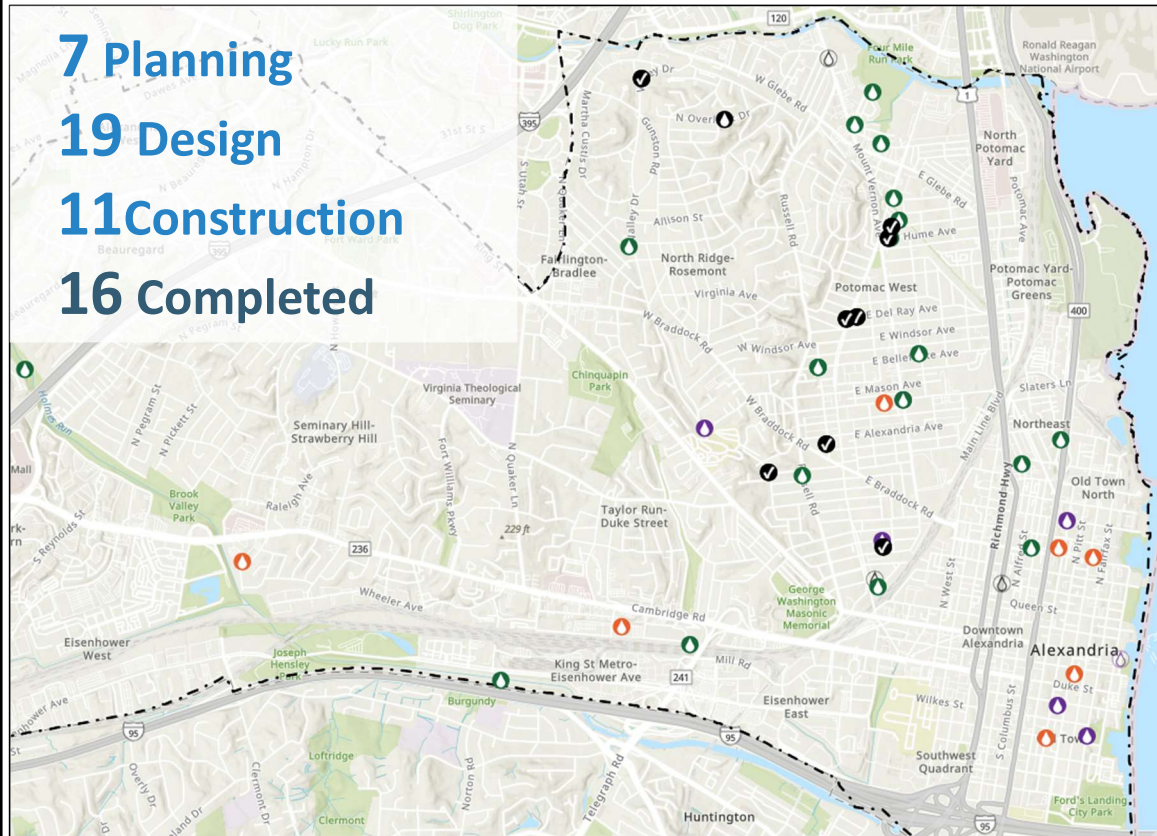
Flood Action Alexandria Progress

7 Planning
19 Design
11 Construction
16 Completed

FLOODACTION
ALEXANDRIA

- ▶ Ongoing maintenance of sewer system and stream channels
- ▶ Early warning and emergency response
- ▶ Flood Mitigation Grant Program
- ▶ Alex311 reporting
- ▶ Stormwater Utility & Flood Mitigation Advisory Committee

***We are learning more so we can
develop a comprehensive
Flood Resilience Plan***





Flood Resilience Plan Purpose and Goals

▶ The Flood Resilience Plan (FRP) will provide a roadmap for the City to reduce current & future flood risk by:

- ▶ Identifying flood hazards in areas not previously studied
- ▶ Identifying priority areas and future flood mitigation projects
- ▶ Developing comprehensive strategies to reduce flood risk
 - Flood mitigation
 - Flood preparedness and response
 - Stormwater management regulations
 - Stormwater financing



Resilience is...

"the capability to anticipate, prepare for, respond to, and recover from major hazards while minimizing social, economic, and environmental impacts."



Additional Goals of the FRP



Satisfy Virginia Department of Conservation and Recreation's Community Flood Preparedness Fund (CFPF) requirements to remain eligible to apply for grants



Coordinate with the FEMA Community Rating System (CRS) to reduce flood insurance premiums for property owners



Honor commitments in the City's Energy and Climate Change Action Plan and Long-Range Interdepartmental Work Plan



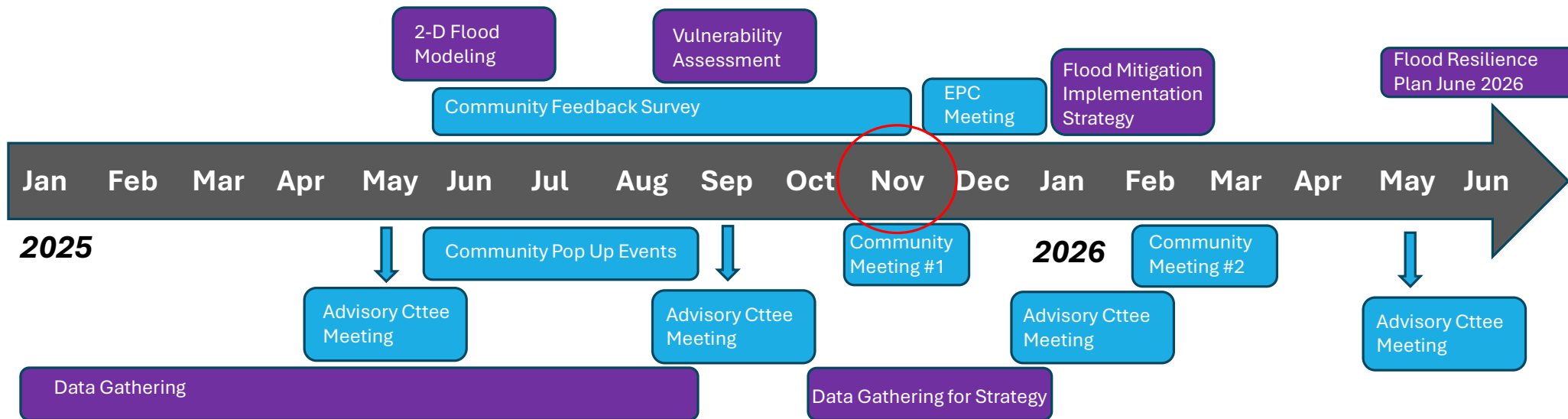


FRP Project Timeline

Legend

Purple – Project Team

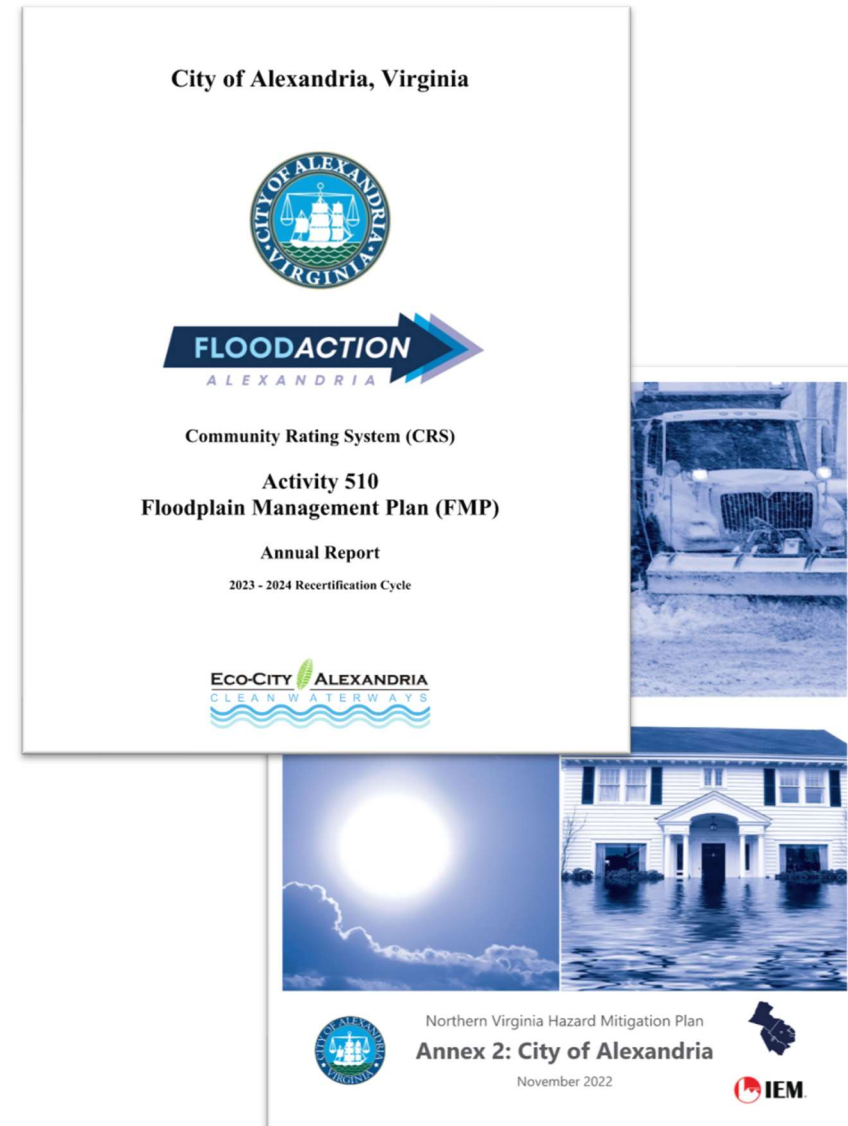
Blue – Community Input Opportunity





Data Gathering

- ▶ Compile data and identify information gaps to inform planning process
 - ▶ Previous studies, reports and analyses,
 - ▶ Projects completed, underway or planned
 - ▶ Relevant guidelines and standards
 - ▶ Flood and Emergency response plans
 - ▶ Geographic Information Systems (GIS) data





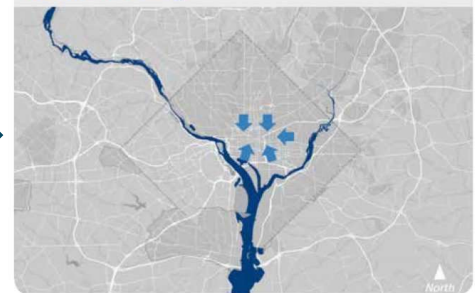
City-Wide Screening-Level Flood Modeling

- ▶ Flood modeling is used to assess the scope and scale of flooding across the City
- ▶ Combined previous flood models with new flood analysis in areas not previously studied
- ▶ Generates maps that show where flooding might occur under different *future* climate scenarios

Flood Modeling

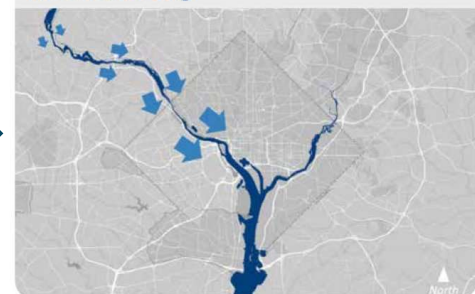
Urban overland drainage models simulate **rainfall on the land surface** to evaluate the **impact from surface runoff**

Interior Flooding



Riverine models simulate **flow in streams** and rivers to evaluate the impact from surface drainage during extreme storm events

Riverine Flooding



Coastal models simulate **storm surge and tide propagation** up the Potomac River from its mouth at the Chesapeake Bay

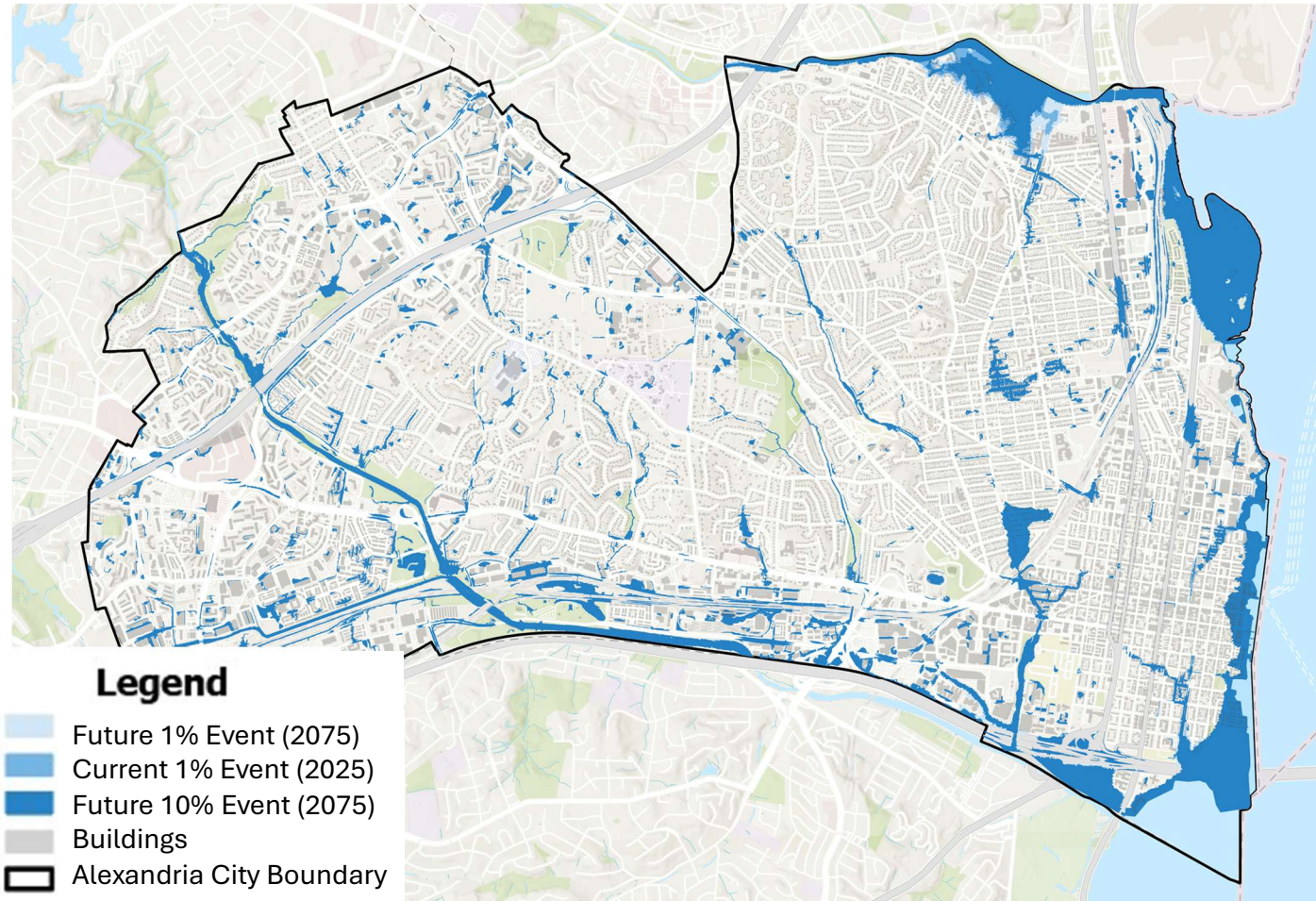
Coastal Flooding





City-wide Screening-level Flood Modeling

- ▶ Urban/Interior Drainage, Riverine and Coastal Flood Extents Map
- ▶ Current and future (2075) climate conditions
 - ▶ **10% Probability** event has a 10% chance of occurring in any given year
 - ▶ **1% Probability** event has a 1% chance of occurring in any given year
- ▶ Three climate scenarios evaluated:
 - Future 10% Event
 - Current 1% Event
 - Future 1% Event



Flood Modeling

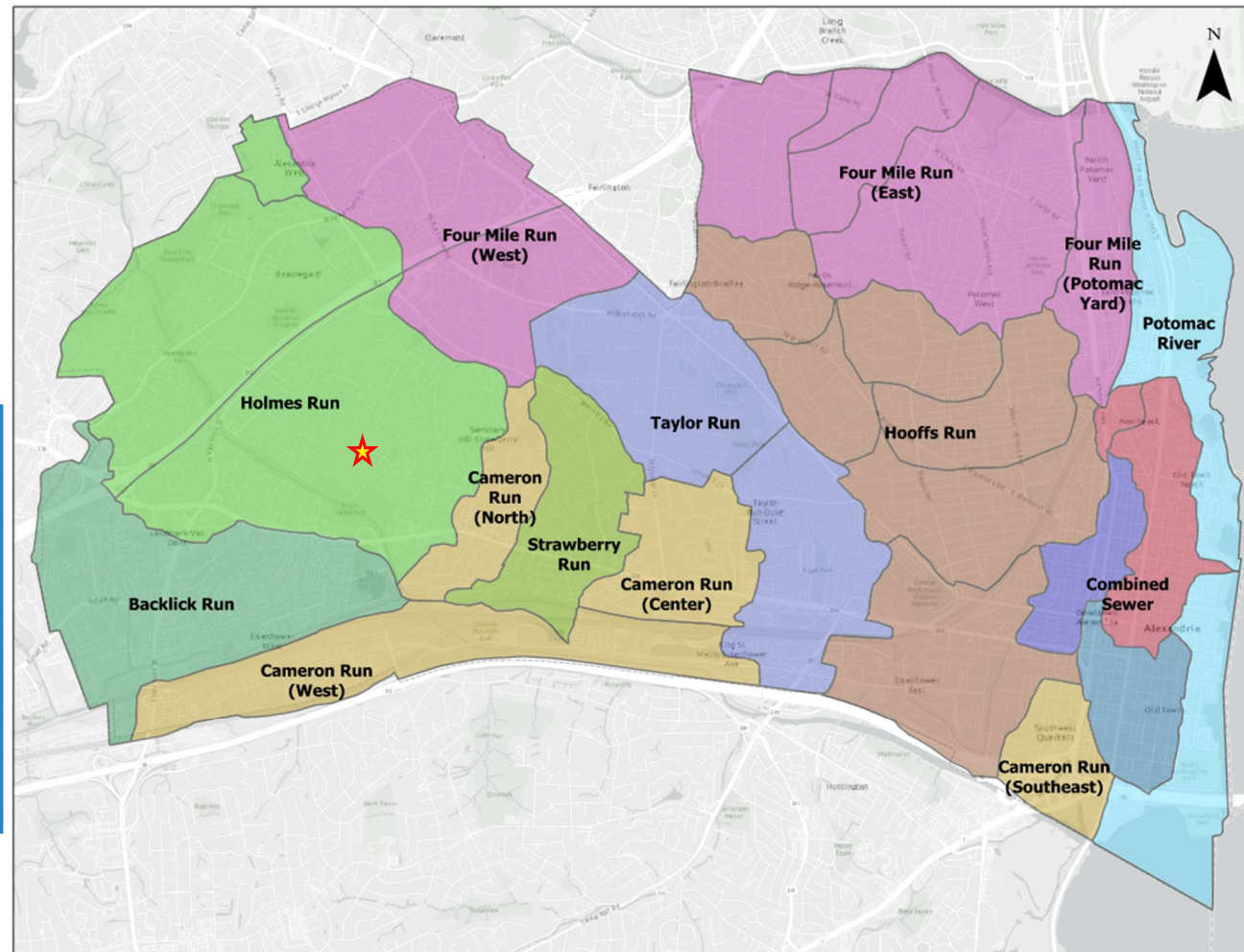


Plan Analyses: Flood Modeling & Vulnerability Assessment

- Modeling and assessment of flood vulnerability for each of the City's sub-watersheds

A Watershed is...

"an area of land where all the water that falls on it (rain, snowmelt) and drains off of it goes to the same water body, such as a creek, river, estuary, wetland, reservoir, lake, or ocean."





Flood Vulnerability Assessment

- ▶ Helps assess flood risk and vulnerability in the City to identify gaps and priorities for further study and new flood mitigation projects
- ▶ Identify the important assets & sensitive areas that may be exposed to flooding
- ▶ Use geospatial tools to overlay the community assets with inundation maps to quantify flood exposure for each asset within each watershed
- ▶ Calculate a total flood exposure score for each feature and combined them into a single Flood Vulnerability Score for each watershed

Vulnerability Assessment

Community features that may be exposed to flooding include...



Critical Facilities: Hospitals, Schools, Government Facilities, Utilities, Etc.



Single Family & Multi-family Residential Buildings



Non-Residential Buildings



Transportation: Road, Rail & Bus Routes



Historic Districts

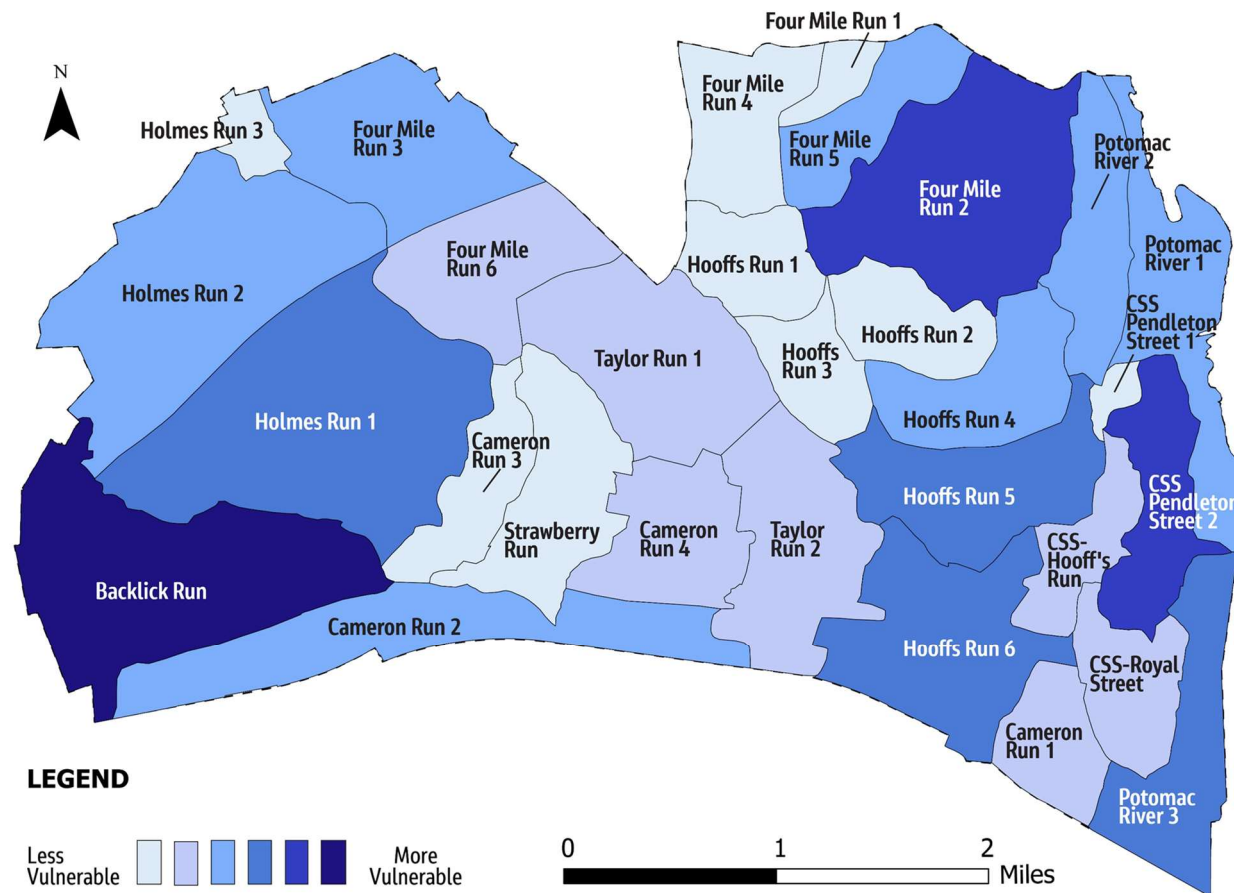


Socially Vulnerable Communities



Vulnerability Assessment Results

- Confirms that watersheds where the City has focused recently (Potomac River, Four Mile Run, and Hooffs Run) are highly vulnerable
- Highlights new areas where further study is needed (Holmes Run, Cameron Run, Backlick Run)

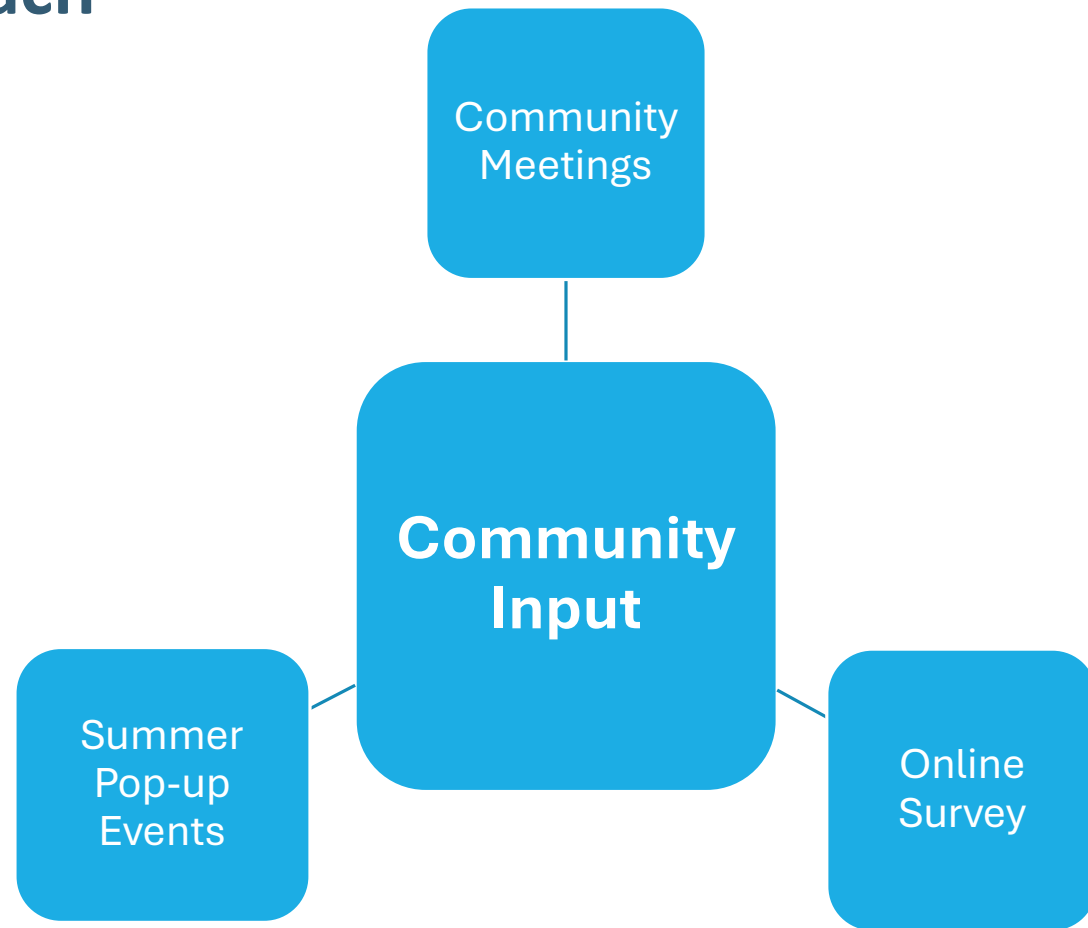




Community Outreach

Outreach Objectives

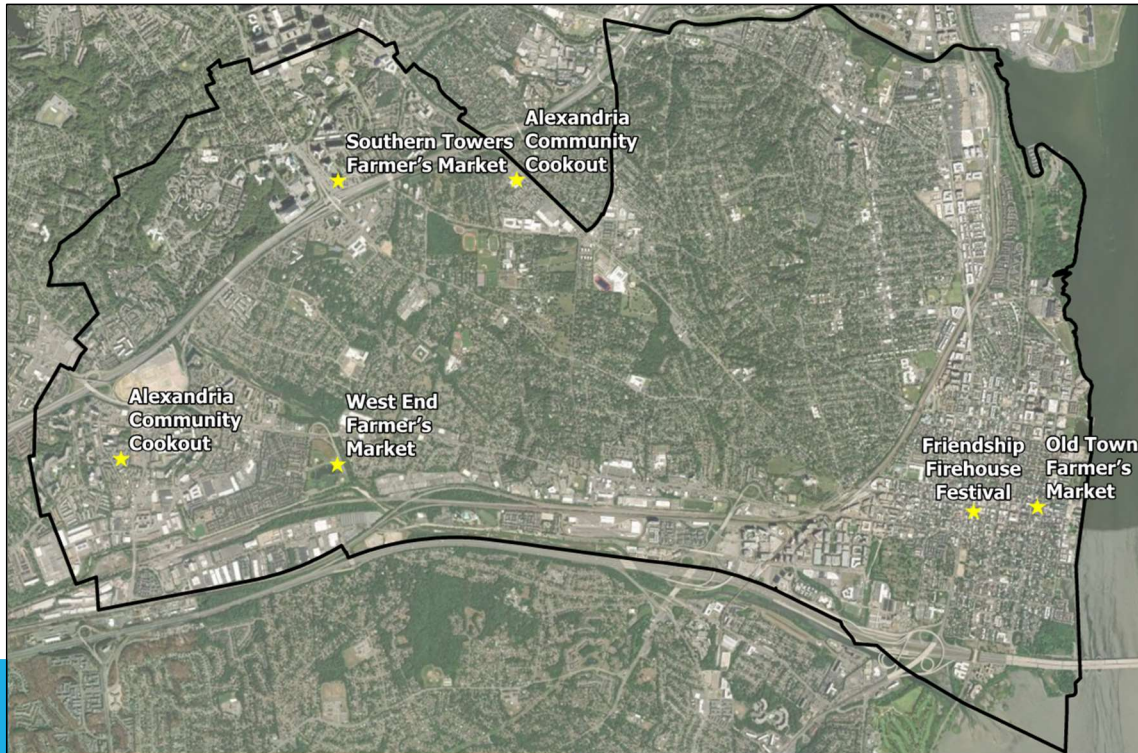
- ▶ Gather input on flood issues from a wide range of community members
- ▶ Obtain information on flooding locations, especially areas not reported previously
- ▶ Inform the community about the purpose and objectives for the plan
- ▶ Build support for flood mitigation efforts throughout the City





Summer Outreach

- ▶ We attended six community events this summer to share information about the FRP and gather input.
- ▶ Engaged with about 400 individual participants



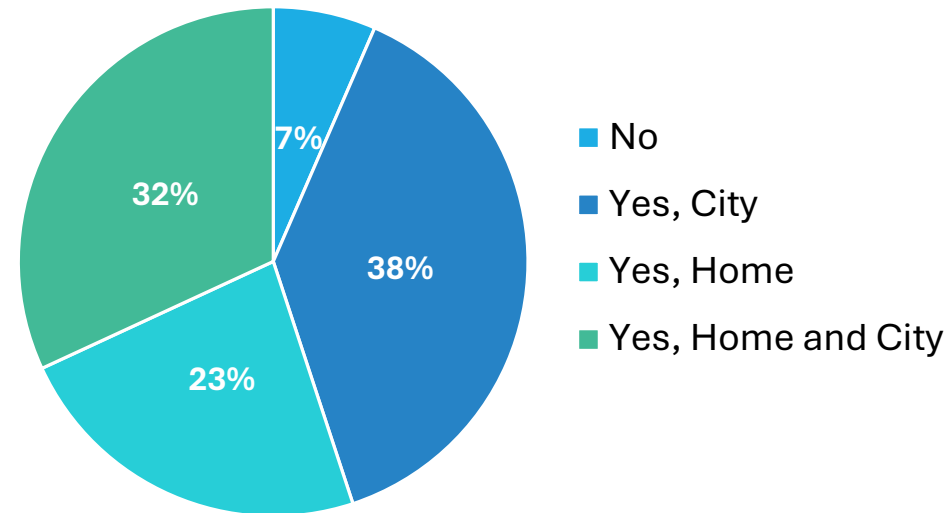


Online Survey

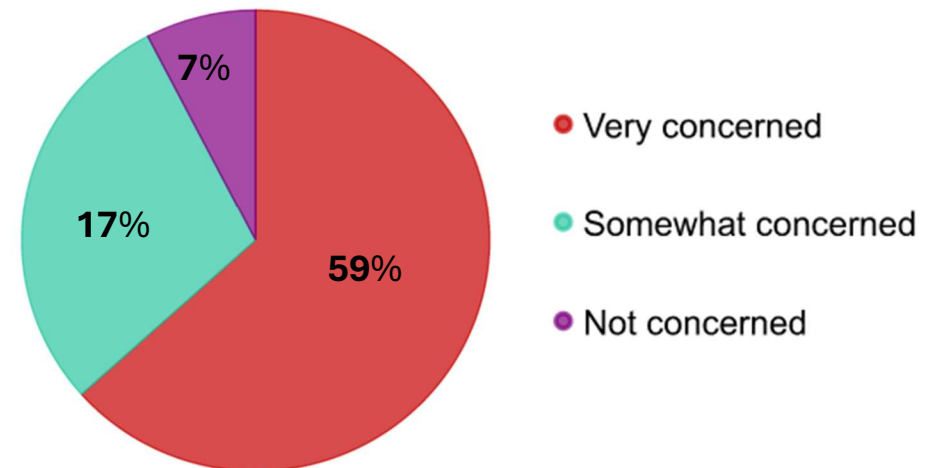
- ▶ 140 survey responses to date
- ▶ 93% respondents have experienced flooding in Alexandria, either at home or around the City
- ▶ 52% have experienced flooding often or very often
- ▶ 59% are very concerned about flood impacts in the future

Community Outreach

Have you experienced flooding in the City of Alexandria?



How concerned are you about flooding impacting you in the future?





Online Survey

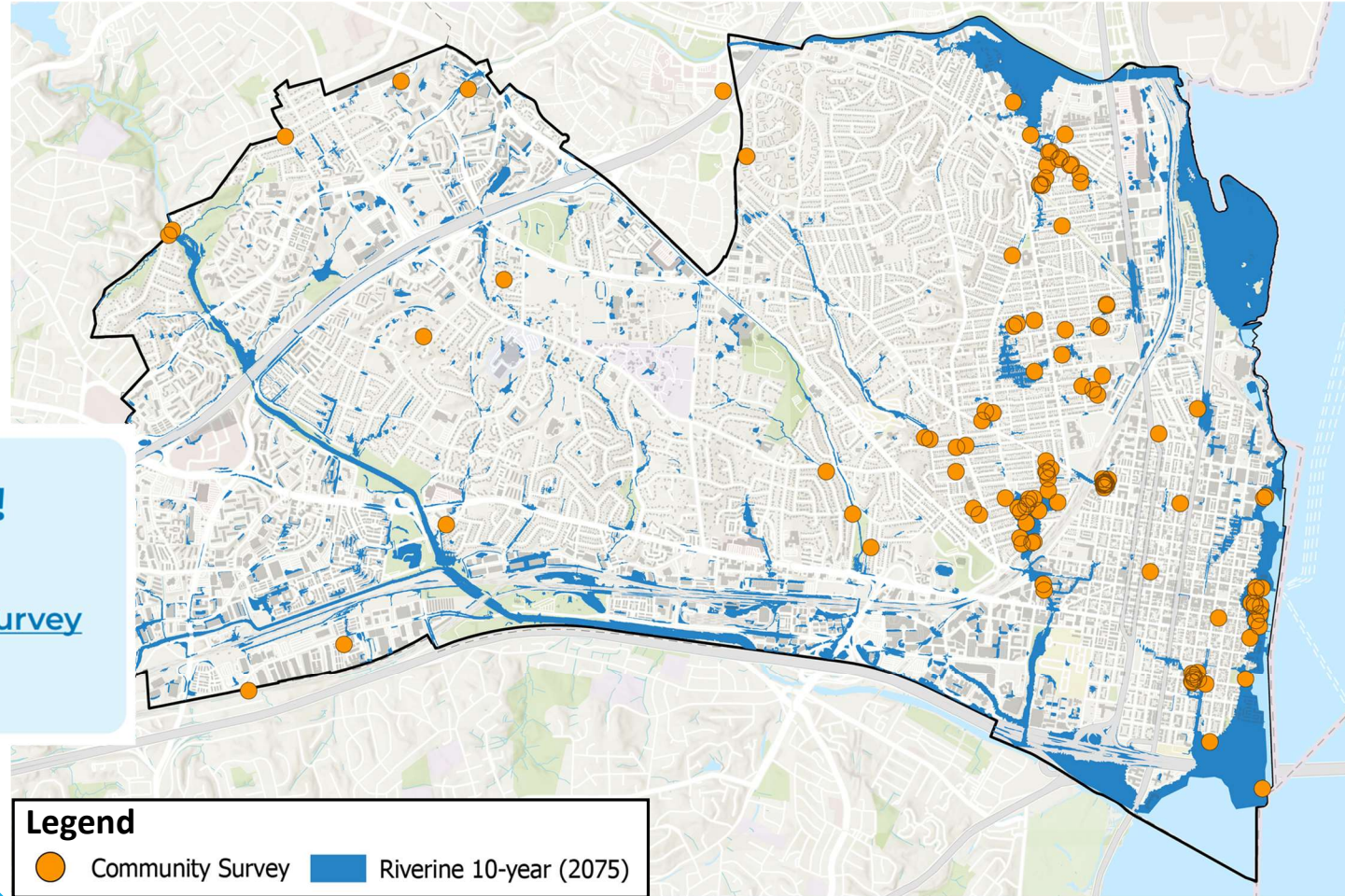
- ▶ 128 flood locations mapped
- ▶ Survey closes November 30

Take our survey today!



bit.ly/AlexCommunitySurvey

Community Outreach



Legend



Community Survey



Riverine 10-year (2075)



How will the City use Community Input to Inform the Plan?

- ▶ Validate modeled flood locations and identify gaps for further study.
- ▶ Inform and justify flood resilience implementation strategies
- ▶ Understand community concerns and flood impacts including costs of flood damage and mitigation efforts
- ▶ Inform future outreach and education recommendations and initiatives





What's Next? Developing a Flood Resilience Strategy

- ▶ Flood mitigation solutions
- ▶ Equity considerations
- ▶ Flood preparedness and response
- ▶ Policies and regulations
- ▶ Communications and outreach
- ▶ Funding strategies





Ways to connect

▶ Contact us

- Jessica Lassetter – Jessica.Lassetter@alexandriava.gov
- Alex Haptemariam, P.E., CFM – Alex.Haptemariam@alexandriava.gov

▶ Visit our website for future updates about the project

- Alexandriava.gov/flood-action/flood-resilience-plan

▶ Sign up to receive the Flood Action Alexandria newsletter

- Alexandriava.gov/eNews

▶ Take our survey!

- bit.ly/AlexCommunitySurvey



Q&A





Thank You!