Resilient Fairfield
Public Workshop #1
March 2, 2023
PROJECT TEAM

CIRCA
- John Truscinski, CFM, Director of Resilience Planning
- David Murphy, PE, CFM, Director of Resilience Engineering
- Yapra Onat, Assistant Director of Research

Town of Fairfield
- William Hurley, Engineering Manager
- Emmeline Harrigan, Flood Plain Administrator

AECOM
- Casey Hardin, PE, Project Manager
- Christian Nielsen, Lead Planner
- Edwina Lam, P.E., Lead Stormwater/Green Infrastructure Engineer
- Megan Gibbons, EIT, Civil Engineer
AGENDA

- Project Overview and Background
- Flood Risk
- Drainage System Assessment
- Discussion and MyMaps
- Next Steps
PROJECT OVERVIEW
Phase I
Resilient Connecticut Planning Framework
January 2020

Phase II
Resilient Connecticut Vulnerability Assessment Report
Fall 2021

Phase III
RESILIENT FAIRFIELD
To be Completed in 2023

CIRCA Resilient Connecticut Study
Phase II Summary
Create a **resilient** transportation system that ensures **safe travel** for community residents.

Understand the project areas current and **future climate vulnerability**.

Assess drainage system to understand possible **choke-points** leading to flooding.

Develop **innovative ideas** and **strategies** to address underpass flooding.

Why this Project and Project Goals

The rail alignment is a physical barrier for North-South travel. Within the study area there are are 4 undergrade bridges (and only 1 above grade) which have a history of flooding during extreme rain events, tropical storms, and in rare cases unusually high tides. Projected sea-level rise and higher frequency extreme rain will pose an ever greater risk to these vital connections and mobility without intervention.
Pilot Project Process

Current and Future Conditions Analysis

Adaptation Options and Concept Design

Benefit Cost Analysis

Final Report and Recommendations

Public Engagement Throughout

<table>
<thead>
<tr>
<th>Reviewed Studies/Projects</th>
<th>Date of the Studies/Projects</th>
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<tbody>
<tr>
<td>Downtown Green Infrastructure Study &amp; Plan</td>
<td>July 10, 2018</td>
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<tr>
<td>2019 Natural Hazard Mitigation Plan Update</td>
<td>Adopted July 18, 2019 FEMA Approval August 9, 2019</td>
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<tr>
<td>Fairfield Plan of Conservation and Development</td>
<td>November 15, 2016</td>
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<tr>
<td>US Army Corps of Engineers' Coastal Storm Risk Management Study</td>
<td>June 7, 2019</td>
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<tr>
<td>Fairfield Flood &amp; Erosion Board Flood Mitigation Plan</td>
<td>January 2015 Amendment 1 on April 15, 2015</td>
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POTENTIAL FLOODING SOURCES:

1) Inland Overflow from Tidal Waters + Storm Surge

2) Extreme Rainfall

3) Stormwater Infrastructure

Affected by: Sea Level Rise > Frequency of Storm Events > Severity of Storm Event

Prediction for 2050 in Connecticut:

- Average precipitation expected to increase about 8.5%
- Sea level will rise 20 inches
100 Year Flood Limits…

- 1% statistical likelihood chance of annual flood
- Each storm is an individual probability event of 1 out of 100

What does that mean for the study area?

- Study incorporated 100-year model limit as a snapshot
- Modeling of flood limits does not take storm drainage issues into consideration

100-Year Storm (CIRCA), 20” Sea Level Rise, Future 2050 Conditions
Storm Surge is the abnormal rise in seawater level during a storm, above normal tide, caused by storm’s winds pushing water onshore.

Air patterns in hurricanes travel counterclockwise.

Water gets pushed into the Long Island Sound where it gets trapped and piles up to move onto normally dry ground.

STORM SURGE IMPACTS

Fairfield

Atlantic Ocean
HURRICANE STORM SURGE

Hurricane Surge Inundation

Source: City of Fairfield, CTDEEP, DTECO
Date of Photo: 2019

aecom.com
- Shape of the coastline affects storm surge
- Inlets in the coastline create pockets to trap water

**Study**

**Assumptions:**
- 100-Year Storm
- 20" Sea Level Rise
- Future 2050 Conditions
Precipitation

- Precipitation is the primary driver of flooding in downtown Fairfield.
- When the town receives intense rainfall over short periods drainage systems can be overwhelmed.
- This can be exacerbated by high-tides and storm surge events.

20 More days with < 1” of Precipitation by mid-century per year.
Role of the Drainage System
Pipe Capacity: The volume of water that can flow freely through a pipe.
Pipe diameter and volume of water entering the system affect capacity.
Potential Flooding Sources

- Pipe diameter and volume of water entering the system affect capacity
STUDY AREA

- 10 Year Flood Limits
- Current Conditions
STUDY AREA

- 10 Year Flood Limits
- 20" Sea Level Rise
- Future 2050 Conditions
STUDY AREA

- 100 Year Flood Limits
- 20" Sea Level Rise
- Future 2050 Conditions
Some of our Preliminary Ideas for Addressing Flooding

- Improve efficiency/capacity of drainage system
- Green Infrastructure implementation
- Modification to underpasses
  - Raising road elevation
  - Widening underpasses
  - Prioritize pedestrian access
- New Overpass over the tracks
Discussion and MyMaps

Discussion Questions

How many times in the past year have you experienced flooding at one of these underpasses or in downtown?

What do you do when your travel is impacted by flooding (i.e. what is your reroute)?

Have you noticed a change in flooding/road closure frequency in your lifetime?

MyMaps Link
Next Steps

Next Steps for Study Team
• Review comments, feedback and MyMaps annotations
• Share draft existing conditions report

Next Public Touch Points
• Flooding Experience Survey
• Public Workshop Alternatives Discussion
THANK YOU!