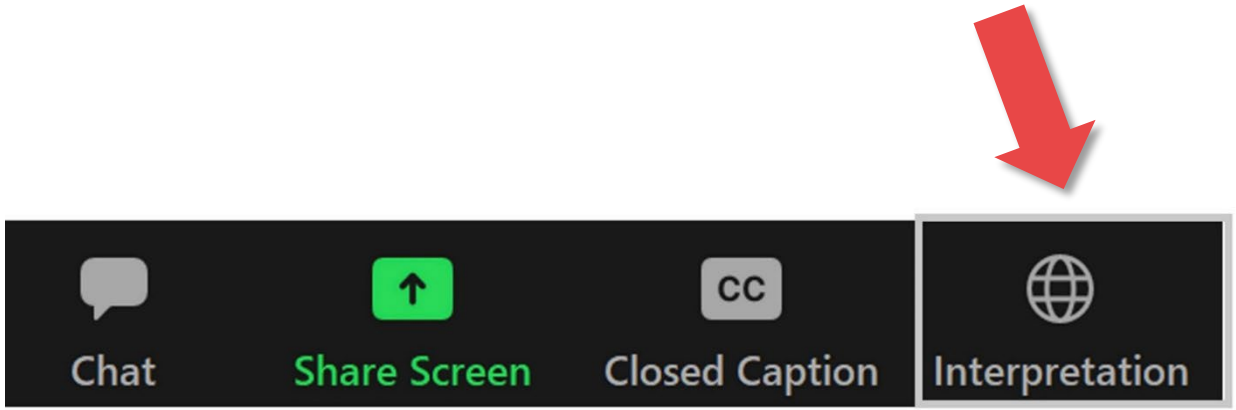
Resilient South Norwalk:

Resilient Corridor Analysis

2nd Community Workshop | June 29, 2023

Spanish interpretation is available during this meeting.
In your meeting controls on the toolbar at the bottom of the screen, click the Interpretation icon (the small globe) and click the language that you would like to hear.



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2nd Community Workshop | June 29, 2023

Agenda & Tonight's Goals

I Introduction and Recap

- Team Introductions
- Project Goals and Overview
- Recap of Vulnerabilities

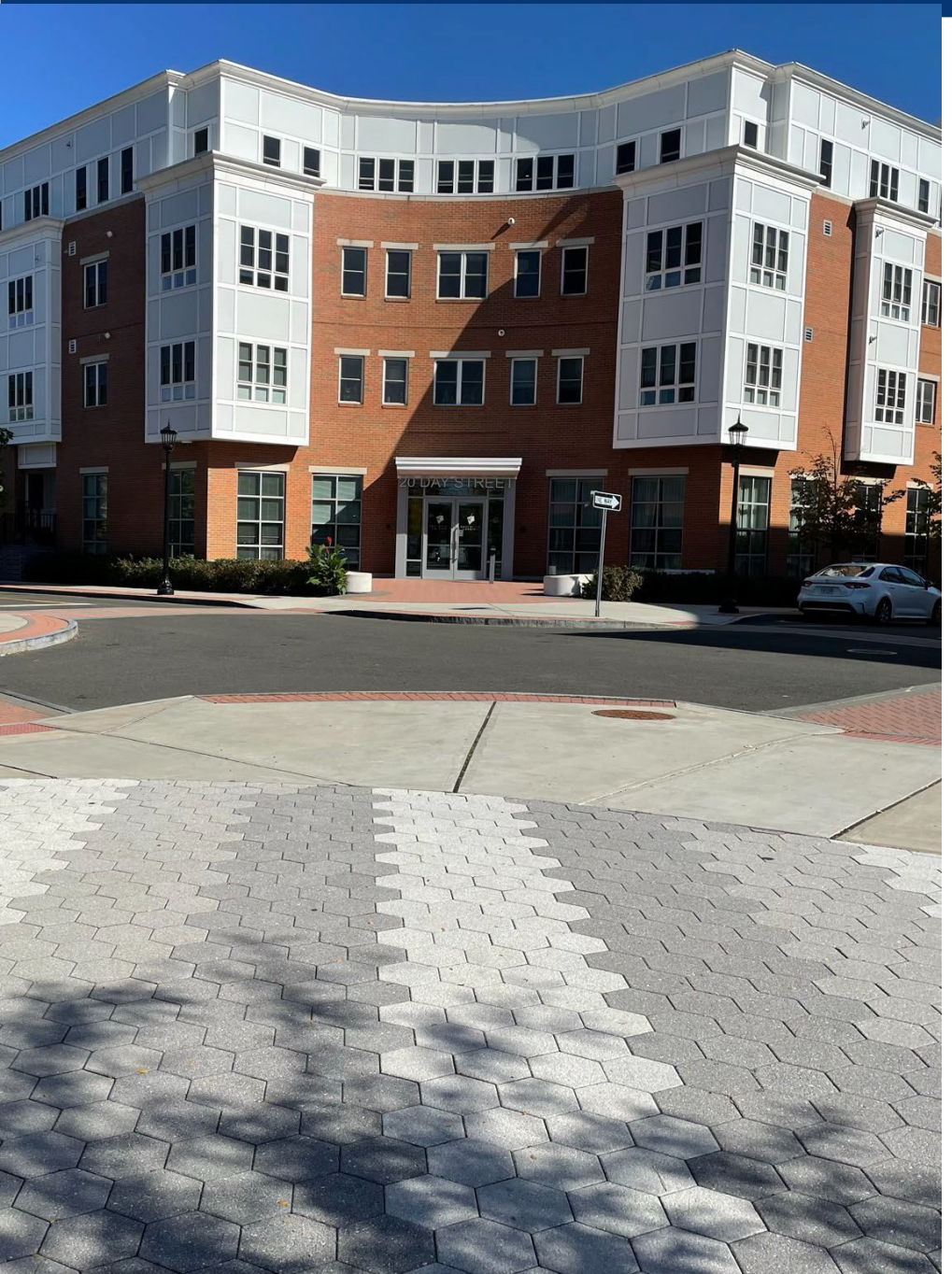
II. Resilient Corridor Adaptation Options: Approach

- Adaptation Options "Kit of Parts"
- Site Specific Options
    I. Water Street & Concord Street
    II. Woodward Ave and Meadow Street
- Project-Wide Options
    I. Resiliency Overlay Zoning & Guidelines for Future

III. Discussion

- Participation Guidance
- Next Steps

Introduction



Project Team

CIRCA
John Truscinski, CFM, *Director of Resilience Planning*
David Murphy, PE, CFM, *Director of Resilience Engineering*

AECOM
Lorayne Black, *Project Manager and Landscape Architect*
Geoffrey Morrison-Logan, *Lead Urban Planner and Community Outreach*
Ellie Peterson, *Landscape Designer*

FHI
Susan Bemis, *Planner*
Chris Henry, *Mobility*

City of Norwalk

Planning Department + Advisory Committee

Steven Kleppin, *Director, City of Norwalk Planning & Zoning*
Michelle Andrzejewski, *Senior Planner*

Alexis Cherichetti, *Assistant Director & Senior Environmental Officer*
Louise Washer, Mayor's Water Quality Committee Member
Lisa Shanahan, *Council Member & Chair of Ad Hoc Sustainability & Resilience Committee*
Nicholas Kantor, *Planning and Zoning Commission Member*
Katherine Knight-Sellschop, *Conservation Commission Member*
Alan Huth, *CEO & General Manager of SNEW*
Brian Bidolli, *Executive Director of Norwalk Redevelopment Agency*
Michele Deluca, *Deputy Director of Emergency Management (city staff)*
Robert Stowers, *Director of Recreation and Parks (city staff)*
Vanessa Valadares, *Chief of Operation & Public Works*
Jessica Vonashek, *Chief of Community and Economic Development (city staff)*
Chris MacDonnell, *Norwalk Harbor Commission*
Thomas Livingston, *Interim Chief of Staff*
Deborah Edwards, *Resident of Norwalk*

Focusing on Community Development

Preserving and enhancing the quality of life of existing affordable communities

"Resilient Corridors"

Creating accessible roadways resilient to climate change and increasing transit connectivity

Promote Healthy Ecosystems

Protecting communities through healthy buffering ecosystems

Develop Energy, Economic, & Social Resilience

Fostering independent development by encouraging green energy and economic growth

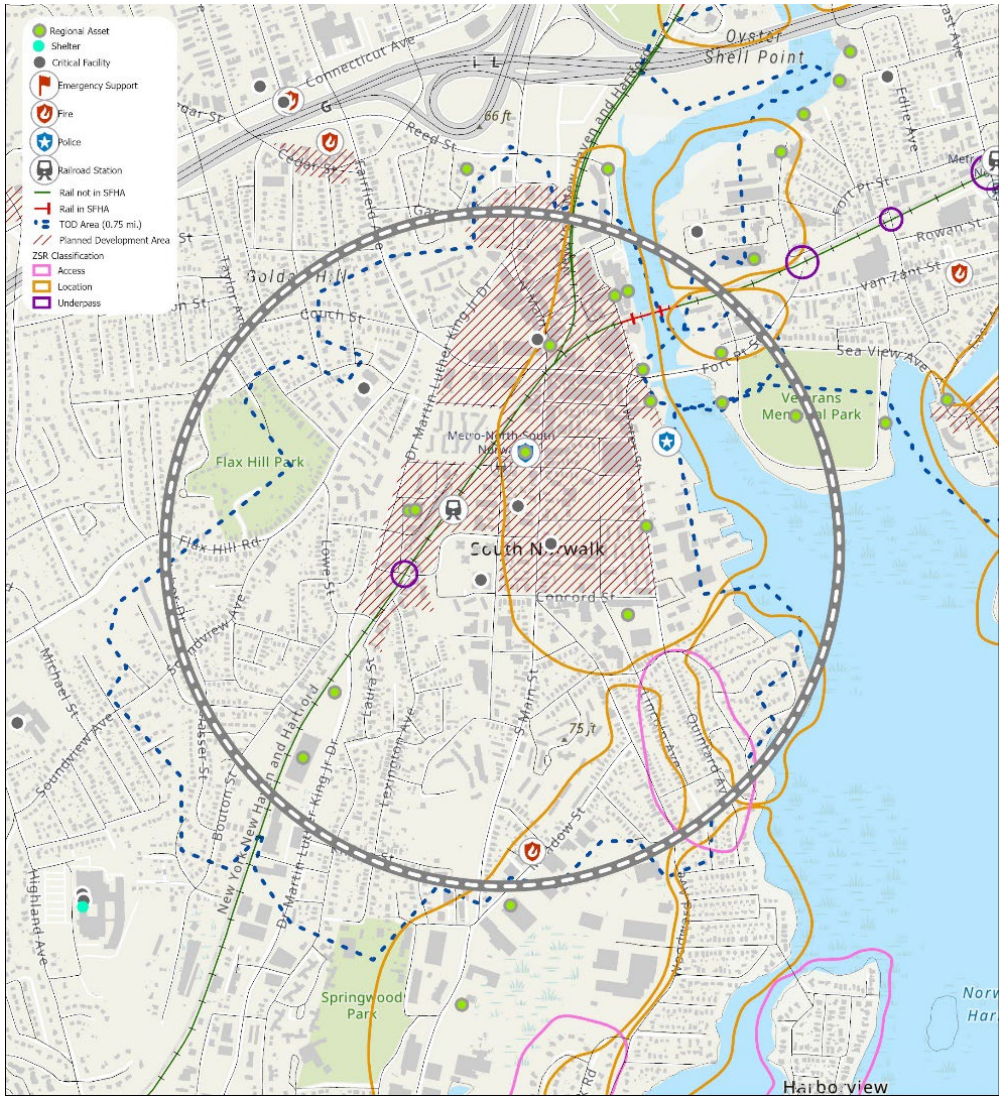
Promote Flood & Heat Resilient Infrastructure

Adapting Critical Infrastructure to withstand Flood and Heat Risks

Resilient Connecticut Phase II

Regional Adaptation/Resilience Opportunity Areas

Name: South Norwalk
Location: Norwalk

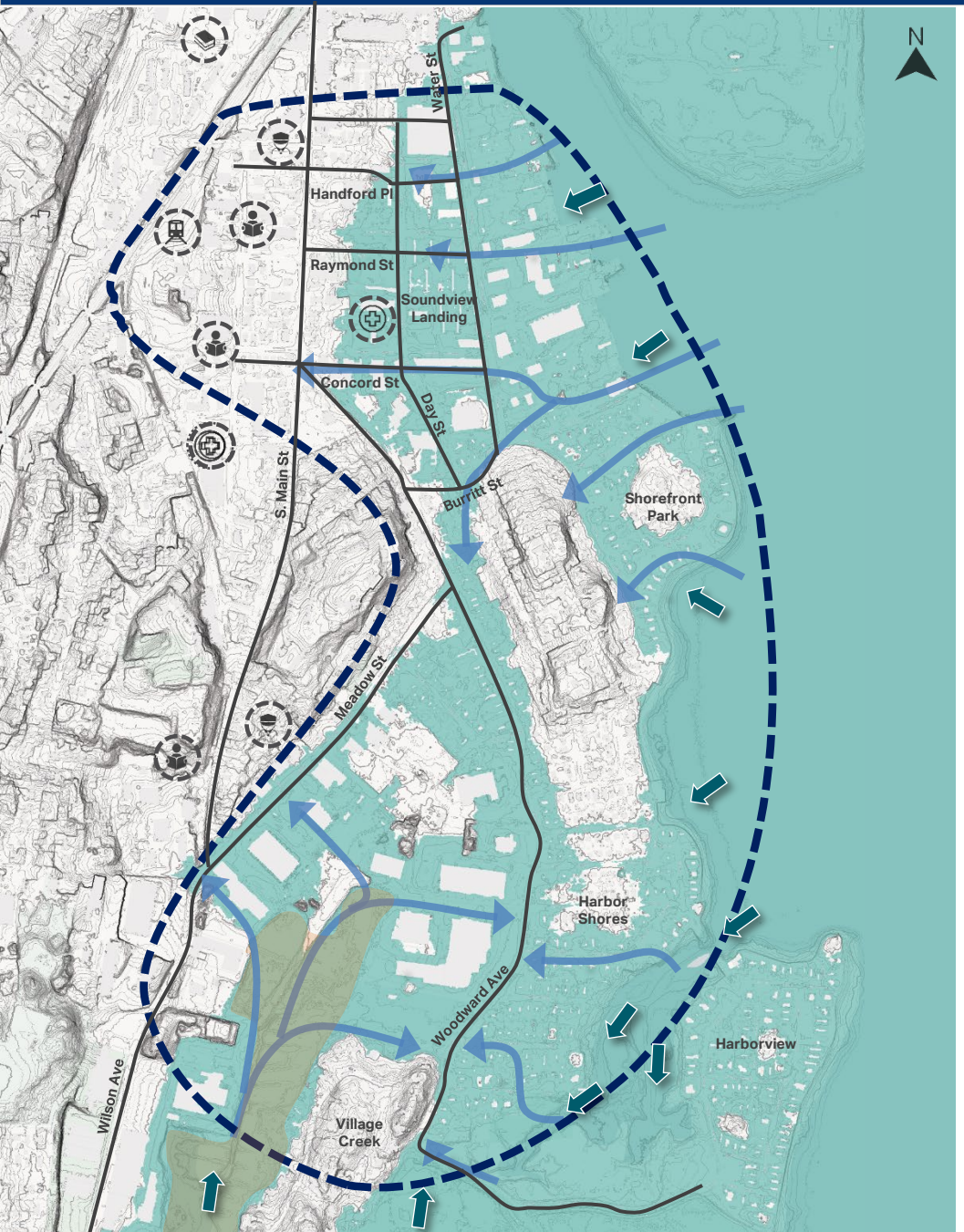


Project Goals

With focus on flood, heat and social vulnerabilities, develop implementable projects and actions through City, stakeholder and community input, which will establish resilient corridors that lessen impacts of climate change within the study area in South Norwalk.

Incorporate **PERSISTS** decision support criteria:

Permittable	Can be authorized through necessary federal, state, and local permits
Equitable	Ensures that benefits are equitable among populations
Realistic	Can be realistically engineered and is plausibly fundable
Safe	Reduces risks to people and infrastructure
Innovative	Process has considered innovative options
Scientific	Apply and improve on the best available science
Transferrable	Can serve as model for other communities
Sustainable	Socially, economically, and ecologically sustainable and supported by the public and leadership

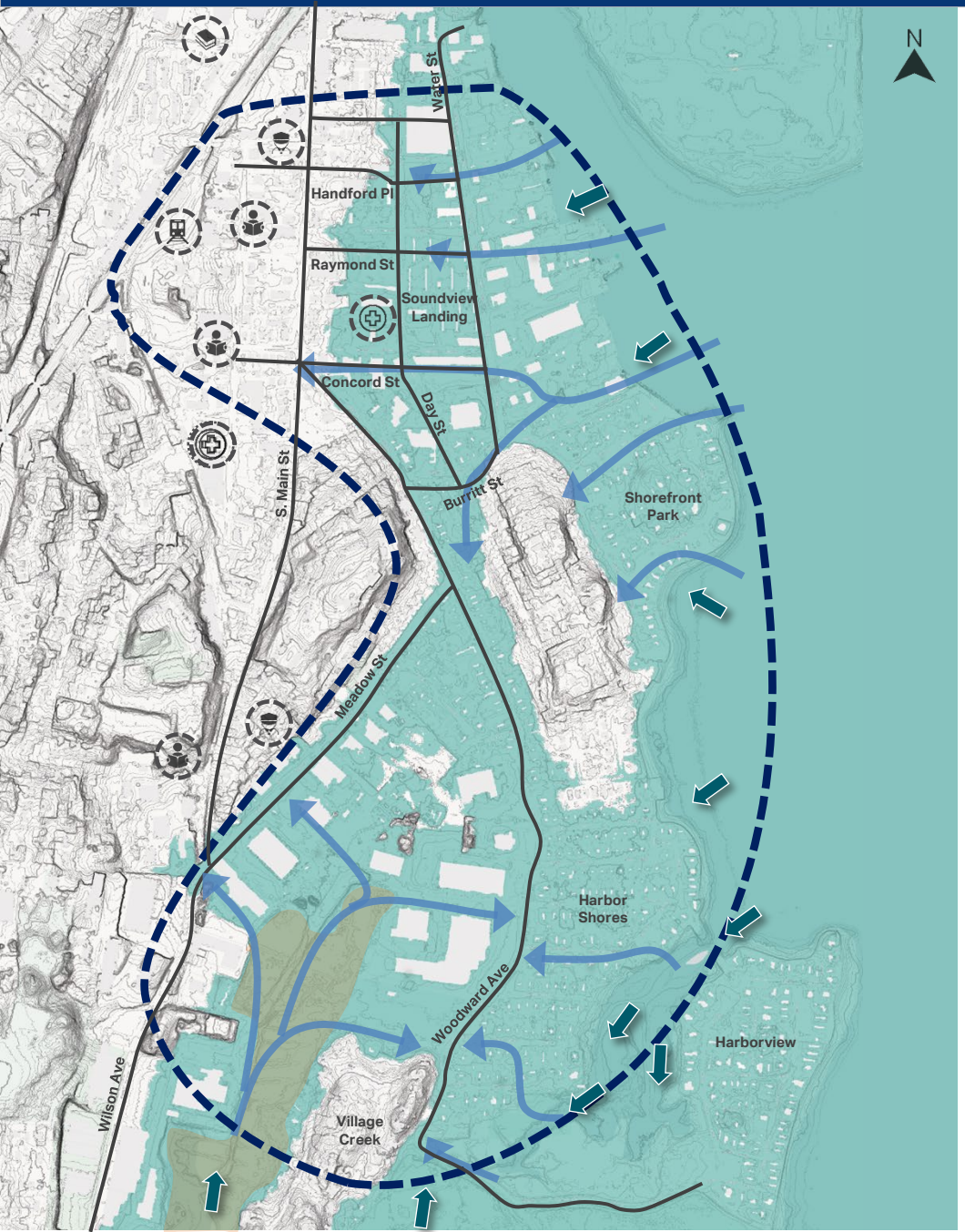


Flood Pathway Analysis

Our team analyzed the direction of water flow during a projected 2050 100-year storm event to determine key areas for flood mitigation

1% Annual Storm **Present Day**

- Project Area
- Study Corridors
- Flood Pathways
- Storm Surge Direction
- Designated Marshlands
- 1% Annual Storm Present Day *Elevation 9.38 NAVD88*



Flood Pathway Analysis

Our team analyzed the direction of water flow during a projected 2050 100-year storm event to determine key areas for flood mitigation

1% Annual Storm **Projected from 2050 with 20" Sea Level Rise**

- Project Area
- Study Corridors
- Flood Pathways
- Storm Surge Direction
- Designated Marshlands
- 1% Annual Storm Projected for 2050 with 20" Sea Level Rise *Elevation 10.88 NAVD88*

Heat Vulnerability in Project Area

Heat Vulnerability is determined by the following physical factors:

- **Maximum Surfaces Temperatures**
- **Air Quality**
- **Density of Impervious Surfaces**

Heat Exposure

Least **Most**

**Maps provided with CIRCA Climate Change Vulnerability Index (CCVI), https://resilientconnecticut.uconn.edu/*

Thank you!

We appreciate all your photo and video contributions showing recent flooding throughout South Norwalk. Your feedback has been so valuable in our understanding of the issues in this community, and we appreciate your engagement!

Woodward Avenue
Hurricane Ida, 2021

Meadow Street
Hurricane Ida, 2021

Longshore Drive
Hurricane Ida, 2021

Conceptual Adaptation Options

Resilient South Norwalk | Adaptation Options "Kit of Parts"

Keeping Cool

- Shade Structures
- Cool Roof & Pavement Colors
- Green Infrastructure
- Expand Tree Canopy & Parks

Keeping Dry

- Elevate Roadway
- Install Flood Barriers
- Install Tide Gates Selectively
- Green Infrastructure
- Update Stormwater System
- Install Berms

Keeping Safe

- Add Community Emergency Centers
- Green Infrastructure
- Signage for Awareness
- Develop Resilience Overlay District

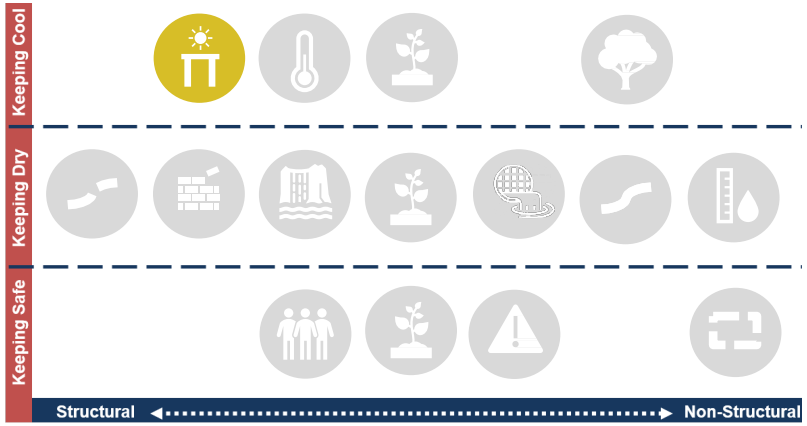
Structural ◀ ▶ Non-Structural

Shade Structures

Source: Maricopa Association of Governments

Source: The Wildlife Trusts and Clear Channel

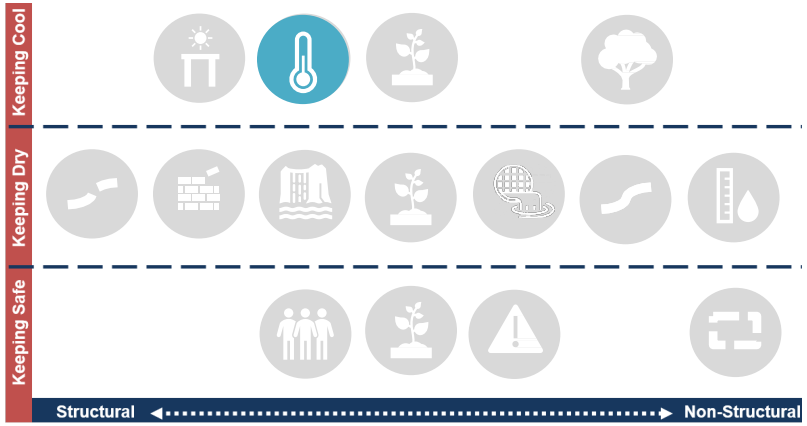
Shade structures offer shade and shelter from precipitation and extreme heat conditions and create opportunities for green roofs and creative placemaking. Structures could be suitable in South Norwalk at public plazas and bus stops, especially in locations with a lack of natural shade.

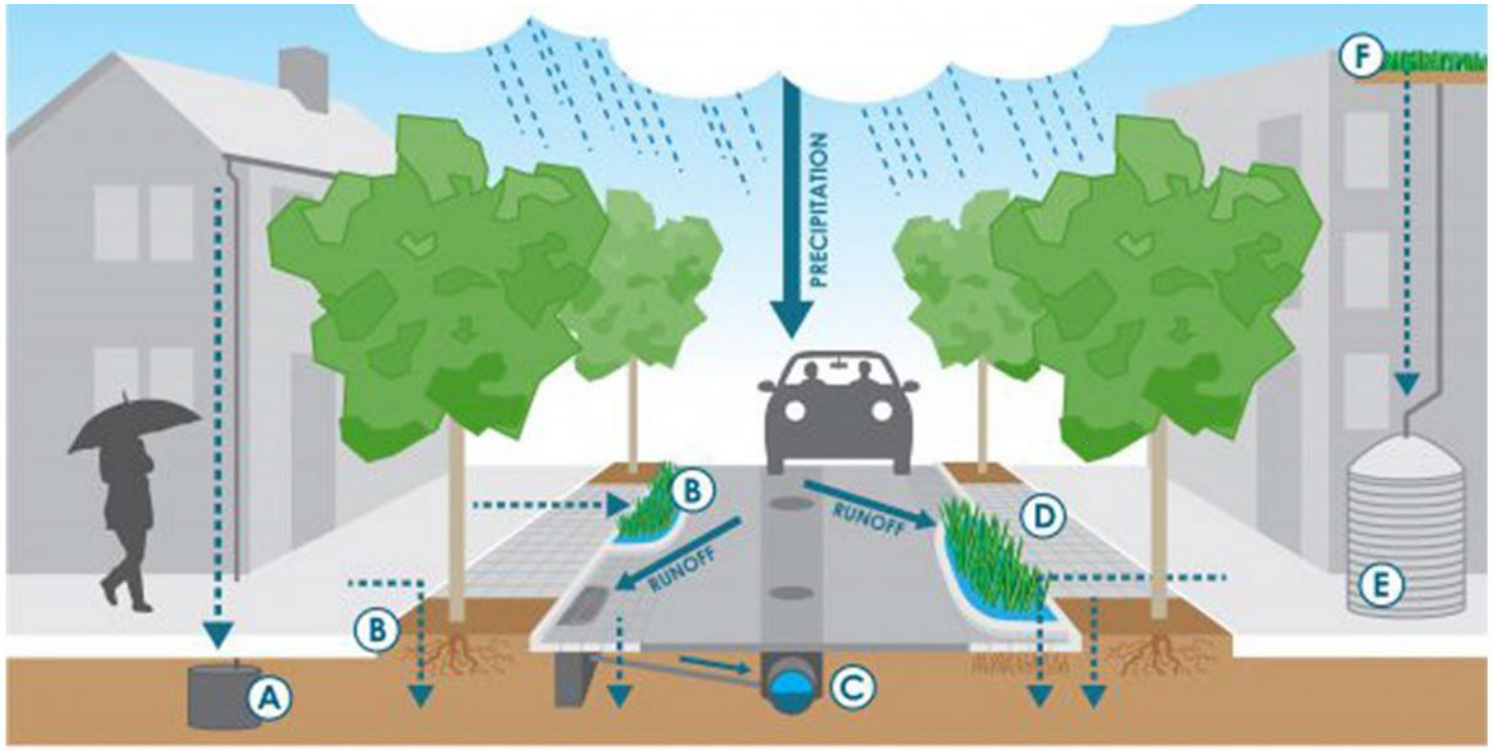


Add Cool Roofs and Cool Pavement Colors

US Climate Resilience Toolkit, https://toolkit.climate.gov/image/3513

Lighter pavement colors and reflective materials are an excellent method of cooling down the land surface and building temperature by reflecting heat vs. absorbing it. Colored and permeable materials could be considered throughout the project area to complement other resilient techniques



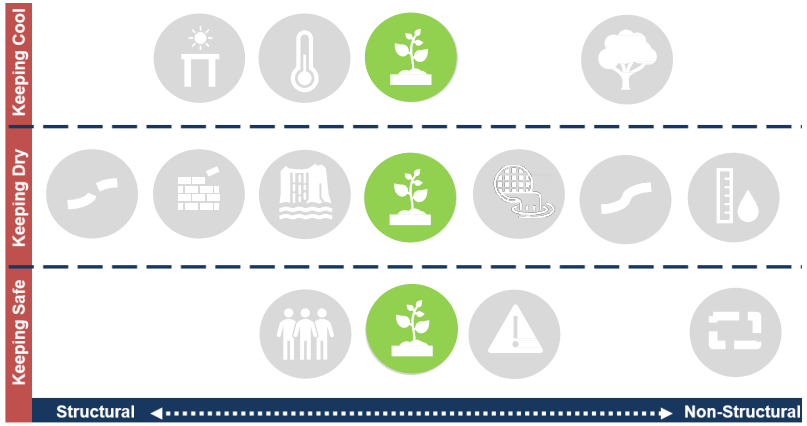


A: Dry Well B: Stormwater Planter C: Storm Drain D: Permeable Paving E: Rainwater Harvesting Cistern F: Green Roof

Tomorrow.norwalkct.org & NACTO

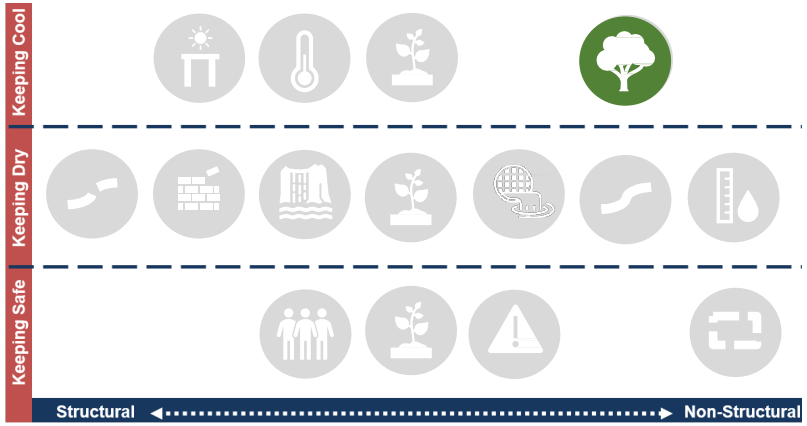
Incorporate Green Infrastructure

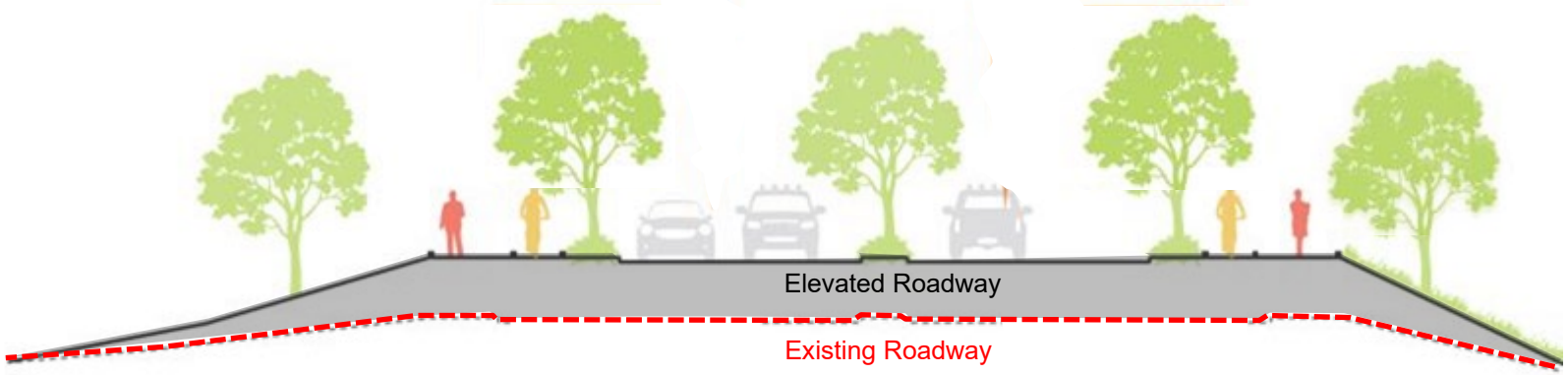
Green Infrastructure refers to a network that provides the "ingredients" for solving urban and climatic challenges. Examples, of green infrastructure applicable to South Norwalk would be the addition of **permeable paving**, **stormwater planters**, and **curb extensions.** Curb extensions have the added benefit of acting as an effective traffic-calming technique and enhance pedestrian safety.



Expand Tree Canopy & Parks

Expanding the urban forest through the increase of the tree canopy in the roadway ROW’s and in public parks and public lands, has the multiple benefit of naturally absorbing water runoff, providing shaded corridors and wind breaks, reducing energy costs, boosting economic benefits, improving air quality, and promoting public health and wellbeing.

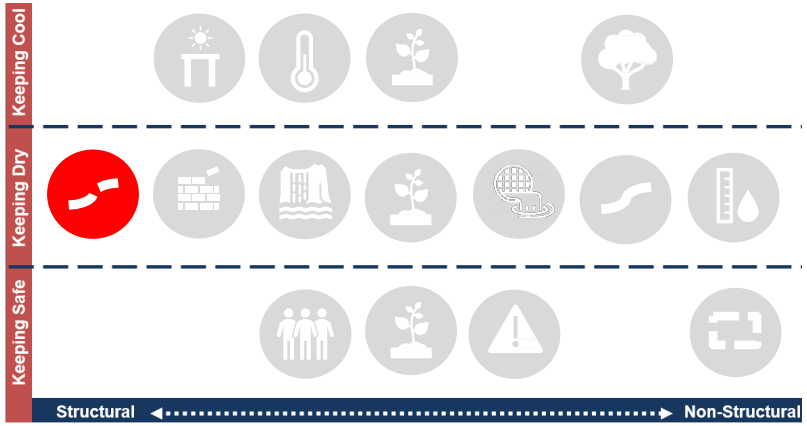




Raised New Developments along Water Street and Raymond Street, Photos by AECOM

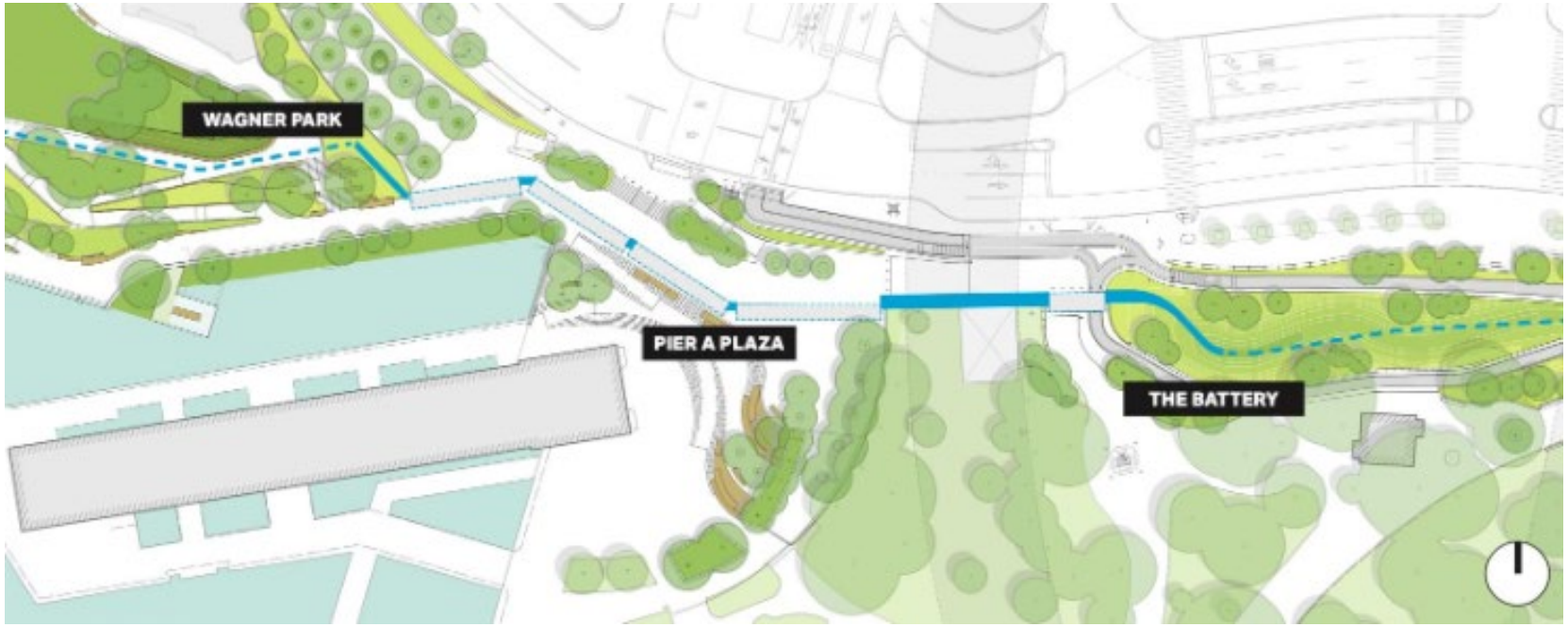
Elevate Roadway

Elevating selected roadways for safe emergency evacuation routes: This selection could be based upon specific standards dependent upon the level of road use and existing and future adjacent land use within the neighborhood. Cost and property owner impacts are a major consideration for this adaptation option.



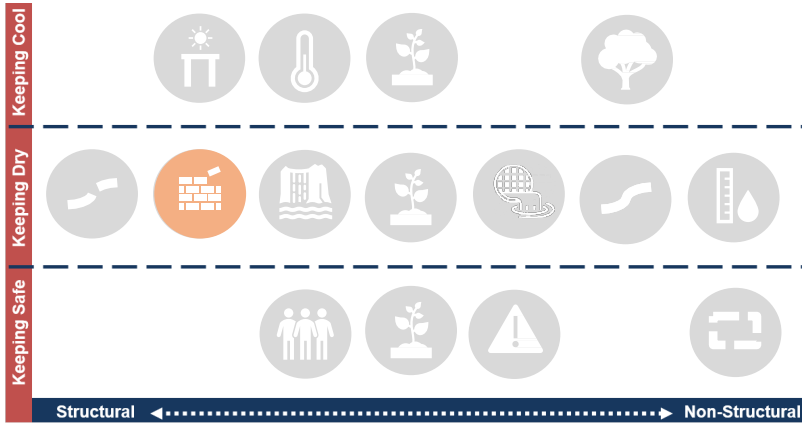
Rendering of a concept for a flood wall clad with various types and colors of stone that represent the topography of the Hudson River Valley. Credit: Battery Park City Authority and AECOM

Neo-barrier, flooddefenses.org



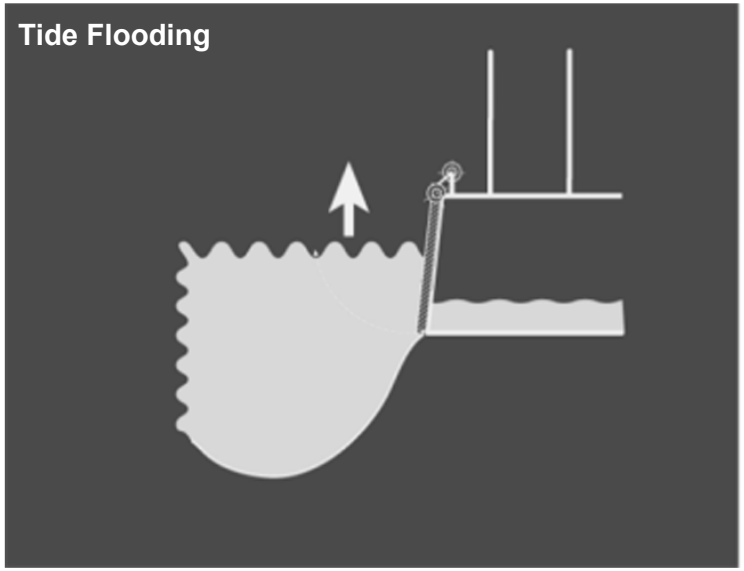
Install Flood Barriers

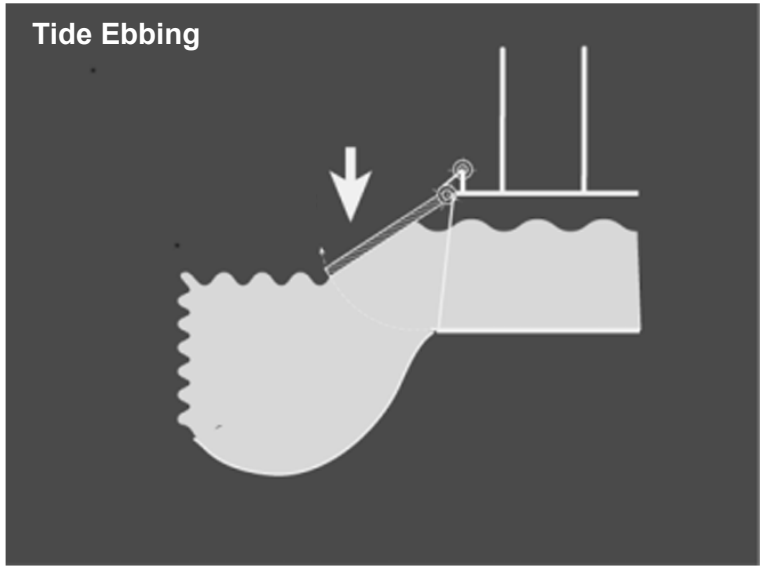
Flood barriers are designed to prevent storm surge or spring tide from flooding an entire region. They can be an appropriate solution in some scenarios but can also cause unintended environmental consequences and can be visually imposing.



Tide Gate, Waterman.com

"Duckbill" Backflow Prevention, redvalve.com

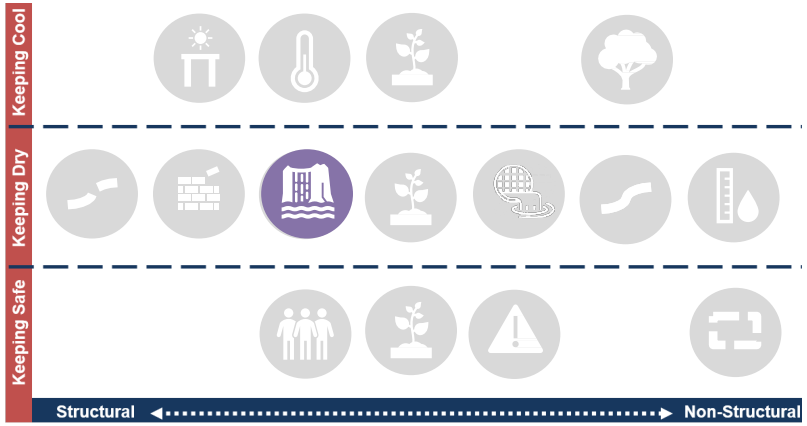


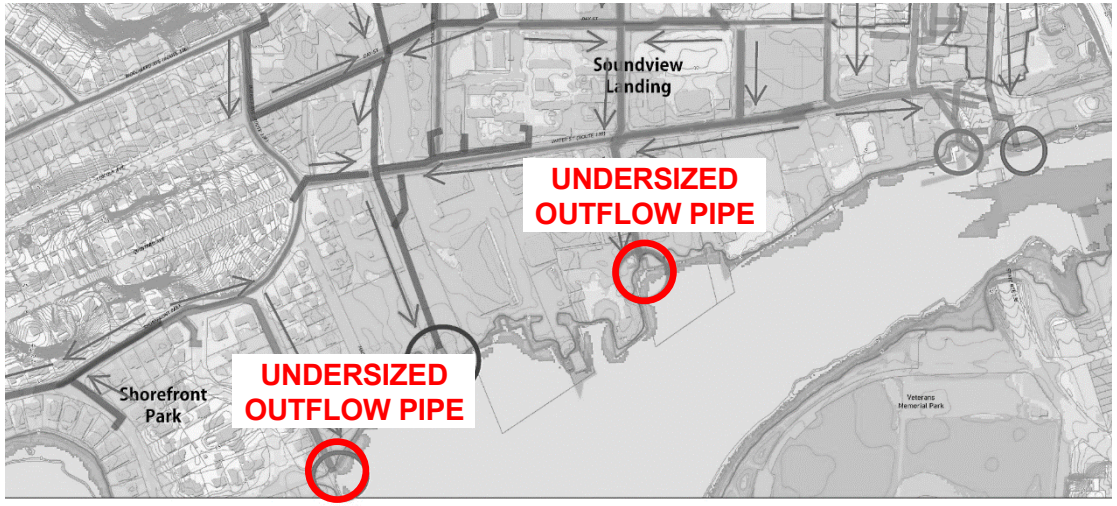


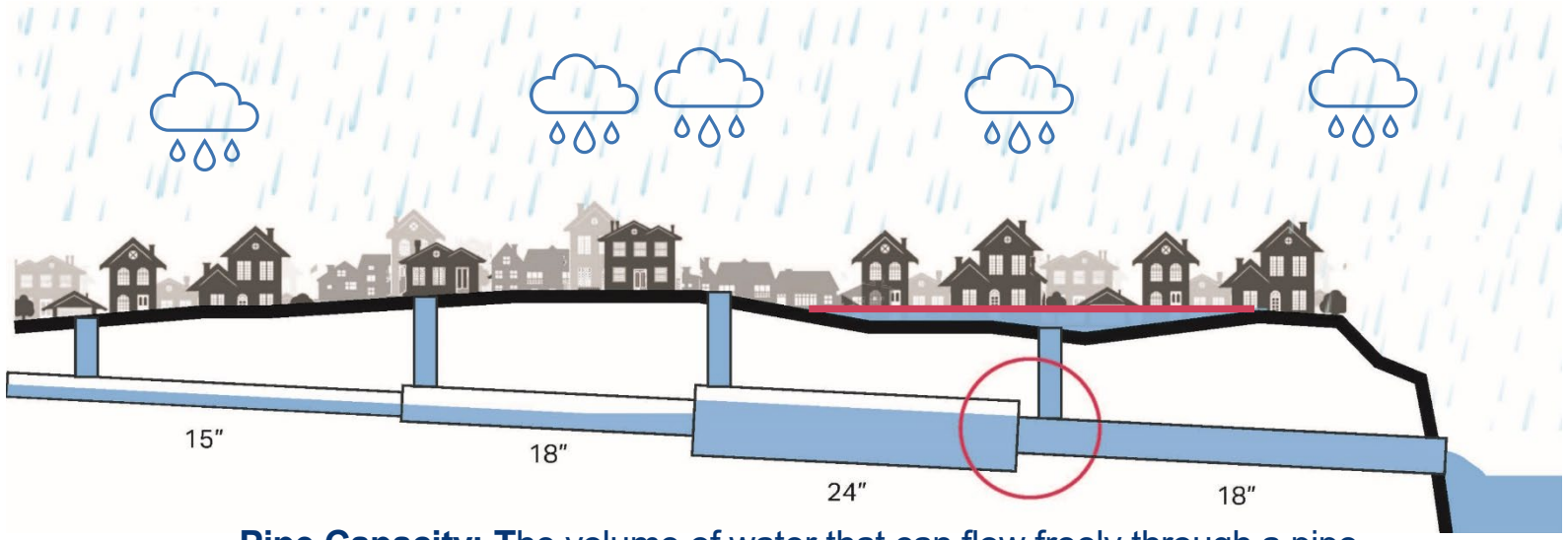
Tide Gate Ecological Effects, Oregon.gov

Install Tide Gates Selectively

A tide gate is a gate through which water flows when the tide is in one direction and that closes automatically when the tide is in the opposite direction. Tides gates could be considered selectively throughout south Norwalk to help contain water during flooding events



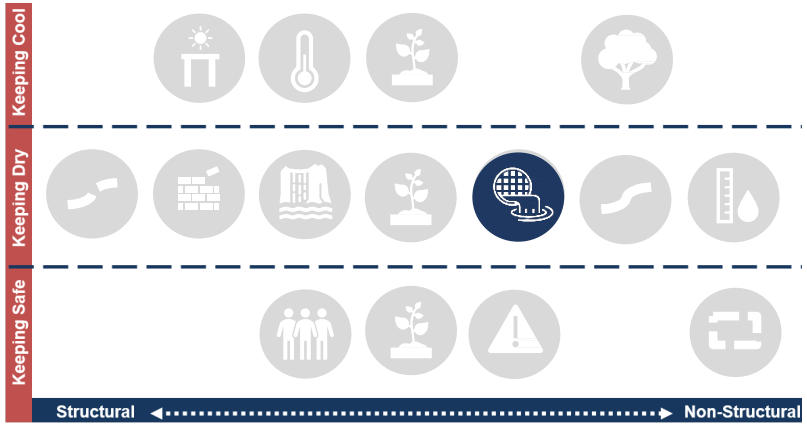




Pipe Capacity: The volume of water that can flow freely through a pipe

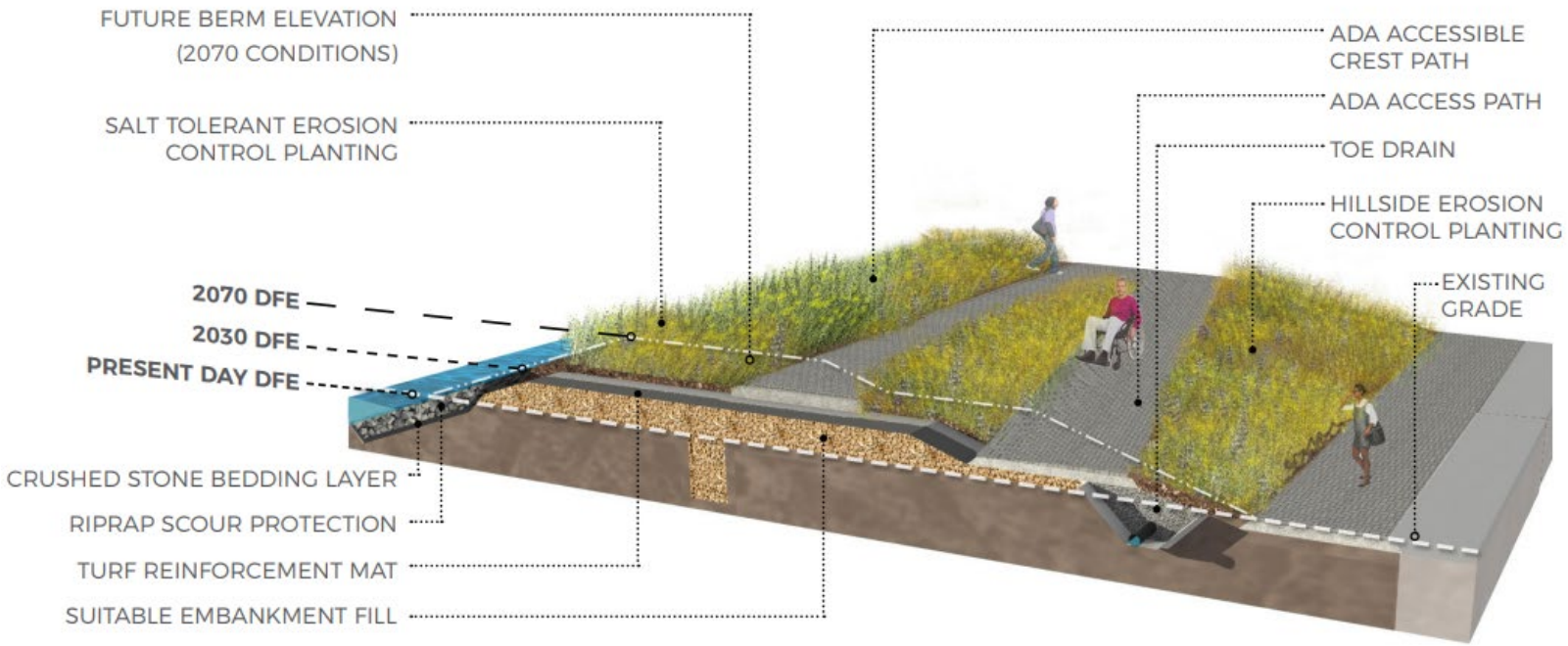
Update Stormwater System

A stormwater treatment system collects excess water from the city combined sewer system and discharges to the ocean. There are several key stormwater outfall locations in South Norwalk with undersized pipes, which may be resulting in additional stormwater backup and flooding inland.

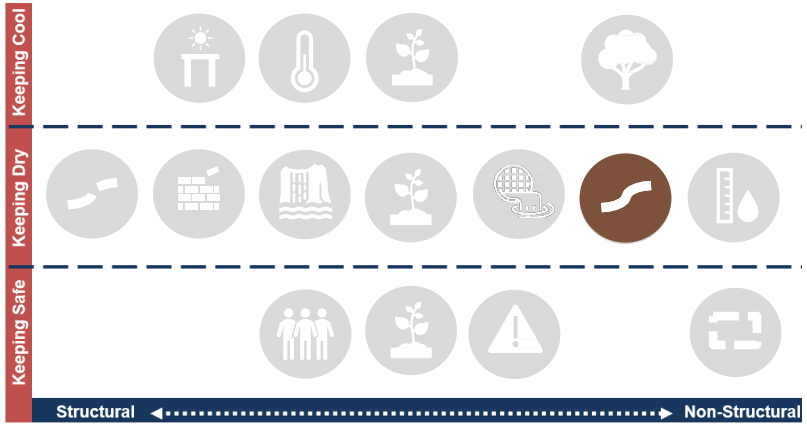


Install Berms

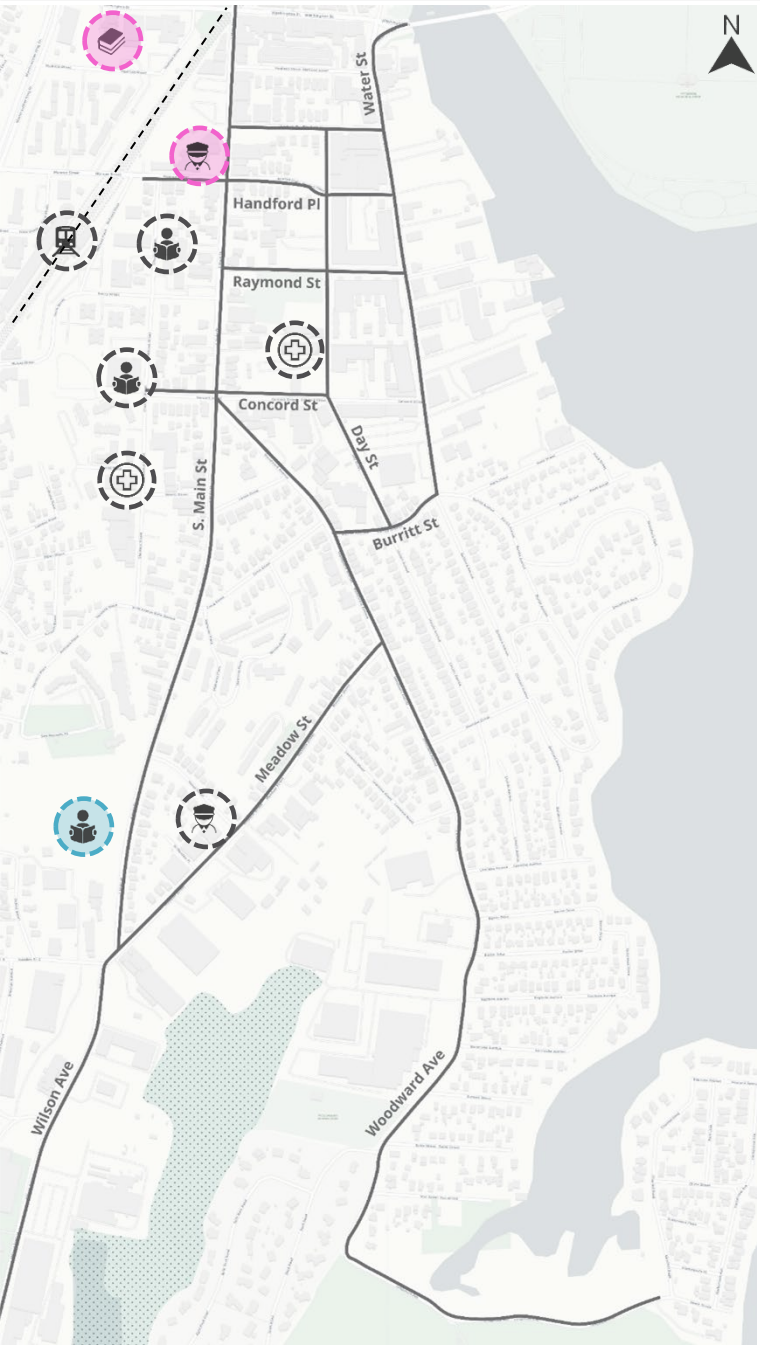
A berm is a planted mound that can act as a natural flood barrier while still providing ecological and aesthetic value.



Vegetated Berm Barrier



'Climate Resilient Design Standards and Guidelines for Protection of Public Rights-Of-Way', Boston Public Works Department, October 17, 2018.



Official Cooling Centers

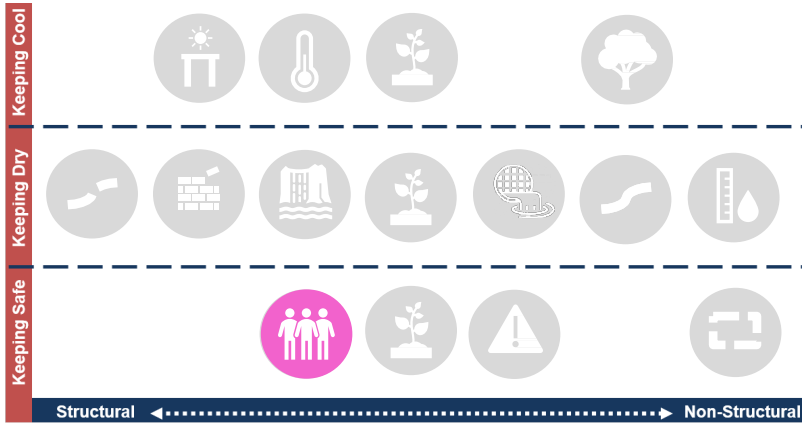
Potential Cooling Centers

Community & Emergency Centers in South Norwalk

- S. Norwalk Police Station Community Room:
- SoNo Branch Library:
- Future South Norwalk Elementary:
- South Norwalk Train Station
- Side-by-Side Charter School
- Columbus Magnet School
- Community Center of Norwalk
- Norwalk Community Health Center at Smilow
- Norwalk Fire Department

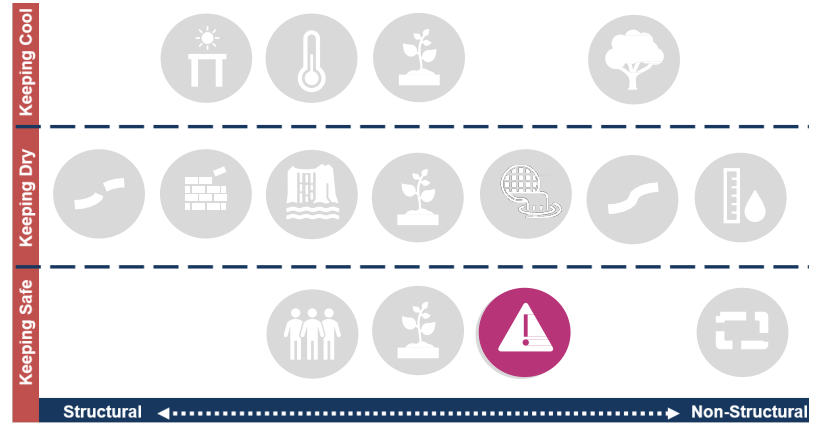
Add Community Emergency Centers

Cooling centers are designated heat wave emergency centers. South Norwalk currently has two official cooling centers in our project area. Other community spaces could be considered in the future to provide additional relief for this community during the summer.



Expand Signage for Heat & Flood Awareness

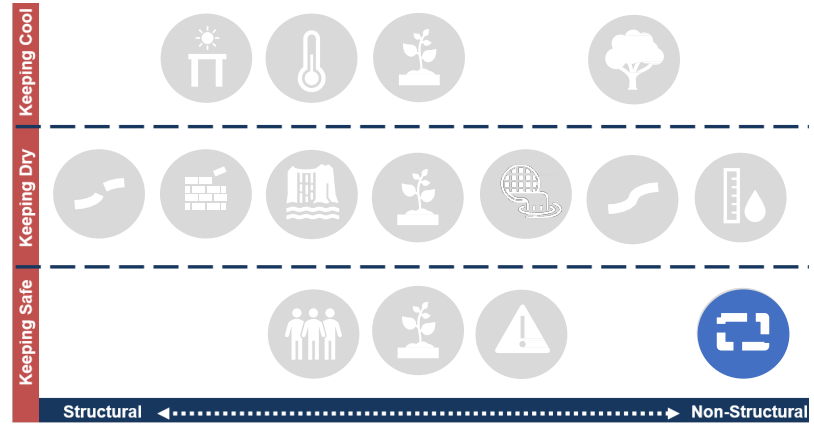
Signage at limits of “impact areas” can be an important tool to increase awareness of risk to the public during extreme heat or flood events.



Flood Sign Maintenance Advisory, https://seaislenews.com/flood-sign-maintenance-advisory/
Extreme Heat Precautions, https://www.chesco.org/1871/Extreme-Heat-Precautions & https://www.weather.gov/

Develop Resiliency Overlay District

A resiliency overlay helps define the areas that are most impacted by flooding and provides a roadmap for future developers to consider before moving forward with their plans. Several cities have already pursued zoning and resiliency overlays to assist climate change preparedness in their communities.



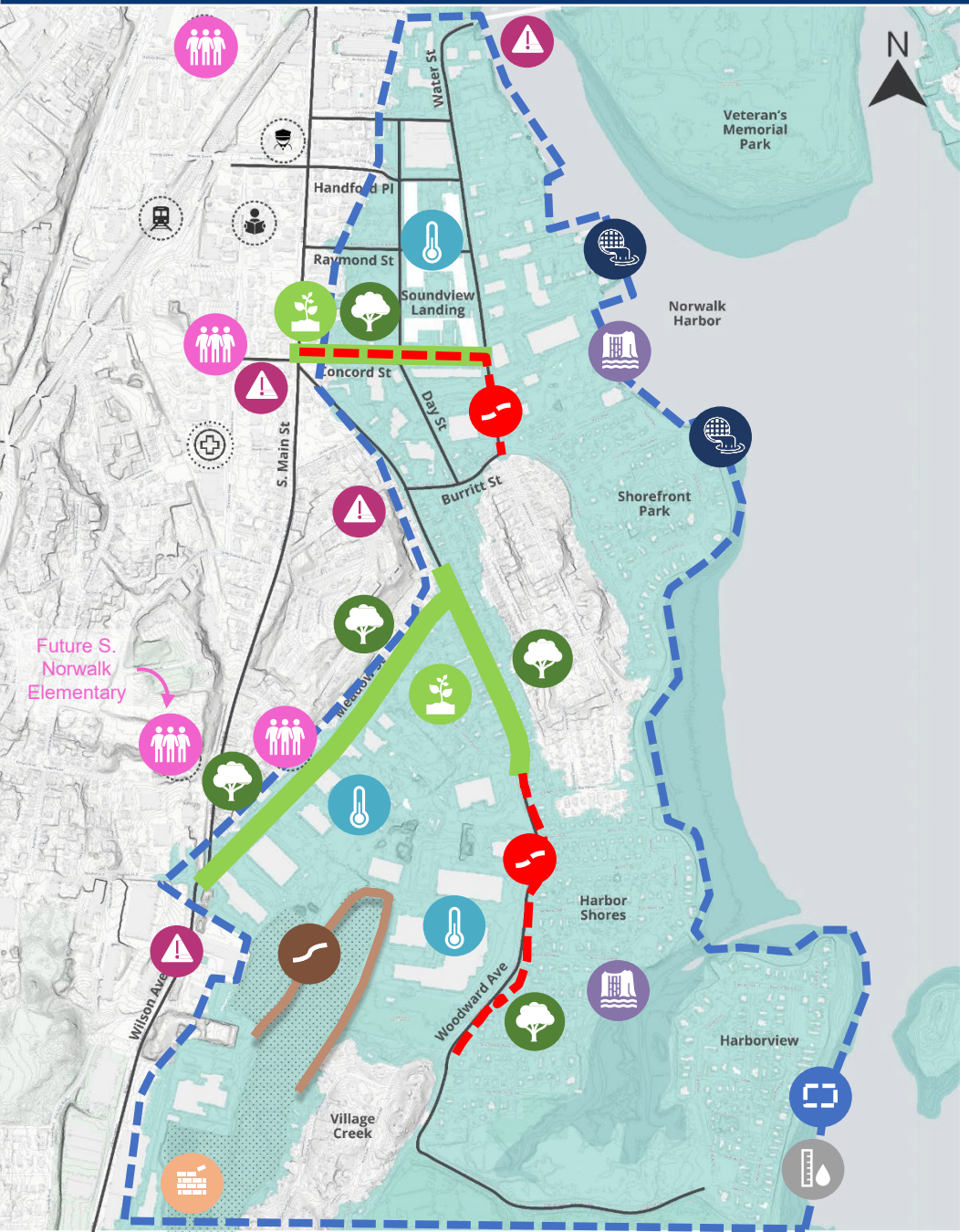
Norwalk is not alone…

Climate Ready Boston
The Boston Planning & Development Agency (BPDA) has been working to advance the climate resilience objectives of the 2016 Climate Ready Boston plan

See: https://www.bostonplans.org/

2019 Zoning Ordinance, Norfolk, VA
The Upland Resilience Overlay was drafted as a part of the 2018 Zoning Ordinance to encourage new development in certain areas of the city that have both a reduced risk of flooding and the potential to support transformational redevelopment.

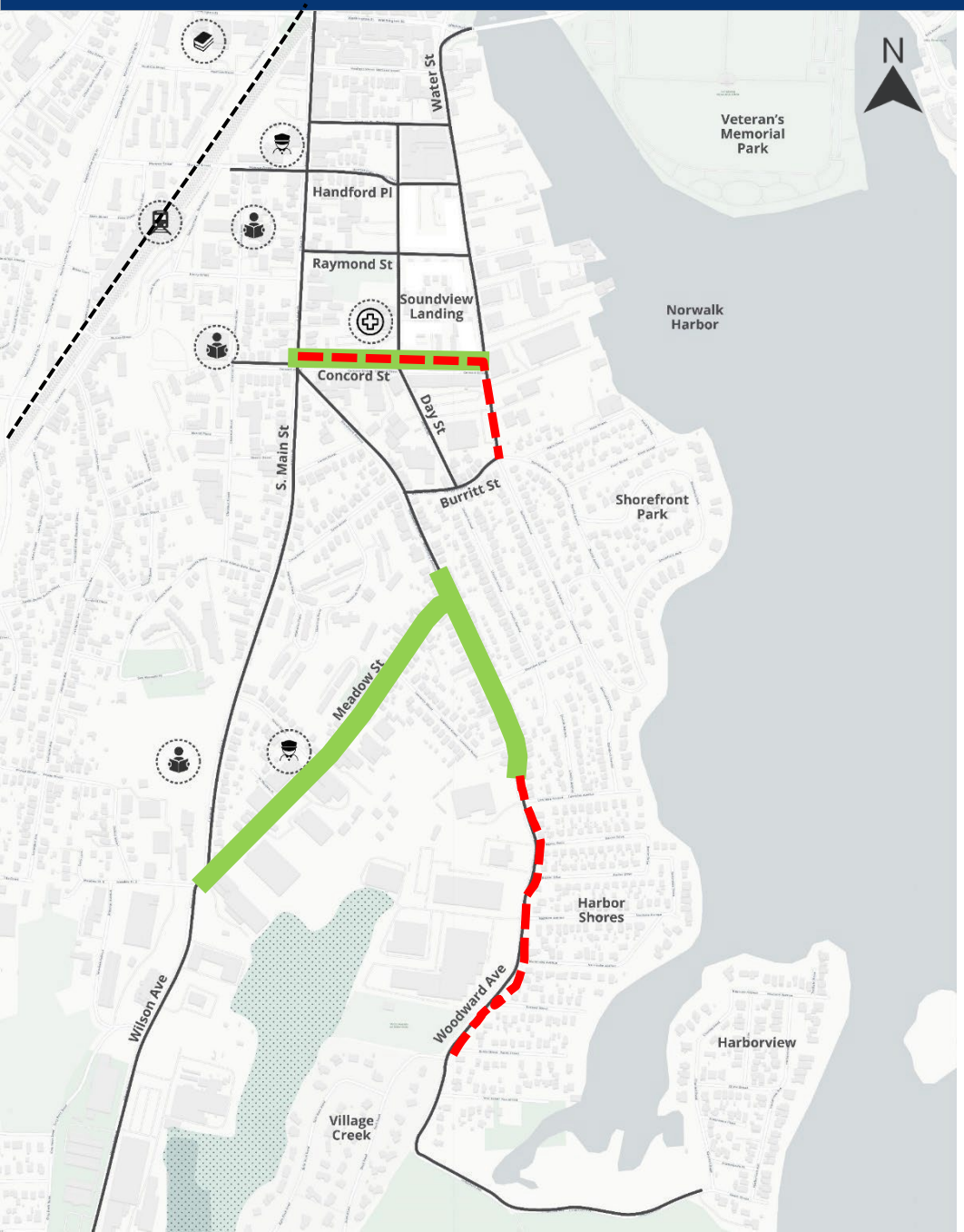
See: https://www.norfolk.gov/



Resiliency Kit of Parts

Site Specific vs. Site Wide Adaptation Options

Focus Areas



Introduction to Focus Areas

After performing an analysis of areas most impacted by flood, heat, and social vulnerabilities, the following focus areas were determined:

Water Street & Burritt Ave

- Road elevation study
- Green infrastructure improvements along Concord Street, increasing accessibility and serving as second line of defense against flooding

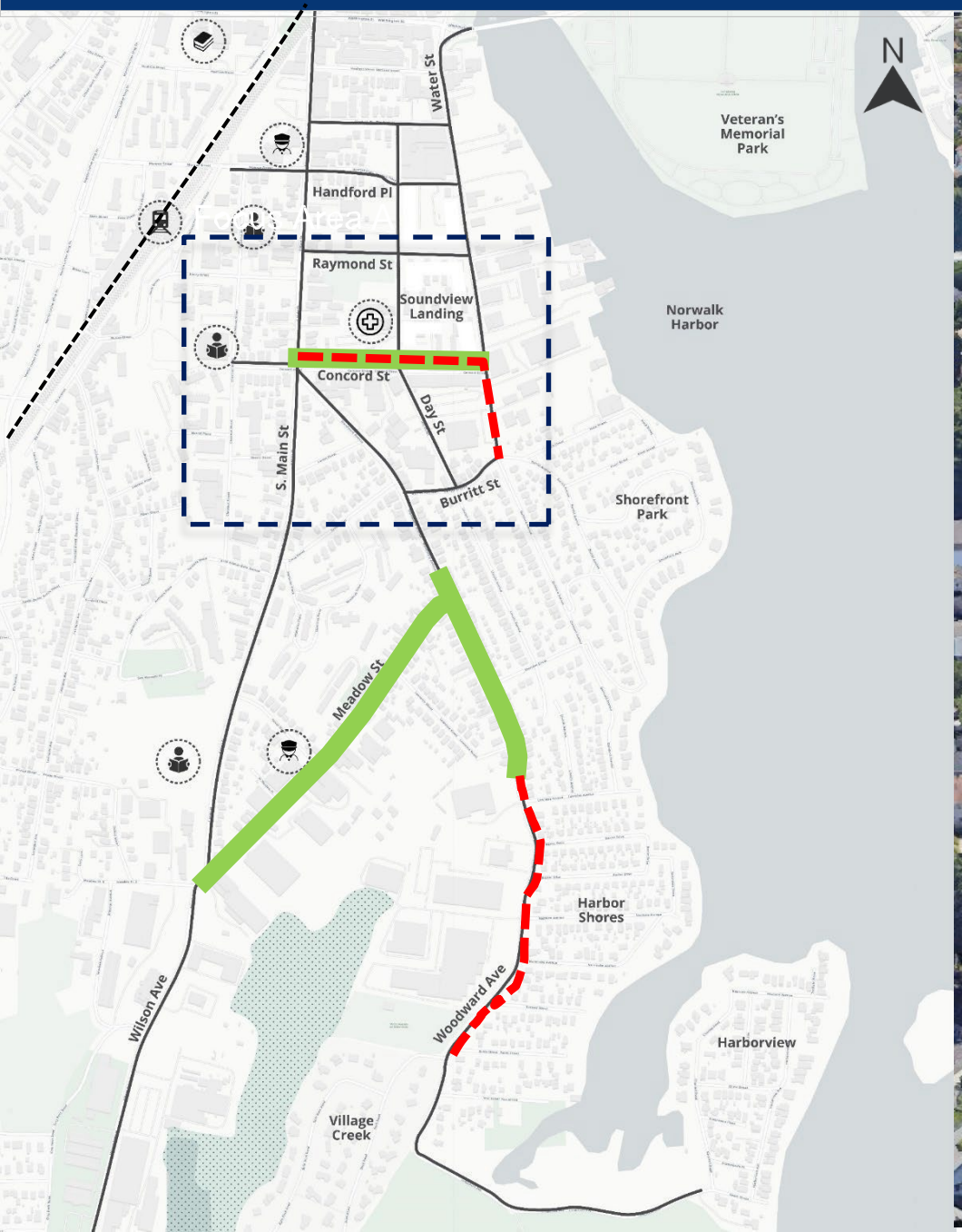
Woodward Ave & Meadow Street

- Road realignment & elevation study
- Create neighborhood parkland and bioretention areas
- "Cool Corridors": Increase public accessibility through shaded biking and walking paths

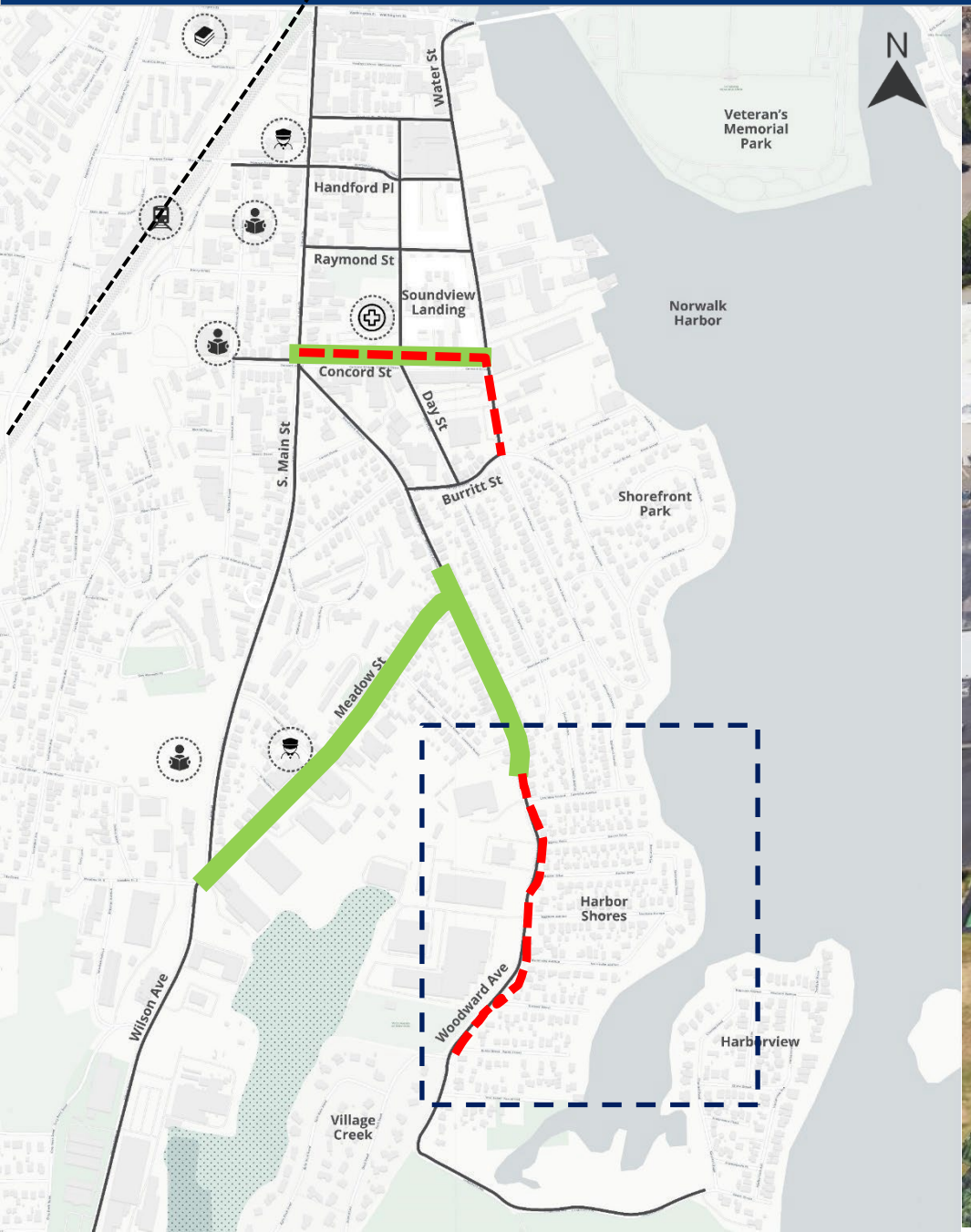
Road Elevation Area

Green Infrastructure

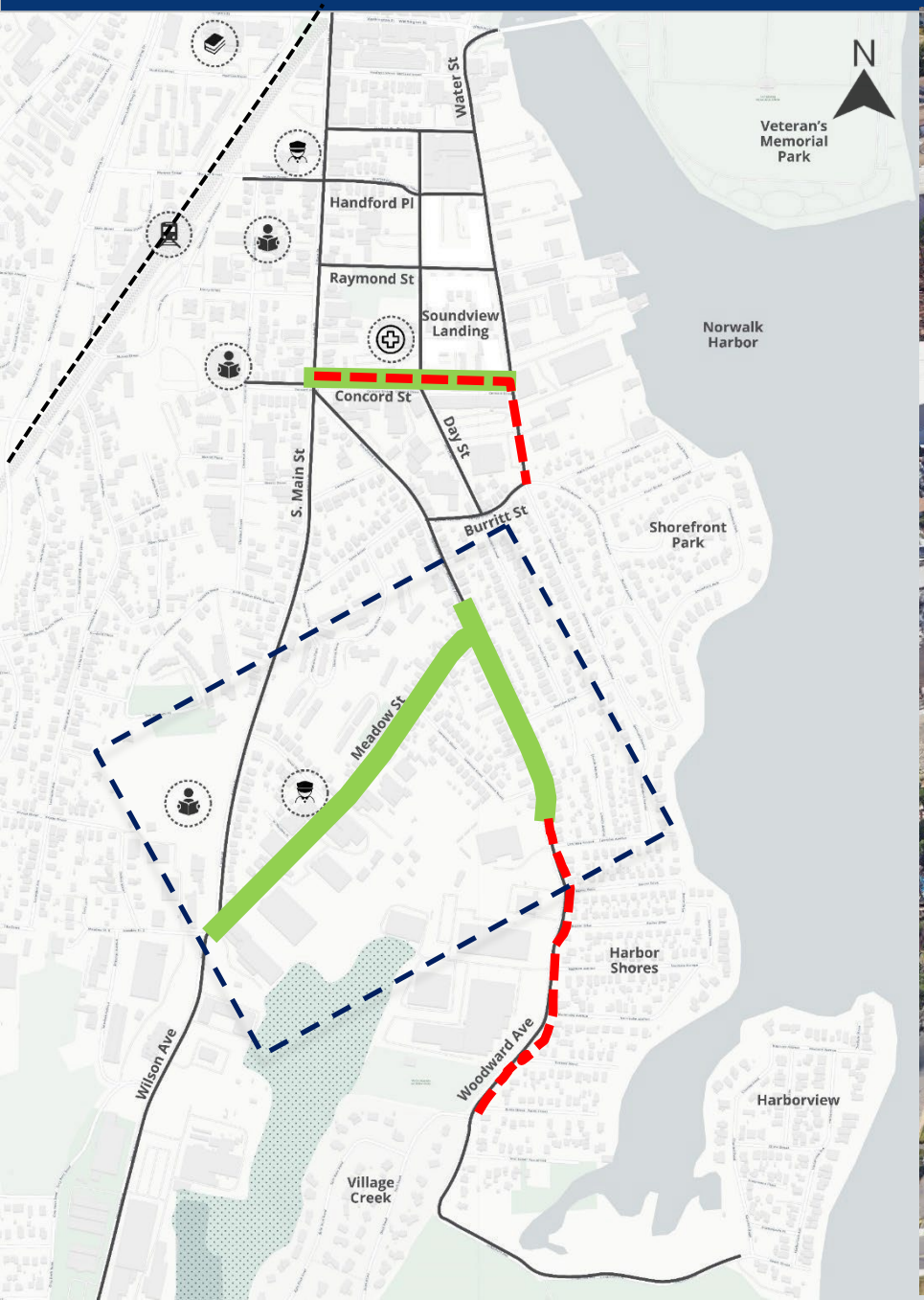
Resilient South Norwalk | Water Street and Concord Street



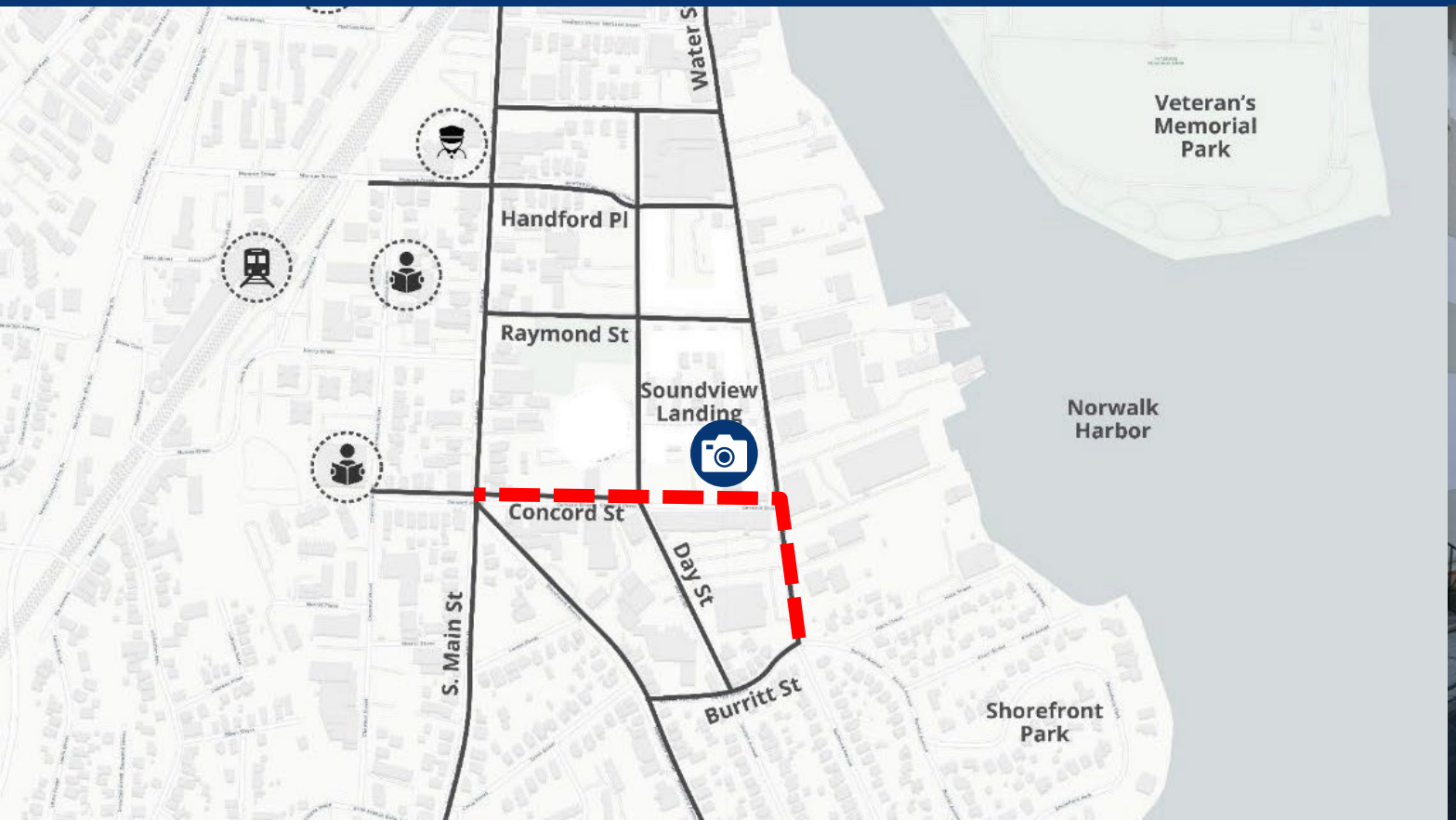
Resilient South Norwalk | Focus Area C: Lower Woodward Ave



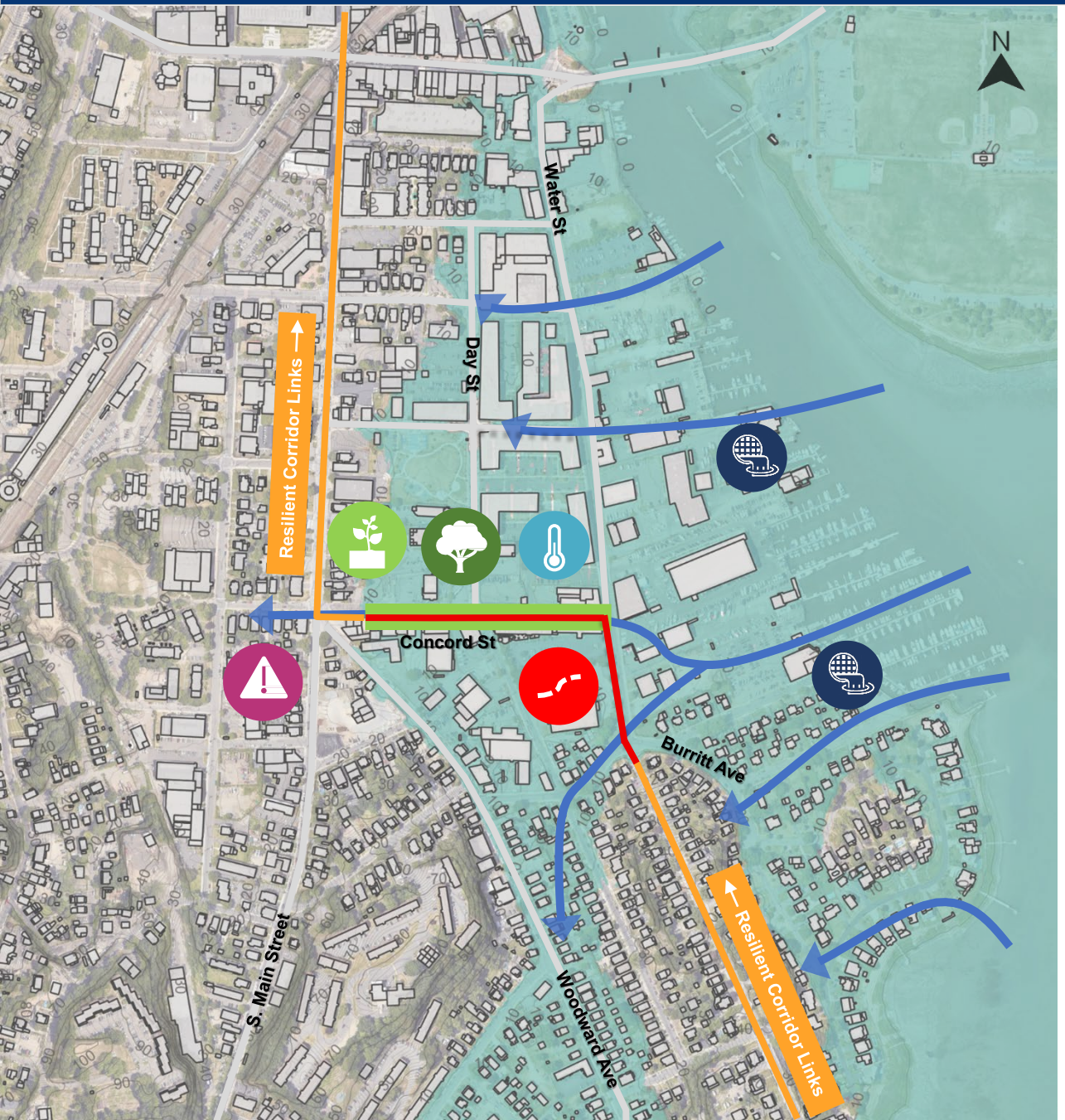
Resilient South Norwalk | Focus Area C: Meadow Street



Site-Specific Option: Water Street & Concord Street



Resilient South Norwalk | Focus Area A: Water Street & Concord Street



Flood to Elevation 10.88 *ft NAVD88*

1% Annual Storm (2050) – Elev.10.88 NAVD88
1% Annual Storm (Present) – Elev. 9.38 NAVD88

Flood Pathways

MHHW (2050) – Elev.4.58
MHHW (Present) – Elev. 3.48

Signage for Awareness

Implemented throughout area

Update Stormwater System

At undersized pipe locations

Cool Roofs and Cool Pavement Colors

Considered for all paved surfaces

Incorporate Green Infrastructure

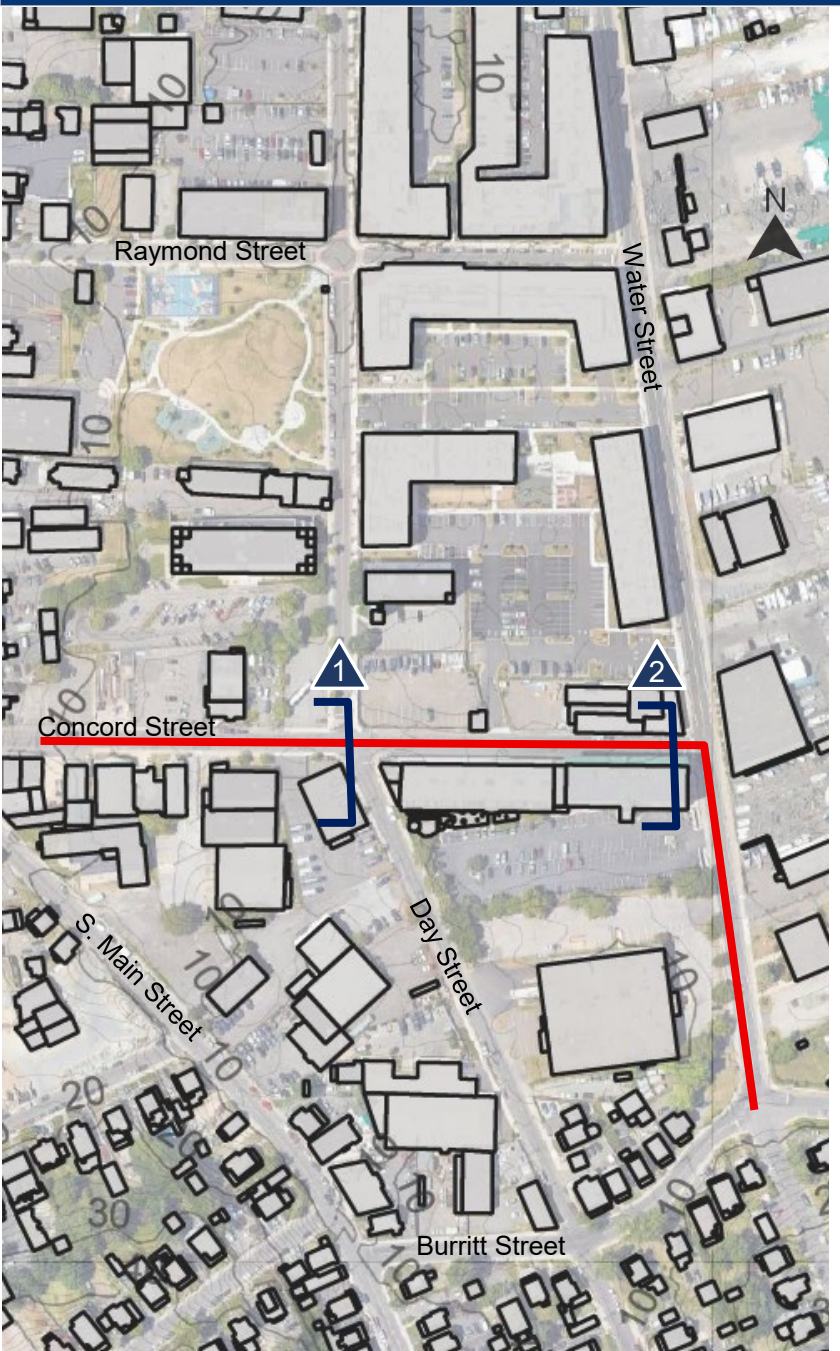
Second Line of Defense for flooding

Expand Tree Canopy & Parks

Tree canopy creates cool walkways

Elevate Roadway

Focused on Concord & Water Street



Flood to Elevation 10.88 *ft NAVD88*

1% Annual Storm (2050) – Elev.10.88 NAVD88
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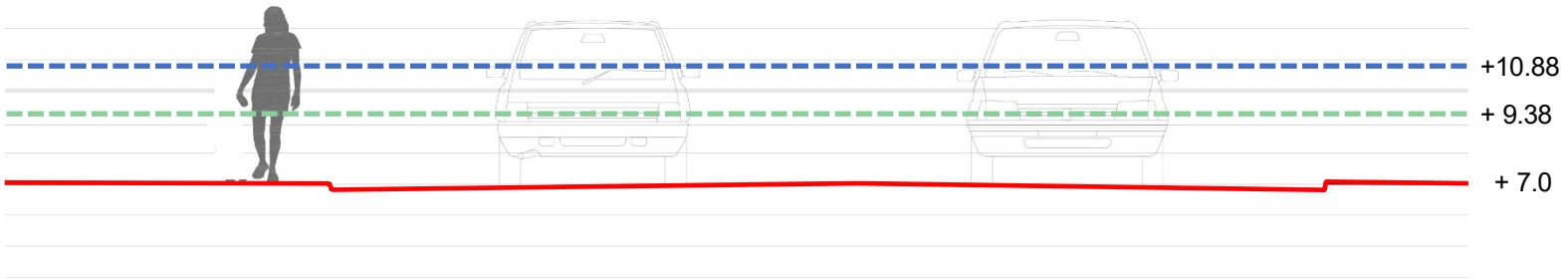
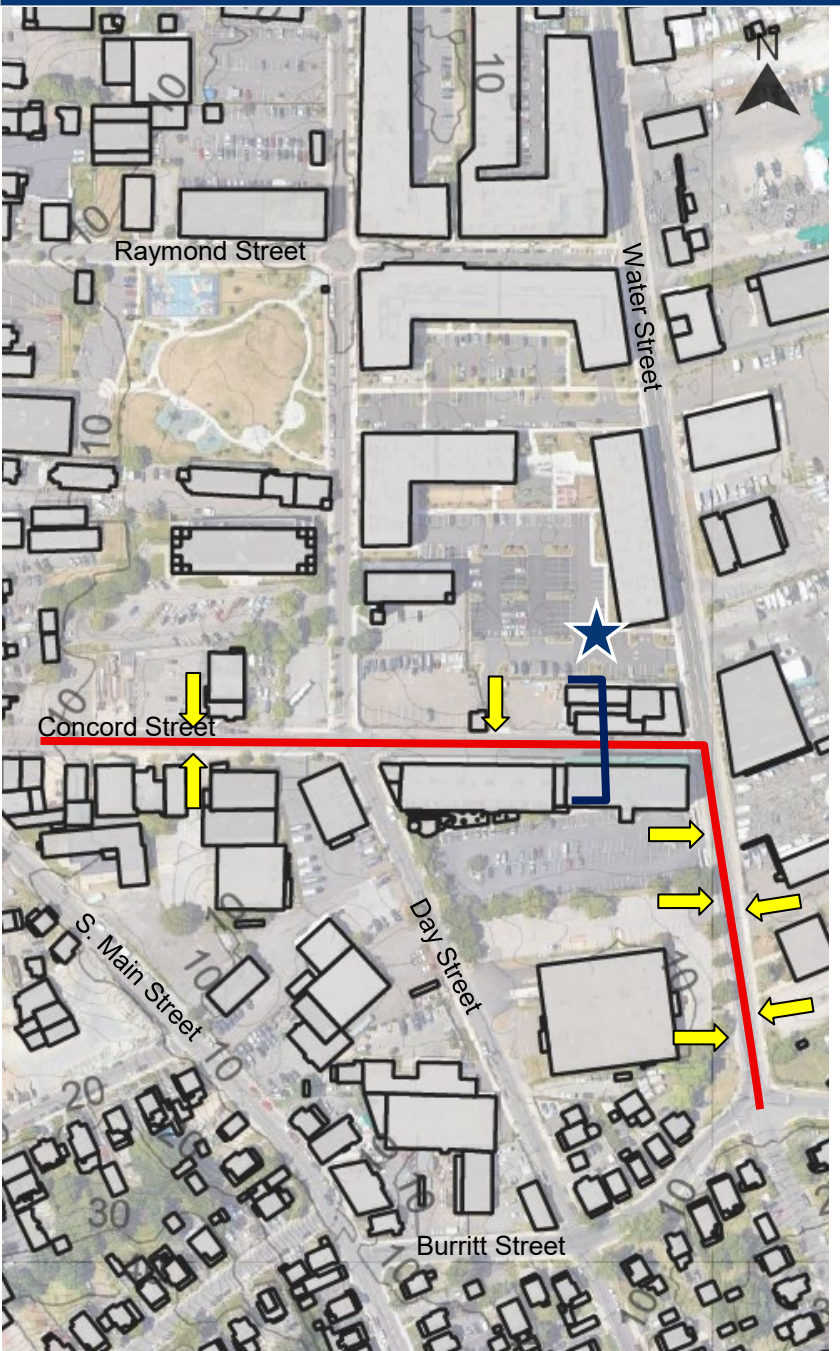
1 Water St & Concord St

Flood mitigation for 1% annual storm requires a minimum of 4’ additional elevation



2 Day St & Concord St

Flood mitigation for 1% annual storm requires a minimum of 4’ additional elevation



Flood to Elevation 10.88 *ft NAVD88*

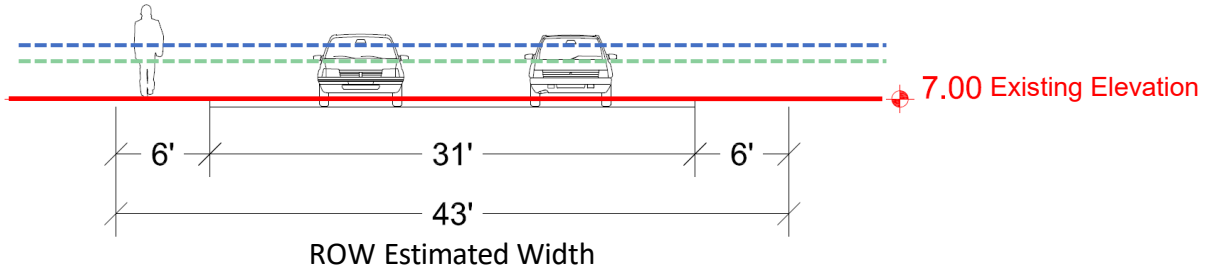
1% Annual Storm (2050) – Elev.10.88 NAVD88

1% Annual Storm (Present) – Elev. 9.38 NAVD88

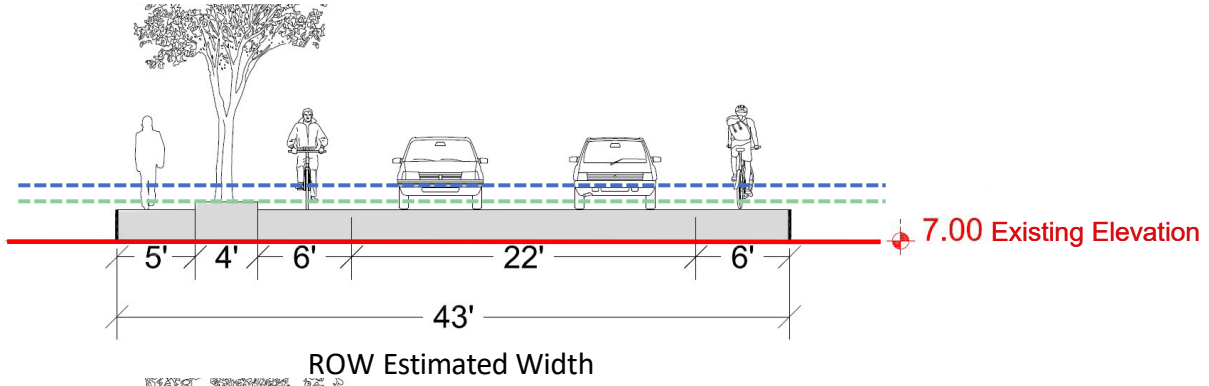
Concord Street Elevation Studies
Current Elevation at 7.00

Driveway Connections

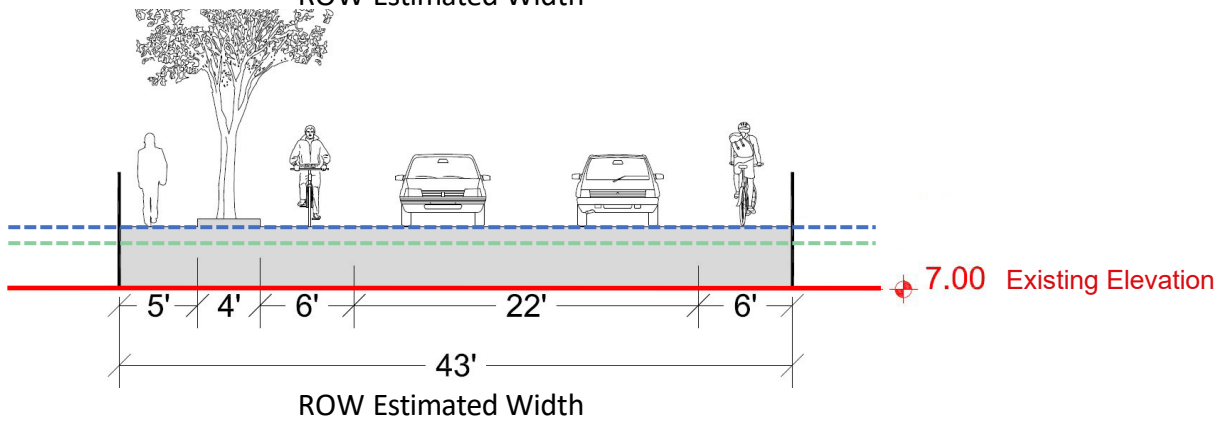
Raise +0’



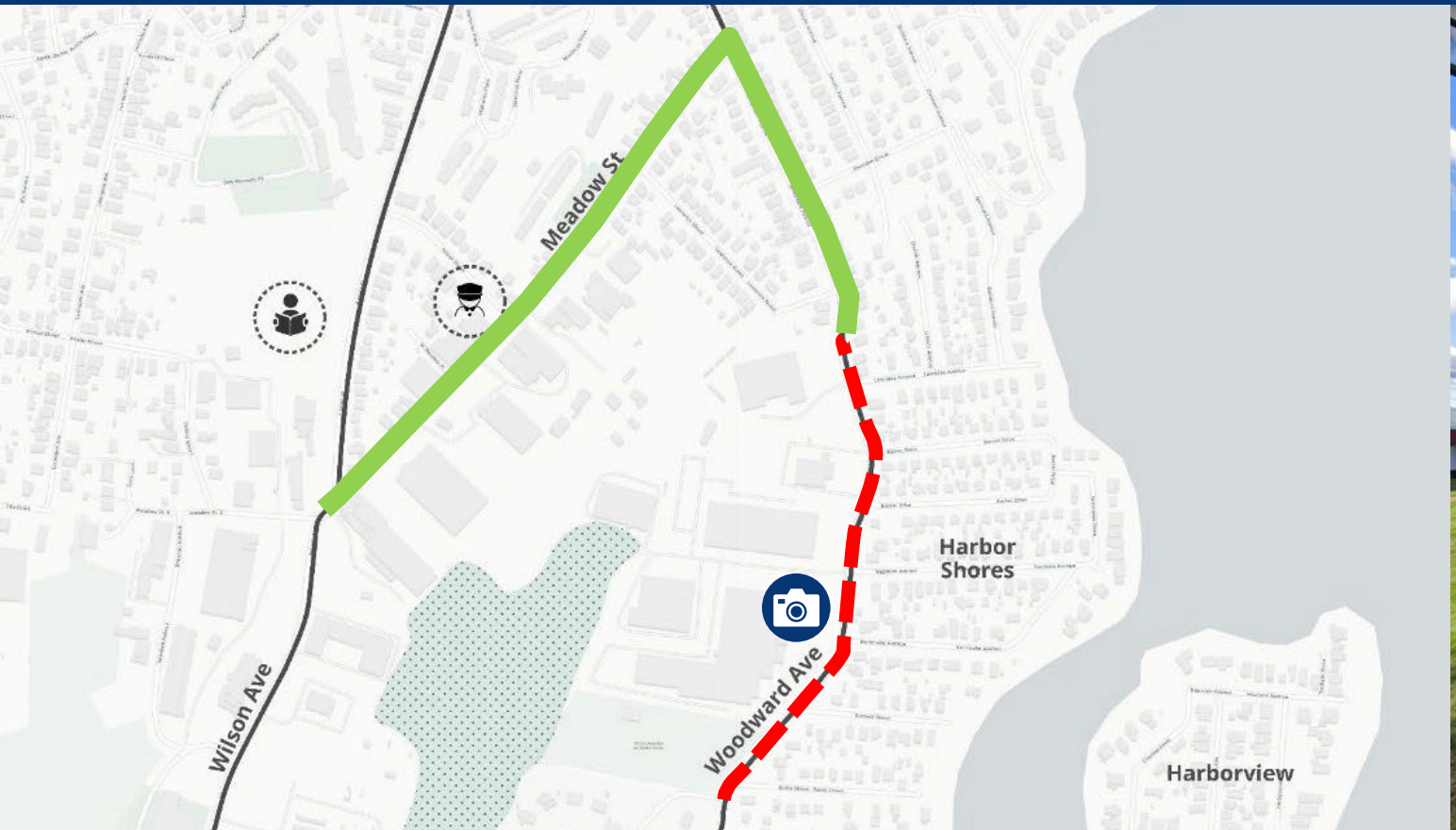
Raise +2’



Raise +4’



Site-Specific Option: Woodward Ave & Meadow St



Resilient South Norwalk | Focus Area B: Lower Woodward Ave

Flood to Elevation 10.88 *ft NAVD88*

Flood Pathways

1% Annual Storm (2050) – Elev.10.88 NAVD88
1% Annual Storm (Present) – Elev. 9.38 NAVD88
MHHW (2050) – Elev.4.58
MHHW (Present) – Elev. 3.48

Add Community Emergency Centers

Provide additional cooling crisis center

Cool Roofs and Cool Pavement Colors

Considered for all paved surfaces

Install Berms

Strategic berm along select areas of village creek

Incorporate Green Infrastructure

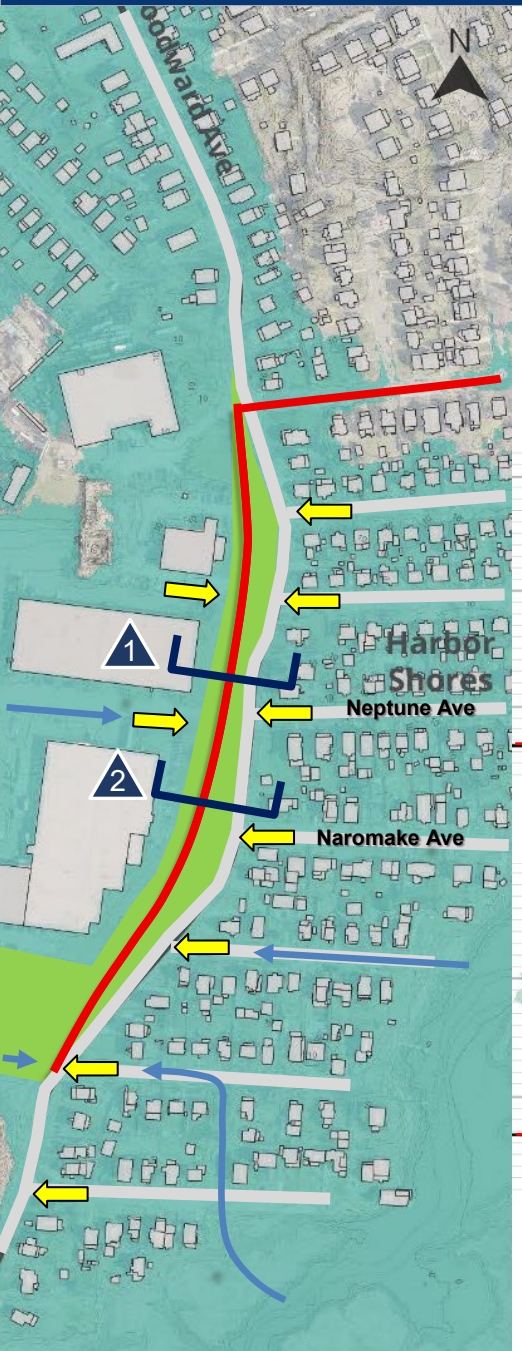
Into right of way and areas of re-grading

Expand Tree Canopy & Parks

Tree canopy creates cool walkways

Elevate Roadway

Focused on lower Woodward Ave



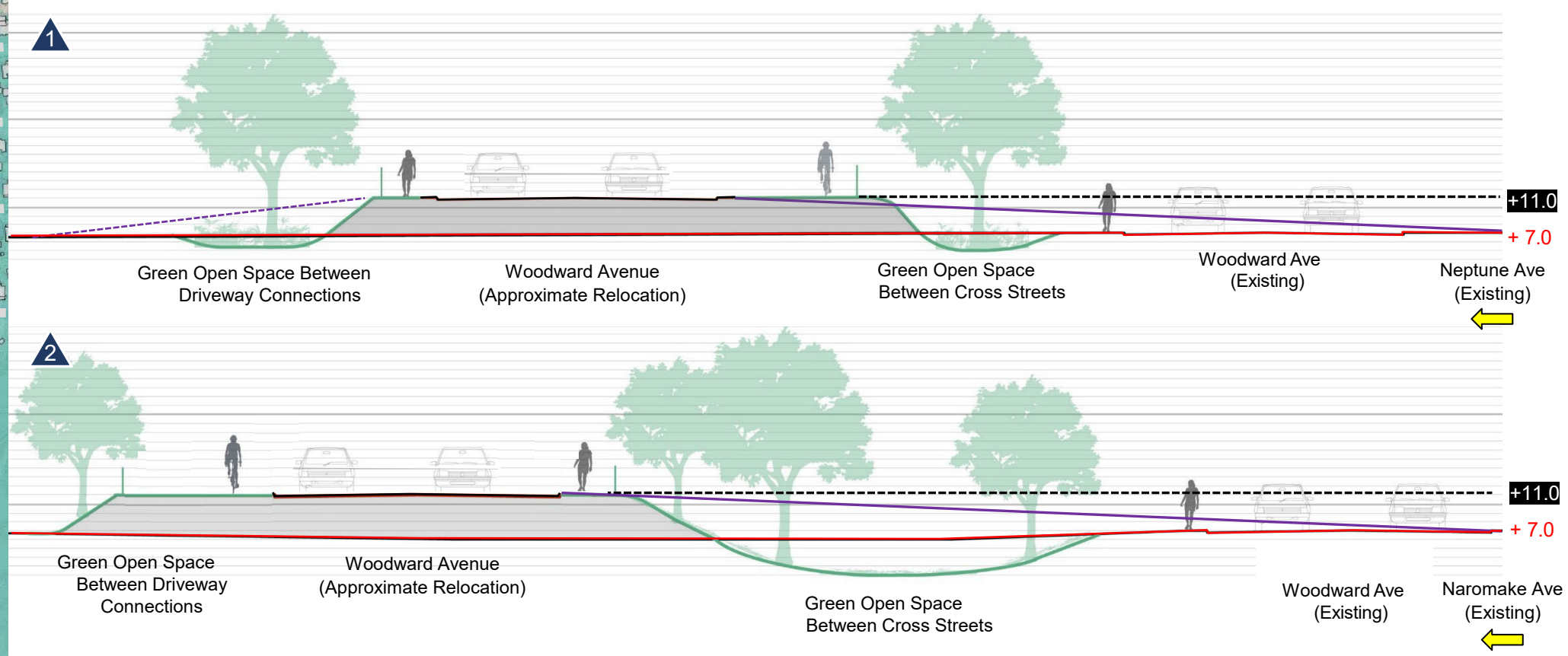
Flood to Elevation 10.88 *ft NAVD88*

1% Annual Storm (2050) – Elev.10.88 NAVD88
1% Annual Storm (Present) – Elev. 9.38 NAVD88

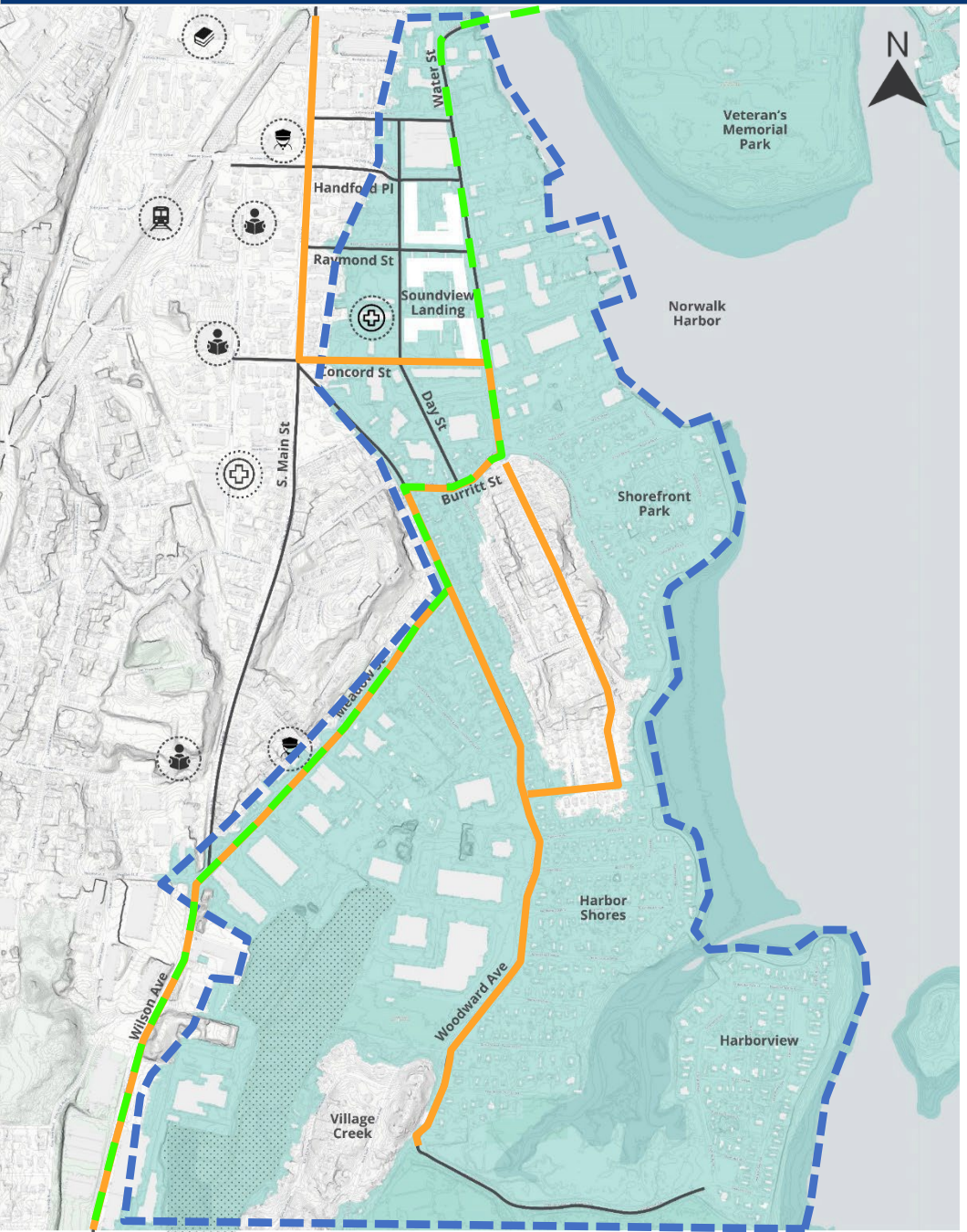
Proposed Road Elevation +11.0
Current Elevation + 7.0
Connecting Road
Neighborhood Road Connections

Woodward Ave & Neptune Ave

Flood mitigation for 1% annual storm requires a minimum of 4' additional elevation



Project-Wide Option: Resiliency Overlay

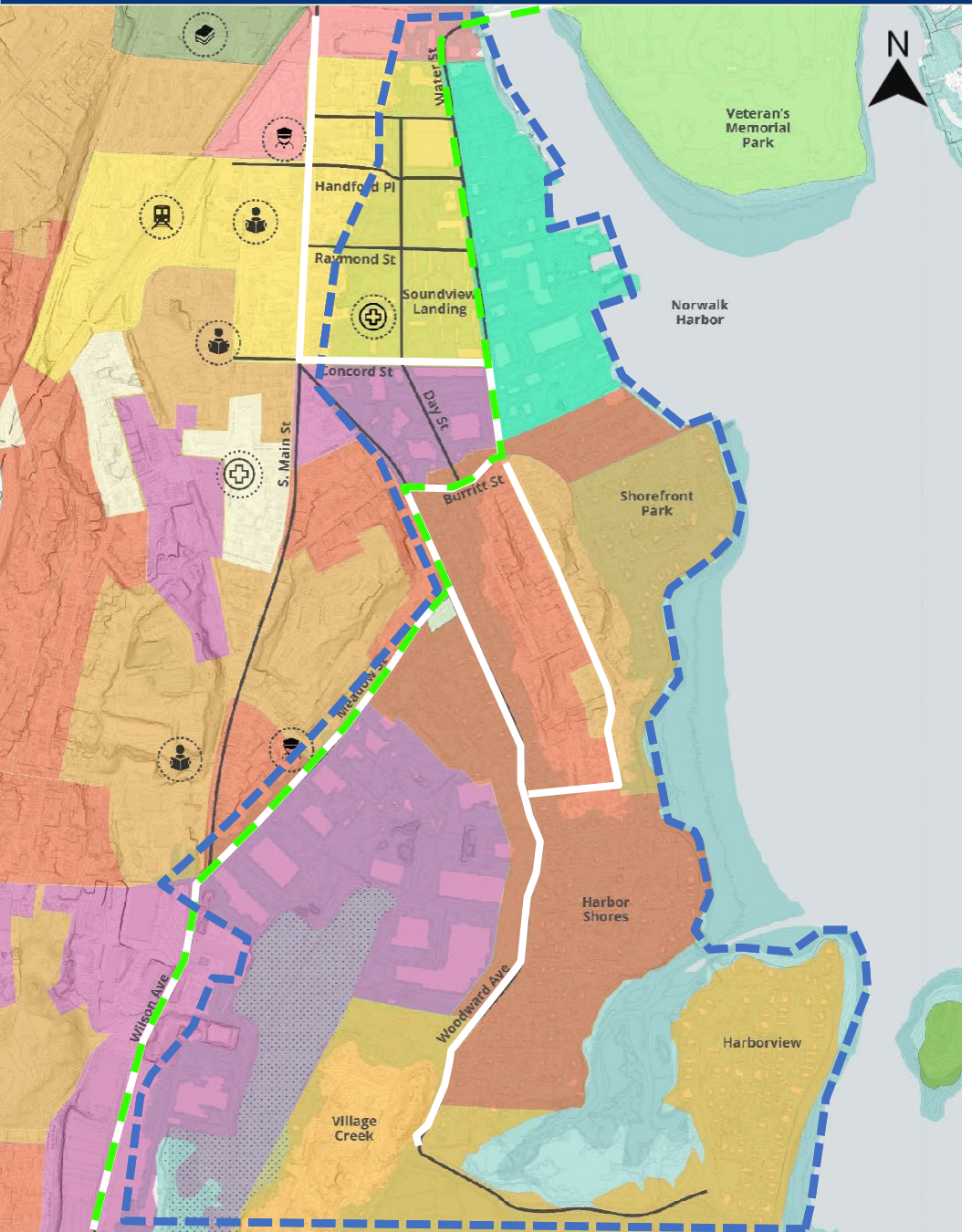


Resiliency
Adaptation Options

Develop Resilience Zoning Overlay & Design Guidelines
**Based on 100-Year Floodplain & 2050 Sea Level Rise*

Establish Officially Recognized Resilient Corridors for development long-term

CT-136 State Road



Resiliency
Adaptation Options

Develop Resilience Zoning Overlay & Design Guidelines

Establish Officially Recognized Resilient Corridors for development long-term

CT-136 State Road

Impacted Building Zones For Project Area

- Residence B
- Residence C
- Residence D
- Industrial 2
- Marine Commercial
- SoNo Station Design District
- Neighborhood Business
- Washington Street Design District

Discussion

Participating in Zoom

Option 1:

- **Raise your Zoom hand**
- **To raise your hand, click “Participants” then “Raise hand”**
- **On a telephone, press *9 to raise your hand**
- **A member of the Project Team will say your name and ask you to unmute so that you can state your question or comment**

Option 2:

- **Use the Zoom Q&A feature**
- **Type your questions in at any point during the meeting**

After you speak, a member of the Project Team will lower your hand and you will once again be muted to allow the team to respond and to allow as many attendees as possible the opportunity to participate.

Moving Forward

- Incorporate public feedback
- Hone in on focus areas and develop targeted recommendations and solutions
- Continue to coordinate with City departments and produce Resilient South Norwalk Report to help create a roadmap for future developments