

Climate & Change:
Where Warren Meets the Water,
addresses the SNEP Five Year Strategic Plan:
Supporting Sustainable Communities. to
establish and sustain “policies to foster
social/climate equity and eliminate
disproportionate harmful impacts to
Environmental Justice (EJ) and underserved
communities in the region.”

This project will establish robust
community participation as a cornerstone
of future climate adaptation.





SNEP SOAR SUMMIT

BUILDING STRATEGIES TO MOVE FROM CLIMATE ANXIETY TO ACTION

WARREN HEZ COLLABORATIVE

Contact Information

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WARREN
HEZ
HEALTH EQUITY ZONE

Bristol HEZ & Warren HEZ Project Coordinator

Elsa Schloemer

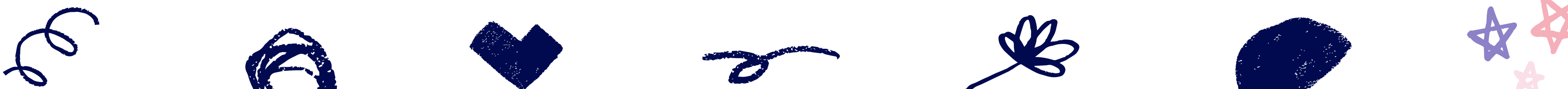
Eschloemer@ebcap.org



SNEP/SOAR Funding for program period July 2024-June 2025

The Town has worked to involve residents in its extensive planning efforts for its Market to Metacom plan with mixed success. Resident understanding of the plan remains uneven, and the majority see themselves as outside of the planning process. Anxiety, the lack of opportunity to take action in the face of this upheaval to their lives, the lack of personal resources and other factors all contribute to residents' sense of disempowerment.

Building on previous resident engagement, this proposal will support outreach, education, empowerment and building more opportunities for involvement of the Market Street neighborhood.





HEZs are part
of the RIDOH
Health Equity
Initiative, our
backbone agency
is East Bay
Community Action
Program (EBCAP)

14 Health Equity Zones in Rhode Island



Health Equity Zones (HEZ), an initiative of the Rhode Island Department of Health (RIDOH), serving Rhode Island's most vulnerable residents by utilizing a unique, community-driven approach to improving the overall health and resilience of communities throughout the state.

East Bay Community Action Program



EBCAP is a Federally Qualified Health Center and Certified Mental Health Center, and as the largest Community Action agency in Rhode Island, supports over 31,000 low-to-moderate income residents in the state's East Bay region. For over 50 years, EBCAP has evolved to meet the changing needs of residents.



Warren Health Equity Zone (HEZ)

The Warren HEZ was founded in 2021, and focuses on Food Systems; Housing Affordability; and Safety around Mobility, Emergency Response, & Preparation for Climate Change

Unless the barriers to adaptation are removed, places like Warren, RI will become less equitable as a result of climate change.

By 2100, sea level rise is projected to make Warren, RI's Market St neighborhood (census tract 305). The neighborhood is at high risk for 100-year storm flooding, which, by 2035, would put the area under between 5 and 15 feet of water. Sea levels are predicted to rise by 1.75 feet by 2035, 3 feet by 2050, 5 feet by 2070 and 9 feet by 2100.


The town has proposed "Market to Metacom" (M2M) a plan to address flood risk, which includes the a managed retreat: the purposeful, coordinated movement of people and buildings away from risks.


Not only is the Market Street area vulnerable to rising tides, it is home to many of the town's most vulnerable residents. A formerly industrialized area, it holds many (67%) low-income households, 13% of whose adults lack a high school education and who are above the 90th percentile of households that are cost-burdened by housing expenses.



Anxiety- Practices, Pauses

Getting worried about stuff that is really happening is not weird, it's information that something may need to change in your situation, and finding your path to changing it can help with the anxiety. So can sharing it.

- 
- Do “anxiety level” check: this is just a way to let yourself and the people you're with know how you're doing. Show on your own height how high your anxiety is right now: knee deep? Waist deep? Neck deep? What's our overall anxiety as a group today?
 - Put one hand either on your chest or on your belly button. Close or unfocus your eyes, turn your back to the circle if you want. Take a breath in, and as you breathe out, make a low, deep humming or groaning sound. Try to both hear the sound in your ears, feel it in your hand, and feel it in your chest.
 - Close your eyes or stare into space, feel the chair under you. Breathe in the sounds of the people around you, even the ones you don't agree with or are frustrated with. Breathe out some gratitude for the air you just breathed in, for the ground under your feet, even for the heat of the sun and the power of the water. Breathe in the power of each other.



The present is
the time
when we get
to be the
change, even
if we don't
know exactly
what form
that will take.



Building a future vision that includes change

EXERCISE 1: WHAT WE SEE AND KNOW

“The environment” in Warren is houses and buildings, roads and streets and sidewalks, water in the rivers and inlets, raised and low-lying land, parks, trees, grass, marshes, seasons and weather.

With that in mind, what are some changes you’ve noticed in the environment in Warren in the past few years?

EXERCISE 2: STORYTELLING


Tell a story of living through environmental change, or other changes related to where and how we live—the time your house flooded, or the time someone in your family grew too frail to keep living at home safely.

Tell a story about the Warren that you love—an event or time that reveals the town at its best, a quality in the town that you would like to preserve and be part of.

EXERCISE 3: VISION

Brainstorm one change that would help Warren residents weather climate change and would also be good for residents in some other way.



Think especially about

- groups of people in who don’t have what they need right now
 - the kinds of relationships and boundaries you would like to have with your neighbors
 - stuff that would be necessary and enjoyable at the same time
- 



Safety & Climate Resilience Working Group

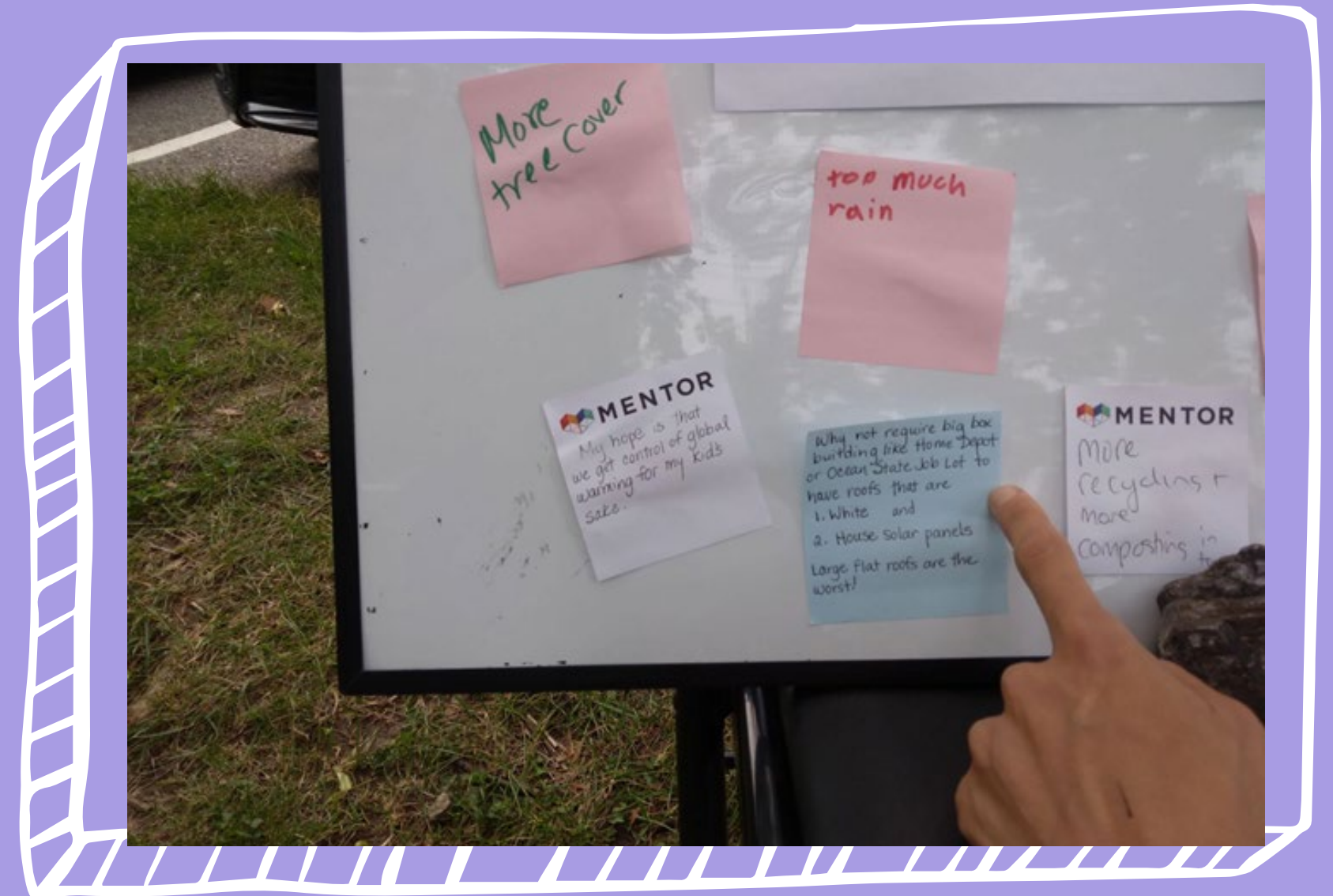
Resident-led, placed-based

- * Monthly meetings; responsive to group questions, concerns
 - * Skills and expertise share outs from members and other resources
 - * Practices and Pauses to manage anxiety
 - * Refreshments, Incentives, Children's Activities (diverse funding)
 - * Connection and collaboration with Town Planner
 - * Door Knocking in neighborhood, invitation to attend
- 
- 

Thank You!



east bay community
action program





Resilient Riverfront Renewal

Main Street, Westerly, RI

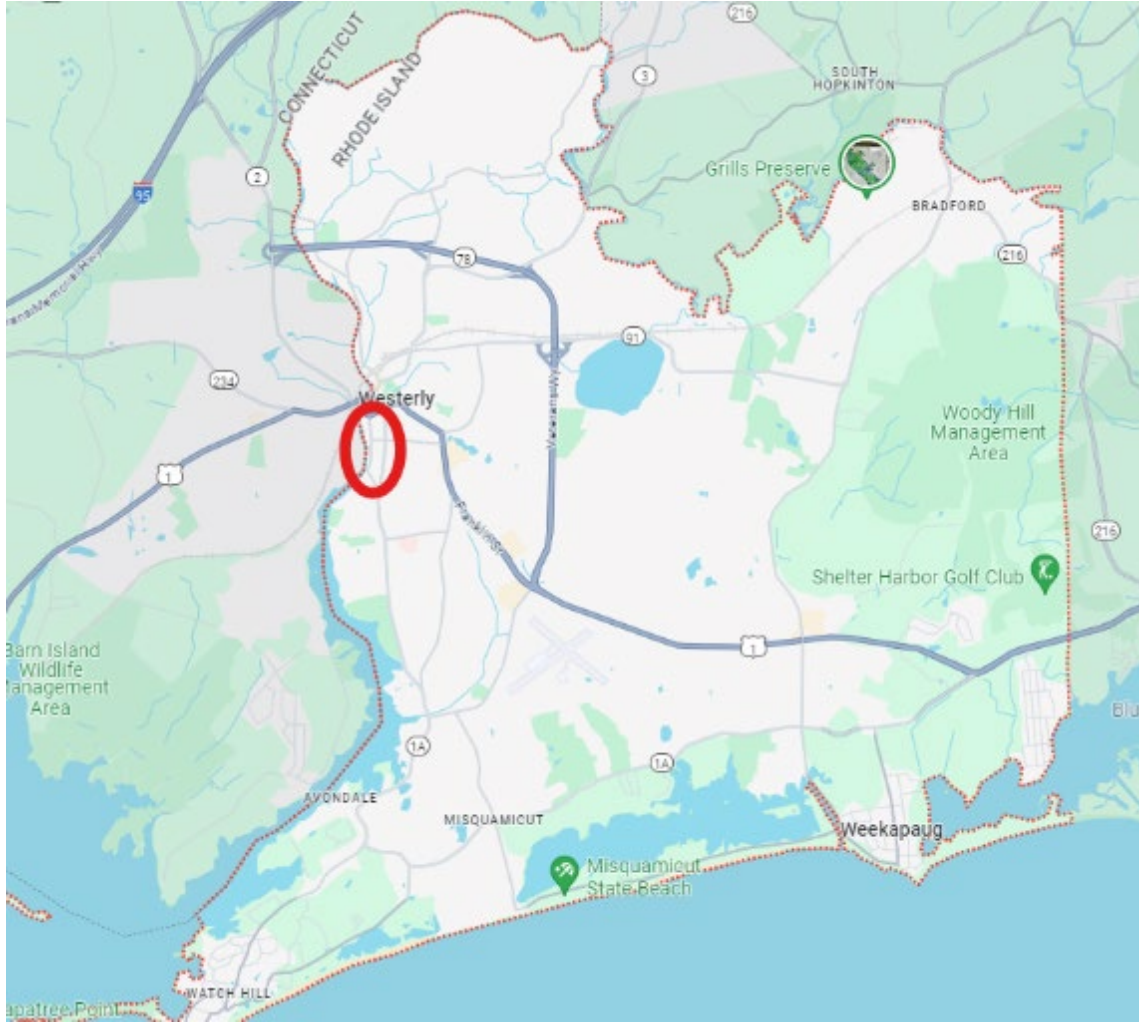
Project Overview

Resilient Riverfront Renewal Project



Project Area

Main Street, Westerly, RI



Pavement Everywhere!



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Resilient Riverfront Renewal - June 2024

Impervious Cover

The Main Street corridor is over 90% paved



LEGEND

- EXISTING IMPERVIOUS AREA
- EXISTING LANDSCAPE
- PROJECT AREA BOUNDARY
- PROPERTY BOUNDARY



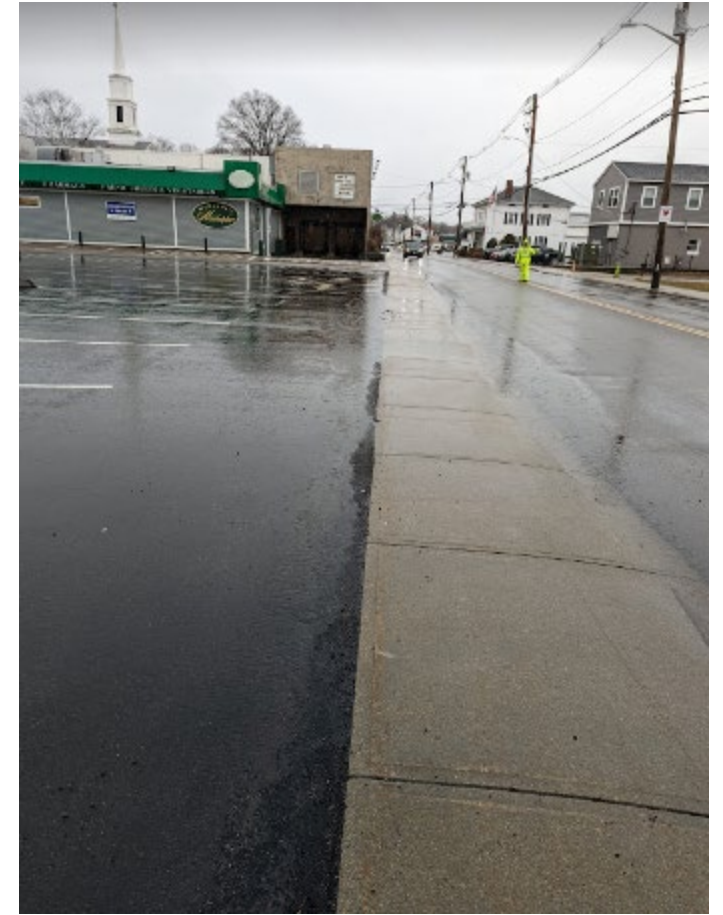
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Pluvial, Fluvial, and Coastal Flooding



Photo credit: Harold Hanka, The Westerly Sun



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O'NEILL**



Pluvial, Fluvial, and Coastal Flooding



Photo credit: Christine Corrigan, *The Westerly Sun*



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O'NEILL**

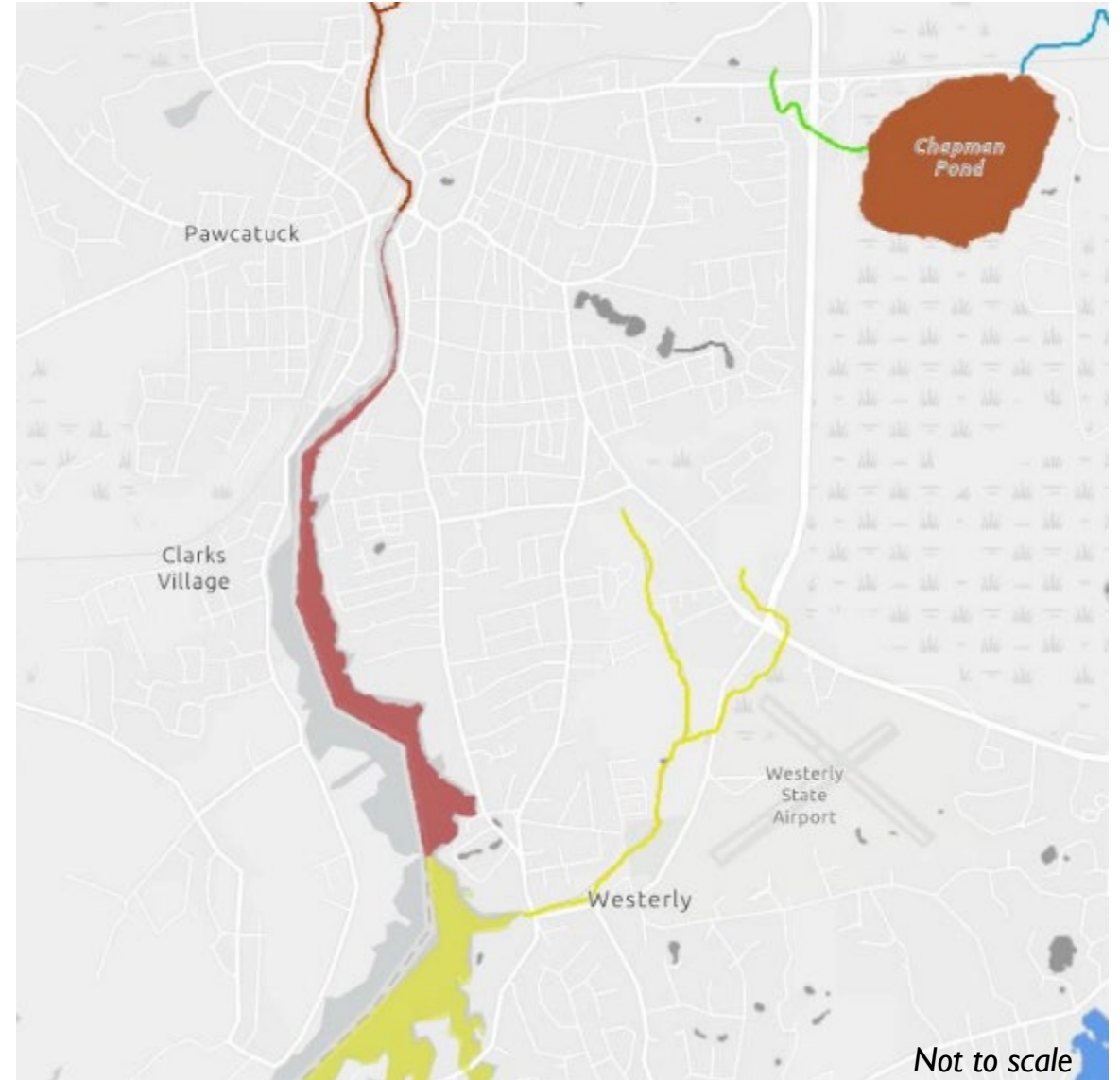
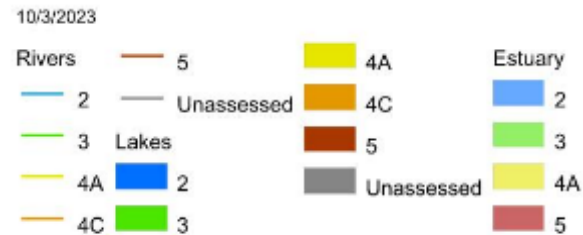


Pawcatuck River: An Impaired Waterbody

The Pawcatuck River just upstream and the estuarine portion of the river along Main Street are both considered Category 5: **Impaired and/or Threatened**

The area downstream from the Main Street waterfront is considered Category 4A: **Impaired and a TMDL has been developed**

The TMDL study for the river indicates that the primary pollutant in both areas is **fecal coliform** and there is **low dissolved oxygen**.



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Project Goals



Improve Water Quality

Evaluate opportunities for **green infrastructure**, reduce impervious surfaces, and create planted areas to infiltrate and treat stormwater



Establish a Green Corridor

Increase the **economic vitality** of Downtown Westerly and improve the quality of life for residents and visitors through the creation of a green corridor



Create a Sense of Place

Establish a **gateway experience** that celebrates the arrival to the Town of Westerly & Rhode Island



Improve Resilience

Improve conditions along the riverfront to **mitigate the risk** to the Main Street corridor from sea level rise and increased storm surge while creating opportunities for public access to the River.



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O'NEILL**



Project History

Spring 2021: Getting Community Buy-in for Stormwater Funding workshop.

Fall 2021: SNEP Technical Assistance grant – Stormwater Concepts for 107 Main St

Fall 2021: RIDOT provided funding for assistance to introduce green infrastructure (GI) to the corridor.

Winter 2022: Narragansett Bay Estuary Program provided funding for a Stormwater Master Plan.

Spring 2022: Town of Westerly provided funding for a Traffic Study.

Summer 2022: RI Infrastructure Bank awarded funding to design, permit and implement GI.

Fall 2022: SNEP awarded funding via the SWIG program to design, permit and implement GI.

Winter 2024: The Wood-Pawcatuck Wild and Scenic Rivers Stewardship Council awarded funding via a Wild and Scenic Community Grant to establish operation and maintenance plans for proposed green infrastructure on Main Street.

Spring 2024: SNEP awarded funding via a SOAR Grant for conducting stakeholder engagement and completing the design for the streetscape.

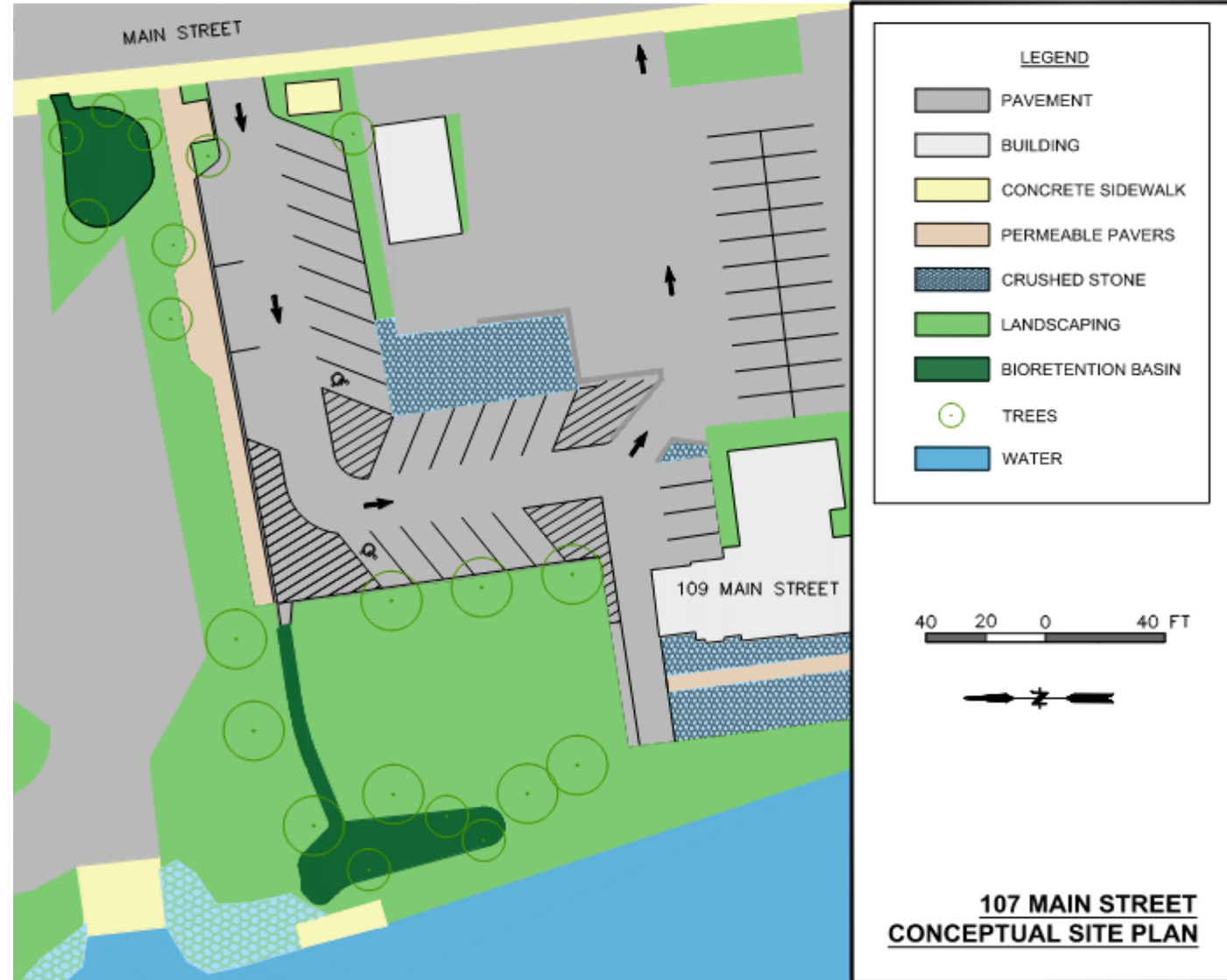
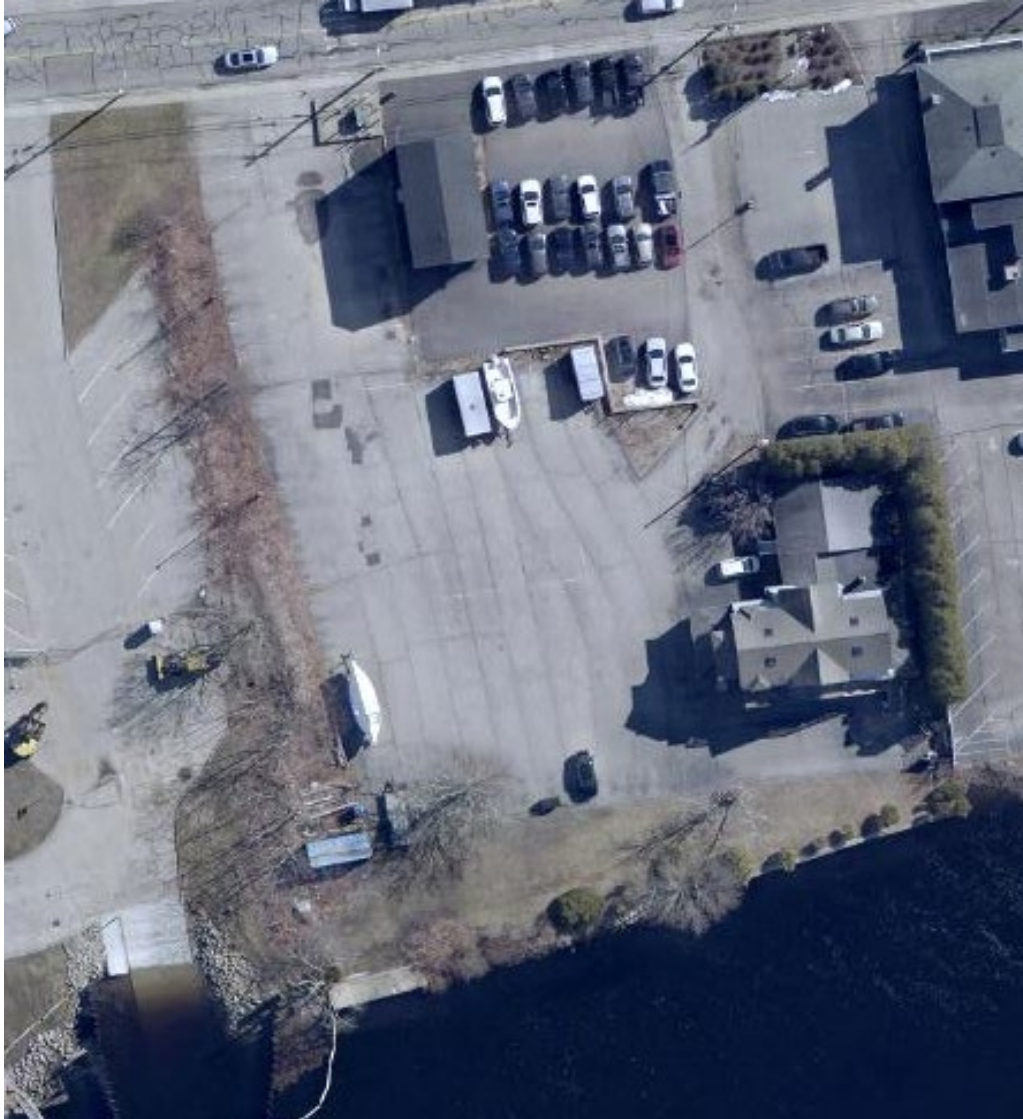


Project Sites

Resilient Riverfront Renewal Project



107 Main Street



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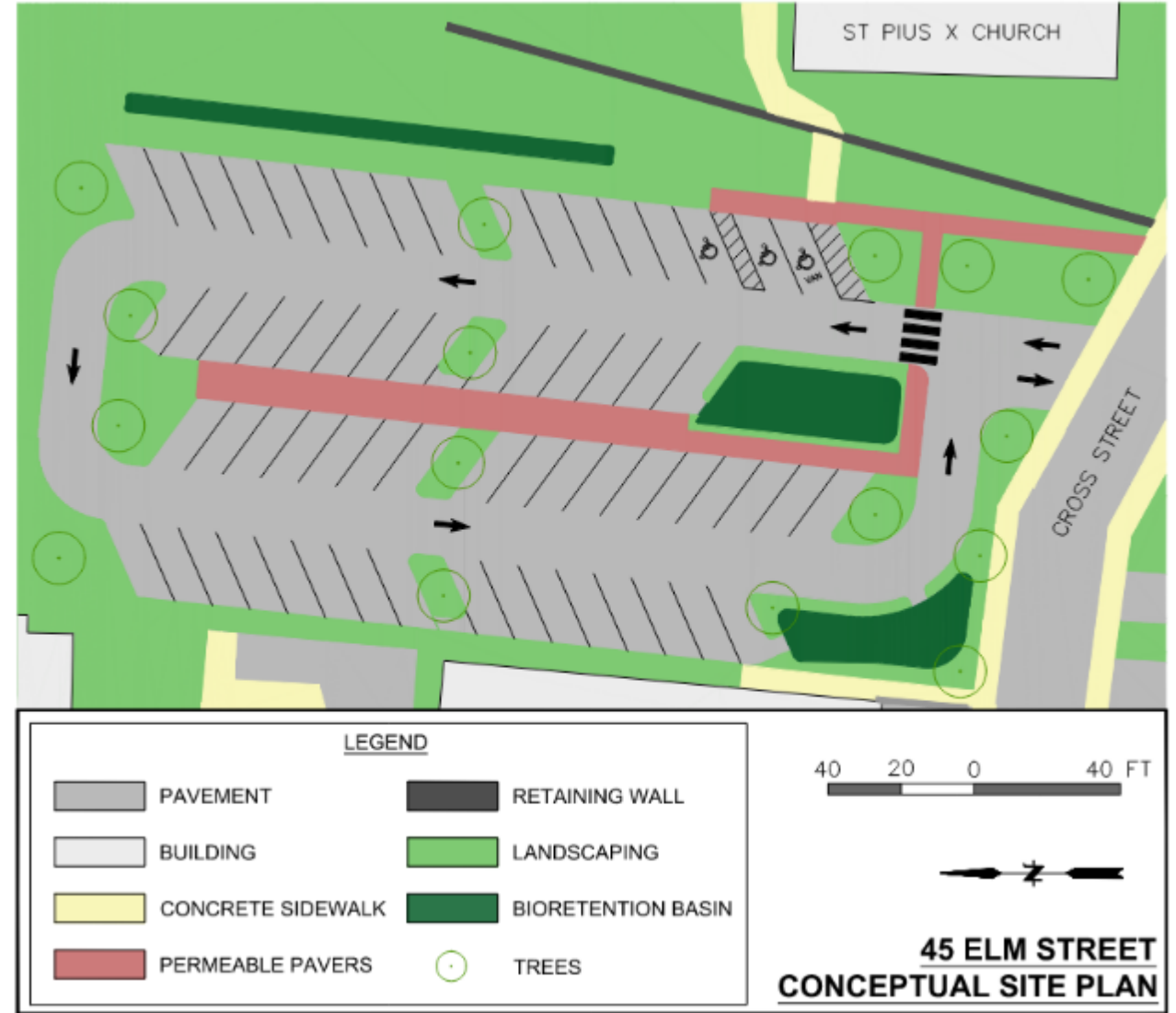


107 Main Street



Highlighted Co-Benefit of GI:
**Public Space and
Connections to the River**

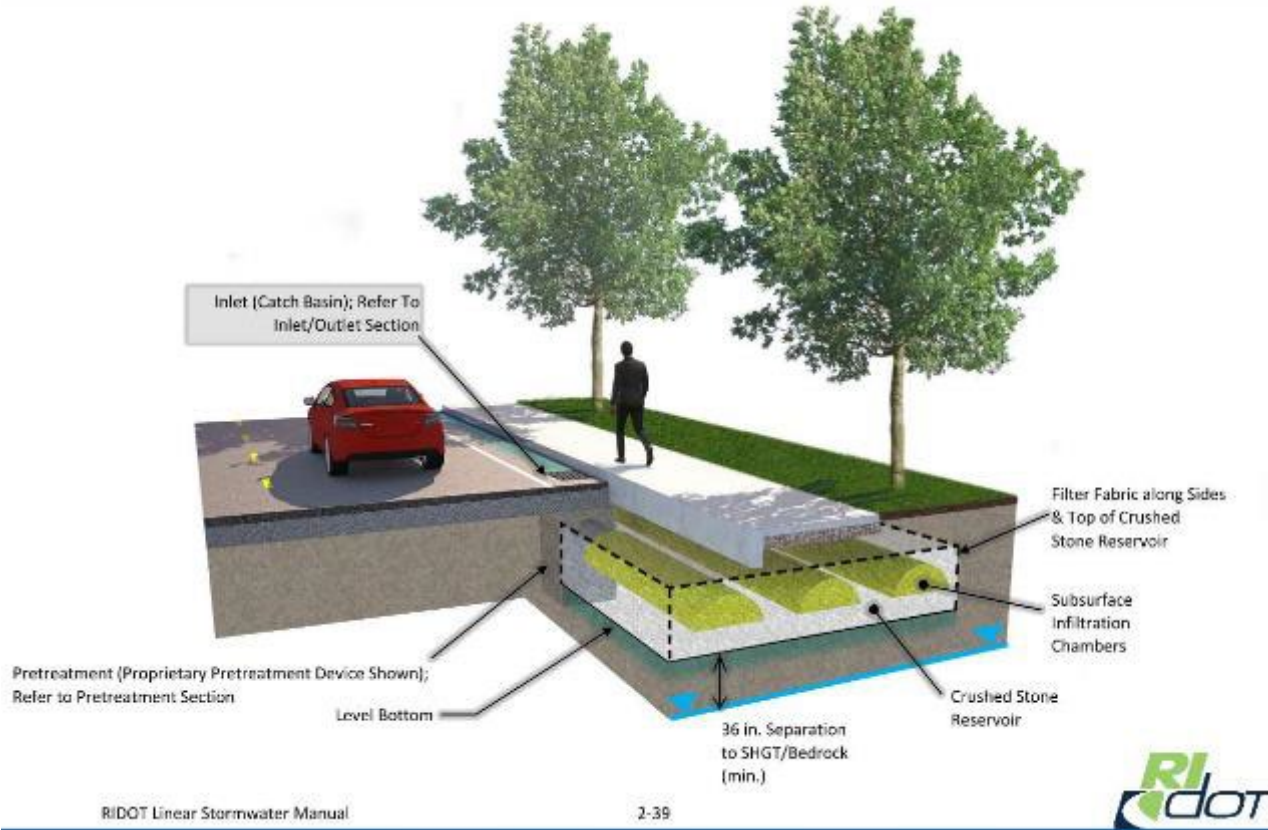
45 Elm Street



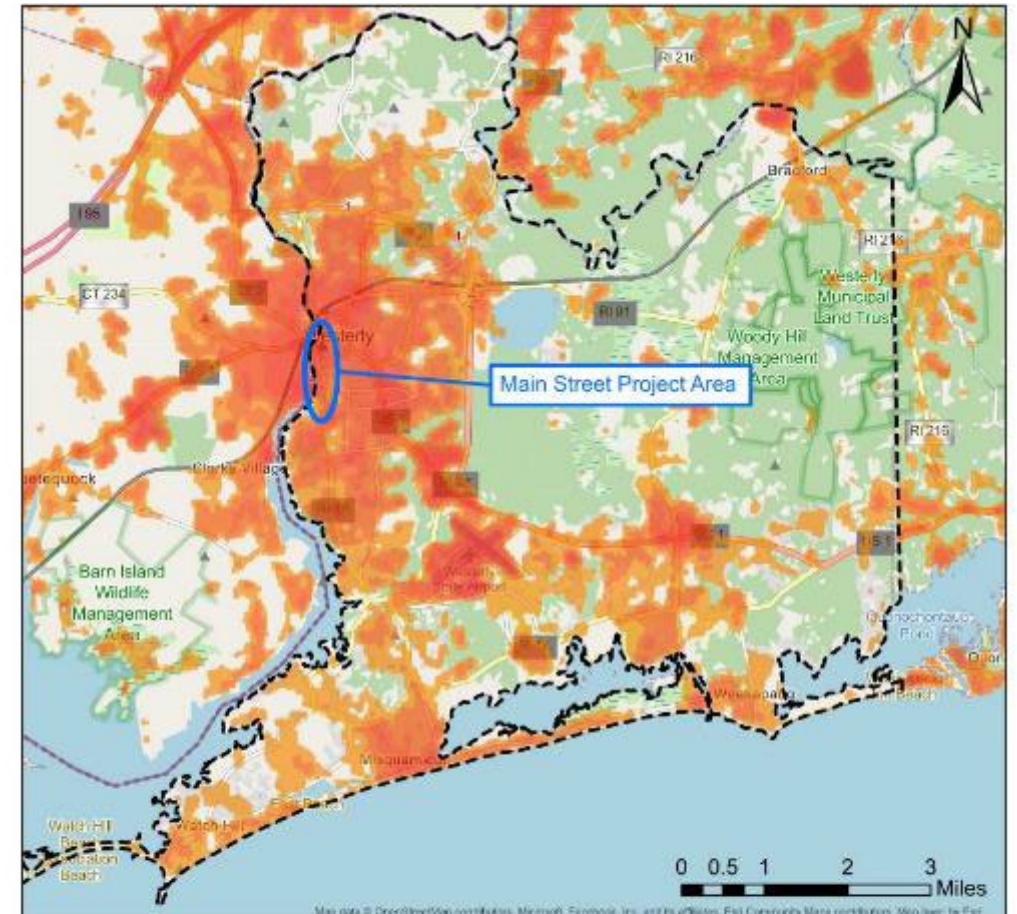
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45 Elm Street



**Highlighted Co-Benefit of GI:
Reducing Heat Island**



Relative Heat Severity

Resilient Riverfront Renewal
Main Street, Westerly, RI

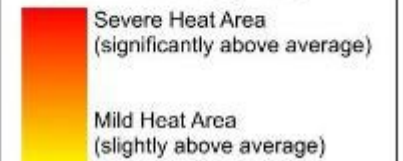
Data Source: The Relative Heat Severity Index for the summer of 2023 developed by The Trust for Public Land using ground level thermal readings from Landsat 8.



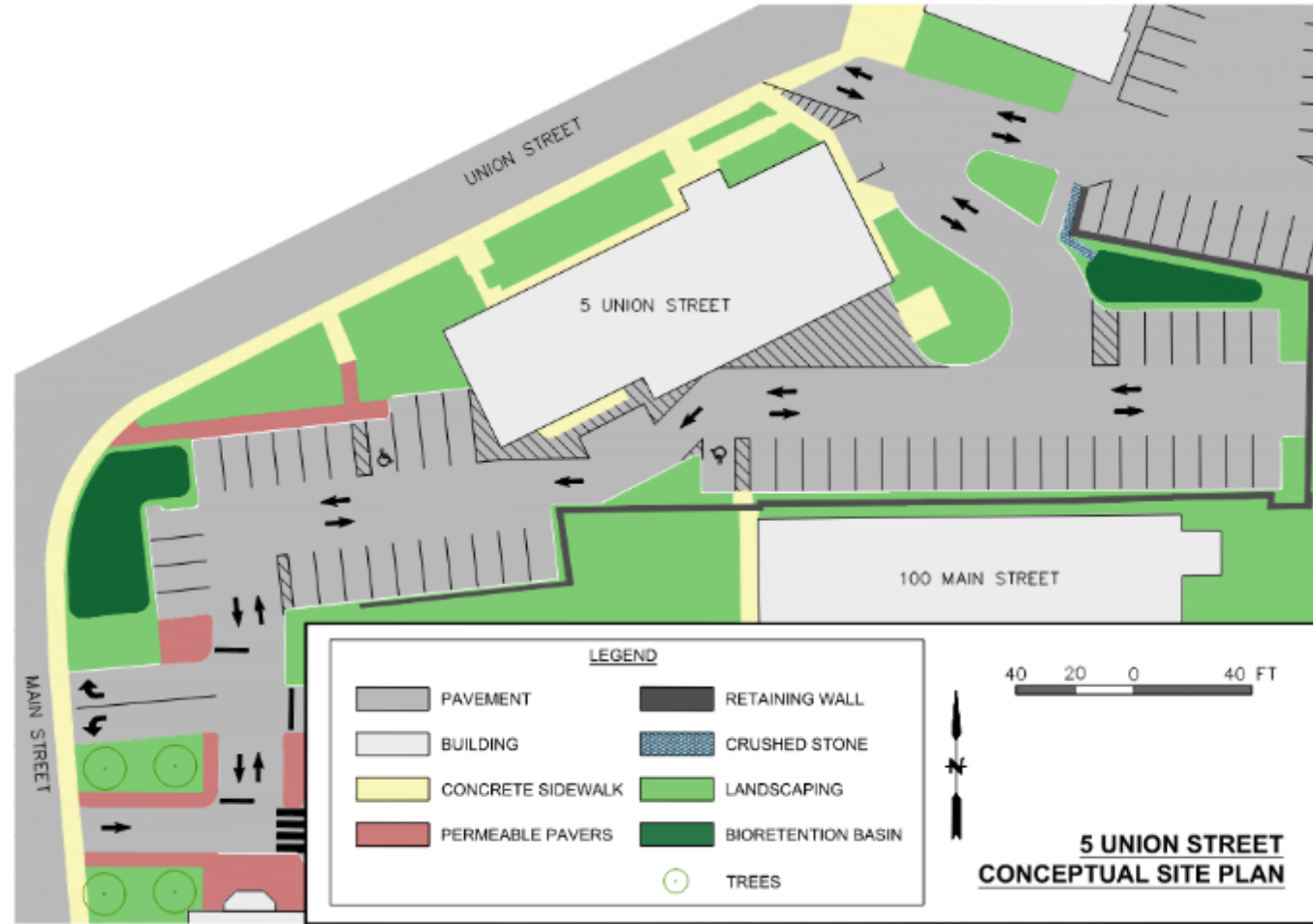
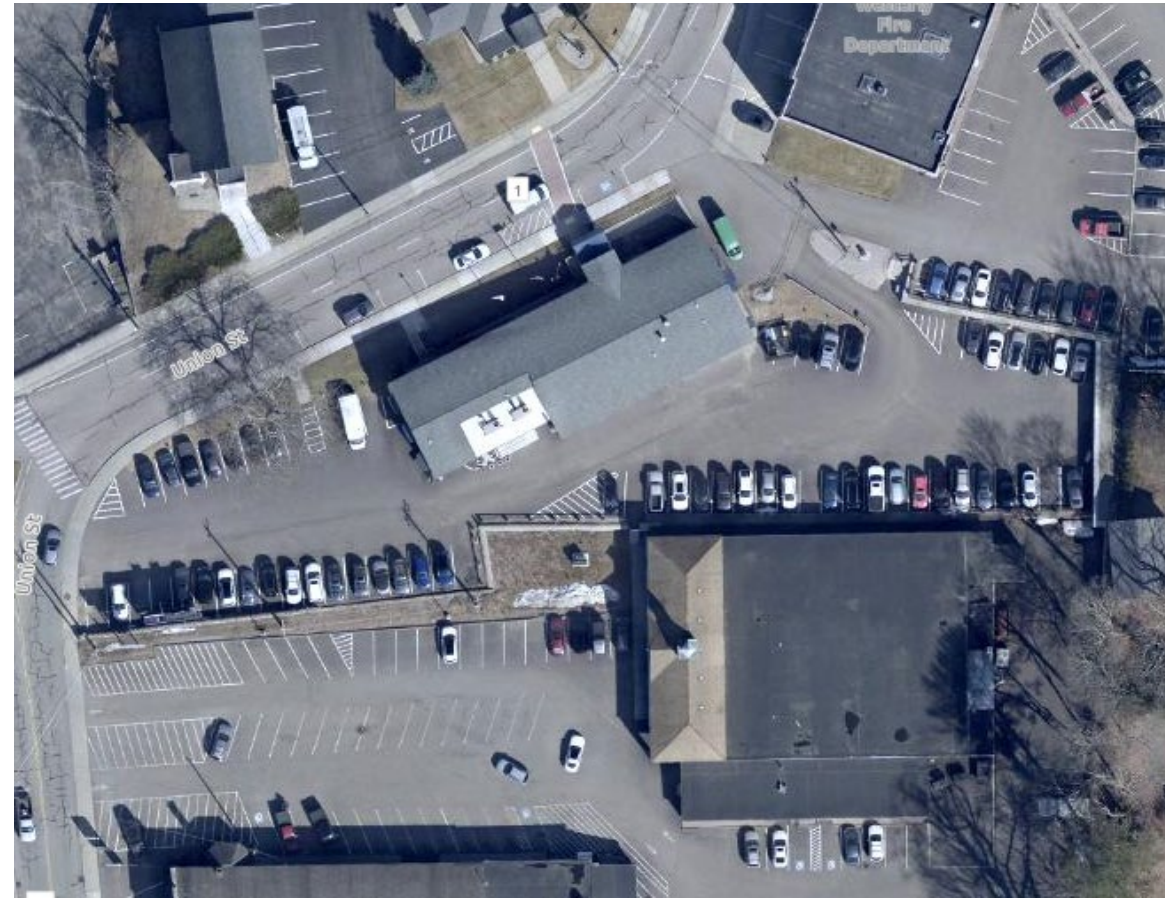
Legend

--- Westerly Town Boundary

Relative Heat Severity Index



5 Union Street



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5 Union Street

Eliminating
Curb Cuts



Highlighted Co-Benefit of GI:
Traffic Improvements

■ CURBED ■ CURB CUT ■ RAMP

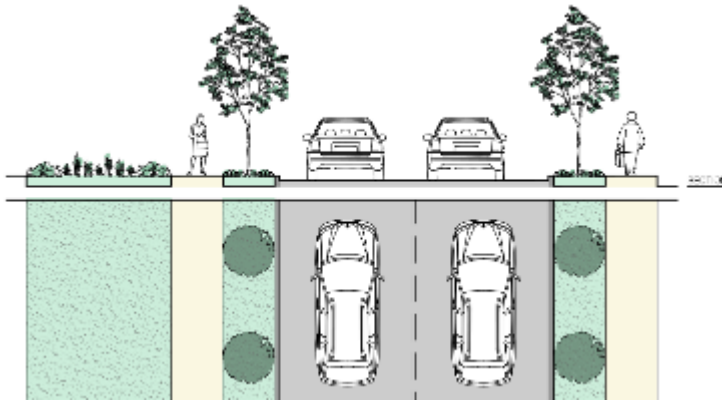


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Streetscape

Developing designs for the streetscape based on the Stormwater Master Plan concepts



Highlighted Co-Benefits of GI:
Pedestrian Safety
Placemaking



Public Engagement

Resilient Riverfront Renewal Project



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Public Events

Walking Tour

June 4, 2024



Community Workshops

June 11, 2024



River Day

June 15, 2024



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Resilient Riverfront Renewal - June 2024

Project Website

24/7 Public Access to:

- Project Information
- Educational Resources
- Past Presentations
- Upcoming Event Info
- Feedback Opportunities

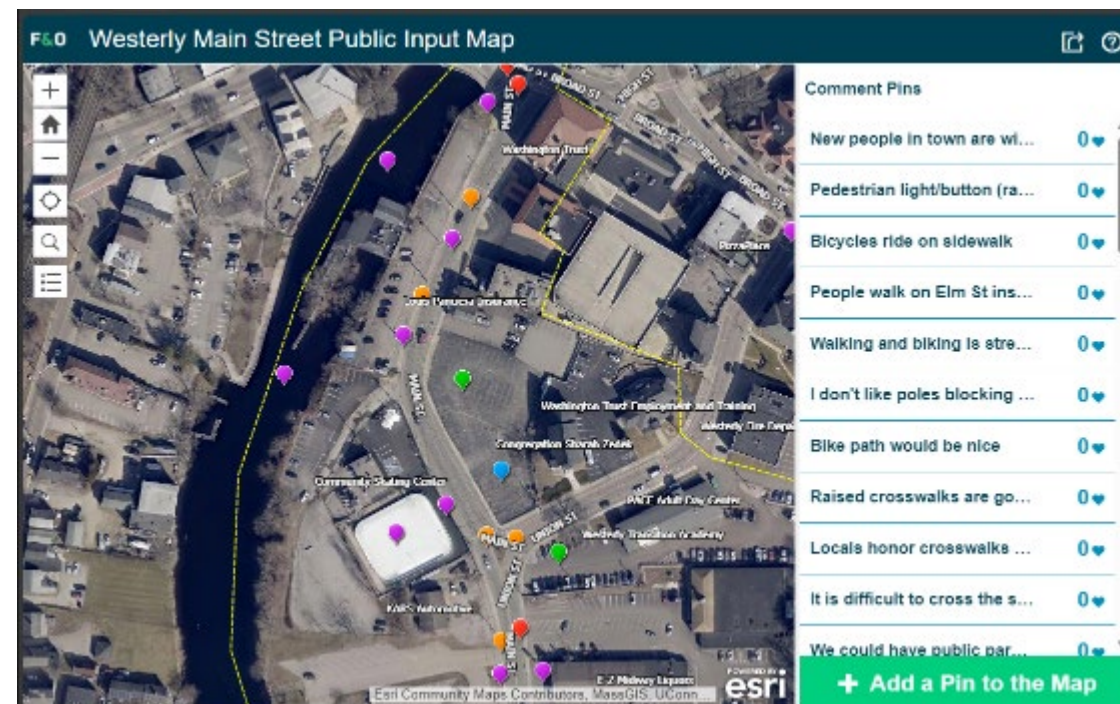
Public Input Map

- Users can add comments, explore comments made by others, and “heart” comments that they agree with

Scan the QR Code to Visit the Project Website!



<https://storymaps.arcgis.com/stories/89c64c24ae3146fdaeca8067b6c0e3f7>



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Stormwater Stewards - Coming Soon!

SRICD's Trained Maintenance Team

Created in response to:

- RIDOT concerns of GI not getting maintained at all or with untrained staff
- Landowner and Town concerns about not having capacity to keep up with maintenance
- Relative lack of trained landscape companies throughout the state

Training Structure:

- Job skills training and stepping-stone to employment for underserved populations
- Educational enrichment for retired or professional volunteers
- Based on national and regional certification models but adapted to local conditions
- Delivered in a variety of formats to best fit the different audiences

Goals of the Program:

- As projects throughout our District grow, this team can expand beyond Westerly
- The team's services will be offered to private and town landowners at cost to ensure long-term functionality of the green infrastructure

Project
Website



Photo Credit: National Green Infrastructure Certification Program



Photo Credit: City of Portland, OR



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O'NEILL**





Project Website

Thank You

Resilient Riverfront Renewal Project





MAYOR BRETT P. SMILEY
CITY OF PROVIDENCE

A Path to Equitable and Sustainable Stormwater and Sewer Management

EPA-SNEP 2024 Symposium

June 12, 2024





EQUITY IN SUSTAINABILITY

A collaborative initiative by the City of Providence and frontline, communities of color **of Providence** to bring a racial equity lens to the City's sustainability agenda.





CLIMATE RESILIENCY

STORMWATER

PVD TREE PLAN

WHAT YOU CAN DO

Climate Ready PVD

Building climate resilient communities now and for generations to come.



Stormwater + Sewer 2024 Timeline of Projects	January-March	April-June	July-September	October-December	2025	<ul style="list-style-type: none"> • Community Engagement • Analysis + Planning • City Operations • State Requirements
Harvard Bloomberg Collaboration Track January-June	<ul style="list-style-type: none"> • 6 month intensive stakeholder engagement training to inform strategies to make Providence climate ready. 					
Providence Wastewater Collection System Roadmap January-May	<ul style="list-style-type: none"> • Providence Wastewater Collection System Roadmap will prepare a Roadmap setting objective outcomes, estimating (internal & external) resource requirements and setting milestones for chosen initiatives. 					
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Roger Williams Park Stormwater Filter 2024-2025	<ul style="list-style-type: none"> • Municipal Resilience Program grants to Parks Department from RI Infrastructure Bank totaling \$695,000 • Providence's Parks Department will install a "treatment train" at the Roosevelt Lake outlet to reduce Phosphorous pollution and test innovative stormwater management methods to inform State agency policies. 					
SNEP SOAR Flooding Solutions Grant 2024-2025	<ul style="list-style-type: none"> • \$300k Understanding Urban Flooding & Finding Community Solutions • The City will engage a contractor to present a coordinated, prioritized approach to urban flood mitigation, through conducting urban flooding mapping analysis, reviewing recent studies on flooding, and coordinating a series of neighborhood meetings. 					
Providence Hurricane Barrier Repairs- ARPA funded Summer 2024	<ul style="list-style-type: none"> • \$1.5 million of repairs made to the Allens Ave sewer gates • \$1.5 million of repairs to be made in summer 2024 to the Fox Point gates 					
FY24 Capital Improvement Plan 2024-2025	<ul style="list-style-type: none"> • Received passage in early January • CIP includes \$35 million per year for sewers and storm water management • \$3M India Point Park sea wall repairs beginning in FY2026 					
DPW Stormwater Management Projects 2024-2025	<ul style="list-style-type: none"> • Hydrologic and hydraulic study of Pleasant Valley Parkway (Project lead: Providence DPW)- \$112,700 • Dredging of Pleasant Valley Parkway stream- \$12,000 • FY24 overtime costs associated with flood mitigation and stormwater management work- \$21,608 • Sewer Clearing and Assessment- \$1,300,000 • Illicit Discharge Detection and Elimination-sewer system and follow up to remove- \$160,000 					

LOCAL CLIMATE CHANGE IMPACTS

More intense storms and more high heat days



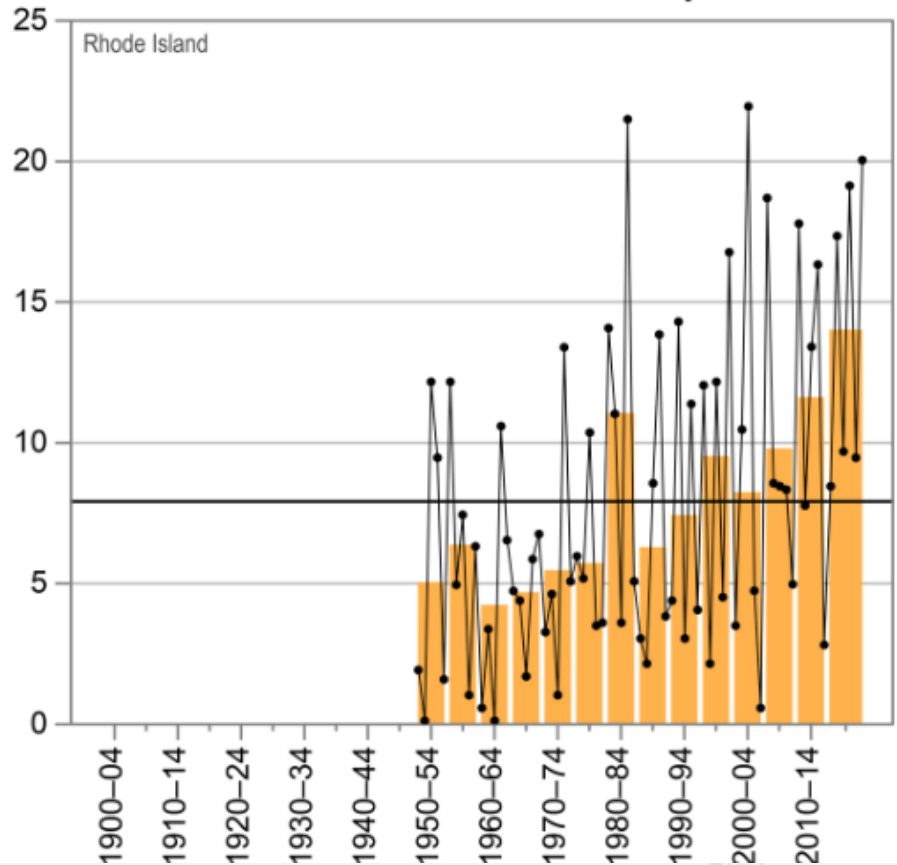


In the past two years, the city has experienced 11 flash flooding events.

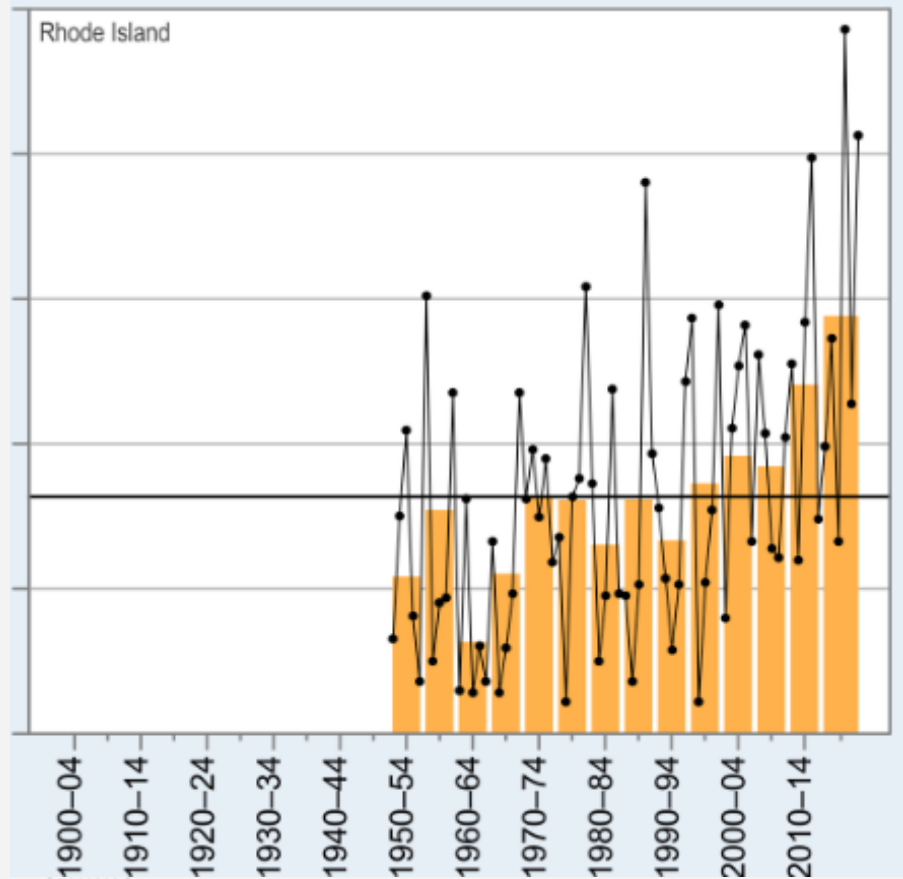


More intense rain = more flooding = more impacts

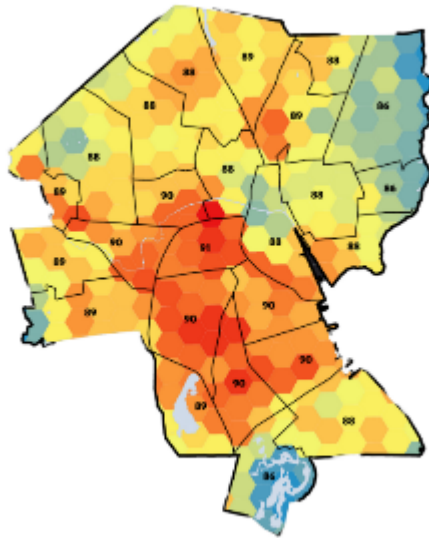
Observed Number of Hot Days



Observed Number of Heavy Nights

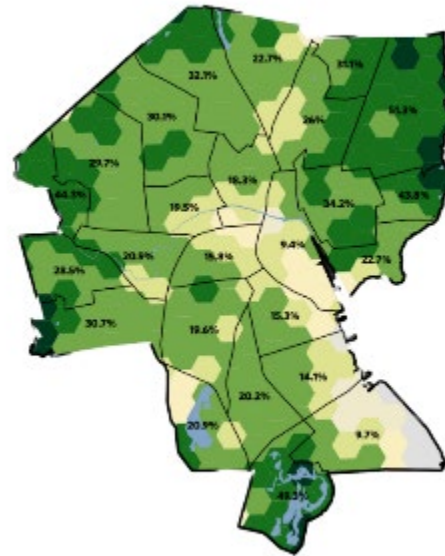


AIR TEMPERATURE & URBAN HEAT ISLAND EFFECT IN PROVIDENCE



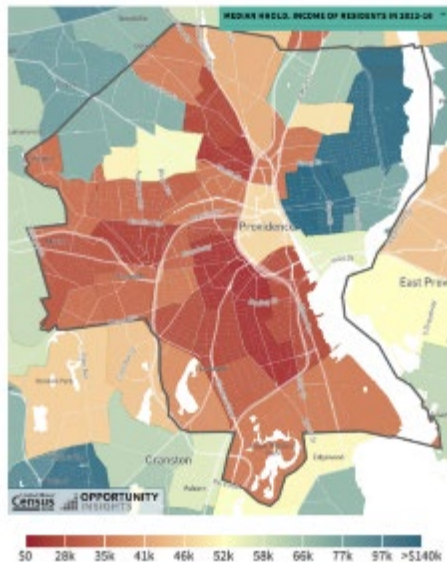
Average Ambient Air Temperature in degrees Fahrenheit - July 2020 (Data from RI Heat Watch - 2020 - RIDOH, RIDEM & CAPA Strategist)

PROVIDENCE'S 2018 % TREE CANOPY COVER



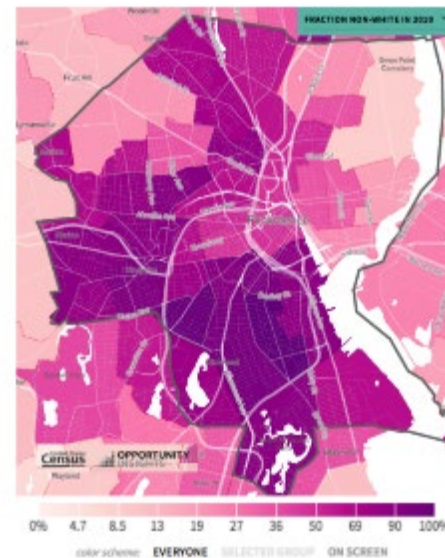
Providence Urban Tree Canopy percentage cover by neighborhood

MEDIAN HOUSEHOLD INCOME IN PROVIDENCE



Map & data from Opportunity Insights and the US Census Bureau. <https://opportunityinsights.org/>

COMMUNITIES OF COLOR IN PROVIDENCE (% OF POPULATION IDENTIFYING AS A RACE OTHER THAN WHITE)



Map & data from Opportunity Insights and the US Census Bureau. <https://opportunityinsights.org/>

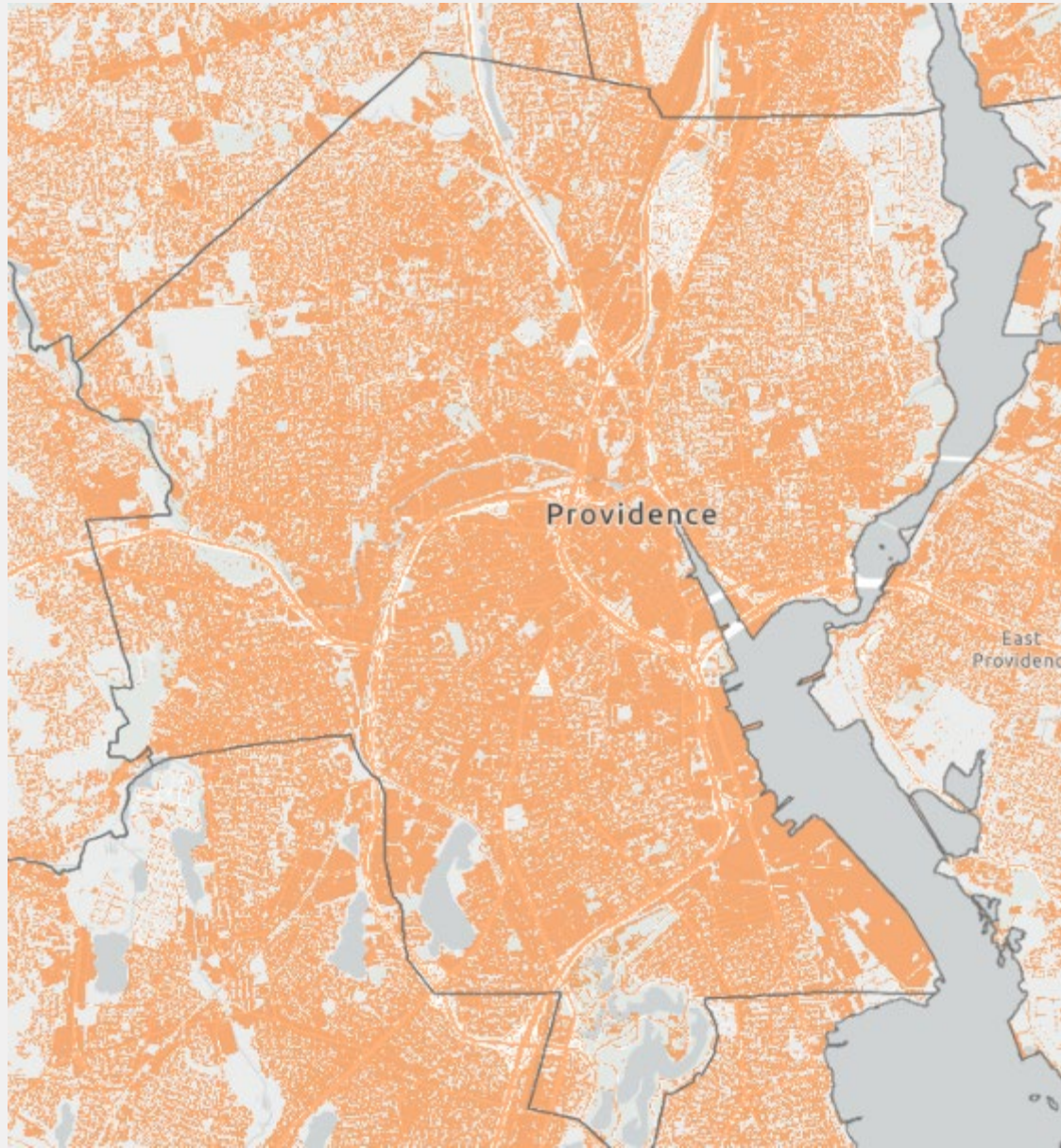
Similar to stormwater, high heat days are exacerbated by impervious cover.

Impacts of high heat are disproportionate across neighborhoods.

THE PROBLEM AT HAND

Beyond Stormwater Pollution





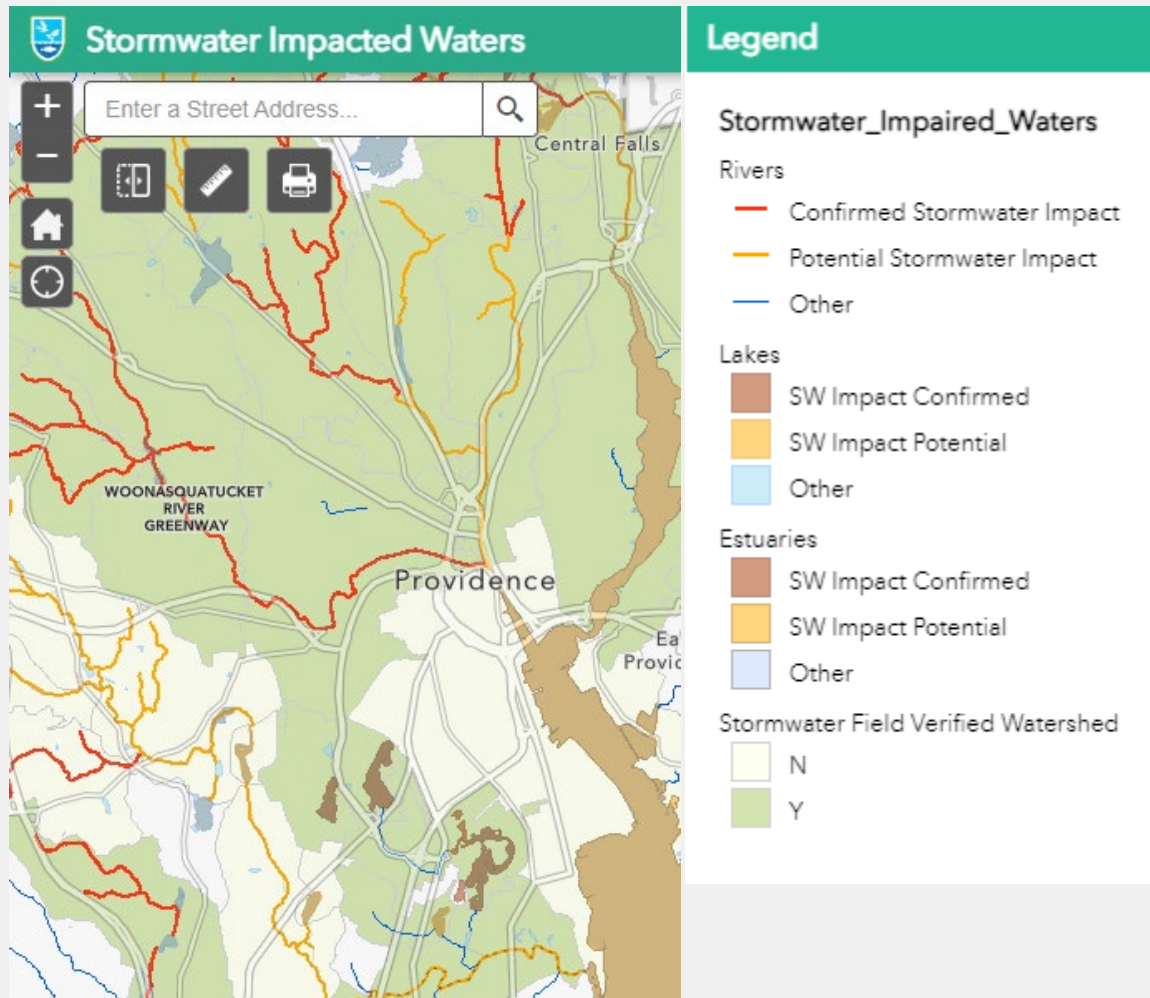
More impervious cover means more stormwater run-off 11

**Impervious
surfaces prevent
rainwater from
absorbing into the
ground**





Stormwater run-off carries pollution to a storm drain and is released to a body of water without being treated.



The waterways of Providence are polluted with stormwater run-off



Bacteria makes water unsafe for recreation

FLOODING AND AGING INFRASTRUCTURE

Deferred maintenance and intense storms



Providence has a growing problem with street flooding



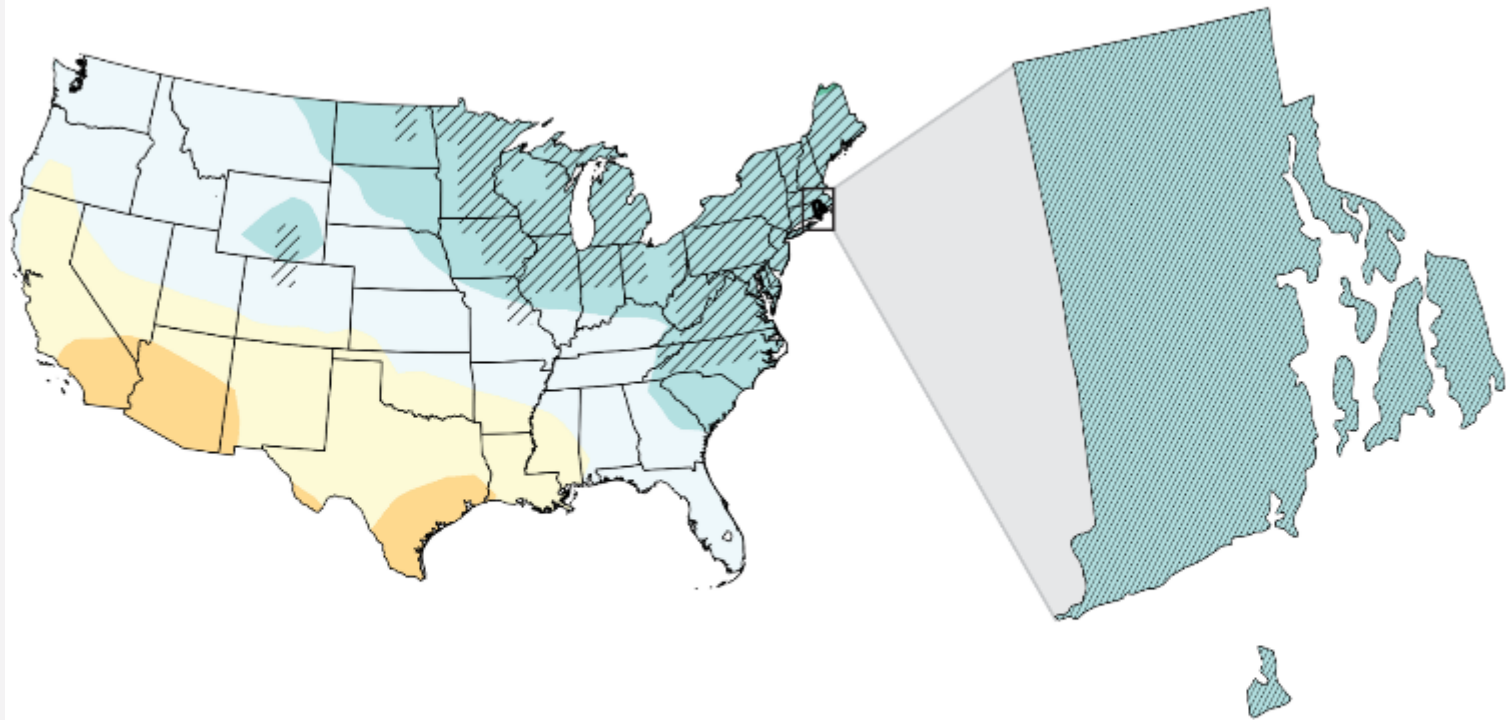


Problems come from inadequate maintenance, aging and deteriorated infrastructure, and more frequent and extreme precipitation.

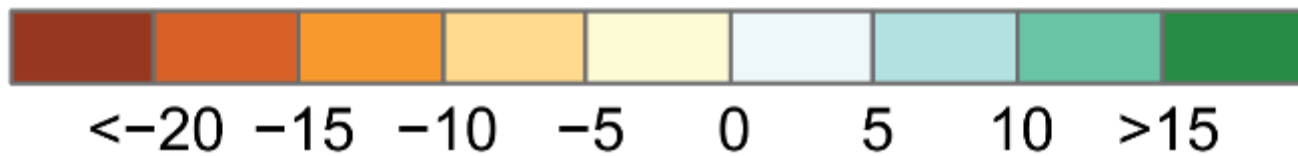


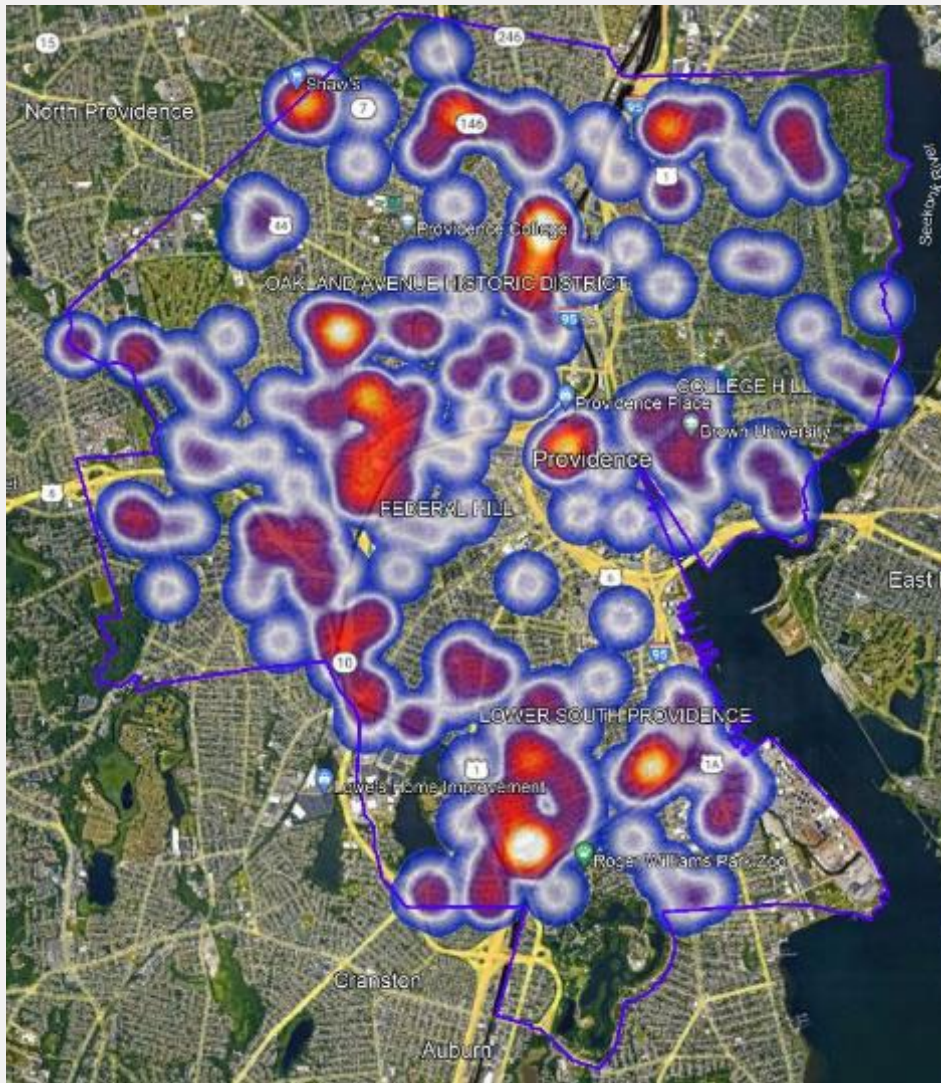
Even relatively small storms can present challenges for infrastructure built 100 or more years ago.

Projected Change in Annual Precipitation



Change in Annual Precipitation (%)





Providence's flooding hot spots impact all neighborhoods

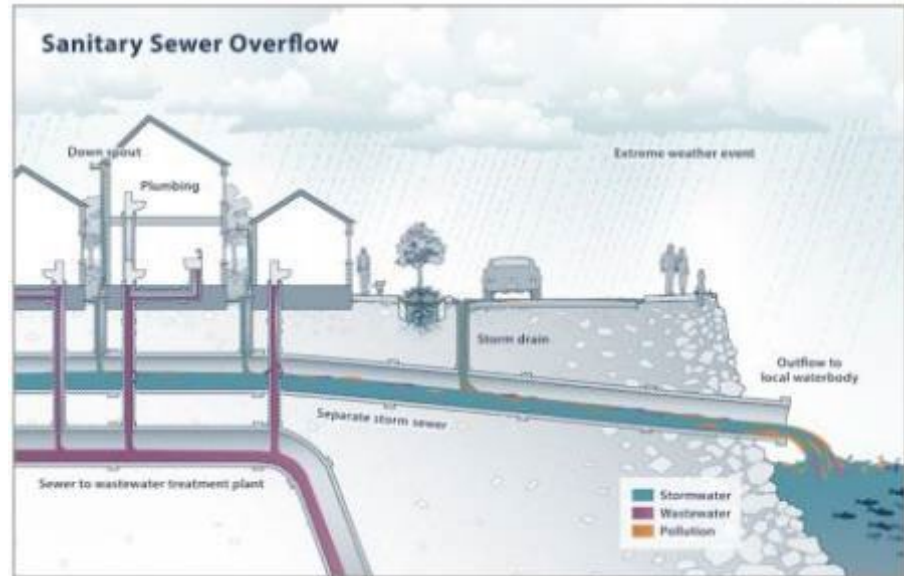
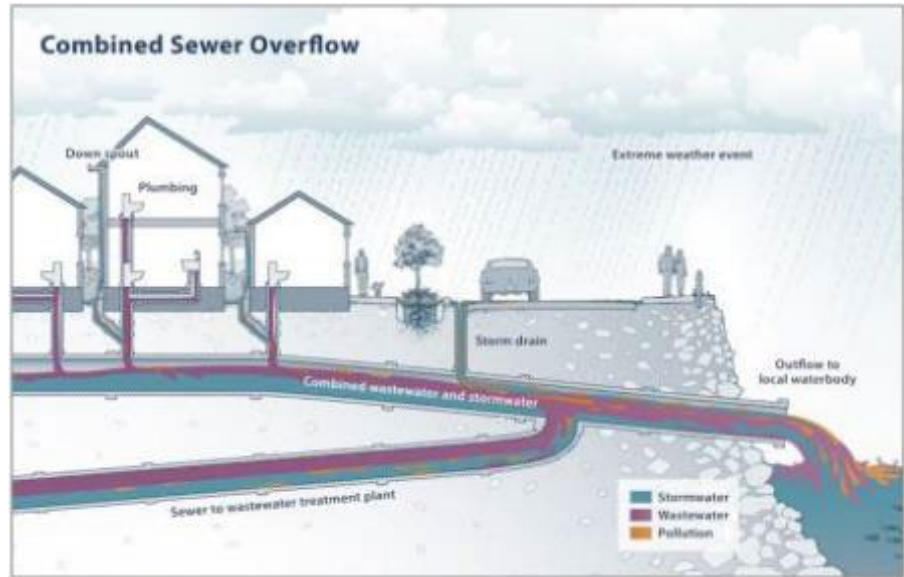
UNDERSTANDING THE MAGNITUDE OF THE INFRASTRUCTURE PROBLEM

What's Underground: Storm sewers, sanitary sewers
and combined sewers



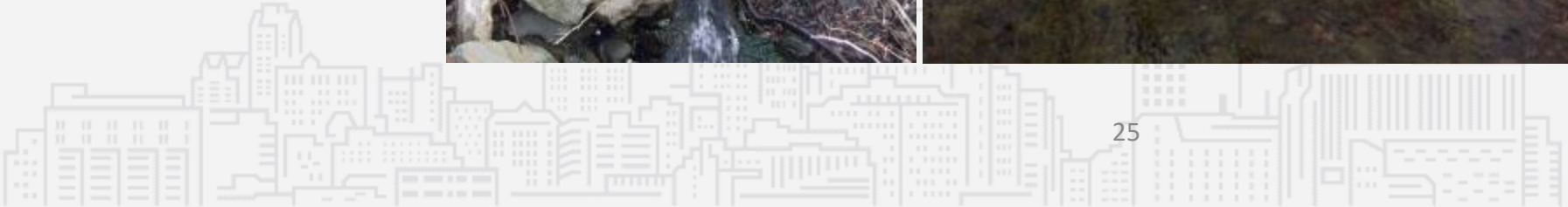
How dirty water is managed in Providence

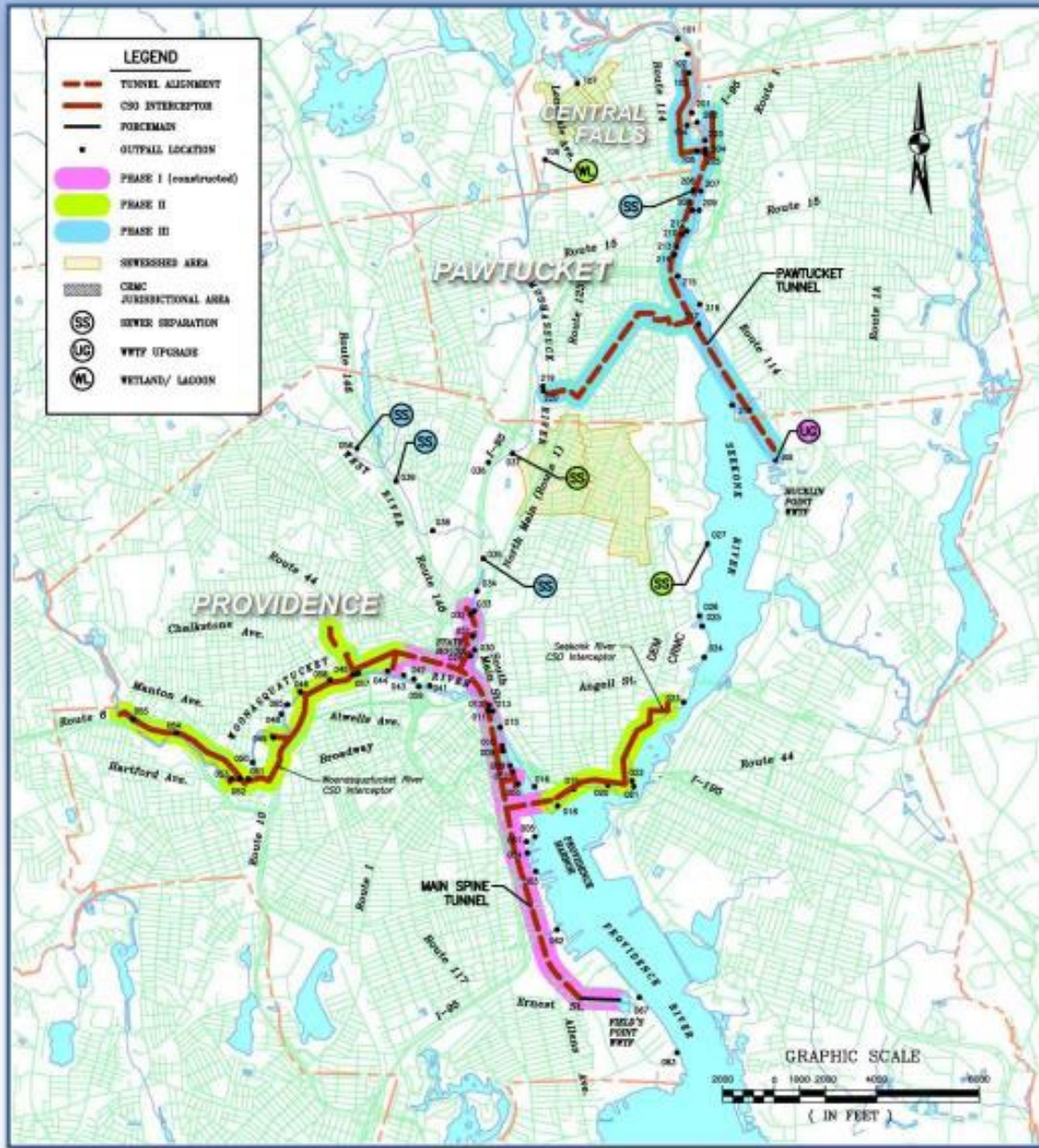




A significant portion of Providence's stormwater system is at least 75 years old.

Pipes don't last forever and need to be replaced when they have exceeded their useful life.





Sewer bills to the Narragansett Bay Commission pay for upkeep to their combined system and investments to prevent combined sewer overflows.

They don't pay for Providence's pipes.



Providence City-owned infrastructure



13,000 catch basins
4,000 gutter inlets



14,473 manholes



327 miles of sewer
(116 miles sanitary, 211 miles combined)

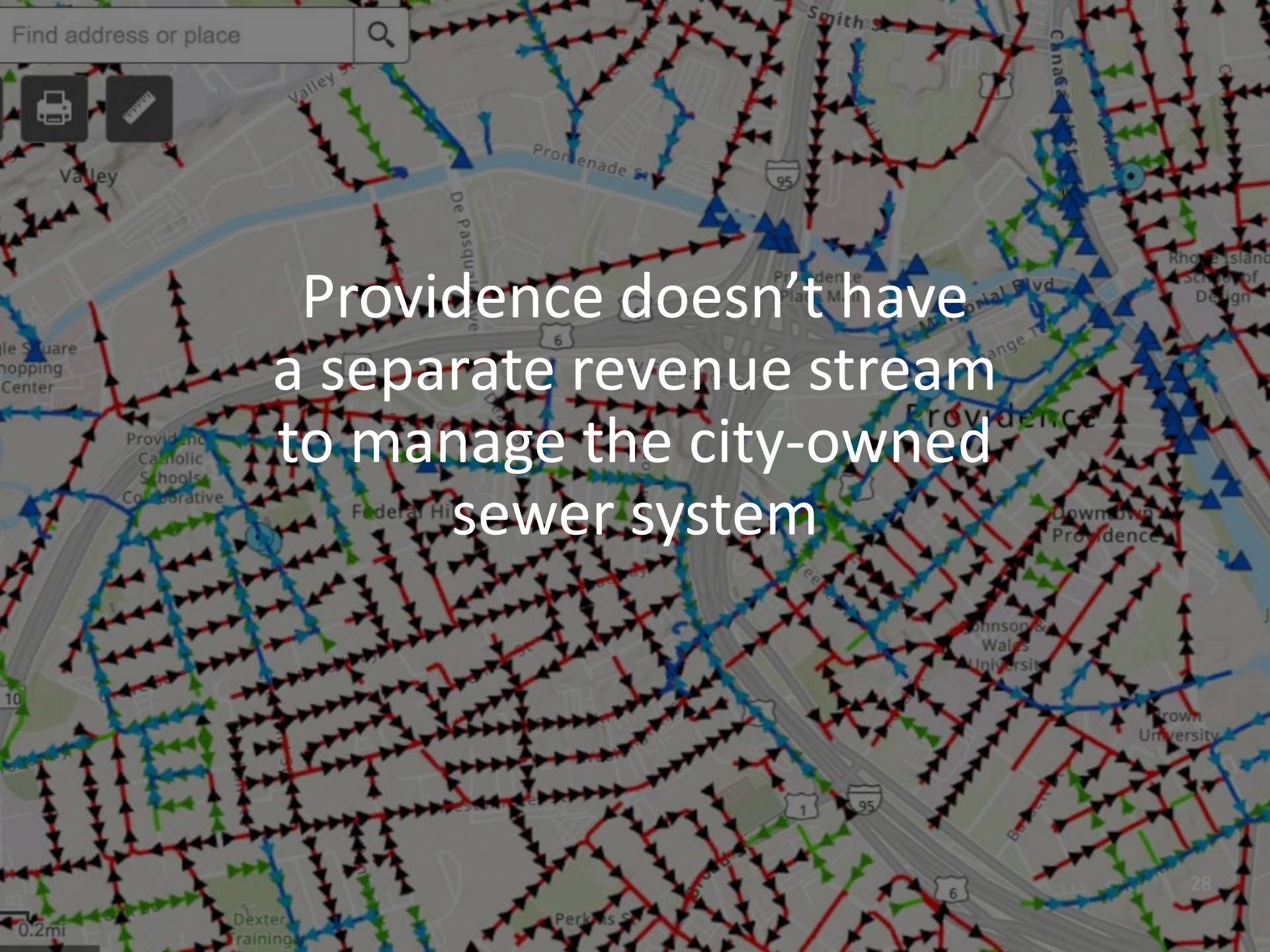


176 stormwater outfalls



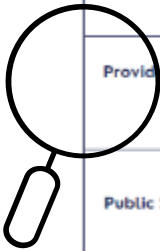
85 culverts, 3 dams





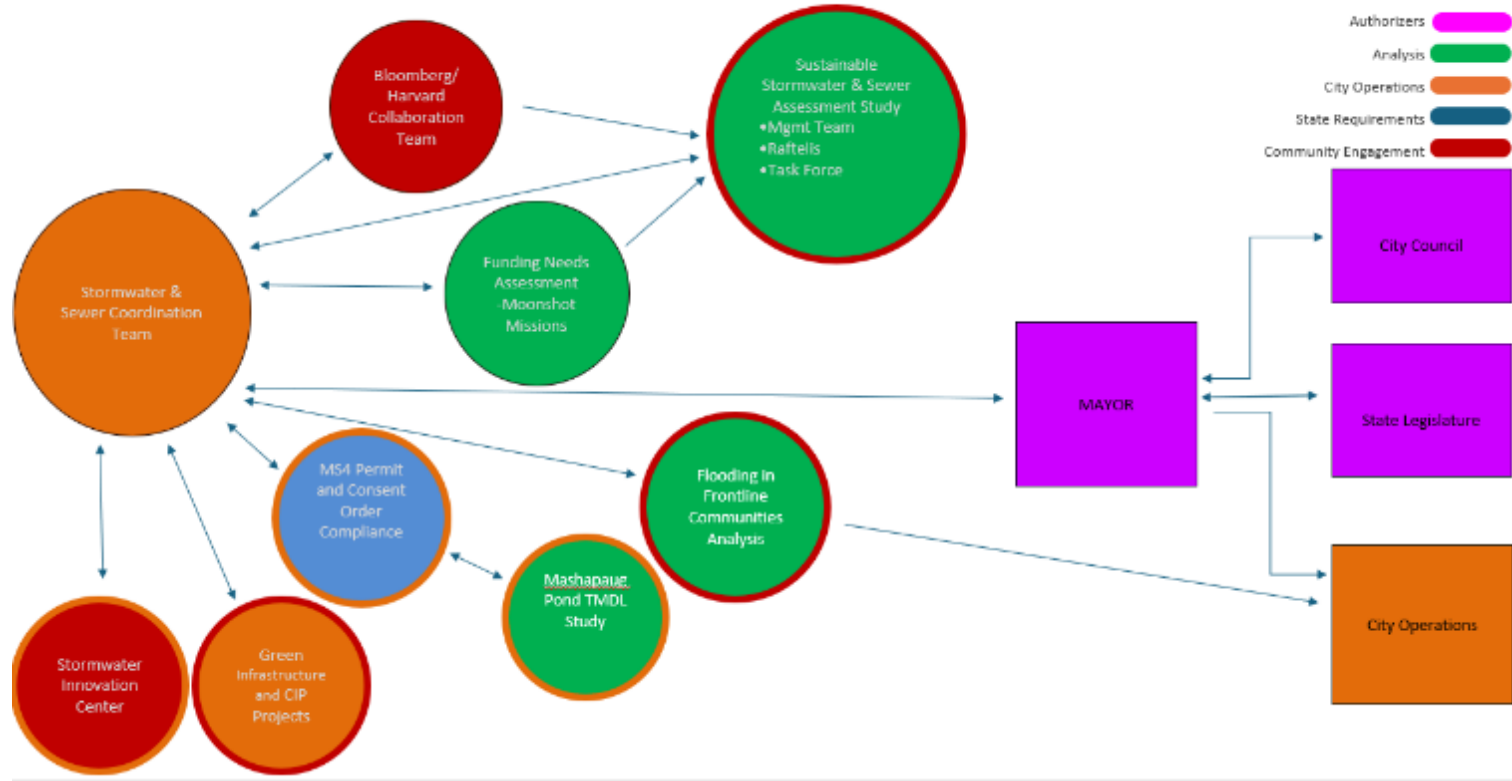
Providence doesn't have
a separate revenue stream
to manage the city-owned
sewer system

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Roger Williams Park Stormwater Filter 2024-2025	<ul style="list-style-type: none"> Municipal Resilience Program grants to Parks Department from RI Infrastructure Bank totaling \$695,000 Providence's Parks Department will install a "treatment train" at the Roosevelt Lake outlet to reduce Phosphorous pollution and test innovative stormwater management methods to inform State agency policies. 					
SNEP SOAR Flooding Solutions Grant 2024-2025	<ul style="list-style-type: none"> \$300k Understanding Urban Flooding & Finding Community Solutions The City will engage a contractor to present a coordinated, prioritized approach to urban flood mitigation, through conducting urban flooding mapping analysis, reviewing recent studies on flooding, and coordinating a series of neighborhood meetings. 					
Providence Hurricane Barrier Repairs- ARPA funded Summer 2024	<ul style="list-style-type: none"> \$1.5 million of repairs made to the Allens Ave sewer gates \$1.5 million of repairs to be made in summer 2024 to the Fox Point gates 					
FY24 Capital Improvement Plan 2024-2025	<ul style="list-style-type: none"> Received passage in early January CIP includes \$35 million per year for sewers and storm water management \$3M India Point Park sea wall repairs beginning in FY2026 					
DPW Stormwater Management Projects 2024-2025	<ul style="list-style-type: none"> Hydrologic and hydraulic study of Pleasant Valley Parkway (Project lead: Providence DPW)- \$112,700 Dredging of Pleasant Valley Parkway stream- \$12,000 FY24 overtime costs associated with flood mitigation and stormwater management work- \$21,608 Sewer Cleaning and Assessment -\$1,300,000 Illicit Discharge Detection and Elimination-sewer system and follow up to remove- \$160,000 					





Providence Stormwater and Sewer Initiatives 2024 Workflow Coordination



THANK YOU

City of Providence



Fishing Gear Removal from Cuttyhunk Island

Identifying
Problem &
Solution

Organizing
Volunteers

Data Collection
and Application

Creative Disposal and
Alternative Uses for
Collected Debris



Laura Ludwig,
Director

Marine Debris and
Plastics Program

Center for Coastal
Studies,
Provincetown MA



SNEP Conference

Roger Williams
College

Wednesday,
June 12, 2024





Squeaky Wheel Gets the Grease –

Resident/community concerns about the issue are brought to appropriate authorities.

Cuttyhunk Shellfish Farm had reached out to MA Division of Marine Fisheries and Environmental Police over the course of many years to request assistance in cleaning lobster gear off the island beaches.



It's Who You Know –

MA Environmental Police have supported CCS ghost gear removals since 2013 and knew of our focus on Abandoned, Lost or otherwise Discarded Fishing Gear (ALDFG) so they asked if we could help.



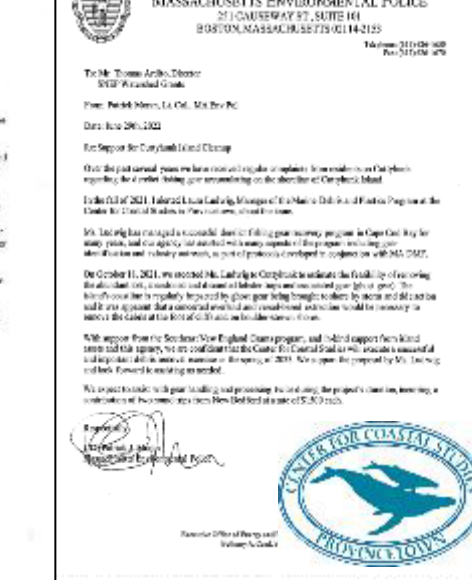
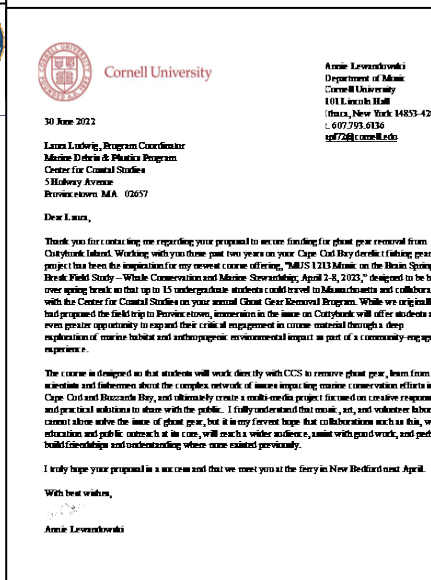
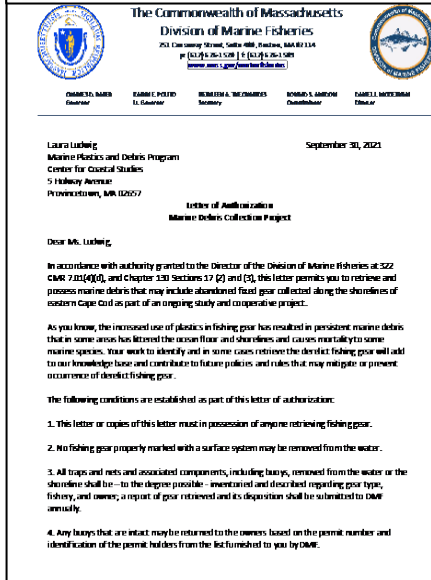
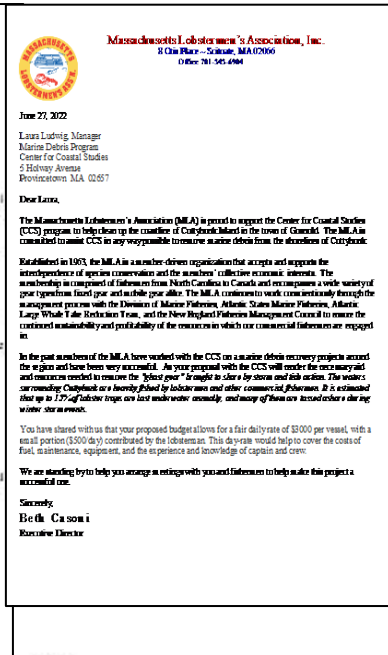
Seeing is Believing –

Lt. Col. Moran
brought CCS out to
assess the issue in
October 2021;
Cuttyhunk Shellfish
Farm gave a royal
tour of the shore and
the ALDFG.



Finding Funding, Power in Numbers -

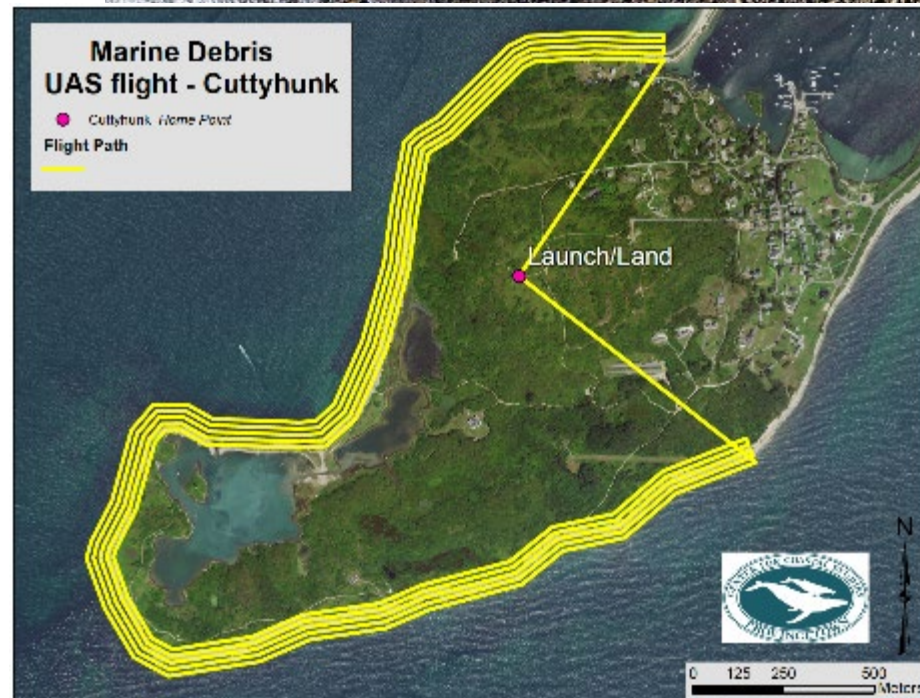
CCS identified a timely funding source (SWIG program!) and additional potential collaborators including Cornell University, MA Lobstermen's Association and 6 other supporting groups; and submitted a proposal to SNEP two minutes before the deadline.



Getting Serious –

First step after the award was issued:

survey and identify all ALDFG targets using a CCS aerial system.



Second
step:

map
the hot
spots
and
access
points.



Atypical College Island Spring Break

Field work was designed around partner Cornell's spring break to take advantage of the power in numbers.

Artists and educators joined for the week-long immersion.



Collecting Debris and Data –

In 2023, 25 people took part in the removal efforts, and all debris was inventoried before being shipped off-island to be recycled, repurposed, or sent to a waste-to-energy facility.







Traps from other parts of the island were unable to be removed.

In areas of steep cliffs and poor access, we focused on removing lightweight debris like buoys and rope.



Trap debris was loaded onto a trailer and four-wheeled to the main wharf area for processing



Traps were not the only debris inventoried – everything else added up, too.



Traps were flattened before they were loaded



Ballast was removed and saved for residents' use



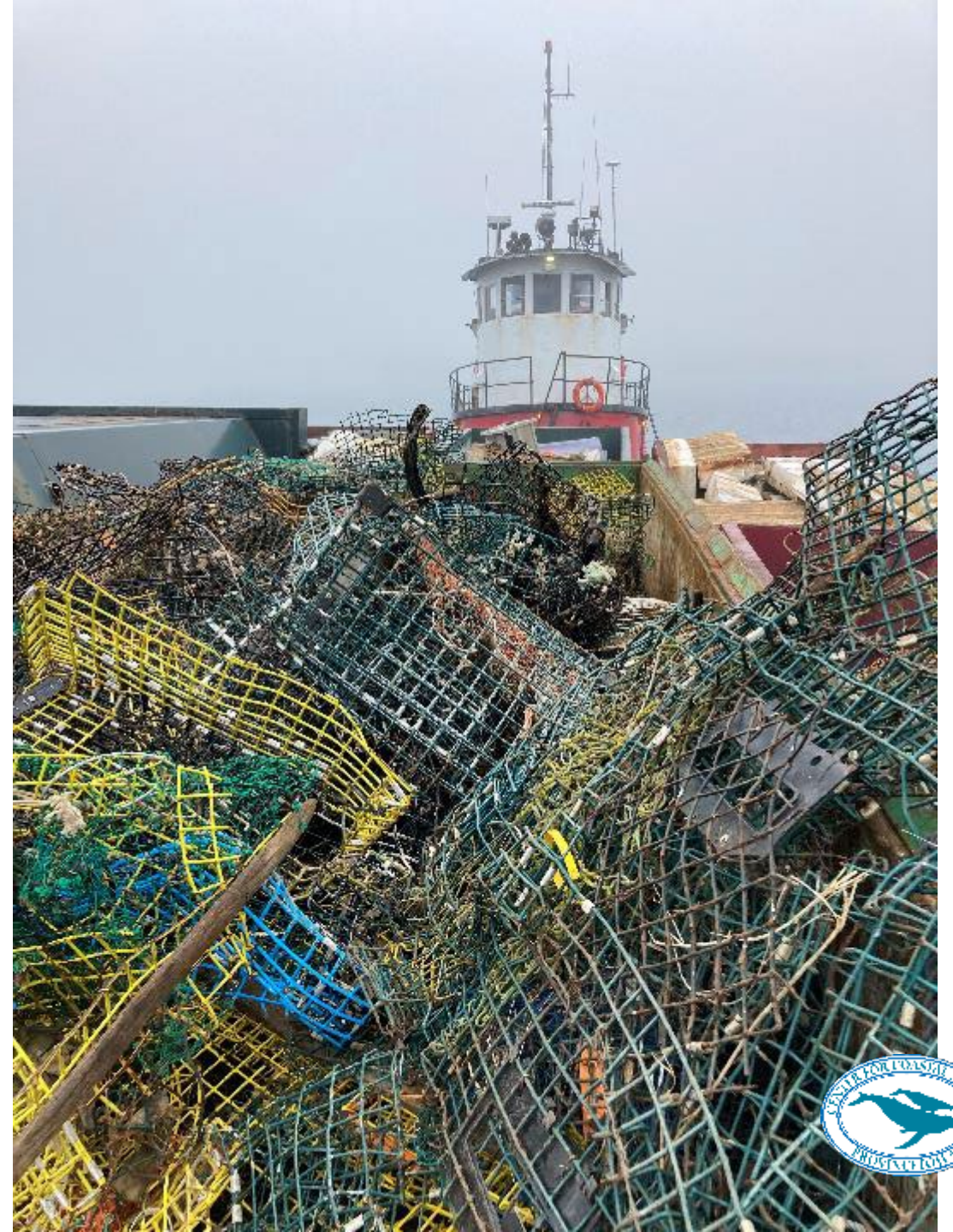


By far the most unwieldy debris





Debris was separated into two 30-yard containers – one for metal, one for everything else



Art for the Win –

Artworks inspired by this residency were exhibited at the New Bedford Whaling Historical National Museum in July; a culminating cleanup and art exhibit on Cuttyhunk was held the weekend of August 12, 2023.

CUTTYHUNK'23

ART COLLABORATION

50 HANDS & 8 TONS 1 MILE
25 HEARTS 8 DEBRIS 1 COAST

JULY 16 – AUGUST 10

NEW BEDFORD WHALING NATIONAL HISTORICAL PARK

OPENING RECEPTION JULY 16, 11AM – 1PM







HARBOR ENTRY
1 mile
of coastline



CUTTYHUNK '23
166 balloons



821
plastic
bottles



CUTTYHUNK '23
94 GLOVES

CUTTYHUNK '23
COPICUT NECK
CUTTYHUNK POND
HARBOR ENTRY
< 1 mile
of coastline









'Ghost gear' piles up in the Gulf of Maine amid plastic onslaught on oceans

Sep 19, 2023 6:30 PM EDT



All that remained -

After a weeklong cleanup effort in 2023, two piles of traps remained to be removed.

The original plan was to mount a water-based extraction during summer 2023, working with commercial fishing vessels



But Cuttyhunk's shoreline is rimmed with rocks and pummeled by tides and currents.

Sensible commercial fishermen just said "no".



So we rounded up a few new recruits and headed back out in May 2024 to get the rest of the traps off the shore.











Could not
have done
this project
without the
equipment
and staff of
Cuttyhunk
Shellfish
Farms









	4/7/2023	5/28/2024	Total Removed	
Item	Count	Count		
rope pieces	1000	550	1,550	est
bottles- plastic drink	821	240	1061	
non-descript rigid plastic >2 cm/1in	970		970	2023 only
lobster traps - mangled	500	45	545	est
non-descript foam > 2cm/1in	269	230	499	
cans	390	66	456	2023 only
lobster traps - identified	244	163	407	
non-descript plastic film	339		339	2023 only
food wrappers	302		302	2023 only
bottle caps- plastic	177		177	2023 only

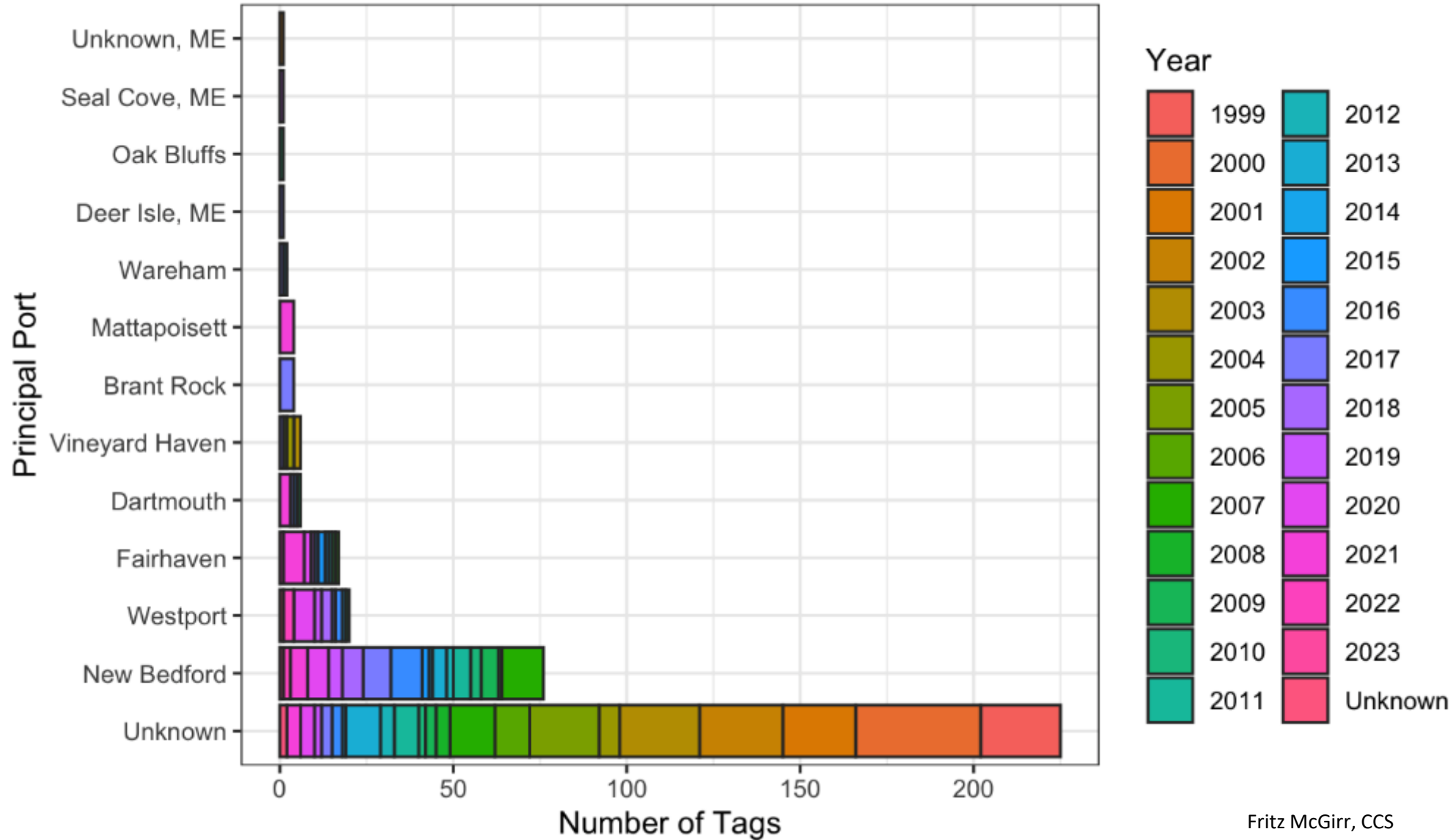


Weight of all collected debris, Cuttyhunk Island, April 2023 + May 2024

Item	tons	lbs	disposition
scrap metal / wire traps:	4	8000	recycled
rope, net, buoys, and a few traps:	3.5635	7127	incinerated
estimated weight of bricks/ballast removed:	1.275	2550	saved for use on-island
estimated weight of debris for artists:	0.675	1350	used for art
total weight of debris collected	9.5135	19,027	



Principal Ports of Lobster Tags Found on Cuttyhunk Island 2023-2024



Fritz McGirr, CCS



Before (2023)



After (2024)



Thank you!

Sarah Thornington,
Photographer/artist

Seth Garfield,
Oyster Farmer

Michelle Carvalho,
STEAM Academy

Pamela Cooley,
Volunteer Cook

CCS Beach Brigade

Tom Ardito,
Restore America's Estuaries

