

# Vinalhaven: Turning the Tide

## Design & Resiliency Team (October 2017)



AIA **USDN**

urban sustainability  
directors network



**BSA** FOUNDATION

BOSTON SOCIETY OF  
LANDSCAPE  
ARCHITECTS



# Design & Resiliency Team (DART)

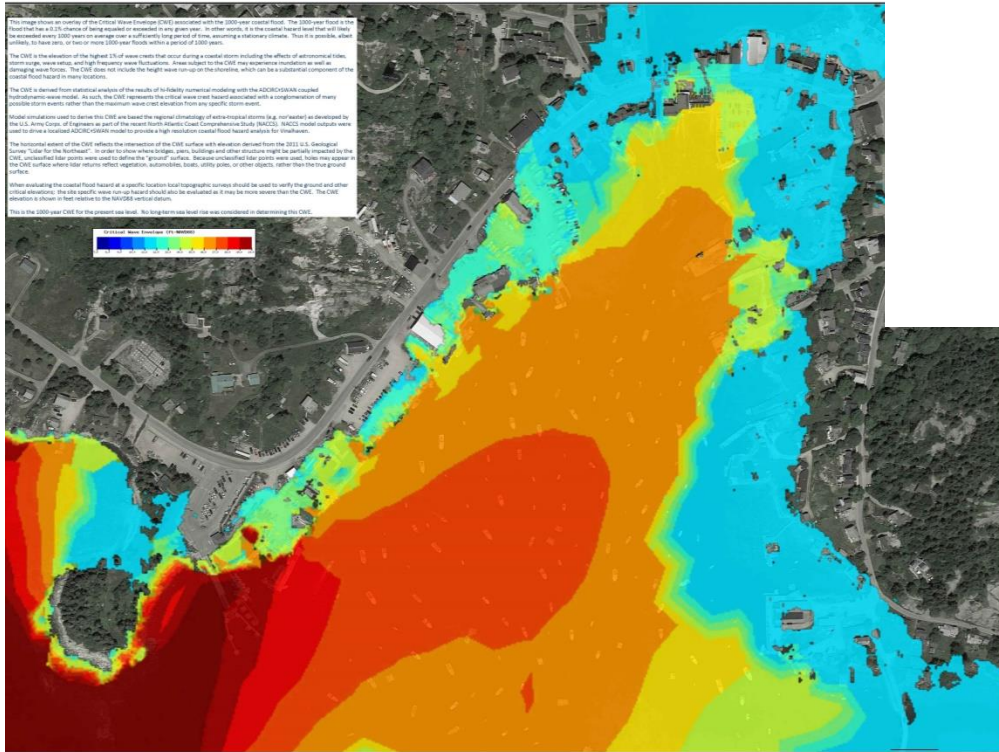
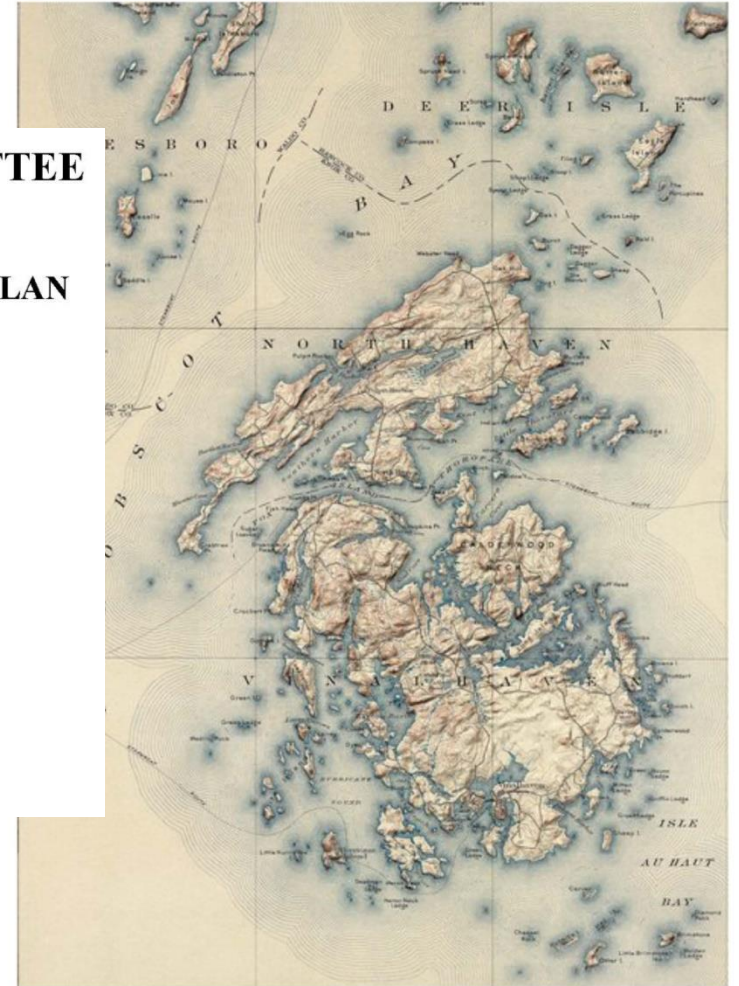


- **Wayne Feiden**, FAICP, Director of Planning & Sustainability, Northampton, MA
- **Cori Burbach**, Assistant City Manager, City of Dubuque, Iowa
- **Michael Davis**, FAIA LEED AP, Bergmeyer Associates; Boston Civic Design Commission
- **Peter Flinker**, ASLA AICP, Principal, Flinker and Dodson
- **David Kriebel**, PhD, PE, Professor of Coastal and Ocean Engineering, US Naval Academy
- **Joel Mills**, Senior Director, Communities by Design, AIA
- **Erin Simmons**, Senior Director, Design Assistance, AIA
- **Binh Minh Hoang** (Vietnam) & **Idfi Septiani** (Indonesia), YSEALI

# Town of Vinalhaven

# Vinalhaven Plans

## VINALHAVEN SIDEWALK COMMITTEE CONDITION ASSESSMENT AND MAINTENANCE & DEVELOPMENT PLAN



Department of Commerce

Scale: 1" = 100'

**VINAL COASTAL DISTRICT**

**RANSOM**  
Consulting  
Engineers  
and Scientists

1000-YEAR CRITICAL  
WAVE ENVELOPE

No.	Revision/Issue	Date
1	REVISED MEETING	05/25/17

191-02061 04/27 2017

**C-100**

*A Comprehensive Plan for 2025*

# DN STREET

- INFRASTRUCTURE  
SIDEWALK, Road, drainage,  
water lines, streetscap,  
electric utilities
- ECONOMIC Develop  
BIZ Closing/Seasonal,  
High costs, Flood Ins!
- WORKFORCE  
Skilled, 'Able' people

# SLR

- Vulnerable Inf.  
ISL WIDE
- MAIN ST FOCUS
- COMM Rating System  
Reduction in premiums

# BROADBAND

- ISL WIDE
- IDENTIFY DEFICIENCIES
- ISL BIZ MODEL?
- ↳ NTIA Beta project  
Grant
- tool for action/implementation  
Assess Readiness

**DART (Design & Resiliency Team)**  
Ferry to Water St  
Sidewalks, Bldgs, etc

- Maine Coastal Program GRANT
- Vulnerability Assessment Carvers Harbor

Leona

# # FUNDING

## Planner

- Master Plan

## Joint Committee

- 1-2 each committee
- Water District, Maine Water Foreman
- Road Commissioner or Foreman
- VHCC or Biz Rep, 1 Non Chamber Biz Rep?
- BOS





- 1 The Bodwell Granite Co's Works.
- 2 Sands Quarry. 3 Harbor Quarry.
- 4 Crown Hill Granite Works - J.T. Armbrust.
- 5 Robert's Harbor Quarries - J.S. Black.
- 6 Co-Operative Granite Co.
- 7 East Boston Quarry.
- 8 Webster's Quarry.
- 9 The Bodwell Granite Co's Polishing Mill and Machine Shop.
- 10 Flour and Grist Mill, C.F. Boyer.
- 11 L.C. Chase & Co. Fly Net Mfrs. E.R. Roberts, Agt.
- 12 M.F. Lenfest, Blacksmithing.
- 13 W.S. Vinal, Hammer Mfr.
- 14 Bodwell Granite Co's General Store - "Marston Block."
- 15 Lane and Libby, General Store and Wholesale Fish Dealers.
- 16 Lyford and Ginn, Druggists.
- 17 Vinal Haven Drug Store.

# VINALHAVEN, ME.

1893.

- 18 A.B. Vinal, Stationery, Fancy Goods, Music, Etc.
- 19 Geo. R. Book, Jeweler - A.A. Maybery, Groceries & Provision.
- 20 L.R. Smith, - Merchant Tailor, 100 F. Block.
- 21 C.B. Smith, - Groceries and Fish.
- 22 Alexander Davidson, Groceries.
- 23 F.M. Brown, General Store.
- 24 W.P. Coombs, - Shoes and Trussings.
- 25 Hiram Shirley, - Fruits, Cigars, Etc. - Billiard & Pool Room.
- 26 H.V. Lane, - Bakery.
- 27 Geo. Roberts, - Livery Stable.
- 28 W.J. Jameson, - Livery Stable.
- 29 Ocean View House, J.F. Hopkins.
- 30 Ocean House, Lanes Island.
- 31 Central House.
- 32 Union Church. 33 Town Hall.
- 34 High School. 35 Graded Schools.

1417



Vinalhaven Speaks



① WHY DO PEOPLE STAY?

- EXTENDED FAMILIES
- COMMUNITY
- BEAUTY
- ECONOMIC STRENGTH OF LOBSTERING
- GENERATIONS OF SEASONAL VISITORS
- SAFETY FOR CHILDREN
- NEED TO ADDRESS OPIOID EPIDEMIC + THREATS TO ECONOMY/LOBSTERING

DOES RESILIENCE = CHANGE?

- FAMILY SUPPORT KEEPS FOLKS HERE
- VINALHAVEN SURVIVED THE COLLAPSE OF FIN FISHING + GRANITE
- RESILIENT PEOPLE
- NEED TO BALANCE SUMMER AND SEASONAL ECONOMIES

- SUPPORT FOR CREATIVITY.

CHALLENGES

- SEA LEVEL RISE
- ACIDIFICATION
- GREEN CRAB
- HOUSE PRICE INFLATION
- AFFORDABLE HOUSING SUPPORTS RESI
- HARD TO MAKE DOWN PAYMENTS.
- NOT ENOUGH YEAR-ROUNDED RENTALS
- NEED QUALITY MEDICAL SERVICES → INCLUDING TRANSPORT TO MAIN
- WATER SUPPLY
- SEWERAGE
- AMAZON PRIME - DON'T HAVE TO SHOP HERE

② - OVER POPULATION OF DEER + DEER TICKS.

DOWNTOWN CHALLENGES / THREATS.

- SURVIVING THRU THE WINTER
- ONLINE SERVICES REPLACING RETAIL
- POOR CONDITION OF WALKWAYS
- NEED WALKABILITY + GREEN SPACES
- WHARFS NEED WORK
- LOSS OF TREES AT STATE BEACH
- DETERIORATING BUILDINGS
- SKYROCKETING COST OF CONSTRUCTION
- NEED BROADBAND → SUPPORT REMOTE WORKING
- NEED BETTER CELL SERVICE
- SLR, POTENTIAL IMPACT ON

FLOODING - WHERE, WHEN, TRENDS?

④

- NORTH HAVEN ROAD - DESIGNING NEW CONCRETE FOUNDATION - BUT HOW TO GET?
- WINTER TIDES NOTICEABLY HIGHER
- FEMA REG'S ARE NOT CLEAR.
- WORST FLOODS 30 YRS AGO - MORE RECENT NUCIENCE FLOODING
- CAN'T MORTGAGE W/O EXPENSIVE FLOOD INSURANCE
- [NAVEL ACADEMY RAISING ROSS 2 FEET] AMOR - ADAPT - ABANDON
- SALT WATER INTRUSION IN WELLS.
- DROUGHT IMPACTS?
- ARE WE PREPARED FOR DISASTERS?

BT BOTTOM ISSUES

③

PARKING + TRAFFIC -

- EAST MAIN + WATER STREET DANGEROUS → TOO FAST TOO BIG
- KIDS ON BIKES

→ NOT A BIG ISSUE IF PEOPLE BEHAVE

DOCKING OF BOATS IS AN ISSUE

- INCREASE TAXI SERVICE
- PEOPLE RETIRE HERE BECAUSE WALKABLE IT'S
- NEED AFFORDABLE HOUSING → ESPECIALLY FOR LOCAL PEOPLE
- STATE AGENCIES LOCATING FAMILIES HERE WHEN THERE'S NO ROOM ELSEWHERE.
- NEED WORK FORCE HOUSING
- COOPERATIVE HOUSING FOR SENIORS
- NEED TO EXPAND ELDER SERVICES.
- SCATTERED SITE HOUSING.

DOE DOWNTOWN?

⑥

CONNECTION TO FERRY IS CRITICAL

MAINTAIN HISTORIC VILLAGE?

KEEP THE OLD, BUT BUILD NEW OUT OF FLOOD PLAIN

LET IT EVOLVE NATURALLY

POSSIBLE TO RAISE BUILDINGS?

TREES → NOT SO MUCH.

BICYCLES → YES - NEED OFF-STREET TRAIL

HOW TO MAINTAIN SOCIAL RESILIENCE?

CLASH BETWEEN WORKING WATERFRONT (NOISY, SMELTY, EARLY) AND SUMMER FOLK.

4 KM BOAT ENGINES

FROM HERE VS. FROM AWAY

LOOKING BACKWARD VS. LOOKING FORWARD.

WHERE CAN PEOPLE MEET?

- BOARDS, COMMITTEES WELCOME RETIRED
- NORTH HAVEN COMMUNITY CENTER

THEATER AS BONDING.

ULTIMATELY, EVERYONE HAS HAD TO ADAPT AFTER ARRIVING HERE.

SCHOOL IS GATHERING PLACE

COMMUNITY PLAYGROUND

→ DO WE NEED \$500K PLAYGROUND? - PUT MONEY INTO REC. CENTER. NEED YEAR-ROUNDED SPACE

WELCOMING COMMITTEE

ISLAND TIME

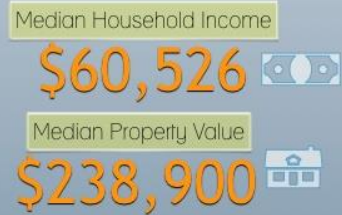
ECONOMIC OPPORTUNITIES

- CONNECT WITH ROCKLAND ART SCENE
- VINALHAVEN AS CENTER FOR RETREATS
  - PAINTING, PHOTOGRAPHY, YOGA
- AQUACULTURE
  - KELP, MUSSELS, OYSTERS, ETC.
  - INCLUDE THE FISHING COMMUNITY
- FILM MEETINGS.
- CONTROLLED VISITATION - CORPORATE RETREAT
- EXPAND MARINE SERVICES - ELECTRONICS?

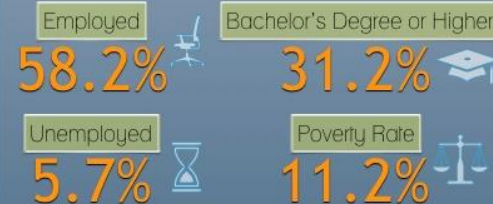


# Older and Aging, but finally stable

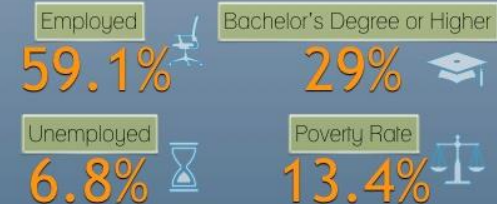
## Vinalhaven



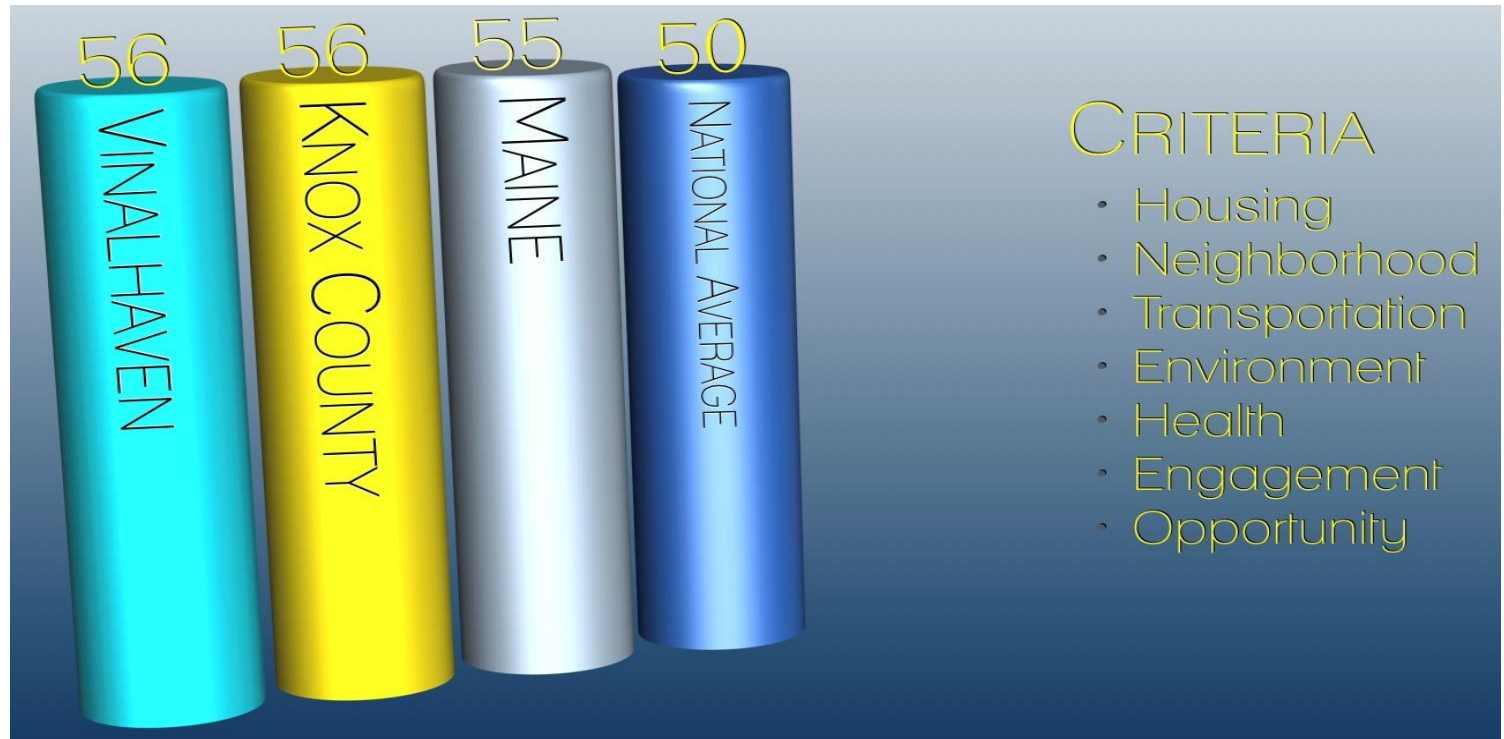
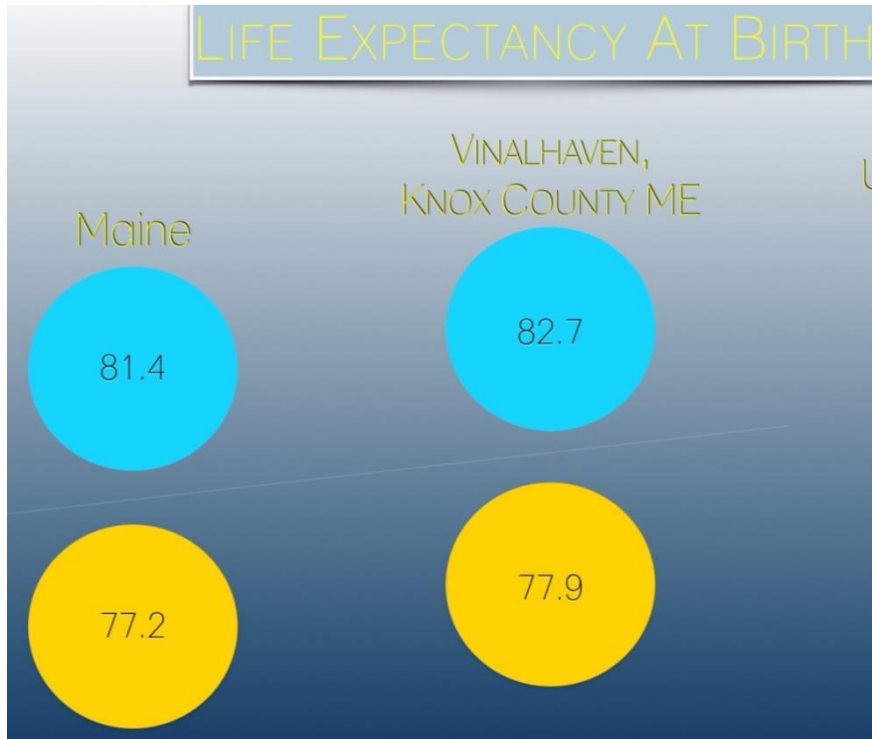
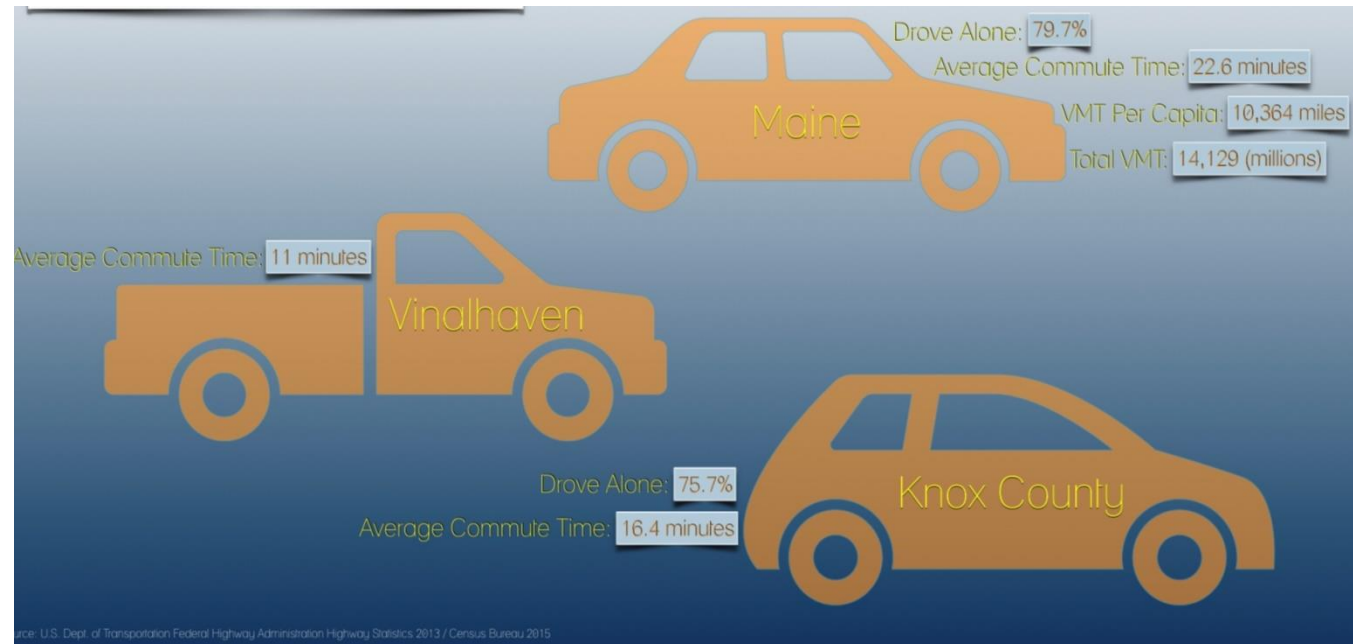
## Knox County



## Maine



# Shorter Commutes Longer Lives Livable



# Economy: 1<sup>st</sup> Fishing, 2<sup>nd</sup> Tourism

## Vinalhaven

### Most Common Employment Sectors



## Knox County



## Maine



### Most Common Jobs





Today



Tomorrow



Today



Tomorrow

# Social Resiliency:

strengthening neighborhood-level relationships and increasing community resilience, specifically in regards to emergency preparedness as well as disaster response and recovery

- Accessible housing choices for all residents
- Maintaining the experience of a close-knit community
  - Who's living here?
  - Community Center
  - Playground
- Building a diverse economy
  - Recruiting young entrepreneurs
  - Keeping our kids here: job training to fit the needs of the island
  - Infrastructure support: buildings & technology





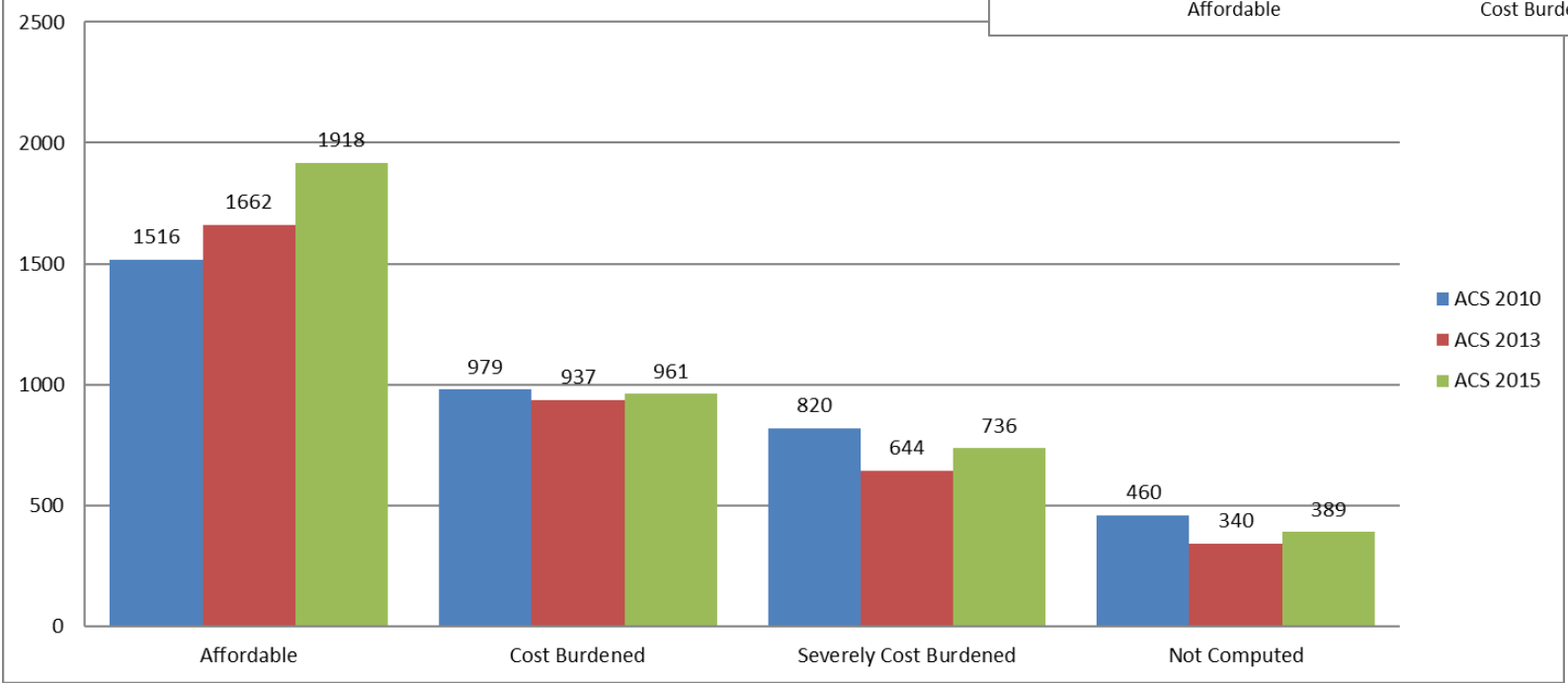
# Housing Affordability

Vinalhaven residents are spending 20.2% of income on housing.

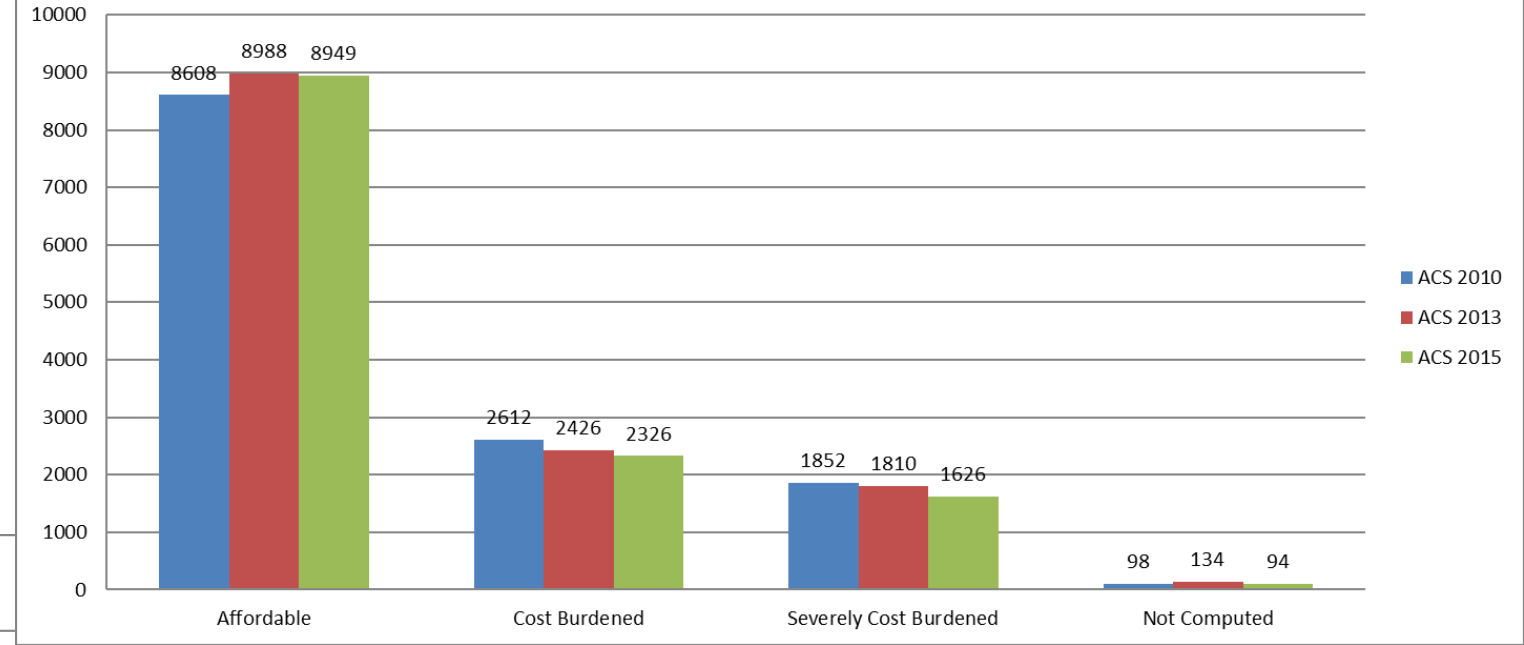


# Knox County Housing Cost Burden

## Rental Housing Costs



## Owner Occupied Housing Costs



# Improving Existing Housing Stock

## Physical Improvements

- Energy efficiency improvements
- Rehabilitation

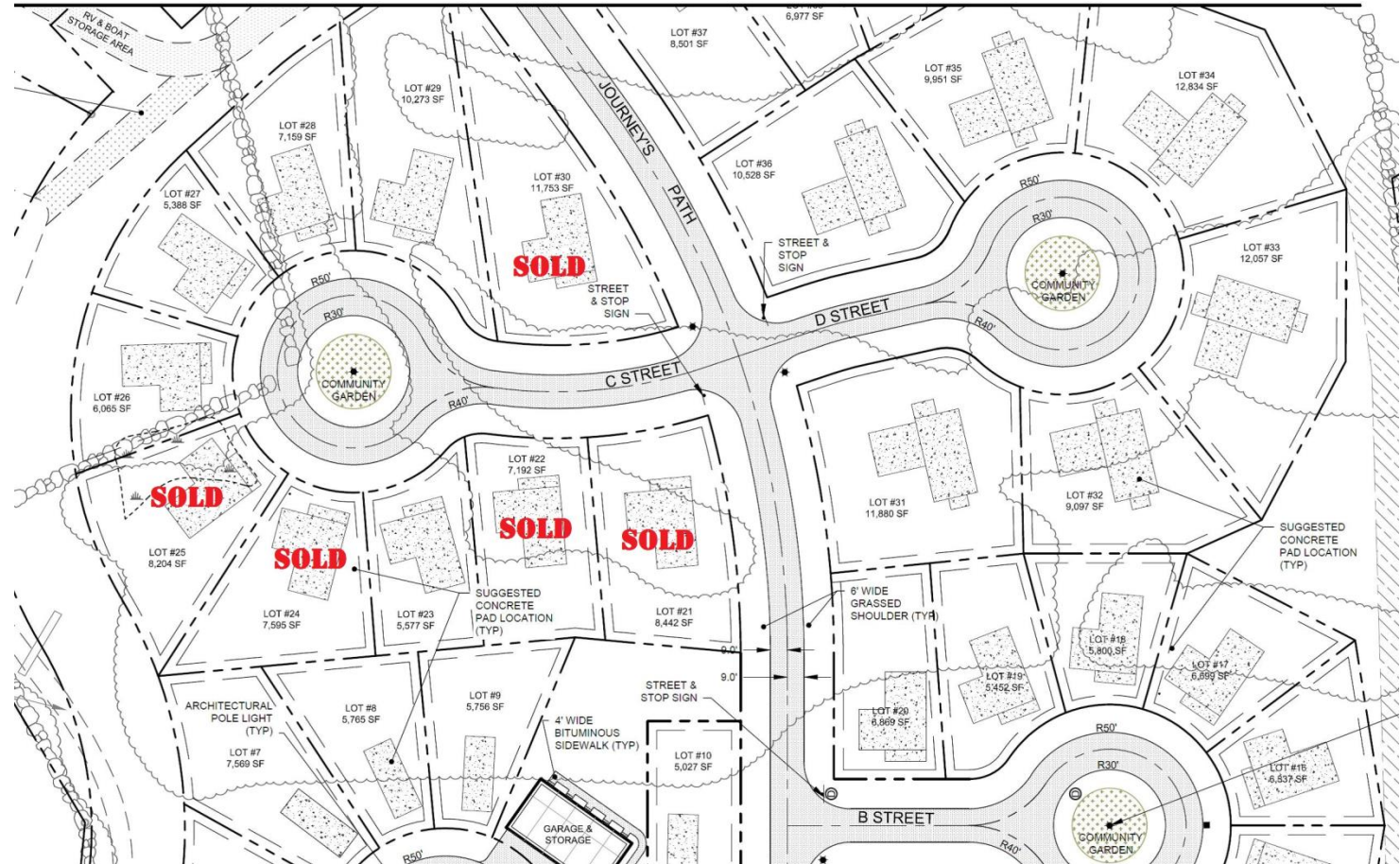
## Financing

- Workforce Housing Incentives
- Downtown Housing Incentive Program

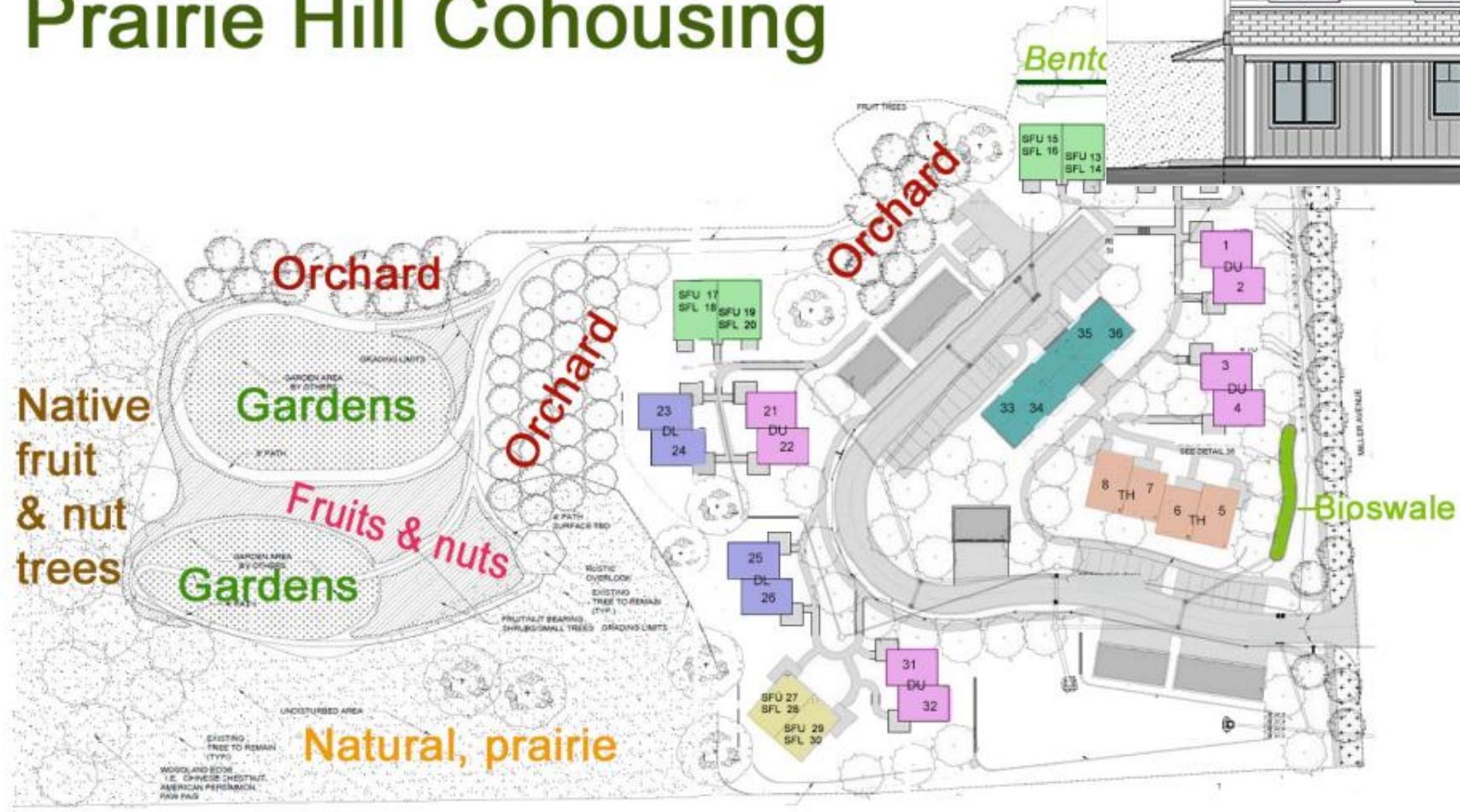
## Policy







- Short-term rental zoning overlay
- Mixed Residential Development: New development should consider a minimum amount of workforce housing

# New Housing Creation



# Prairie Hill Cohousing

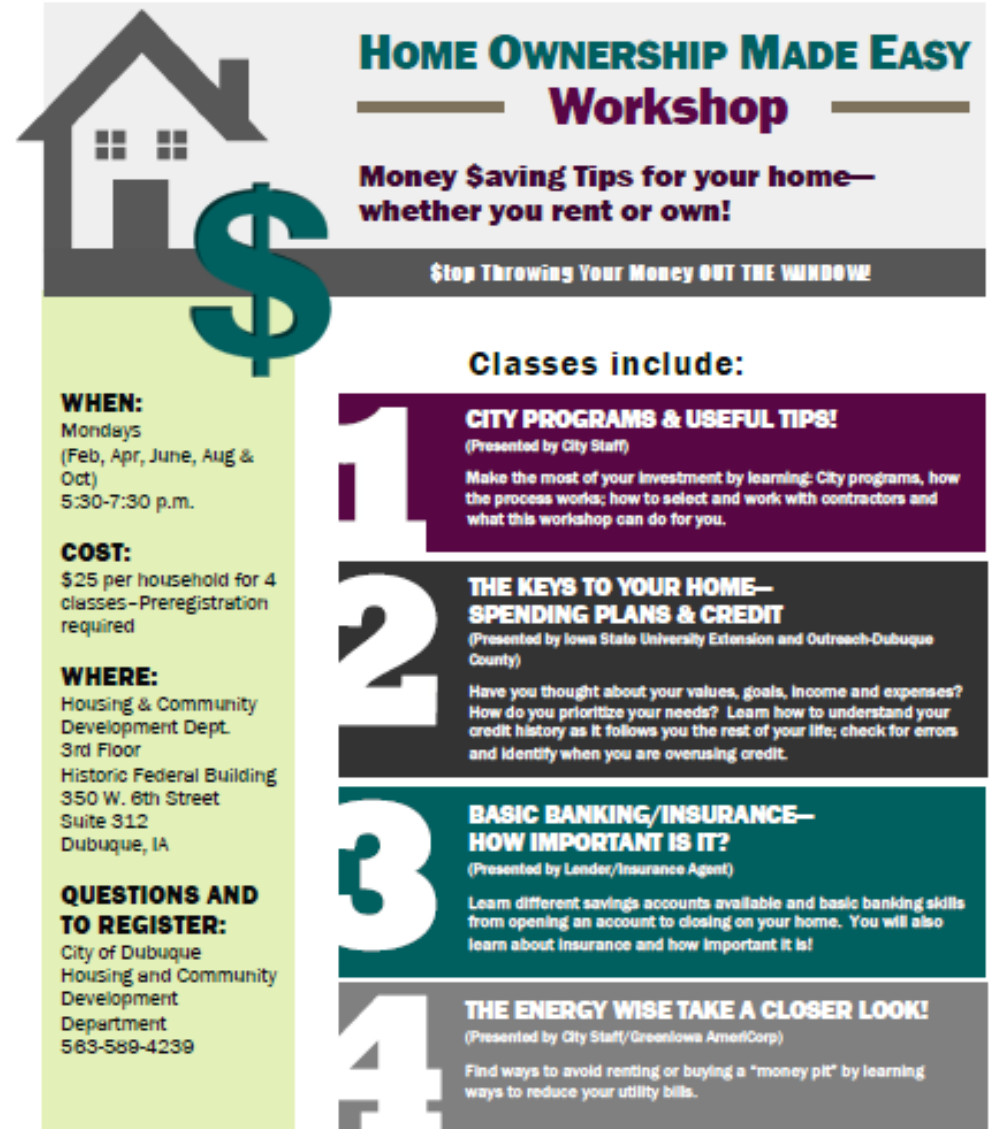


- |  |   |   |
|--|---|---|
|  Stacked flats              |  Duplexes, upper entry |  Townhouses, one level |
|  Stacked flats, lower entry |  Duplexes, lower entry |  Common house          |

# Housing Financing Options

## First-time Home Buyers Program

- \$5,000 loan for those making 80% of median income
- \$25,000 loan for 30% of median income
- 0% interest
- Required to participate in home ownership workshop



**HOME OWNERSHIP MADE EASY**  
**Workshop**

**Money Saving Tips for your home—  
whether you rent or own!**

**Stop Throwing Your Money OUT THE WINDOW!**

**Classes include:**

- 1 CITY PROGRAMS & USEFUL TIPS!**  
(Presented by City Staff)  
Make the most of your investment by learning: City programs, how the process works; how to select and work with contractors and what this workshop can do for you.
- 2 THE KEYS TO YOUR HOME—  
SPENDING PLANS & CREDIT**  
(Presented by Iowa State University Extension and Outreach-Dubuque County)  
Have you thought about your values, goals, income and expenses? How do you prioritize your needs? Learn how to understand your credit history as it follows you the rest of your life; check for errors and identify when you are overusing credit.
- 3 BASIC BANKING/INSURANCE—  
HOW IMPORTANT IS IT?**  
(Presented by Lender/Insurance Agent)  
Learn different savings accounts available and basic banking skills from opening an account to closing on your home. You will also learn about insurance and how important it is!
- 4 THE ENERGY WISE TAKE A CLOSER LOOK!**  
(Presented by City Staff/GreenIowa AmeriCorp)  
Find ways to avoid renting or buying a "money pit" by learning ways to reduce your utility bills.

# Age-Friendly Community

AARP Livability Index:

Housing: 50

Neighborhood: 36

Transportation: 47

Environment: 67

Health: 50

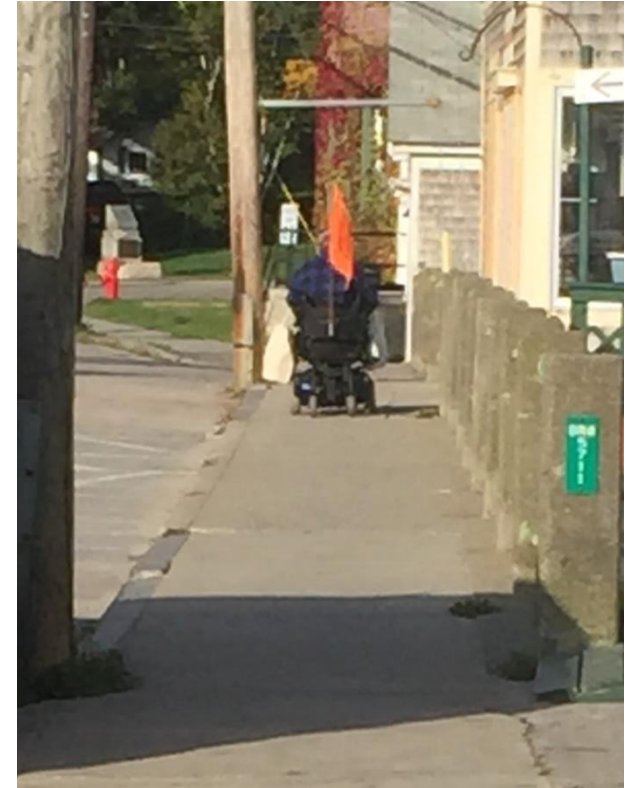
Engagement: 91

Opportunity: 53



# What might the aging need to stay on the island?

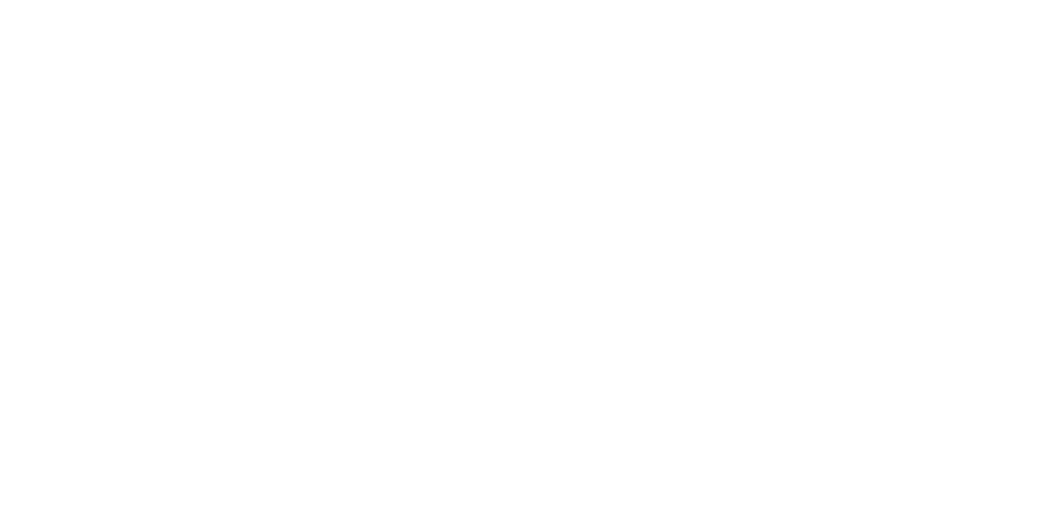
- Walkable neighborhood
- Accessible, affordable housing
- Medical care: telemedicine, pharmacy
- Transportation: car sharing program, taxi service
- Engagement: community center opportunities
- Part-time job opportunities





# Building a Connected Community

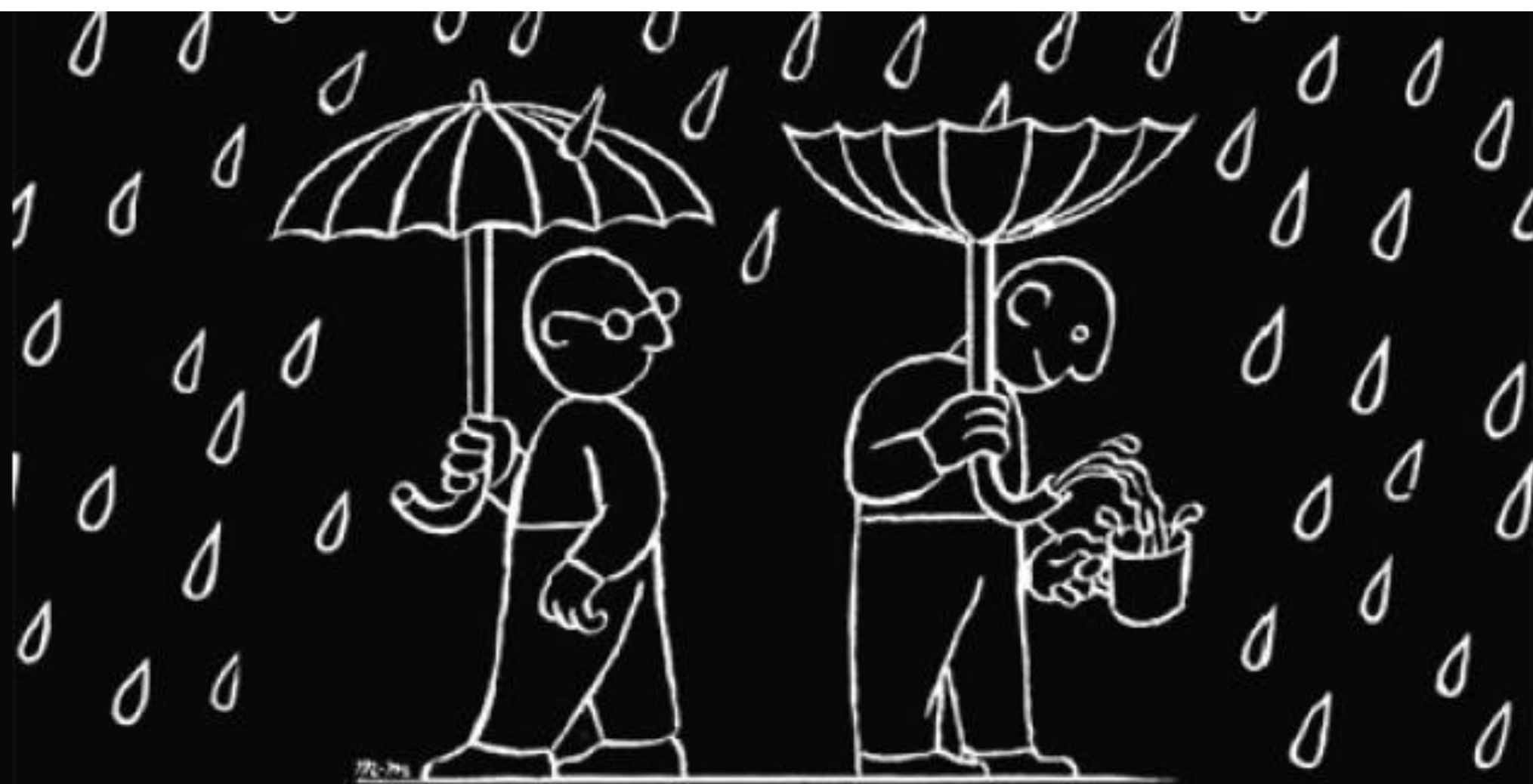






# Mobile Community Center/ Activated Park Spaces



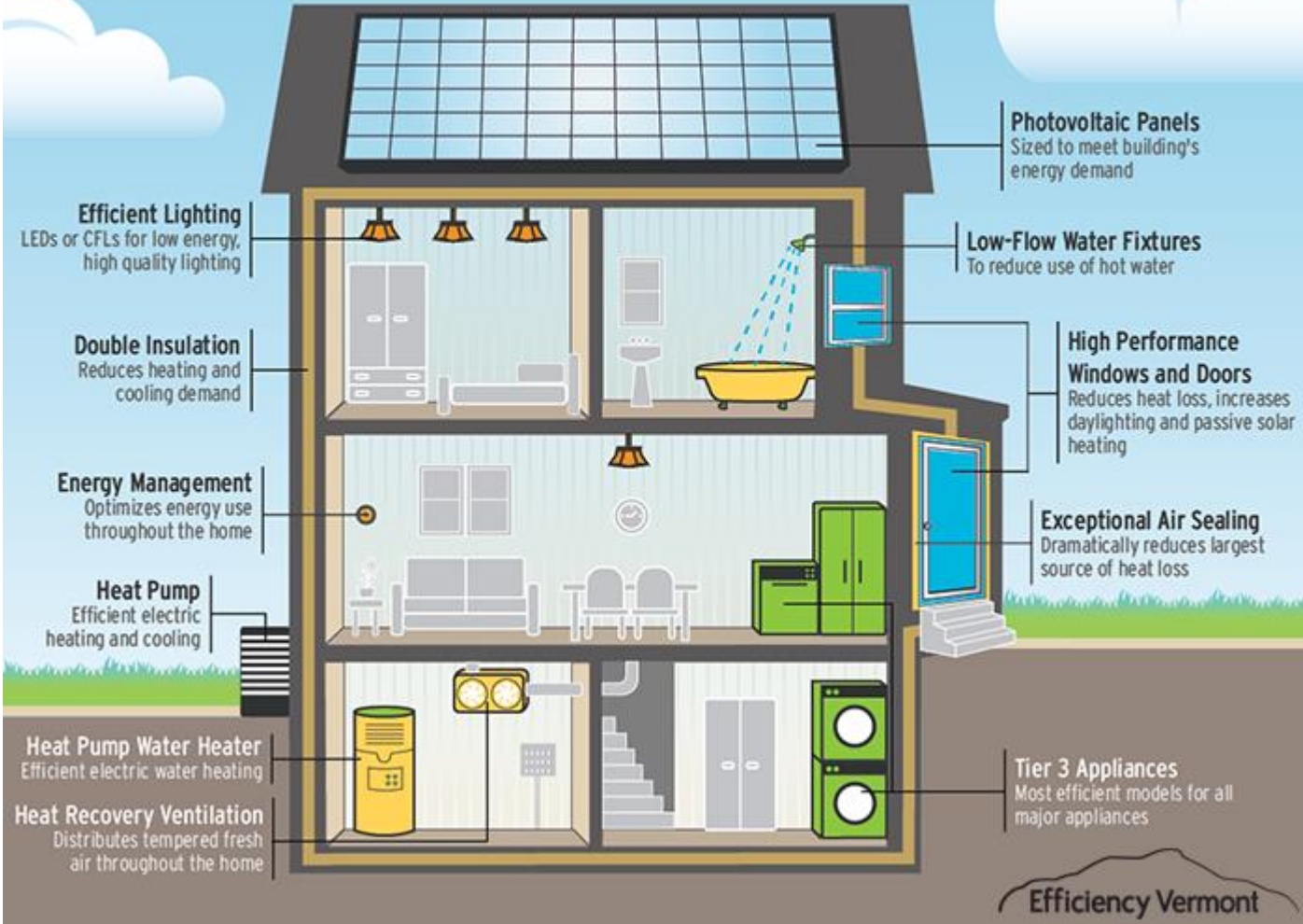


**INNOVATION IS A STATE OF MIND**

# Net Zero Island



# Features of a net-zero home

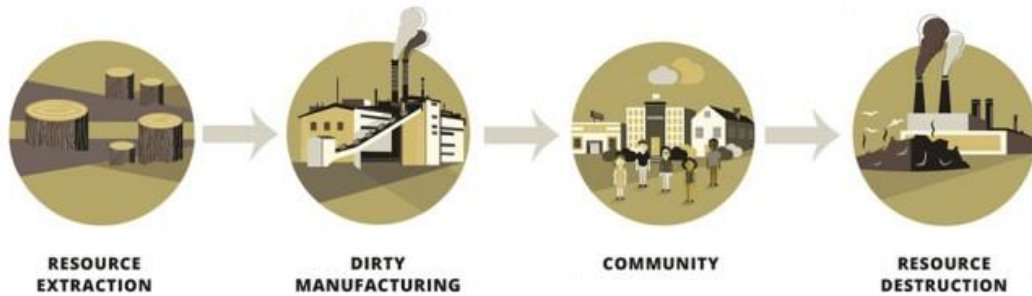


BRIGHTBUILT BARN  
1 BEDROOM  
1 BATHROOM



# Zero Waste Community

Everyone has the easily-accessible opportunity to recycle and compost at home, at work, and at school.

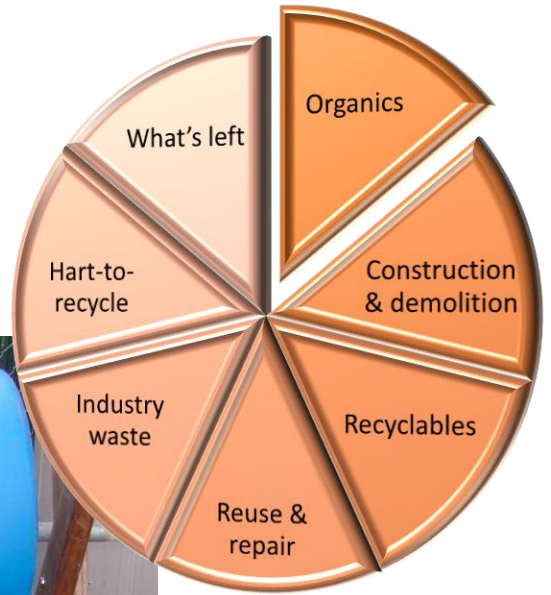


Linear, One-Way Production System

to  
➤➤➤➤







# Sustainable Agriculture

- Beginning farmers & fisherman are entrepreneurs.
- Opportunities for value-added products.
- Expansion of opportunities through shoulder-season agriculture.
- Edible landscaping.
- Explore opportunities to build community around food.







**“People have to be able  
to live here.”**

**“We shouldn’t have to deal with  
infrastructure to run our businesses.”**



*Finalists Economic Development Strategy*  
household income in Yonkers was higher  
a change since 2000 when it was slightly

Year	Median
2000	\$32,000
2005	\$33,000
2010	\$34,000

per capita household income

# Coastal Flooding Issues

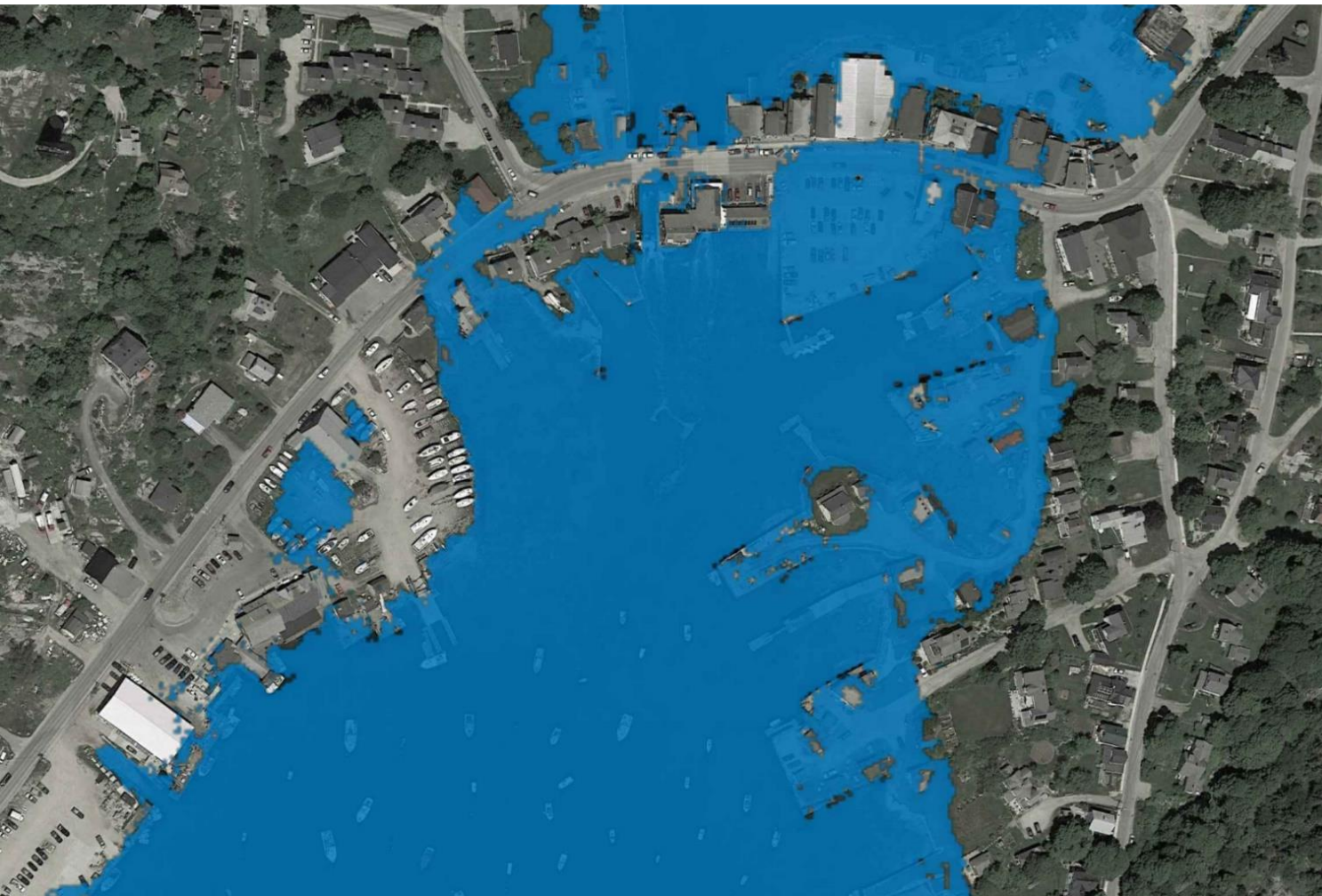


# Coastal Flooding Threats

- Storm Tides
  - Feb 1978 Storm of Record +9.7 ft
  - FEMA Zones AE 10 and VE 13
- Nuisance Flooding
  - King Tides
  - Nov 2016 +7.6 ft
- Sea Level Rise
  - Pushing high (King) tides higher
  - Projections for future sea level rise

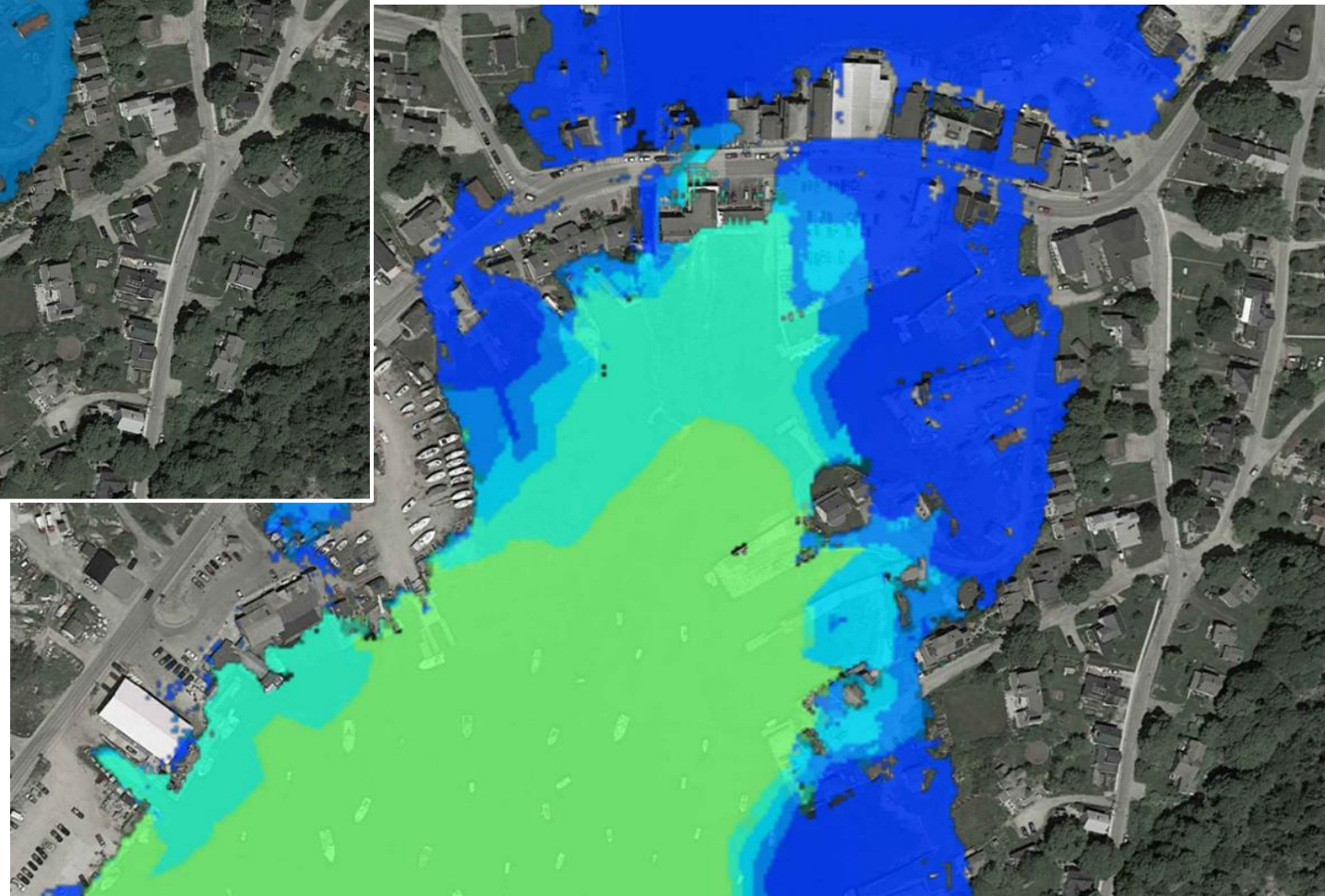


# Ransom Engineering Study

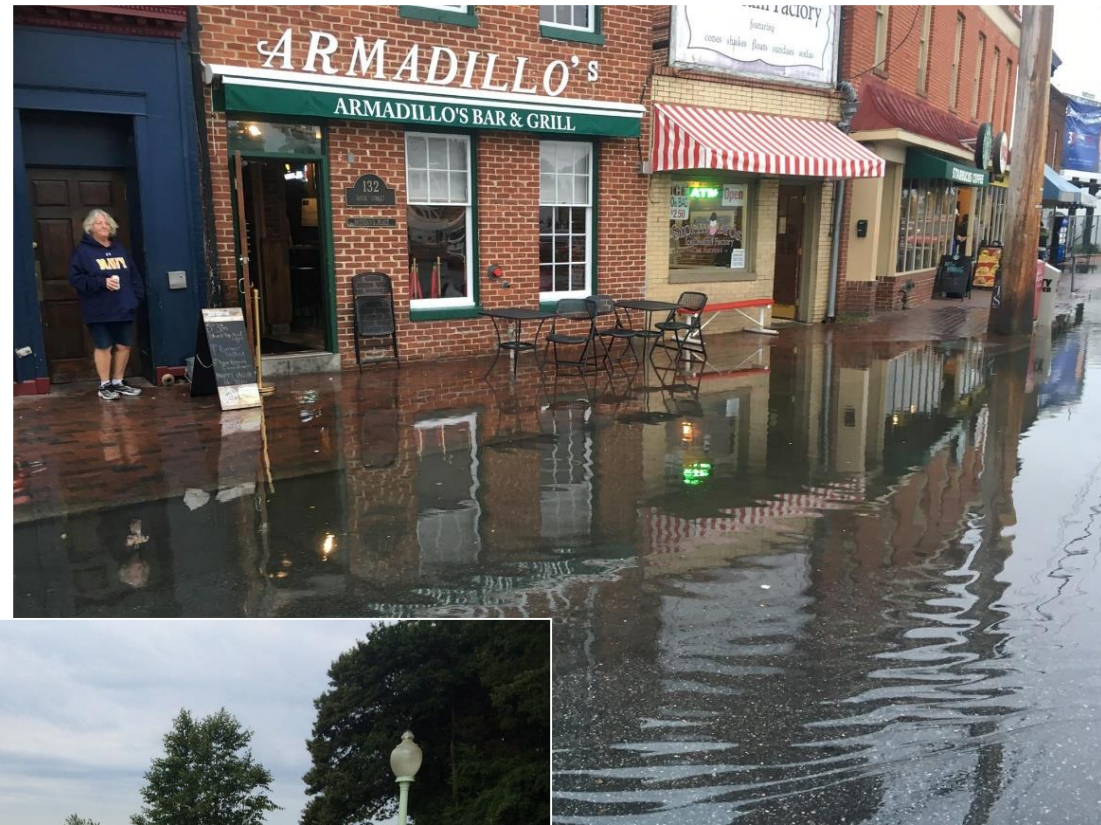


100-year Storm Surge and Waves

Town should consider map  
amendment or change



# Nuisance Flooding Annapolis and US Naval Academy

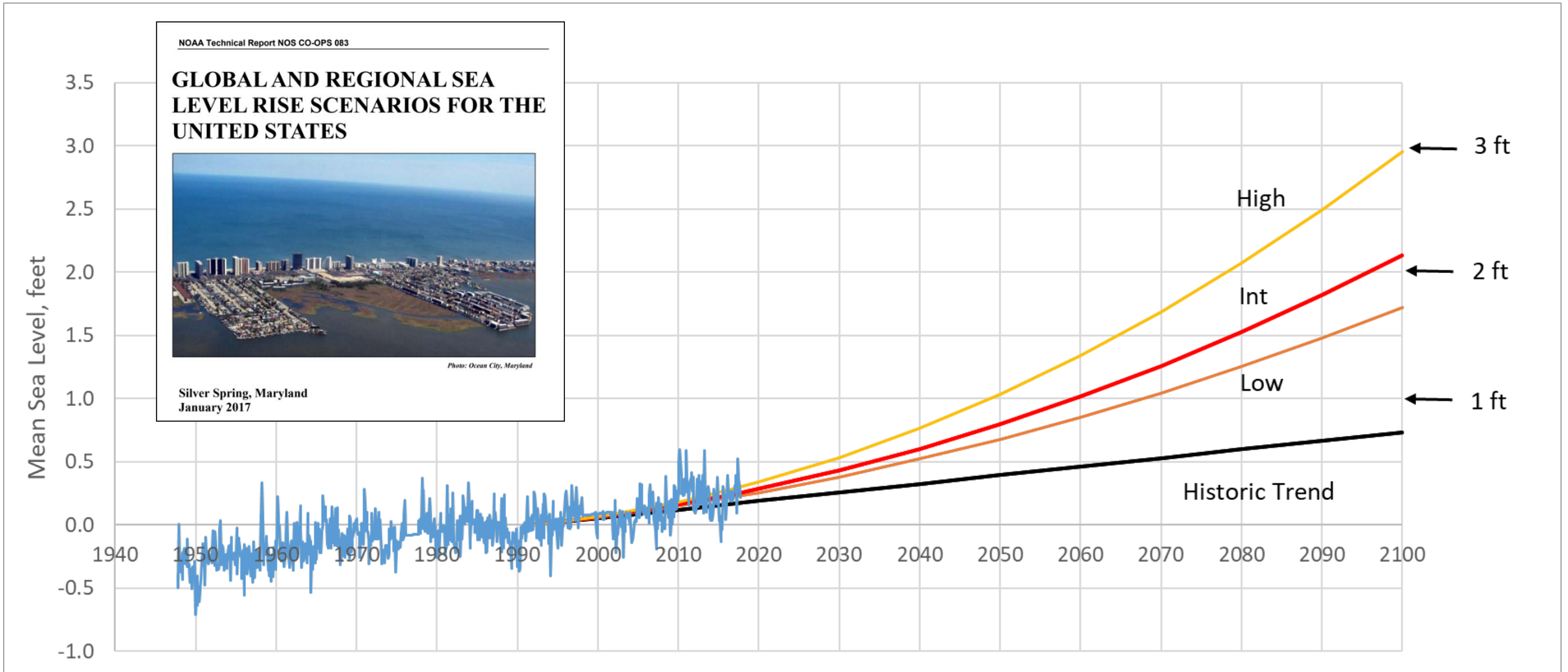


Late 1980's: 1 flood every 3 years  
2015-2017: 15 to 20 floods per year



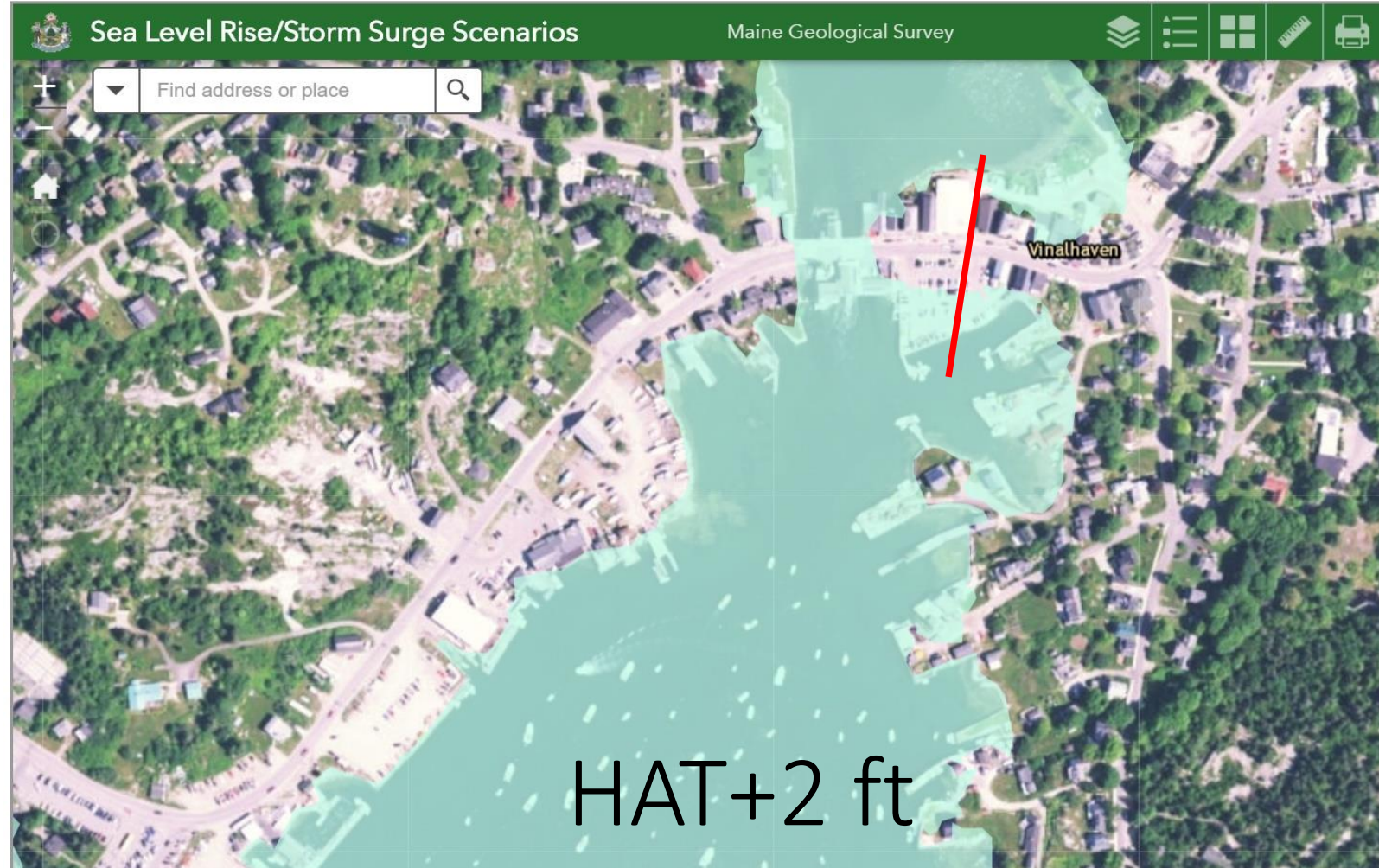
# Sea Level Rise

## Measured mean sea level at Bar Harbor and Projections for Future

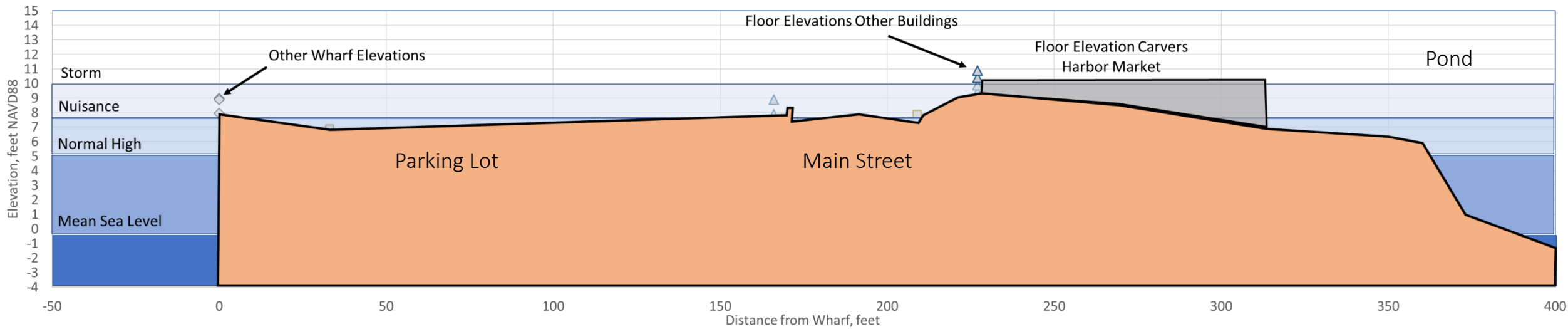


# Maine Geological Survey Coastal Hazards Sea Level Rise and Storm Surge

- Highest Annual Tide (HAT)
  - Regulatory Boundary for Shoreland Zoning Act
  - HAT is about the same as the Nov 2016 King Tide
- State maps show HAT plus sea level rise
- Consider elevation transect across Main Street



# Transect Present Condition

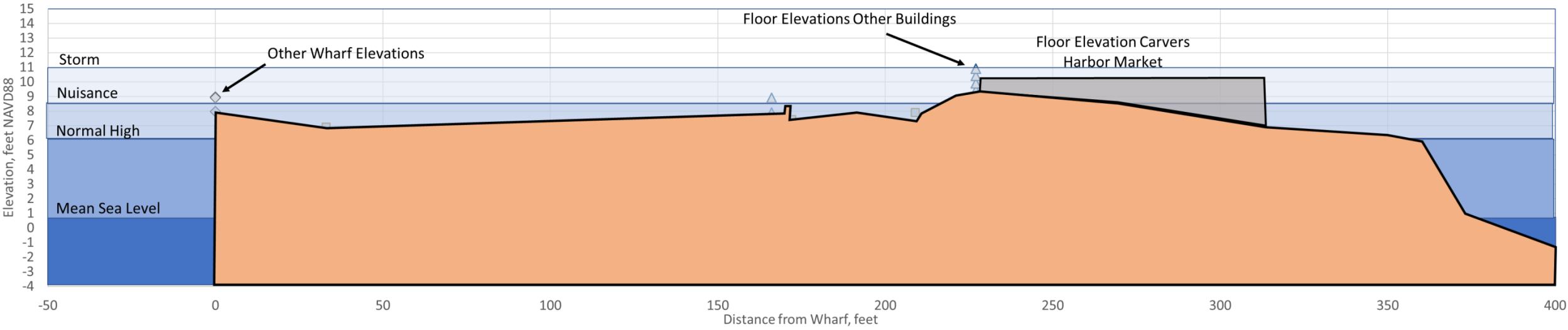


Storm = Nov 1978 and FEMA Base Flood Elevation

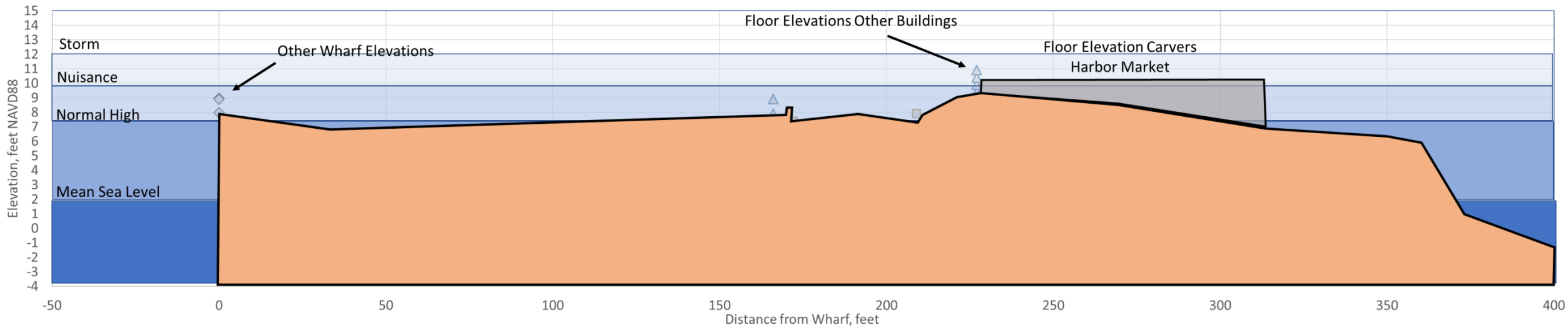
Nuisance = Highest Annual Tide (HAT) and Nov 2016 King Tide

Normal High = Mean Higher High Water

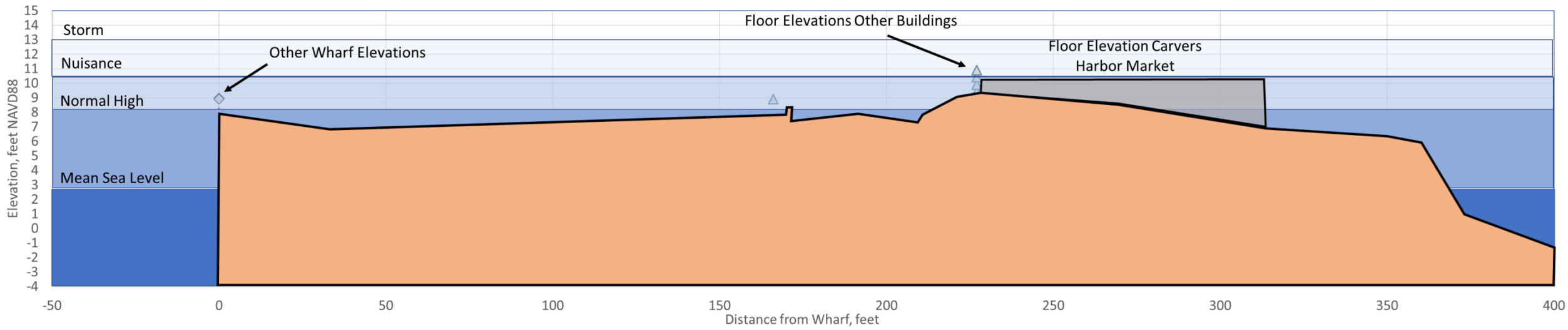
# Transect 1 foot Sea Level Rise



# Transect 2 feet Sea Level Rise



# Transect 3 feet Sea Level Rise



# Response to Coastal Flooding

## **Armor, Adapt, or Abandon**

Consider Town's Positives and Negatives

### **Positives**

- No ground subsidence
- Low historic rate of SLR
- Storm surge elevation relatively low
- Large % of harbor shoreline is wharf with parking
- Buildings are light wood frame
- Single road
- Stormwater can drain two directions

### **Negatives**

- Porous grout and granite block
- Sluice structure connecting Carvers Pond
- Downtown is a peninsula
- Large % of Pond shoreline is privately owned
- Wood frame buildings limit floodproofing options

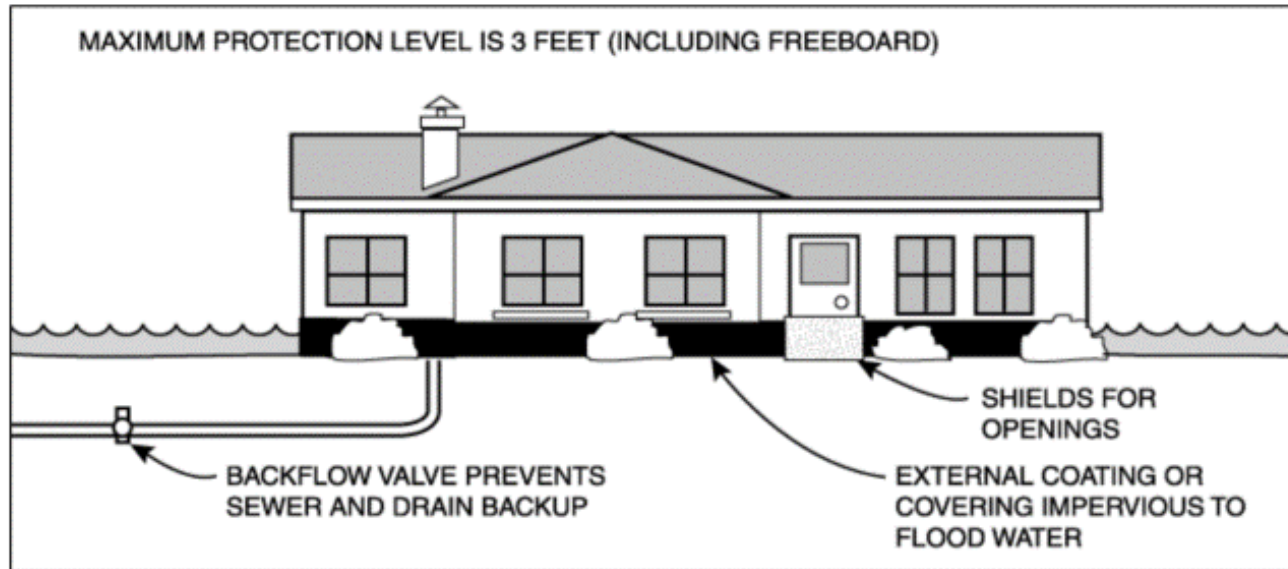
# Armoring Option: Floodwall

- Widely used in other locations
- Difficult (not impossible) in Vinalhaven
  - Porous grout
  - Peninsula shoreline relative to land area
  - Limited space and private property
  - Difficult near sluice structure
  - May need flood gates at sluice
- Low wall could reduce wave action from harbor during storms





# Adaptation Option: Dry Floodproofing



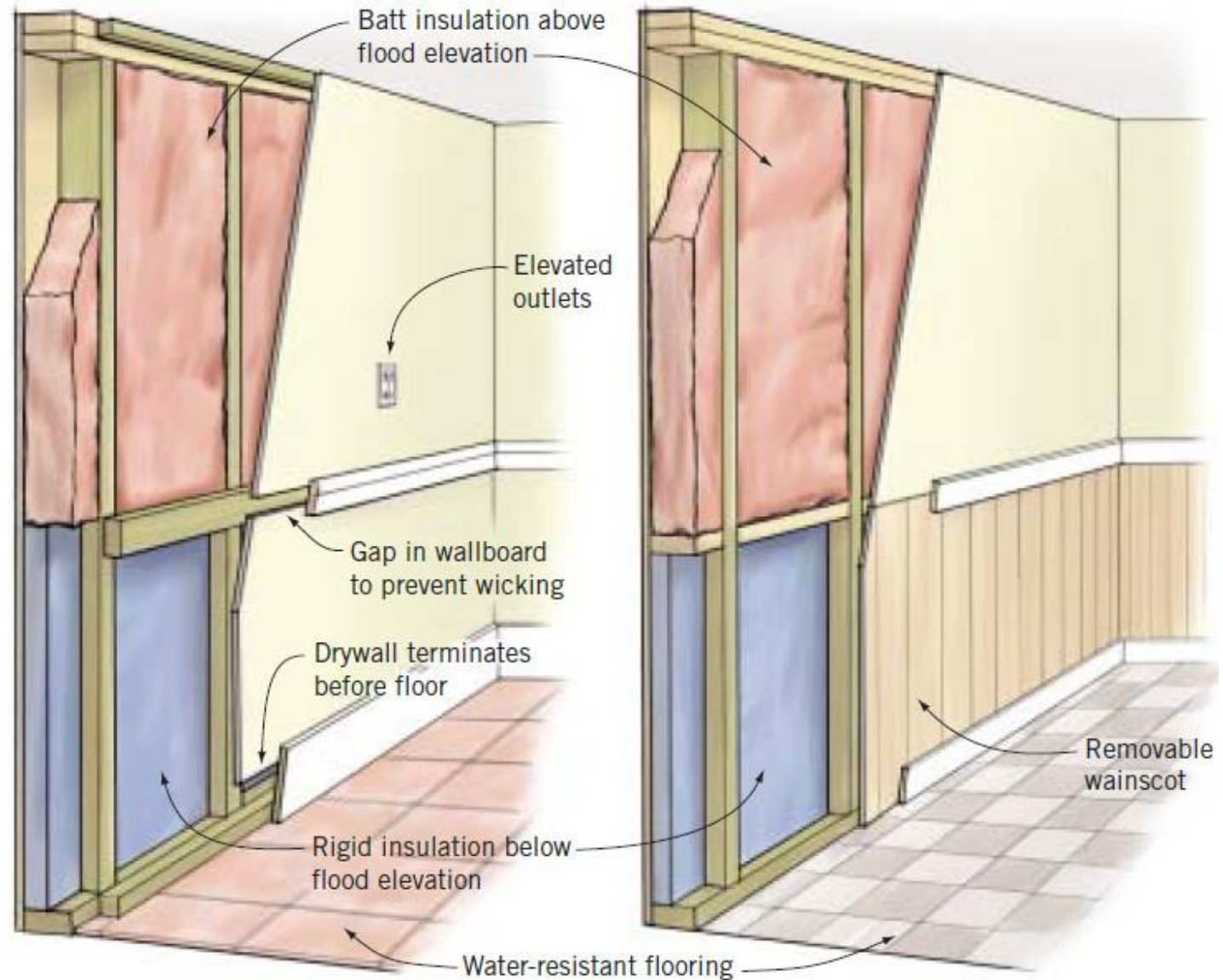
- Can be low cost
- Would work for low flood levels and wave effects
- Would work if Pond level not a high as harbor level
- Difficult with light wood frame buildings



# Adaptation Option: Wet Floodproofing

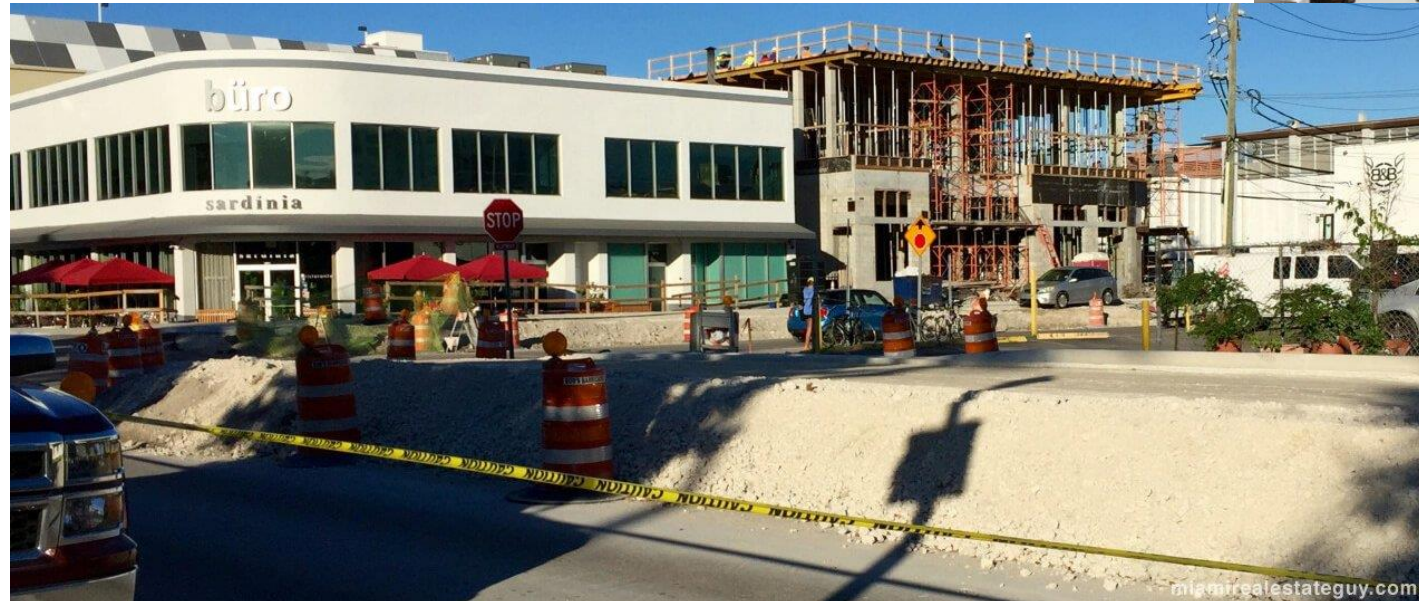
- Individual action of each property owner
- Can be low cost
- Does not prevent all flood damage but adds resiliency

## DRAINABLE, DRYABLE WALL CONSTRUCTION



# Adaptation Option: Raise Roads (and Wharfs)

- Appears to be an appropriate action for Town
- Being done in other locations
- Cost effective public works approach to resiliency
- Best done as part of overall revitalization or life cycle upgrade



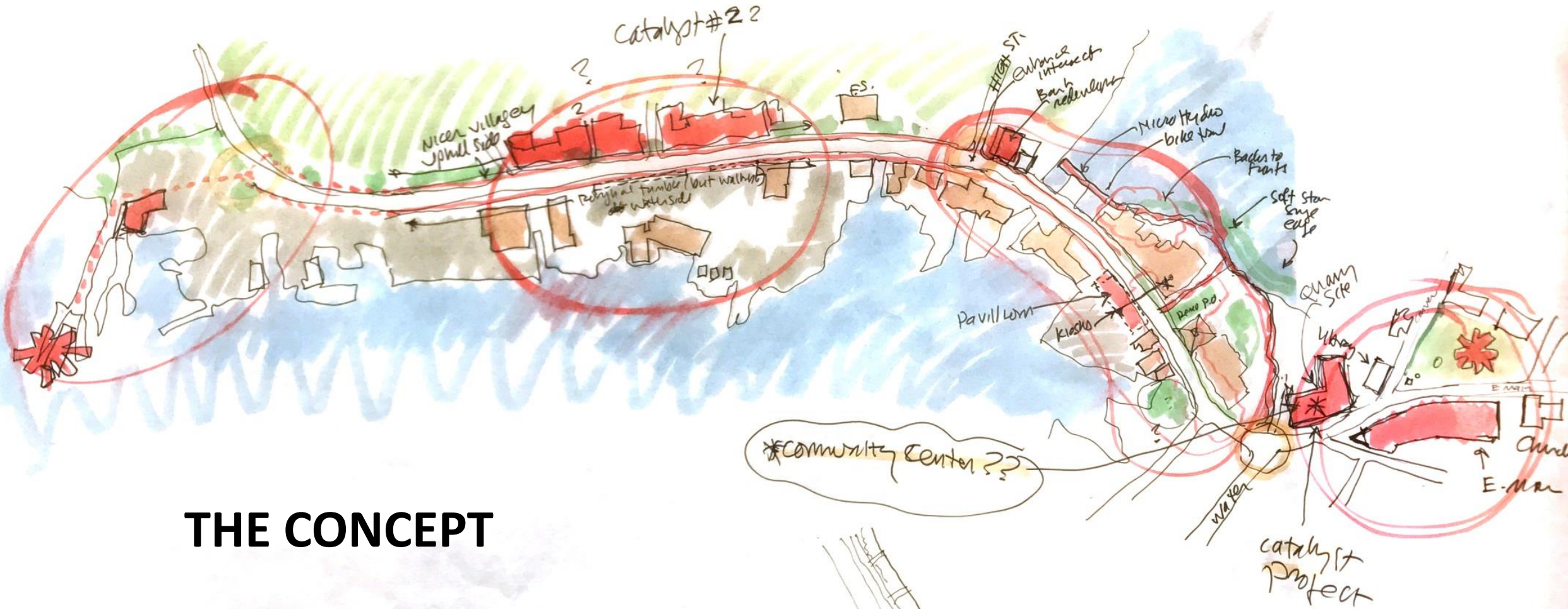
# Adaptation Option: Raise Buildings

- Appears to be an appropriate action
- Being done in other locations
- Action for property owner, unless Town can coordinate
- Cost effective, especially with reduction in FEMA flood insurance



# Improving Resiliency to Coastal Flooding

- Near term (to 2050):
  - Elevate road and sidewalks
    - Prevent nuisance flooding with 1 ft SLR scenario
    - Need to evaluate stormwater and sewer
  - Encourage prudent wet or dry floodproofing measures
- Long term (to 2100):
  - Consider long term plan to raise wharf elevations
  - Consider modifying sluice structure
  - Consider long term plan to raise buildings
    - First floor above future FEMA base flood elevation
- Take advantage of life cycle replacement and upgrades



# THE CONCEPT

# MAIN/WEST MAIN STREET WITH MULTIUSE TRAIL AND COMPLETE STREETS

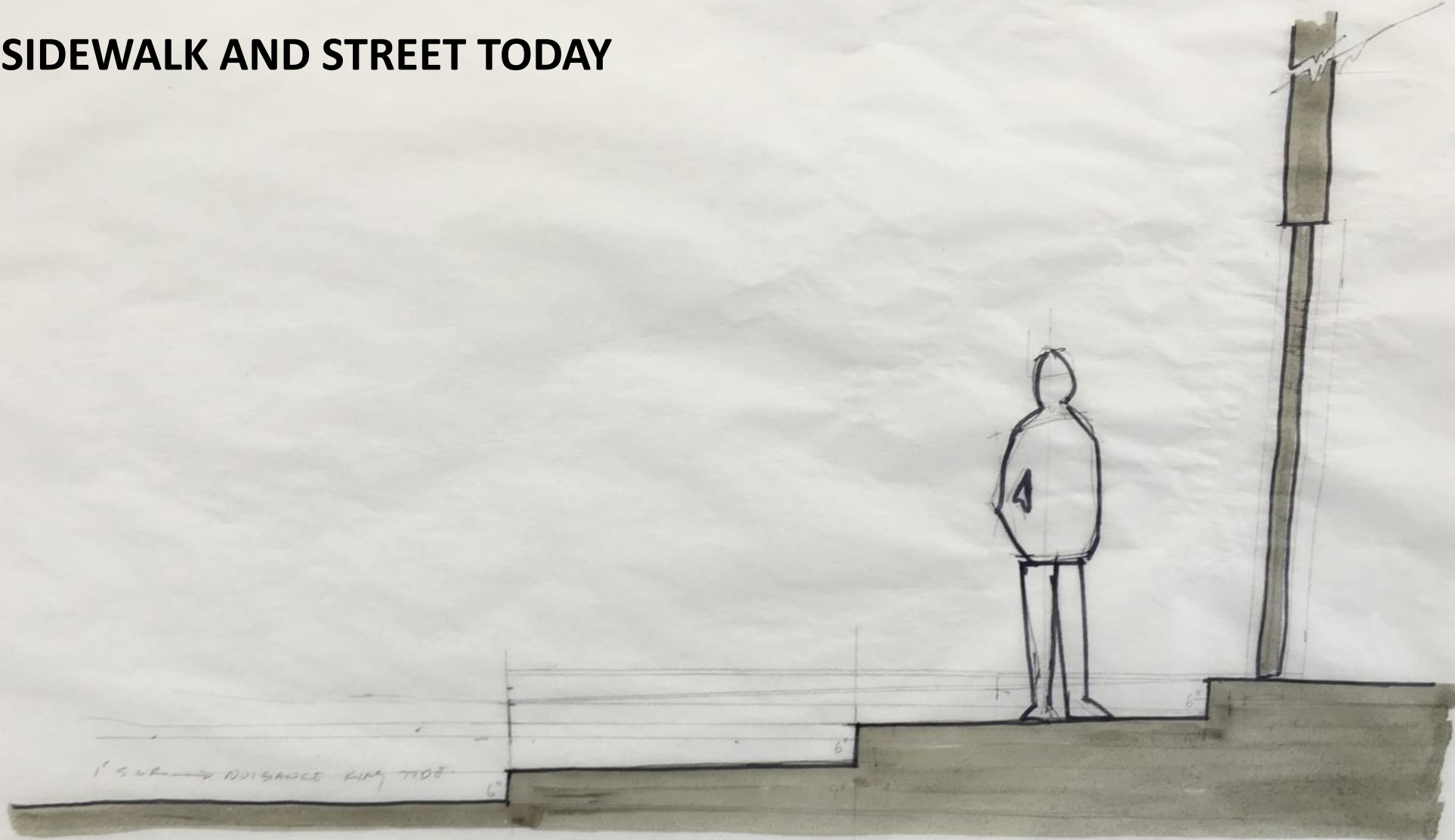


**MAIN STREET (DOWNSTREET/EAST SIDE) WITH  
MULTIUSE TRAIL AND COMPLETE STREETS**





# SIDEWALK AND STREET TODAY

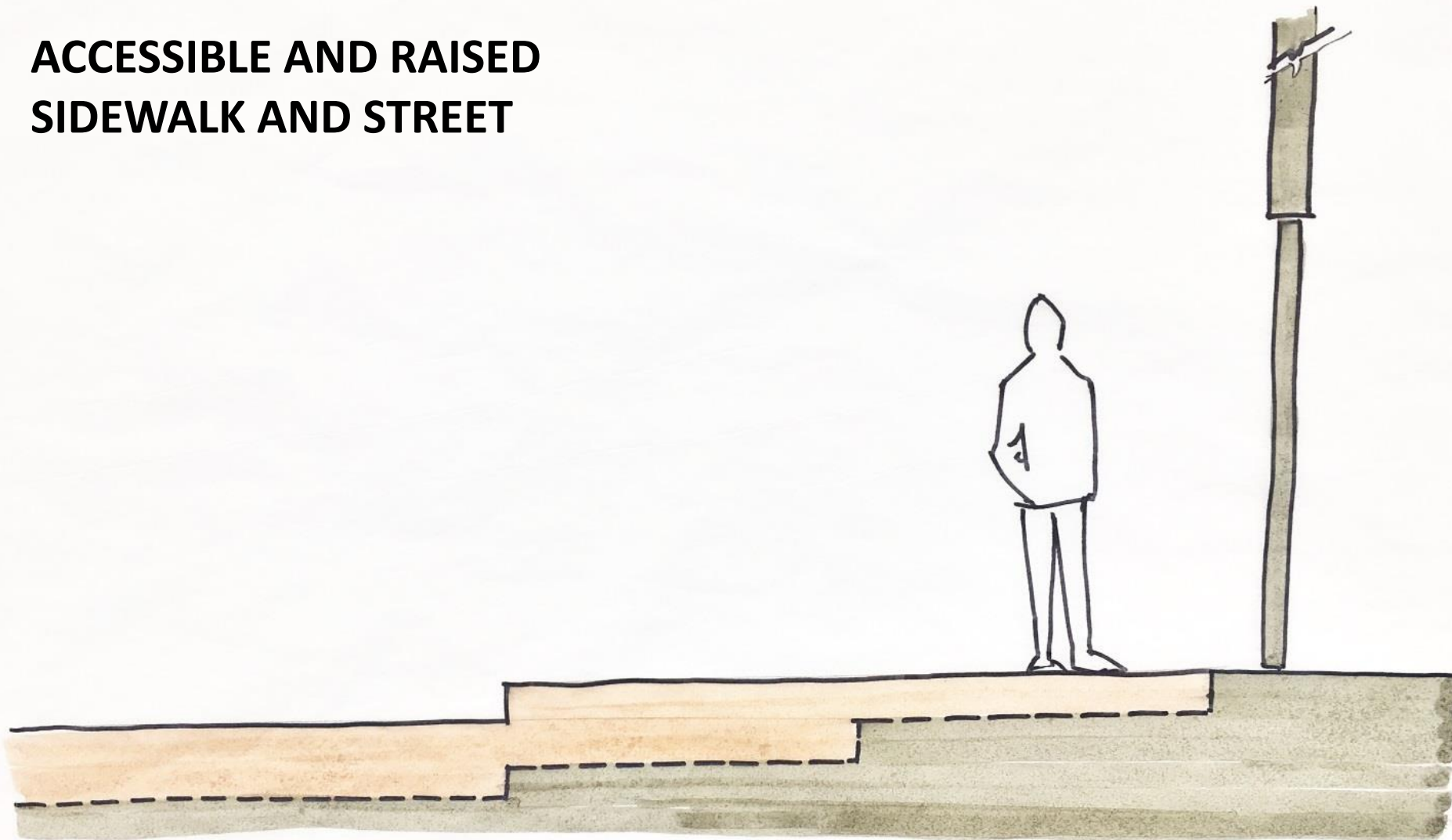


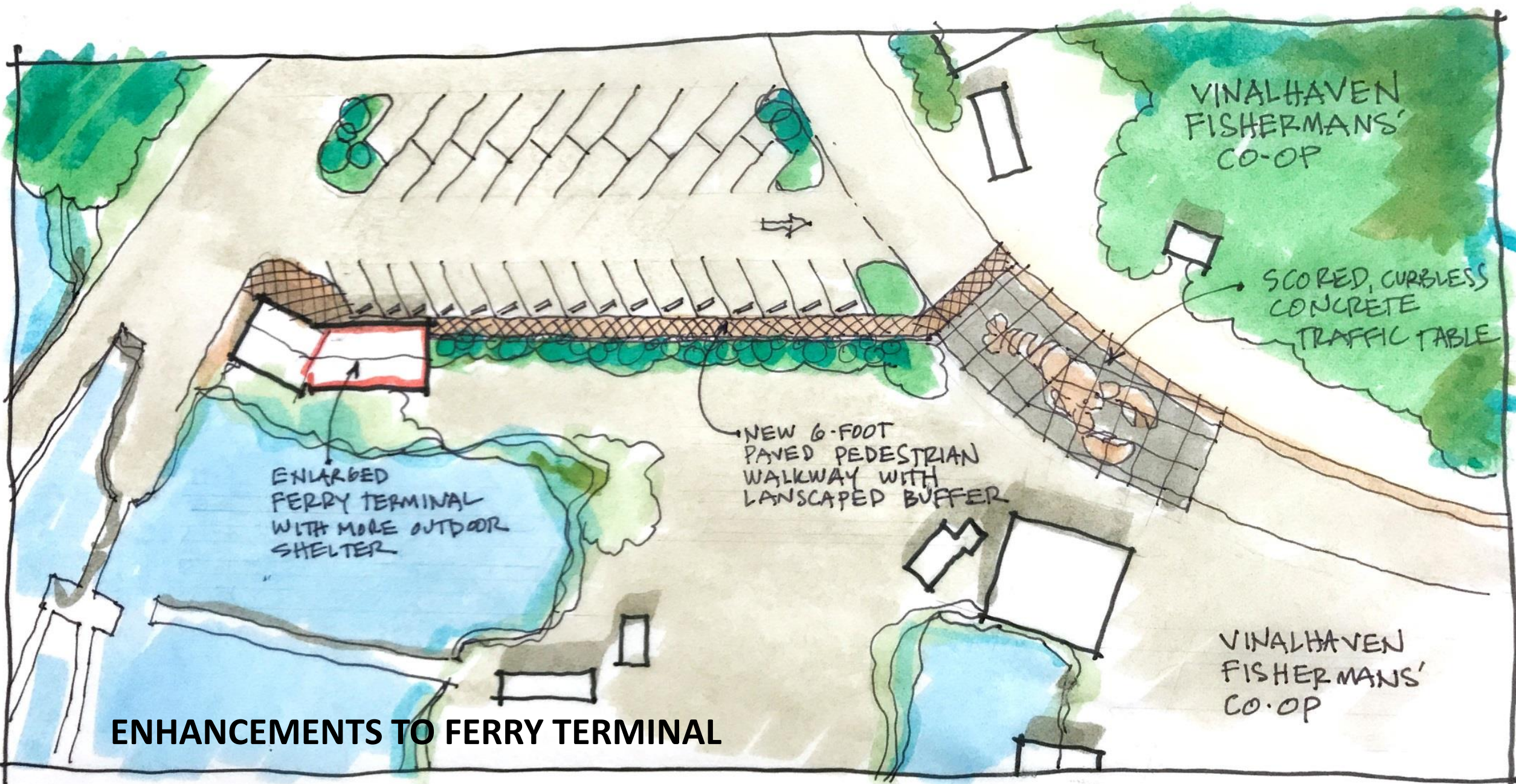
1' SUR -> NOISABLE KING TIDE

FROM GASS AT 10'

3'-10"  
3'-10"  
1'-10"

# ACCESSIBLE AND RAISED SIDEWALK AND STREET





VINALHAVEN  
FISHERMANS'  
CO-OP

SCORED, CURBLESS  
CONCRETE  
TRAFFIC TABLE

NEW 6-FOOT  
PAVED PEDESTRIAN  
WALKWAY WITH  
LANDSCAPED BUFFER

ENLARGED  
FERRY TERMINAL  
WITH MORE OUTDOOR  
SHELTER

VINALHAVEN  
FISHERMANS'  
CO-OP

**ENHANCEMENTS TO FERRY TERMINAL**

NEW 2-3 STORY COMMERCIAL DEVELOPMENT

ENHANCED SIDEWALK  
ON NORTH SIDE OF MAIN ST.

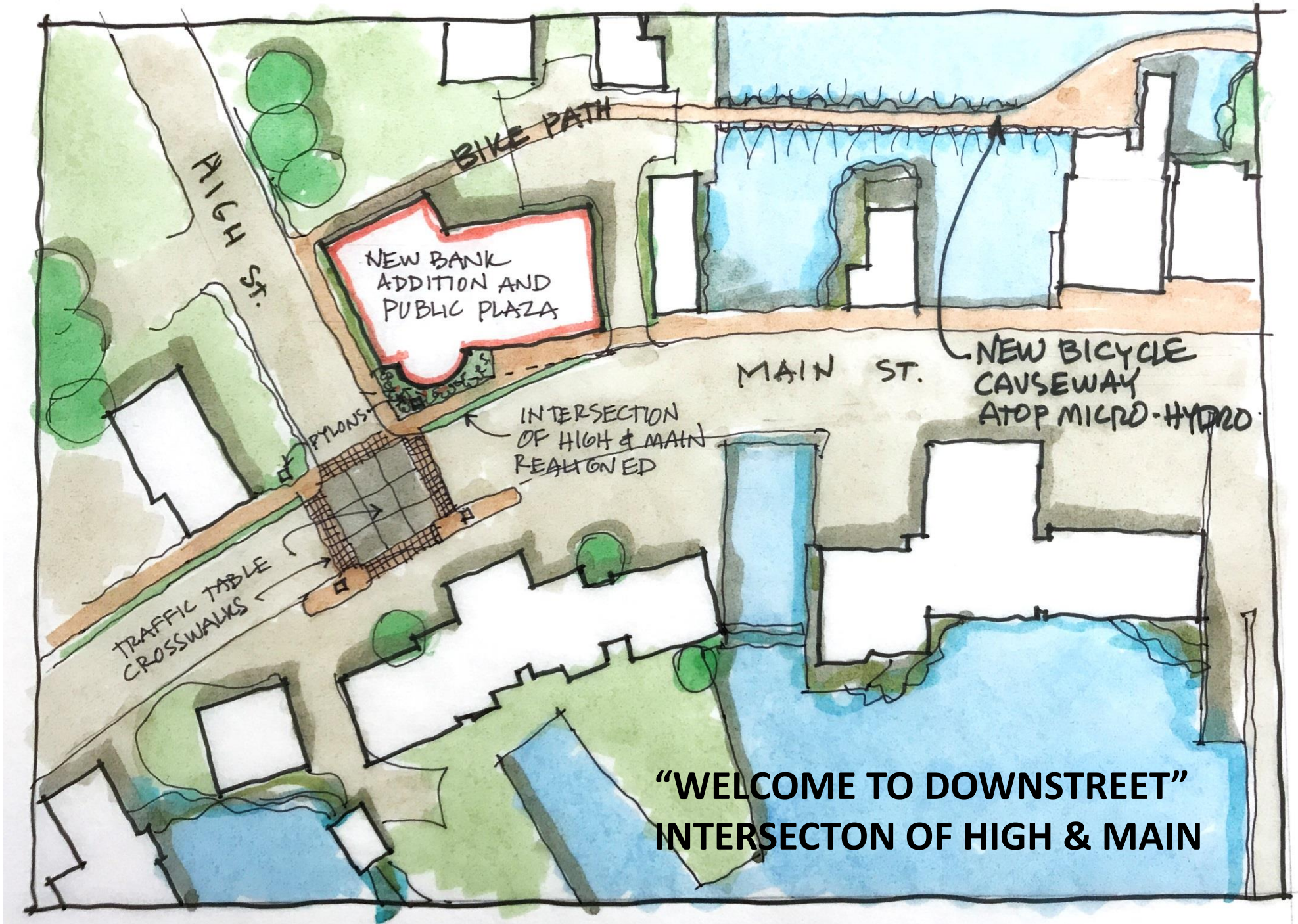
MINOR ENHANCEMENTS  
TO SOUTH SIDE OF  
MAIN ST. WHERE  
APPROPRIATE

**DEVELOPMENT OPPORTUNITIES  
BETWEEN THE FERRY TERMINAL  
AND DOWNSTREET**

FISHERMAN'S  
FRIEND

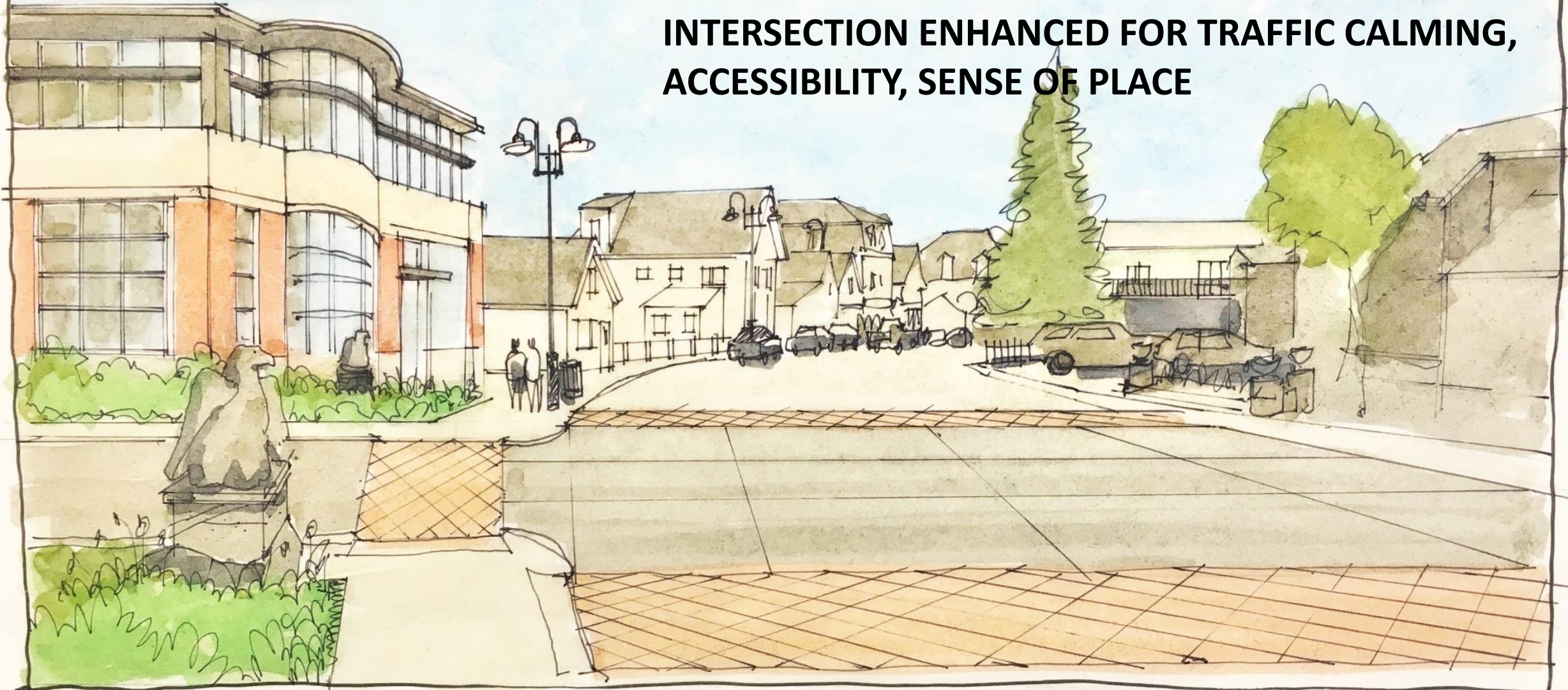






**“WELCOME TO DOWNSTREET”  
INTERSECTON OF HIGH & MAIN**

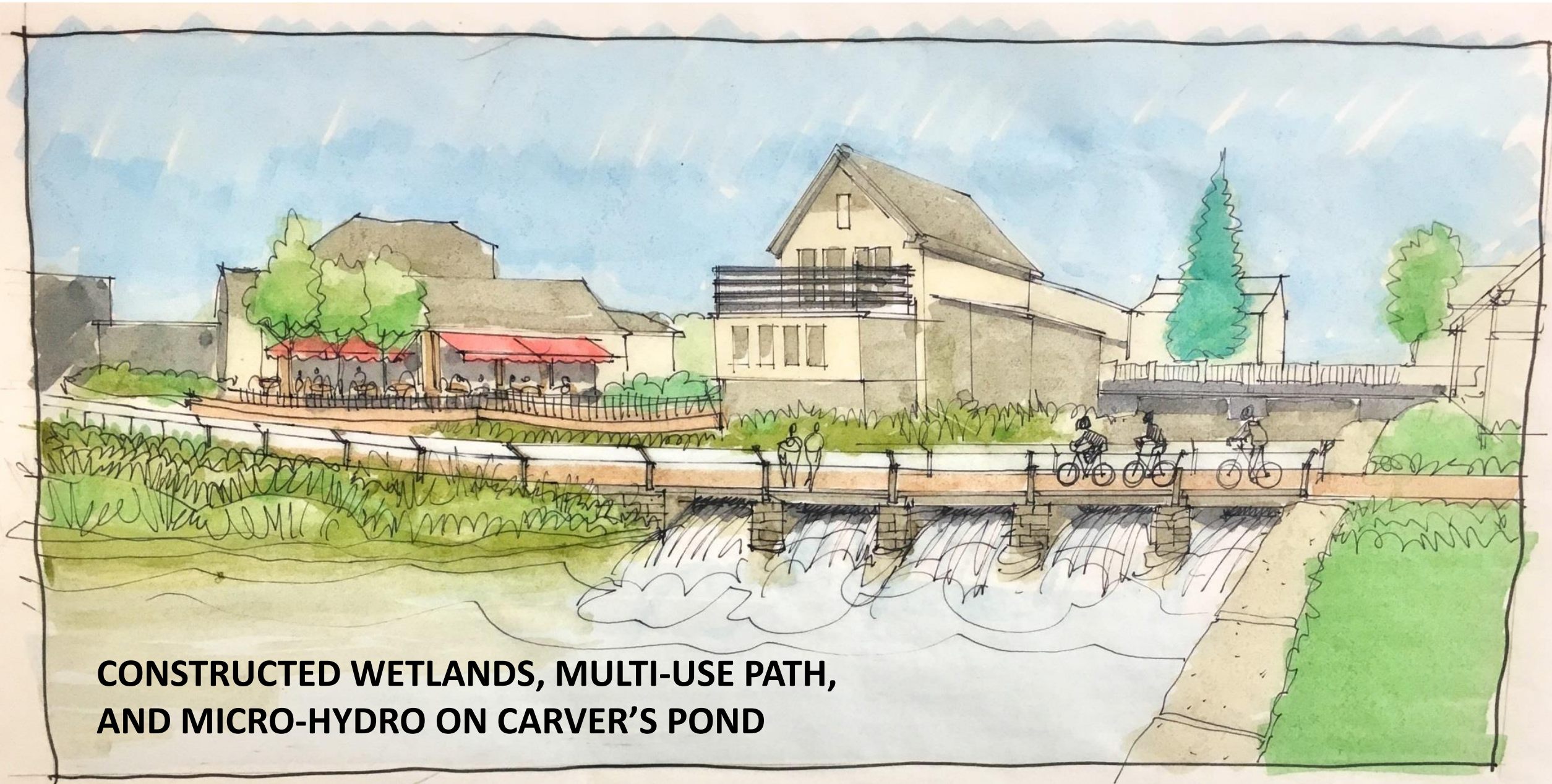
**ADDITION TO CAMDEN NATIONAL BANK.  
INTERSECTION ENHANCED FOR TRAFFIC CALMING,  
ACCESSIBILITY, SENSE OF PLACE**



**MAIN STREET (DOWNSTREET/EAST SIDE) WITH  
MULTIUSE TRAIL AND COMPLETE STREETS**





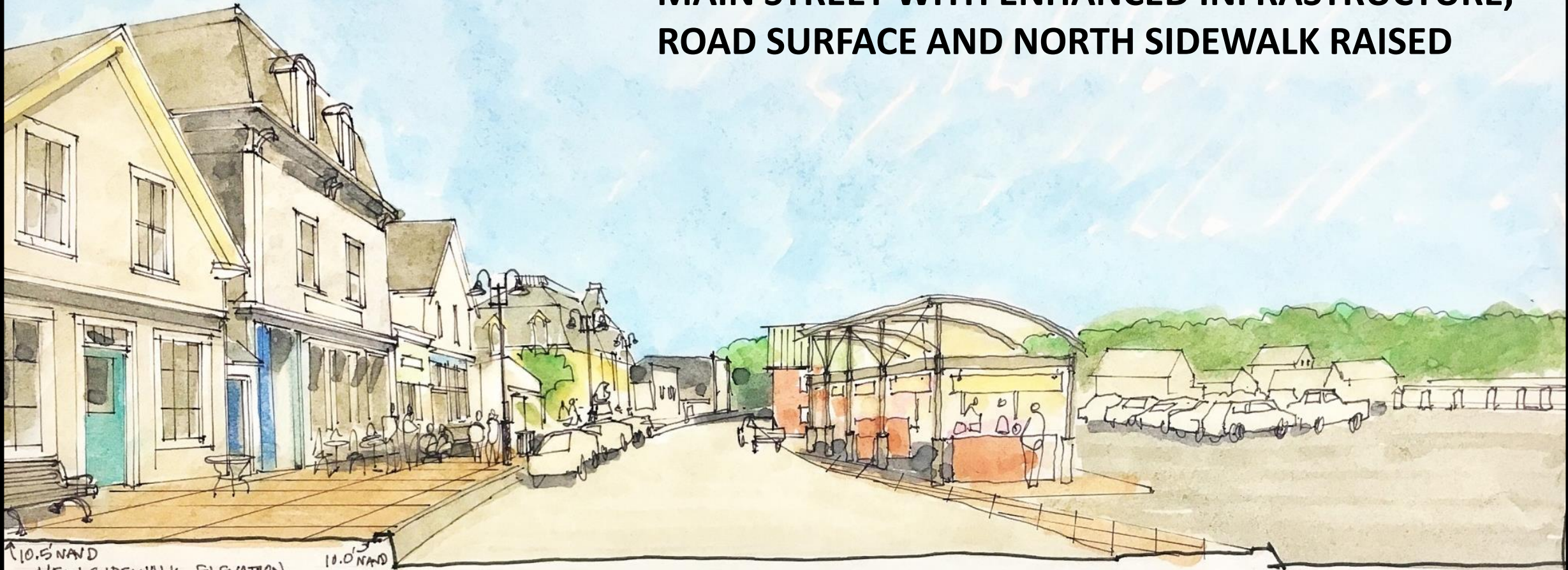


**CONSTRUCTED WETLANDS, MULTI-USE PATH,  
AND MICRO-HYDRO ON CARVER'S POND**



**NEW PARK AT DOWNSTREET CENTER**

# MAIN STREET WITH ENHANCED INFRASTRUCTURE, ROAD SURFACE AND NORTH SIDEWALK RAISED



↑ 10.5' N.A.D.  
NEW SIDEWALK ELEVATION  
MEETS ACCESSIBILITY REQUIREMENTS  
RAISED ABOVE 100-YR FLOOD

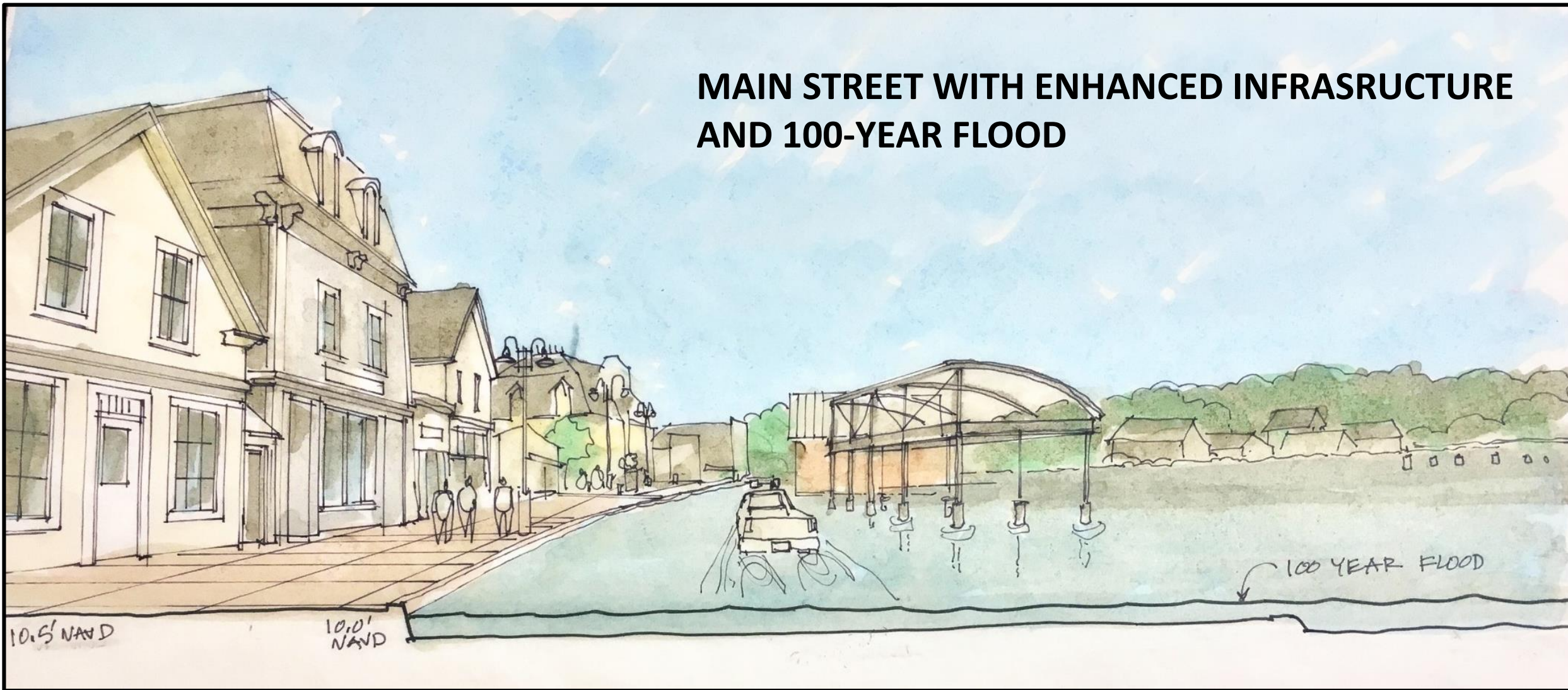
10.0' N.A.D.

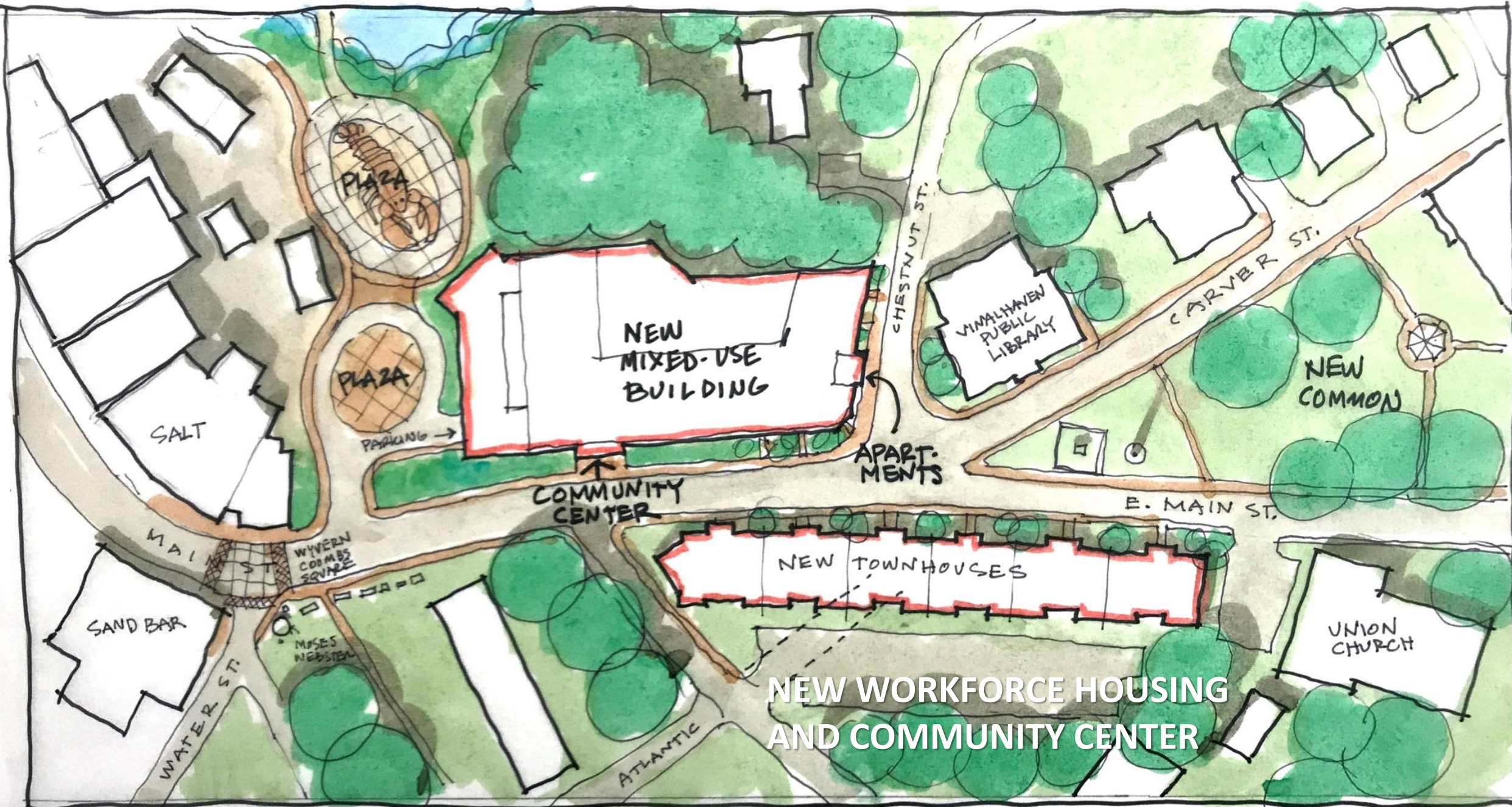
← NEW ROAD ELEVATION +1-0.0 FEET N.A.D. →

← BANDED CONC. WALKWAY →

EXISTING PARKING LOT

# MAIN STREET WITH ENHANCED INFRASTRUCTURE AND 100-YEAR FLOOD

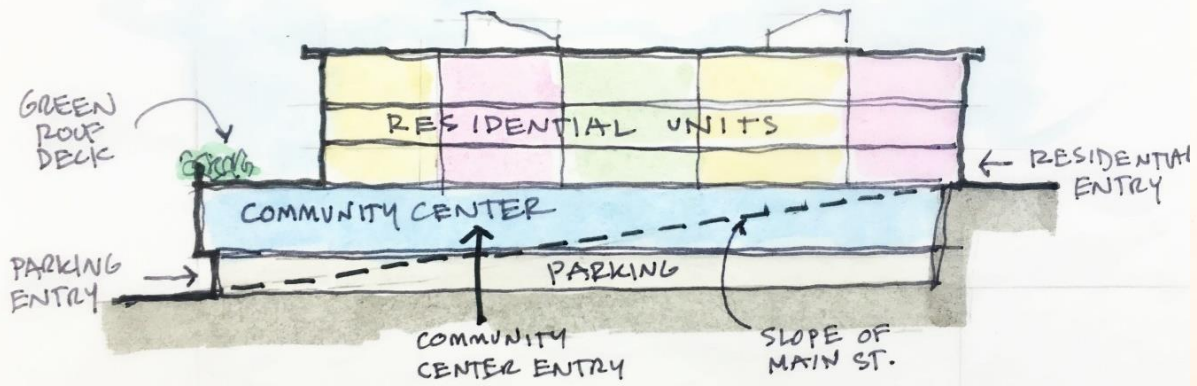




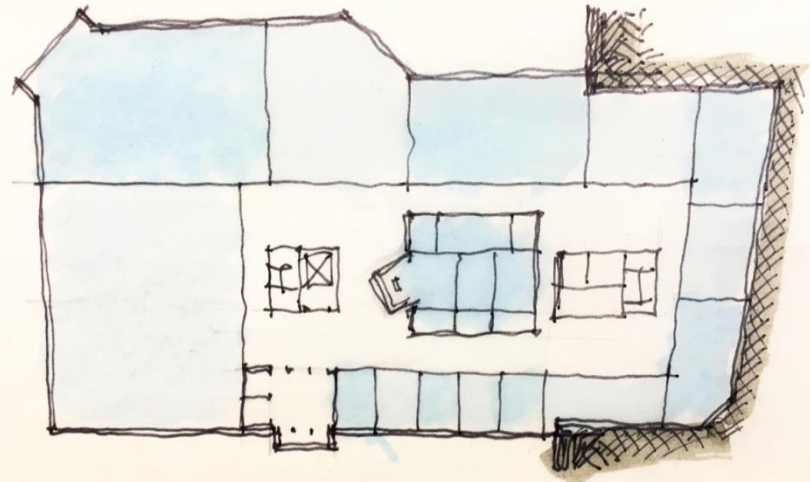
**NEW WORKFORCE HOUSING  
AND COMMUNITY CENTER**



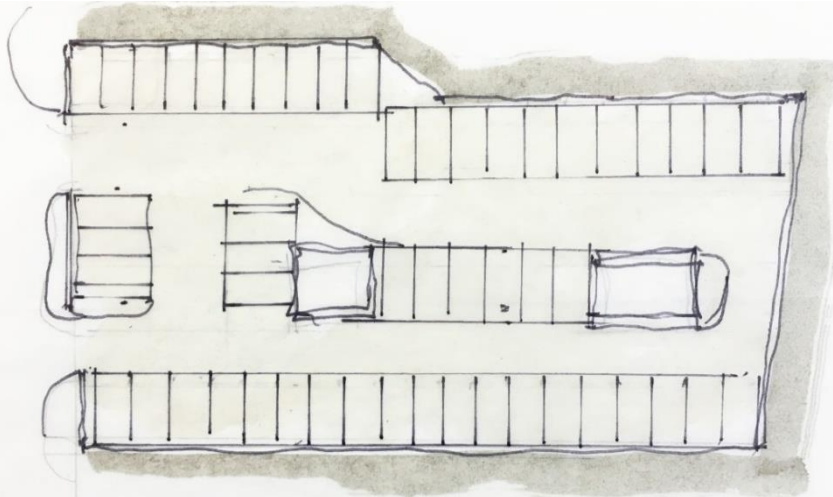
**NEW WORKFORCE HOUSING  
& COMMUNITY CENTER  
AT WATER AND MAIN STREETS**



BUILDING SECTION



COMMUNITY CENTER PLAN  
24,000 GSF, SPACES FROM 200 SF TO 4,800 SF



PARKING LEVEL PLAN



TYPICAL RESIDENTIAL FLOOR  
10 UNITS @ 850-1000 GSF EA.



**NEW WORKFORCE HOUSING AT EAST MAIN  
AND CHESTNUT STEETS**







# Making it Happen: First Steps to Funding

Project	Opportunity	Next Steps
Main/West Main Streets, sidewalks, and multiuse path	<b>MaineDOT</b> 1. Statewide Transportation Improvement Program (STIP) 2. Bicycle & Pedestrian Funding	1. Certification as a “Qualifying Pedestrian Area” 2. Start STIP process 3. Explore funding options
Sidewalks and accessibility, community center, flood control	<b>Maine CDBG</b> (Housing Assistance, Downtown Revitalization, Public Facilities, & Public Infrastructure)	Focus on downtown, new housing, and benefits to Harborside, John Carver, and Hillside Apartments and
All projects	<b>Maine Community Foundation</b>	Explore opportunities, especially feasibility funding
Community Center Housing component	<b>Tax Increment Financing (TIF)</b>	Explore TIF for any private development above community center to cover infrastructure
Flood mitigation	<b>FEMA Hazard Mitigation Grant</b>	Cost-benefit analysis
Multiuse Trail	<b>Federal Land &amp; Water Conservation Fund</b>	Explore funding

# Making it Happen: First Steps for Partnerships

Project	Opportunity	Next Steps
Quick starts	Quick starts all projects that require limited resources.	Organize volunteers <b>start today!</b>
Next steps	Identify priorities from presentation	Set town priorities from DART. <b>Start today!</b>
Community Center housing component	Housing developers & investment funds	Explore a willingness to partner for upper floor housing
Multiuse path and downtown revitalization	Explore with property owners	Explore- <b>no</b> purchase for projects with future federal transportation dollars
Portable community trailer	Trailer	Explore options for donation of used trailer
Flood mitigation	Coordinate with Vulnerability Assessment	Use DART to influence Assessment
Lower flood insurance rates	FEMA Community Rating System	Apply: 10-15% discount 1 <sup>st</sup> round, more with mitigation actions

# Vinalhaven: Turning the Tide [www.DesignResiliency.org](http://www.DesignResiliency.org)

