Bayside Resiliency & Flood Mitigation Forum

29 May 2026

Welcome!

Goals today

- Progress update
- Overview of solutions
- Community input
- sbrennan@fenwickisland-de.gov

Bayside Resiliency

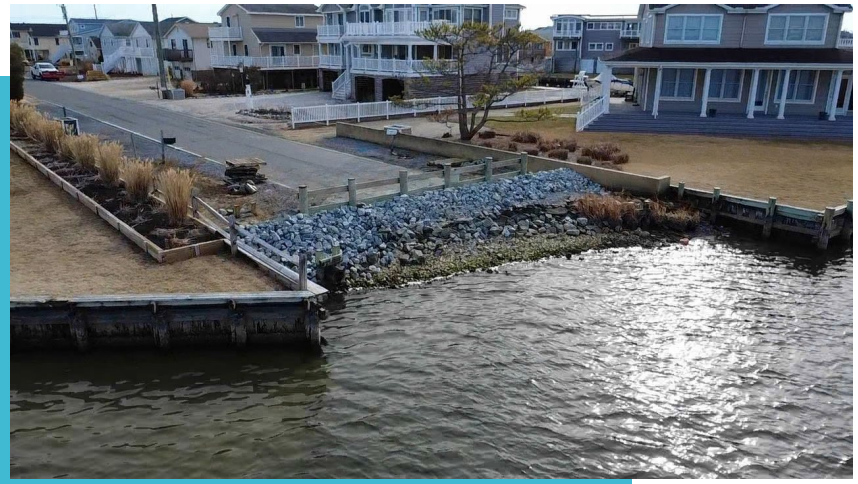
29 May 2026

Agenda

Introduction	1:00 - 1:10
Town activities since last August	1:10 - 1:20
Engineering research and planning	1:20 - 1:40
Resiliency toolkit	1:40 - 1:50
Break	1:50 - 2:00
Town project prioritization	2:00 - 2:15
Private property considerations	2:15 - 2:30
Discussion	2:30 - 2:55
Next steps	2:55 - 3:00

Problem statement

- Flooding on the bayside - tides 1.4’ above baseline (NAVD88) result in water on the streets
  - Potential public safety risk - response to emergencies, evacuation
  - Potential damage to Town and private property
  - Difficulty navigating flooded roadways
- More days of flooding over recent years
- DelDOT recognizes the threat; the plans for Coastal Highway were published in 2023
- Mitigation of ***tidal flooding*** also helps to mitigate ***catastrophic storm*** events, but doesn’t resolve all impacts



Town Activities

Since 2015, Public Works Dept has been maintaining and upgrading drains and outfalls

2023/2025 – Infrastructure Committee (IC)

- Funded engineering studies with grants
- Documented local tides and trends
- Held 3 public meetings

Spring/Summer 2025

- Funded of engineering master plan after FEMA grant was cancelled ($300k)

Fall 2025/Winter 2026

- Completed demonstration berm on Farmington St
- Began review of high priority town projects based on engineering recommendations
- Continued community engagement– today and 21 August

Goal by target year 2050

Success - Roads remain passable during high tides and intense rainfall events

Recommended Solution - Prevent flooding with a managed program of barrier construction such as bulkheads and berms

We have time however we need to begin now

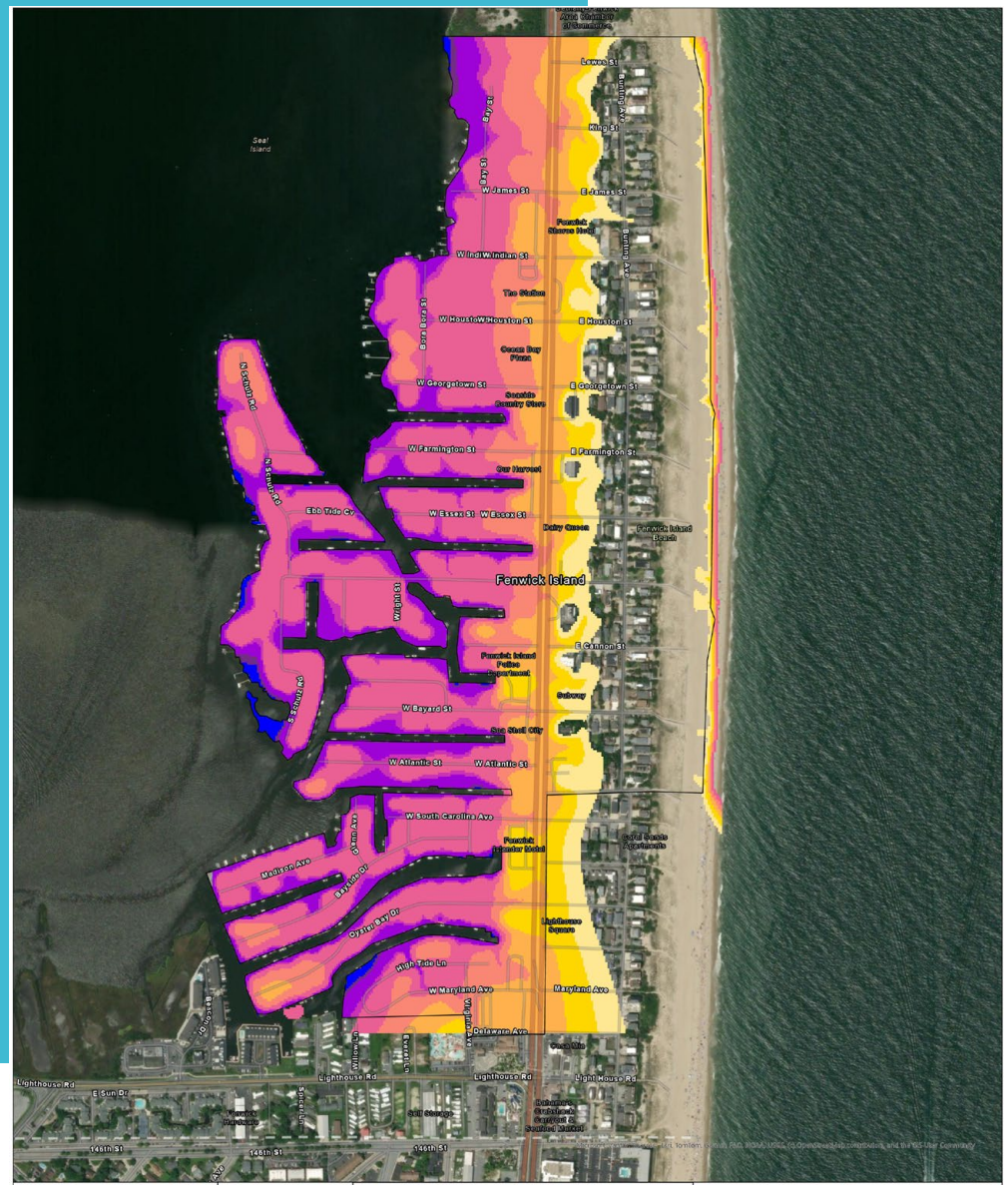
Engineering partnership

STRAUGHAN ENVIRONMENTAL

Straughan engineering project tasks

- MODELS -Updated flood forecasts
- EXISTING CONDITIONS - Defined drainage areas
- ASSESSMENT OF WIND/WAVE THREATS
- MASTER PLAN – Segmented Town
- TOOLKIT – Defined solutions for use on both private and town efforts

Updated Flood Forecast Models



LEGEND

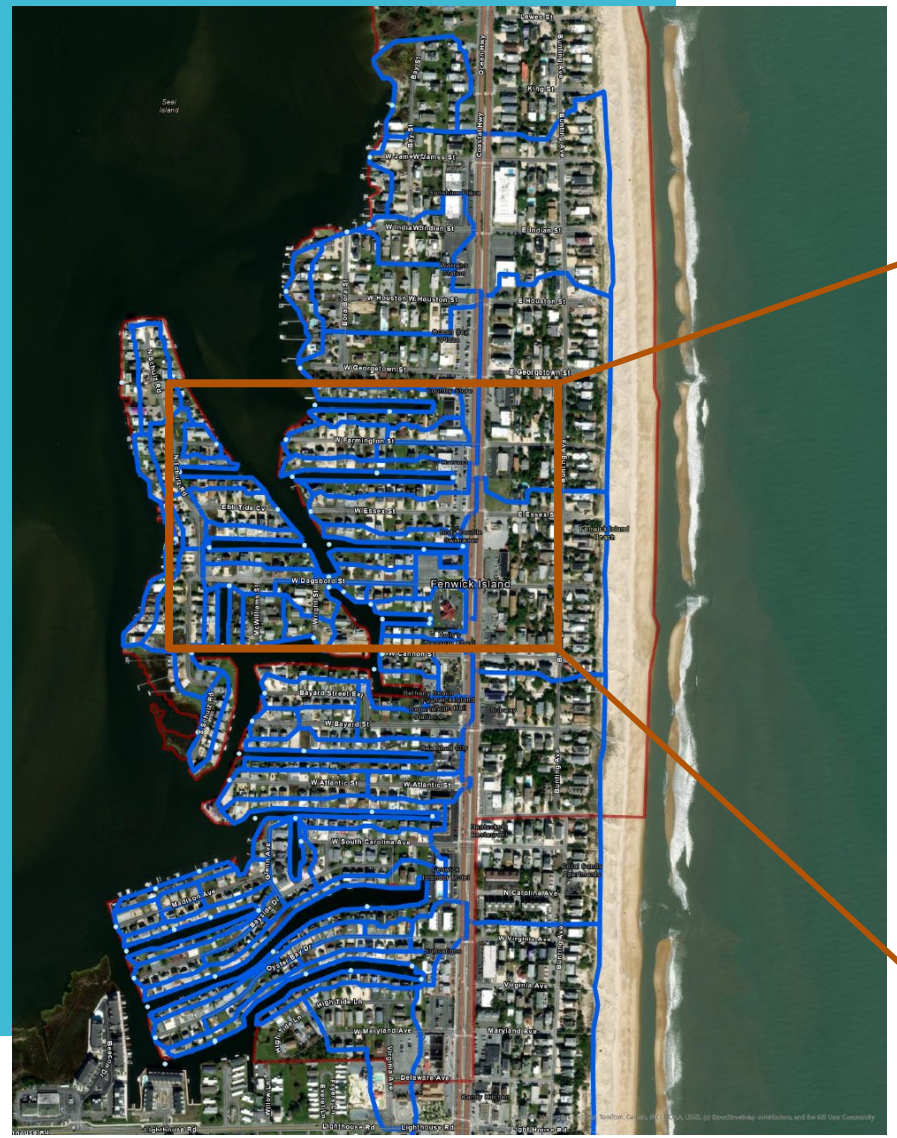
MHHW (0.69ft NAVD88)	MHHW + 3' (3.69)*
MHHW + 2030 SLR (0.82)*	MHHW + 4' (4.69)*
MHHW + 2050 SLR (1.41)*	MHHW + 5' (5.69)*
MHHW + 1' (1.69)*	MHHW + 6' (6.69)*
MHHW + 2' (2.69)*	Town of Fenwick Island Boundary

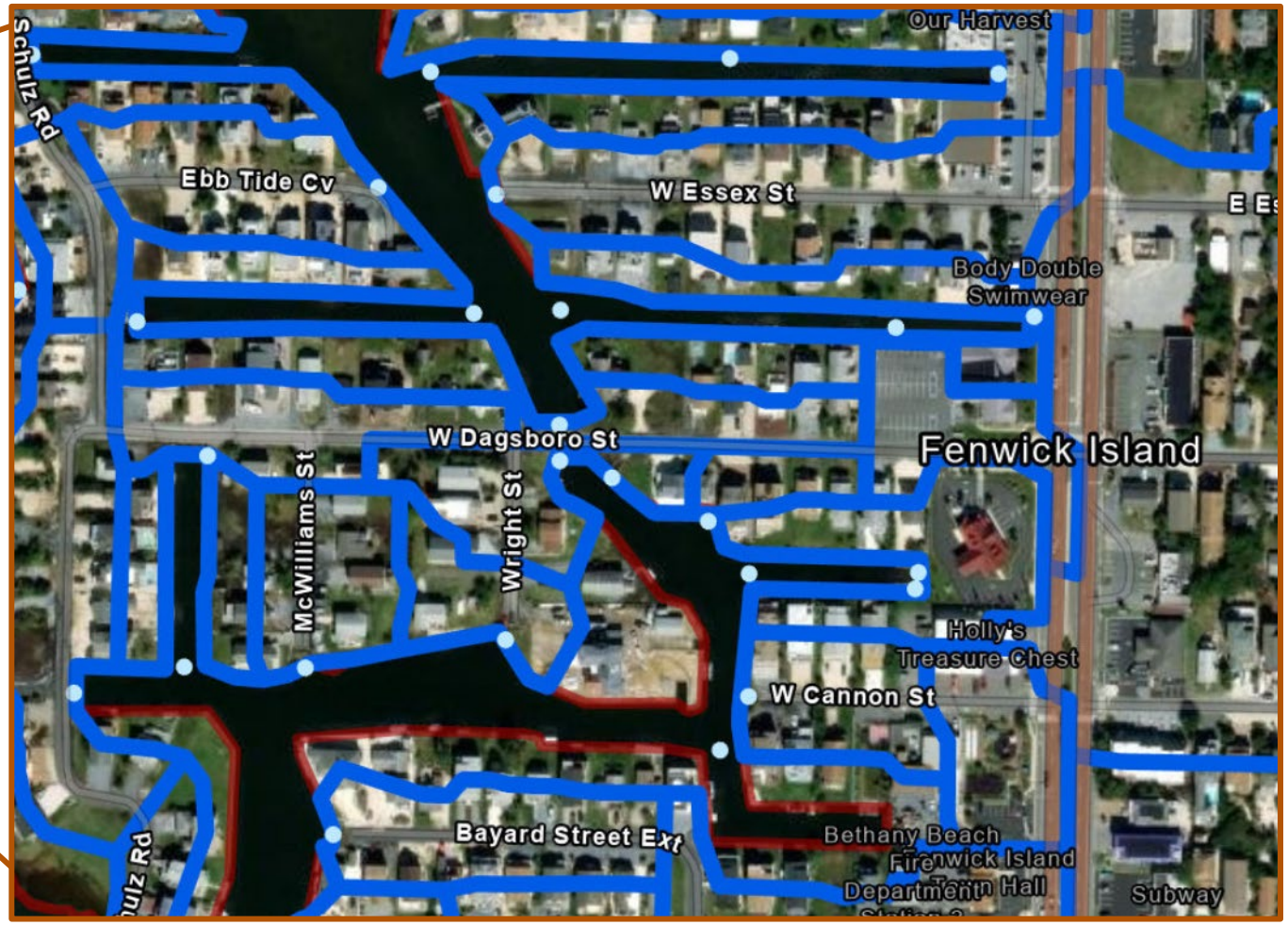
*All elevations are reported in feet relative to NAVD88 datum

- Identified areas prone to current tidal flooding (at MHHW)
- Estimated areas susceptible to future tidal flooding based on intermediate SLR predictions (Delaware SLR Planning Scenarios)
- Additional prioritization for streets where 2030 SLR escalation is expected to impact roadways at mid-block locations

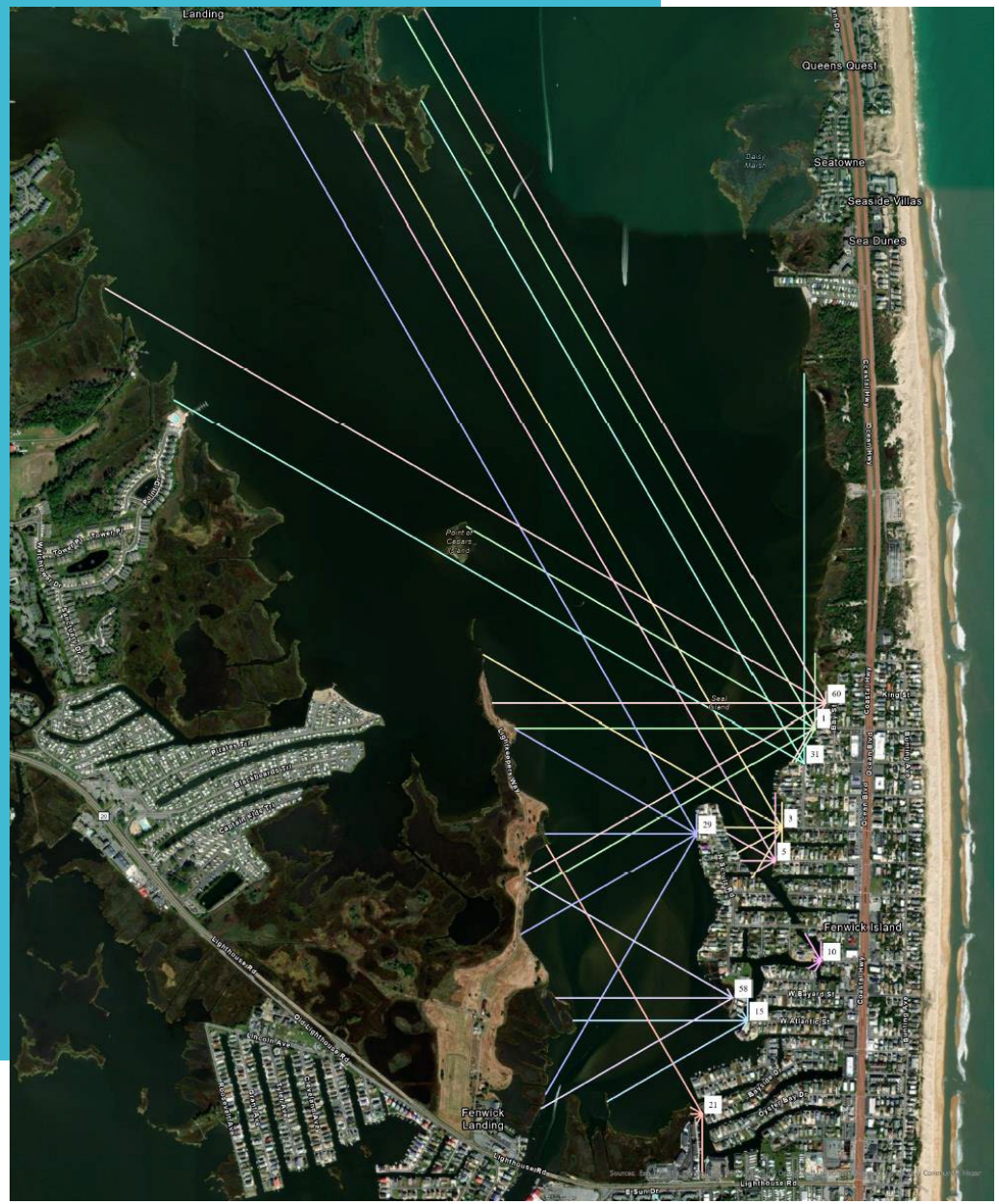
Defined Drainage Areas

67 Individual Drainage Areas and Points of Interest (POIs)





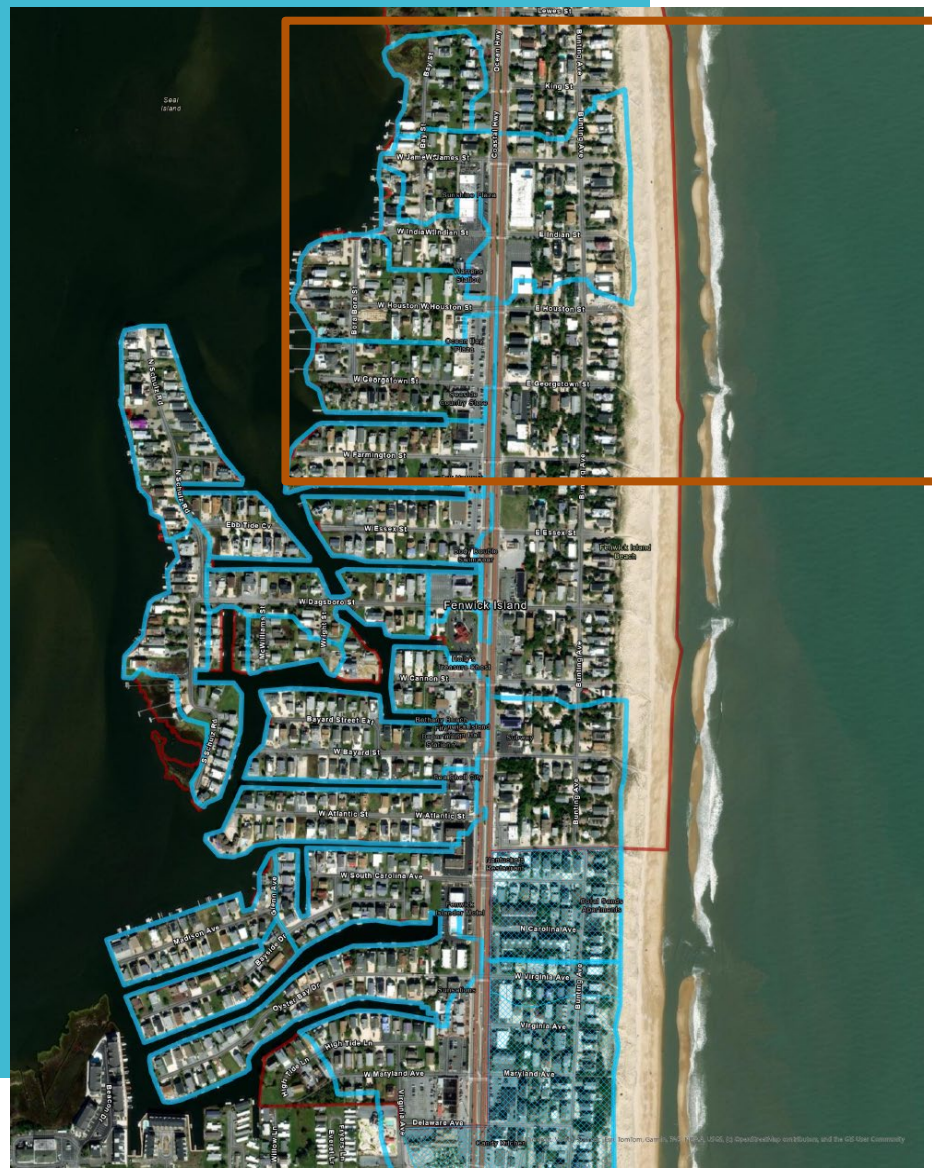
Assessed Wind and Wave Impact



Maximum Wave Heights (Representative POIs)

Point of interest	Wave Height (ft)	Direction
Bayside Dr	1.03	NNW
W Atlantic Ave	0.73	WSW
N Schulz Rd	1.75	NNW
W Cannon St	0.33	NNW
Georgetown St	1.66	NNW
W James St	1.67	NNW
Bora Bora St	1.61	NNW
Farmington St	1.69	NNW
S Schulz Rd (LOI)	0.24	WNW
West Bay St (LOI)	1.65	NNW

Defined Focus Areas



21 focus areas (FAs) are derived from drainage areas. They drive vulnerability analysis and priorities

Look at the poster in the rear of the room to locate your focus area

Defined Toolkit

Road raising Bulkhead Berm/Dune Lot elevation Tidal valves/floodgates Wave attenuation device	Living shoreline Streetscape bioretention Bioswale Infiltration trench Impervious reduction

Can be used on both
town and private property

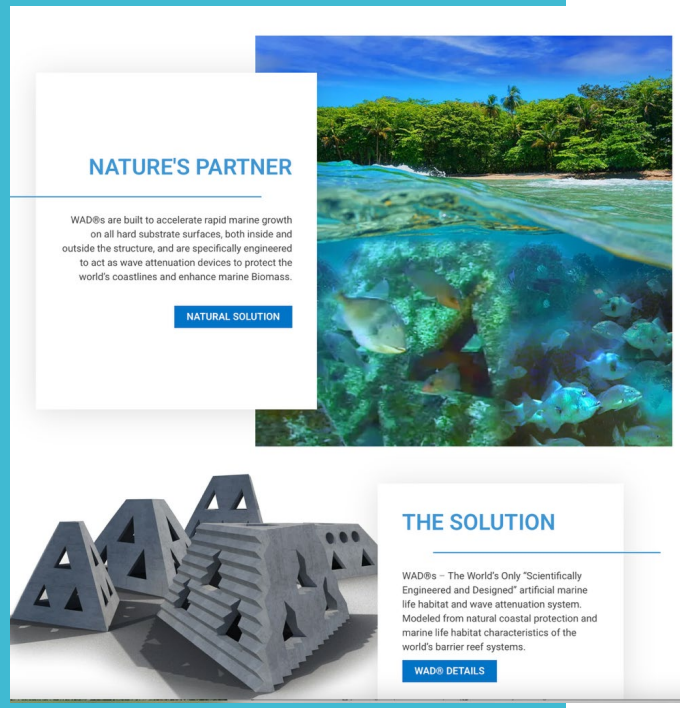
Berm and Landscaped Dune

Hesco Barrier

Sandbags

Lot Elevation

Wave Attenuation Devices



Especially on properties facing Little Assawoman Bay

Break

Straughan Town Project Definition

- Defined examples of Town projects using toolkit in selected focus areas
- Analyzed focus areas using technical criteria to define and rank the vulnerability of each focus area

Town Projects in Each Area

Town projects relate to each of the 21 focus areas

The projects encompass a combination of relevant tools such as:

- Survey of streets and adjacent properties
- Roadway improvements
- Bulkheads/berms
- Swales/bioretention
- Living shorelines
- Wave attenuation devices

The proposed project plan envisions 1-2 projects per year

Town projects may work in coordination with private property efforts

Examples of the Toolkit on Town Property

W James St

- Largest drainage area in Town
- Wide public right of ways
- Swales and bioretention

W Dagsboro St

- Raise roads
- Berms at “bridge”
- Swales and bioretention

Madison Ave

- Raise roads
- Bioretention
- Private bulkheads/berms

See drawings at the back of the room

Ranking of Focus Areas

Straughan identified 18 technical criteria to create a ranking for each focus area

Prioritization Framework Table

				Focus Areas																			
				1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19	20	21
Criteria	Metric Notes	Category	Criteria Weight (max Score)*	Bay St	James St	W Indian St	Bora Bora St / W Houston St	W Georgetown St	W Farmington St	W Essex St	N Schulz Rd	Ebb Tide Cv	S Schulz Rd	South McWilliams St /	South W Dagsboro St	North W Dagsboro St	W Cannon St	W Bayard St	W Atlantic St	W S Carolina Ave	Madison Ave	Bayside Dr	Oyster Bay Dr	High Tide Ln / MD Ave / DE Ave
Wave Height Threat Level for Children (≥ 6")	Acres/FA Acres	Social Vulnerability	6	5.6	5.3	3.5	6.0	3.0	1.3	0.5	5.7	1.8	4.6	0.2	0.0	0.0	0.1	0.1	0.3	0.0	4.8	0.0	0.0	0.0
Wave Height Threat Level for Properties (≥ 1 ft)	Acres/FA Acres		6	6.0	1.3	1.6	2.9	1.2	1.6	0.5	5.3	2.0	3.3	0.0	0.0	0.0	0.0	0.0	0.1	0.0	3.6	0.0	0.0	0.0
Wave Height Threat Level for Adults (≥ 2 ft)	Acres/FA Acres		6	0.0	0.0	0.5	0.0	0.1	0.2	0.0	5.2	0.8	4.3	0.0	0.0	0.0	0.0	0.0	0.0	0.0	6.0	0.0	0.0	0.0
Property Density	Count/FA Acre		2	1.6	0.9	1.4	1.0	0.8	1.1	1.2	1.3	1.2	1.4	2.0	1.2	0.7	1.0	1.3	1.4	0.8	1.7	1.6	1.3	0.2
Unmanaged Impervious Coverage	Acres/FA Acres	Asset Vulnerability	3	1.2	1.1	1.4	1.4	1.4	0.8	0.7	1.5	1.0	1.8	2.5	0.8	1.5	1.2	1.9	1.0	0.7	0.3	0.4	0.5	0.0
Evacuation Routes and Accessibility	Count/FA Acre		10	0.0	1.7	1.7	1.7	1.7	0.0	0.0	3.3	0.0	0.0	0.0	10.0	10.0	0.0	1.7	0.0	8.3	0.0	5.0	0.0	3.3
Roadway Impacts Attributable to Near-Term Flooding (MHHW)	Linear Feet/FA Road Length		10	0.0	6.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	3.3	6.7	10.0	0.0	0.0	0.0
Roadway Impacts Attributable to Mid-Term Flooding (MHHW + 2030)	Linear Feet/FA Road Length		8	7.2	1.7	0.2	1.4	1.8	1.5	0.4	2.8	2.7	7.5	6.4	4.2	0.0	0.4	0.6	5.6	1.5	4.9	2.4	0.0	0.0
Roadway Impacts Attributable to Long-Term Flooding (MHHW + 2050)	Linear Feet/FA Road Length		5	5.0	4.0	2.4	3.5	3.8	3.4	3.0	3.9	5.0	5.0	5.0	5.0	1.8	0.9	4.2	4.0	4.4	5.0	5.0	2.9	1.7
Vulnerability (Weighted Exceedence @ 2050 SLR)	Linear Feet*Factor/ FA Acres		8	0.7	0.2	2.2	0.8	1.4	3.2	1.7	4.3	5.2	2.4	5.2	7.5	1.1	0.7	2.7	4.3	0.3	4.8	2.4	1.0	0.2
Existing Outfall Protection	Count/Total Outfalls		3	0.0	1.3	0.0	0.8	0.0	1.1	1.3	0.3	0.0	1.7	0.0	1.8	2.5	0.8	0.4	0.4	1.0	1.6	1.3	2.1	2.1
Existing Tidal Valve	Count/Total Outfalls		5	0.0	5.0	5.0	3.3	5.0	2.1	2.5	5.0	2.5	5.0	5.0	4.0	5.0	1.7	2.5	2.9	3.5	2.5	3.5	4.5	4.3
Actionable ROW Area for BMPs	Acres/FA Acres	Actionability	3	3.0	2.3	1.7	2.2	1.3	1.1	1.1	2.6	1.4	2.7	3.0	0.7	1.4	1.2	1.9	1.6	2.0	0.6	0.6	0.7	1.3
Shallow Bioretention BMP Feasibility	Acres/FA Acres		5	0.0	0.4	1.0	0.0	0.0	0.0	0.0	0.7	0.9	1.5	0.0	4.5	0.0	0.0	1.8	0.0	0.6	0.0	0.2	0.3	0.4
Streetscape Bioretention BMP Feasibility	Acres/FA Acres		2	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.1	0.0	0.4	0.0	1.5	0.0	0.0	0.3	0.0	0.1	0.0	0.0	0.1	0.1
Bioswale BMP Feasibility	Linear Feet/FA Acres		2	0.1	0.2	0.5	0.0	0.0	0.2	0.2	0.5	0.3	0.7	0.1	1.5	0.0	0.0	0.8	0.0	0.3	0.0	0.2	0.5	0.1
Permeable Asphalt	Acres/FA Acres		1	0.0	0.0	0.0	0.2	0.8	0.5	0.7	0.0	0.0	0.0	0.0	0.0	0.0	0.2	0.0	0.3	0.1	0.0	0.0	0.0	0.1
Infiltration Trench Feasibility	Linear Feet/FA Acres		6	0.7	2.1	3.5	1.9	4.3	2.5	3.9	3.0	2.3	2.5	1.0	1.8	0.0	2.1	6.0	2.9	5.1	0.0	1.7	3.5	1.0
Road Raising Feasibility	Linear Feet/FA Acres		1	0.0	0.0	0.0	0.3	0.6	0.5	0.0	0.4	0.0	0.3	0.8	0.0	0.0	0.0	0.0	0.5	0.0	0.0	0.0	0.0	0.0
Impervious Reduction Feasibility	Acres/FA Acres		2	0.1	0.0	0.0	0.0	0.0	0.4	0.6	0.2	0.0	0.4	0.0	1.5	0.0	0.0	0.0	0.5	0.1	0.0	0.0	0.0	0.0
Living Shoreline Feasibility	Linear Feet/FA Acres		5	0.0	0.0	4.5	0.0	0.0	0.0	0.0	1.6	0.0	4.3	0.0	0.0	0.0	0.0	4.1	0.0	0.7	0.0	0.0	0.0	2.4
Structural (Bulkhead/Levee/Dune) Feasibility	Linear Feet/FA Acres		3	0.0	0.0	0.0	1.4	2.3	2.0	0.0	1.5	0.0	1.4	3.0	0.0	0.0	0.0	0.0	2.0	0.0	0.0	0.0	0.0	0.0
Tidal Valve/Outlet Protection Feasibility	Count/FA Acres		3	0.0	0.0	0.0	0.3	0.4	0.4	0.0	2.4	0.0	0.9	3.0	2.7	0.0	0.3	0.7	0.5	0.8	0.9	1.7	3.0	0.0
	SUBTOTAL	Social Vulnerability	**20**	13.2	7.5	7.0	9.9	5.1	4.2	2.2	17.4	5.9	13.6	2.2	1.2	0.7	1.1	1.4	1.7	0.8	16.1	1.6	1.3	0.2
	SUBTOTAL	Asset Vulnerability	**50**	14.2	20.9	12.9	13.0	15.1	12.0	9.6	21.2	16.4	23.3	24.1	33.3	21.8	5.8	14.0	21.5	26.4	29.1	20.0	11.1	11.7
	SUBTOTAL	Actionability	**30**	3.9	5.1	11.1	6.3	9.6	7.6	6.4	12.9	4.9	15.1	10.9	14.2	1.4	3.8	15.6	8.3	9.8	1.6	4.4	8.0	5.4
		Total Score	**100**	31.2	33.5	31.0	29.2	29.8	23.9	18.2	51.5	27.2	52.0	37.2	48.7	24.0	10.6	31.0	31.5	37.0	46.7	26.0	20.4	17.4
				9	7	11	13	12	17	19	2	14	1	5	3	16	21	10	8	6	4	15	18	20

Ranking of Focus Areas

Key technical criteria which drive the technical ranking are

Social Vulnerability	Asset Vulnerability	Feasibility
Number of properties affected	Evacuation routes	Right of way area
Wave height threat	Roadway length	Larger depth to water table

Most Vulnerable Areas based on Technical Criteria

Focus Area	Tech Score	Estim Prop Count	Impacted Prop
South Schultz	52	32	
North Schultz	51	30	
West Dagsboro	49	24	~ 97
Madison	48	31	
McWilliams / Wright	38	11	
W. South Carolina	37	37	~ 84
W. James	34	11	
W. Atlantic	32	30	
Bay St	31	18	
W. Bayard	31	31	

Infrastructure Committee - Next steps on Town Projects

- Further refine project ranking by adding criteria, cost/benefit, timing of grant funding, geographical distribution, overlap with road paving schedule, and town funds availability
- Present the top 4 town projects to Town Council in summer
- Continue education and community engagement– 21 August

Private Property Owners

Our role today is to provide you with information so that you can make informed decisions

Property owner's role in a successful plan

Raise bulkheads or add berms to 2050 target elevation level (4' above NAVD88)

Elevate lots when major improvements occur

Install wave attenuation for properties facing bay

Manage boat ramps using various methods

Install/maintain stormwater swales/living shorelines and don't disturb town swales in right of way

Coordinate with neighbors

2050 Master Plan illustrating Fenwick Island bayside barrier network

Depends on:

- Engineered standards and building ordinances
- Responsible maintenance by property owner (town or private)
- Recognition of urgency in the high risk focus areas
- Permitting, inspection and enforcement processes

Implementation Schedule

Discussion

Next Steps

- Continue discussion at Infrastructure, Town Council meetings and the 21 August forum
- Complete bid package for Town projects by Fall 2026
- Commence construction of Town projects in 2027

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THANK YOU!