



Scarborough Flood Vulnerability Assessment Project Meeting #3/4

January 21, 2025

Meeting Agenda

AGENDA

1. **Welcome**
2. **Task 2 Updates:**
 - Draft Memos (Data Review, Flood Vulnerability Results)
 - Prioritization Results and Discussion
3. **Task 3 Updates:** Initial Drone Flight review
4. **Task 4 Updates**
5. **Task 5 Updates:**
 - Pilot Project Updates
6. **Task 6 Updates**
7. **Task 7 Updates:**
 - StoryMap update
8. **Discuss overall project schedule, including:**
 - Next Deliverables
 - Next Community Event
 - Next Project Meeting
9. **Adjourn**



Task 2: Data Review & Collection

Task 2 is bulk of flood vulnerability work:

- Data review (GIS assets, flood levels, etc.)
- Field work
- Flood vulnerability results
- Asset prioritization

Ultimate work product will be an ArcGIS StoryMap.

Interim memos submitted along the way for work documentation and review.



Task 2: Data Review & Collection

Draft Data Review Memo:

- Memo summarizing data sources used in study.
- Submitted as draft July 16, 2024
- Comments received – will be incorporated and resubmitted as Final in December
- Will revise together with vulnerability results memo

Draft Vulnerability Results Memo:

- Memo summarizing vulnerability assessment methods and results.
- Submitted as draft November 26, 2024
- Comments received in January 2025 – will be incorporated and resubmitted as final along with data review prior to next meeting

These memos inform the content of the ArcGIS StoryMap.



Initial Prioritization of Roads

$$\text{Flood Risk} = \text{Flood Exposure} \times \text{Consequences}$$

Exposure: How likely is it to flood?

- Captured in Flood Vulnerability Results

Consequences: Updated based on November 2024 Working Group Meeting:

- Area Impacted (# of Buildings)
- Public Safety
- Damage Potential
- Environmental Impact (new)
- Economic Impact (new)



Initial Prioritization of Roads

Environmental Impact:

Uses same environmental data compiled for Scarborough as part of the SMPDC Climate Ready Coast project (2022)

Habitats:

1. Current tidal marsh
2. Future coastal habitat
3. Undeveloped blocks and connectors
4. Freshwater wetlands and vernal pools
5. Aquifers and source protection
6. Rare, threatened, endangered, or exemplary habitats and natural communities
7. Riparian habitat connectors
8. Fin fish
9. Submerged aquatic vegetation and shellfish growing areas
10. Seabird nesting and shorebird areas
11. Tidal Waterfowl and wading bird habitats shapefile
12. Conserved land
13. Candidate deer wintering habitats



Initial Prioritization of Roads

$$\text{Flood Risk} = \text{Flood Exposure} \times \text{Consequences}$$

Consequence Score	Area Impacted (# Buildings)	Public Safety Impact	Damage Potential, Relative Cost	Environmental Impact	Economic Impact
5	Town-wide (>150 buildings)	Very High: - Official Evacuation Route	Very High: - Has experienced damage - Within wave action zone - Utility infrastructure below roadway	Very High: ≥8 habitats impacted	Very High: - Zoned as "Town and Village Center", "Industrial Zone", within the Industrial Overlay, or with AADT > 5,000
4	Multi-Neighborhood (75-200 buildings)	High: - Access to critical infrastructure or services - Unofficial Evacuation Route	High: - Within wave action zone	High: 6-7 habitats impacted	High: - 1,000 < AADT < 5,000
3	Neighborhood (25-75 buildings)	Medium: - No alternate route	Medium: - Revetment along roadway (e.g., scour potential)	Medium: 4-5 habitats impacted	Medium: - Zoned as "Beach Mixed-Use District", "Town and Village Centers 4"
2	Sub-neighborhood (5-25 buildings)	Low: - Alternate route - No alternate access, but impacts property that would already be flooded (neighborhood/local street) - cul-de-sac, dead end street	Low: - Stillwater inundation	Low: 1-3 habitats impacted	Low: - Zoned as "Town and Village Centers Transition" zone, "Town and Village Centers Fringe", "Coastal Mixed Use"
1	Property- Level (<5 building)	None - No impact (e.g., end of dead-end street w/ no houses affected)	None: - High-tide inundation, no revetments or other coastal structures	None: No Habitats impacted	Very Low / None: - Zoned as "Residential", "Rural Farming"



Initial Prioritization of Roads

Flood Risk = Flood Exposure x Consequences

Flood Risk =

consequences x (% chance present-day flooding x weighting factor)
+ (% chance 2030 flooding x weighting factor)
+ (% chance 2050 flooding x weighting factor)
+ (% chance 2100 flooding x weighting factor)

Weighting Factor:

higher weight present-day risk, lower weight in future

Revised to 35% present-day, 30% 2030, 25% in 2050, and 10% in 2100



Prioritization of Roads

Without
environmental
or economic
impact added

Rank	Road Name	Risk Score
1	Payne Rd	5,281
2	Black Point Rd	5,044
3	Pine Point Rd	4,683
4	Black Rock Rd	4,225
5	King St	4,225
6	Winnocks Necks to Plummer Island	4,225
7	Champion St	4,225
8	Old Neck Rd	3,242
9	Sawyer St	3,168
10	Jones Creek Dr	2,882
11	Snow Canning Rd	2,112
12	Bayview Ave	2,037
13	Ocean Ave	1,880
14	Avenue 6	1,801
15	E Grand Ave	1,567
16	Milliken Rd	1,441
17	Clay Pits Rd	1,410
18	Shipwreck Rd	1,410
19	Vesper St	1,253
20	Saccarappa Ln	1,253



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Added Environmental Impact

Rank	Road Name	Risk Score
1	Payne Rd	5,149
2	Winnocks Necks to Plummer Island	5,149
3	Black Point Rd	5,134
4	Pine Point Rd	4,864
5	Black Rock Rd	4,357
6	Sawyer St	4,357
7	King St	3,961
8	Champion St	3,961
9	Old Neck Rd	3,242
10	Snow Canning Rd	2,772
11	Jones Creek Dr	2,702
12	Avenue 6	1,891
13	Ocean Ave	1,880
14	Bayview Ave	1,763
15	Milliken Rd	1,621
16	Clay Pits Rd	1,528
17	Winnocks Neck Rd	1,410
18	E Grand Ave	1,410
19	Shipwreck Rd	1,293
20	Vesper St	1,293



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Current Final Ranking

Added Economic and Environmental Impact

Rank	Road Name	Risk Score
1	Payne Rd*	5,703
2	Black Point Rd*	5,188
3	Pine Point Rd*	4,972
4	Black Rock Rd*	4,753
5	Sawyer St*	4,753
6	King St*	4,436
7	Winnocks Necks to Plummer Island*	4,436
8	Snow Canning Rd*	3,802
9	Champion St*	3,485
10	Jones Creek Dr*	3,026
11	Old Neck Rd*	2,810
12	Avenue 6 *	2,162
13	Ocean Ave*	1,880
14	Milliken Rd*	1,513
15	Bayview Ave*	1,504
16	Winnocks Neck Rd	1,504
17	E Grand Ave	1,504
18	Clay Pits Rd*	1,316
19	Ferry Rd	1,222
20	Shipwreck Rd	1,128



Prioritization of Roads

The rankings are meant as one more tool to **guide** adaptation decision-making process, not as final rule for order of adaptation.

There are many reasons a road farther down the list would undergo adaptation earlier in process, such as: availability of funding, public support, relatively low-cost solution.

Current Final Ranking

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Task 2 Next Steps

- Final draft of data review memo
- Final draft of flood vulnerability memo
- “Technical” memo documenting prioritization methods
- Timeline: by next meeting

Current Final Ranking

Added Economic and Environmental Impact

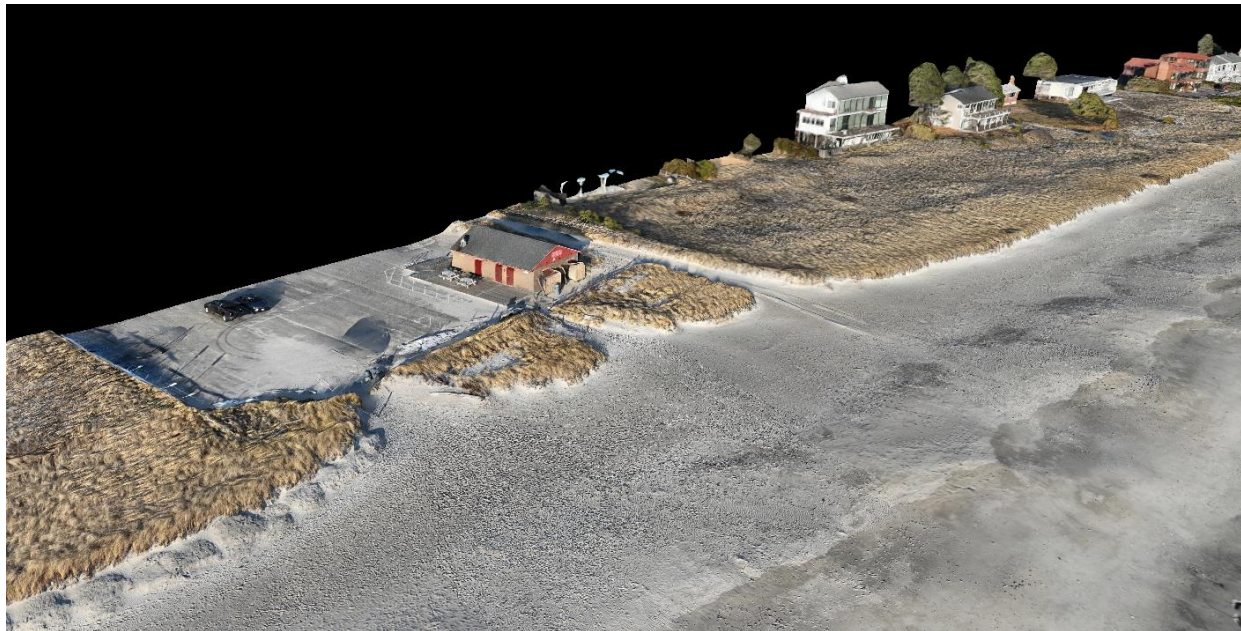
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Task 3: Initial Drone Flight

Drone Flight #1:

- December 13, 2024
- Higgins Beach and Pine Point Beach
- Imagery and Topographic Survey
- Drone Flight #2 will be coordinated in the spring



Task 4 Updates

Task 4: Ordinance Review:

- Work has begun
- Keeping a watch on state regulatory changes, nearby efforts



Task 5: Adaptation Strategies

Pilot Project Update:

Three proposed projects based on community engagement input and discussions with Town staff

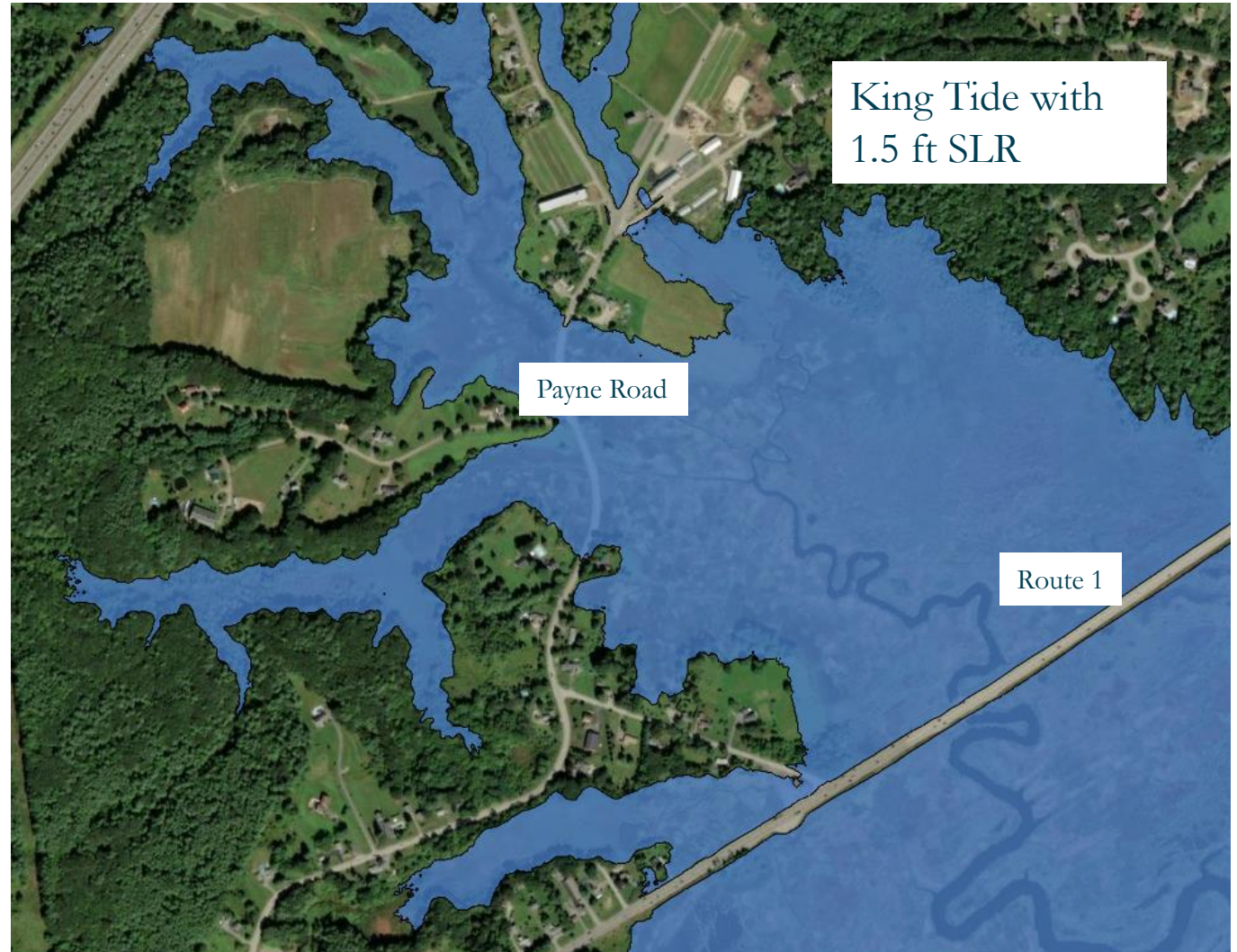
1. Payne Road Adaptation Alternatives
2. Higgins Beach / Bayview Avenue Adaptation, Fortification, and/or Dune Restoration Planning
3. Pine Point neighborhood emergency alert system



Task 5: Adaptation Strategies

Payne Road Adaptation Alternatives

1. Memo/report outlining flood risk, adaptation alternatives, and funding sources of adaptation
2. Goal to position project for funding to carry out design



Task 5: Adaptation Strategies

Higgins Beach / Bayview Avenue Adaptation, Fortification, and/or Dune Restoration Planning

- Goal to reduce erosion and protect Bayview Avenue from damage.
- Will prepare up to 3 adaptation concepts (i.e., wall protection, dune restoration, etc.) to bring to a conversation with Maine DEP for clarification on what can and cannot be permitted in this area.
- Deliverable will be up to 3 basic sketches of design options, including notes, and documentation/recommendations from Maine DEP



Task 5: Adaptation Strategies

- Work with MEMA, Cumberland County, and local emergency personnel to document what currently exists.
- Provide a framework and/or options for how to put in place an updated emergency alert system for Pine Point based on current best practices in disaster planning.
- Recommend less “official” strategies and initiatives to increase resilience, such as neighborhood networking groups.

Pine Point neighborhood emergency alert system



Task 6: Community Engagement

Next Community Events:

End of Project Public Presentation – June/July 2025



Task 7: StoryMap

DRAFT Scarborough Flood Vulnerability Assessment

An evaluation of present-day and future coastal flood risk throughout the Town of Scarborough, Cumberland County, Maine.

GEI Consultants, Inc.

ArcGIS StoryMap

- In draft form – methods and flood risk results
- Working out hosting/back-end details
- Adaptation recommendations, etc. will be included by end of the project



Project Schedule – Now to July 2025

TASK	10/14/24	10/21/24	10/28/24	11/4/24	11/11/24	11/18/24	11/25/24	12/2/24	12/9/24	12/16/24	12/23/24	12/30/24	1/6/25	1/13/25	1/20/25	1/27/25	2/3/25	2/10/25	2/17/25	2/24/25	3/3/25	3/10/25	3/17/25	3/24/25	3/31/25	4/7/25	4/14/25	4/21/25	4/28/25	5/5/25	5/12/25	5/19/25	5/26/25	6/2/25	6/9/25	6/16/25	6/23/25	6/30/25		
Meeting: Project Kick-Off Meeting																																								
Task 2: Data Review and Collection																																								
a) Data review and memo																																								
b) GIS data																																								
c) DEM																																								
d) Initial flood inundation layers																																								
Meeting: Project Update Meeting #1																																								
Public Meeting #1 (range of dates)																																								
e) Field survey																																								
f) Revised GIS layers																																								
g) Draft vulnerability assessment memo																																								
Meeting: Project Update Meeting #2																																								
Neighborhood Public Meetings (#2 & #3) (range of dates)																																								
Meeting: Project Update Meeting #3																																								
Task 4: Ordinance Review																																								
Task 5: Adaptation Strategies																																								
a) Draft adaptation strategies memo																																								
b) Pilot project concept designs																																								
Meeting: Project Update Meetings #4,#5, #6																																								
Task 8: StoryMap and Executive Summary																																								
a) ArcGIS StoryMap																																								
b) Executive Summary																																								
Meeting: Project Update Meetings #7																																								
Final Public Meeting at Town Council (range of dates)																																								

We are here.

This Week



Current Deliverables

Data Review Memo: Task 2.1

- Summary of flood vulnerability data reviewed and used as part of this study.



Initial Web-Based Flood Inundation Viewer (not for public)

- To convey flood extents to project team.



Flood Risk Memo: Task 2.7

- Summary of flood exposure methodology and results



Next Deliverables / Community Events

Next Deliverables:

- Final draft data review memo
- Final draft vulnerability memo
- Technical document of prioritization methodology
- Draft ArcGIS StoryMap for comment/review
- Draft adaptation strategies: April/May 2025
- Draft Pilot Projects: April/May 2025

Next Community Events:

End of Project Public Presentation – June/July 2025



Next Project Meeting

Project Update Meeting #4/5:

- Virtual meeting early March.

Purpose:

- Progress on Pilot Projects.
- Progress on overall adaptation strategies.
- Progress on ordinance review.
- Review of ArcGIS StoryMap for prioritization information.



Thank you!
Questions?



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