

# CAROLINA BEACH

Town Council Workshop

Tuesday, July 23, 2024 – 9:00 AM

Council Chambers, 1121 N. Lake Park Boulevard, Carolina Beach, NC



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## AGENDA

### CALL TO ORDER

### DISCUSSION ITEMS

- [1.](#) Employee Recognition
- [2.](#) Sunny Day Flooding Project Update
- [3.](#) Resolution authorizing the Town of Carolina Beach to submit an application to the Wilmington Urban Area Metropolitan Planning Organization for Surface Transportation Block Grant Program for a Sidewalk Project located adjacent to S. Lake Park Blvd from the Carolina Beach Lake to Alabama Ave.
- [4.](#) Second Reading of Resolution 24-2307 supporting New Hanover County's Ordinance on Abandoned Vessels
- [5.](#) Discussion on Community Building Repairs

### COUNCIL COMMENTS

### ADJOURNMENT



# AGENDA ITEM COVERSHEET

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**PREPARED BY:** Kim Ward, Town Clerk

**DEPARTMENT:** Clerk

**MEETING:** Town Council Workshop – 7/23/2024

**SUBJECT:** Employee Recognition

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**BACKGROUND:**

Brian Stanberry will recognize the following employee for years of service:

|                        |         |            |
|------------------------|---------|------------|
| <b>Robert Ridgeway</b> | 5 years | Stormwater |
|------------------------|---------|------------|



## AGENDA ITEM COVERSHEET

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**PREPARED BY:** Jeremy Hardison, Community Development Director

**DEPARTMENT:** Community Development

**MEETING:** Town Council 7/23/24  
Sunny Day Flooding Project Update

**SUBJECT:**

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**BACKGROUND:**

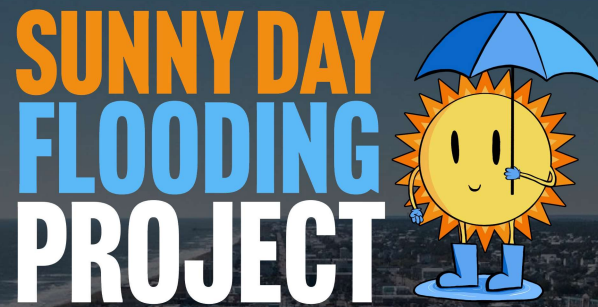
The research Team will be presenting updates on the project to review how often did it flood in Carolina Beach in the last year, how important are tides vs winds vs rain in causing flooding, how are floods impacting Carolina Beach residents, and what strategies to mitigate flooding are preferred by Carolina Beach residents.

**ACTION REQUESTED:**

None- information item and answer any concerns or questions Town Council may have.

**MOTION:**

N/A



# 2024 Sunny Day Flooding Project Update

Dr. Miyuki Hino, Assistant Professor, City and Regional Planning, UNC

Dr. Katherine Anarde, Assistant Professor, Civil & Environmental Engineering, NCSU

Thomas Thelen, PhD Student, Civil & Environmental Engineering, NCSU



THE UNIVERSITY  
of NORTH CAROLINA  
at CHAPEL HILL



**Carolina Beach Town Council**

July 23, 2024



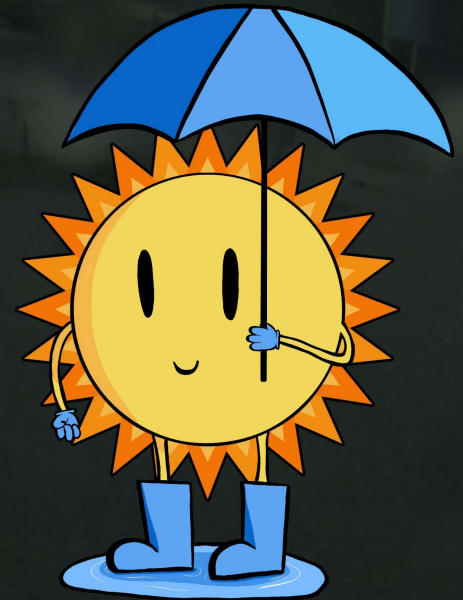
## Today's talk, summarized in four questions

How often did it flood in Carolina Beach in the last year?

How important are tides vs. wind vs. rain in causing flooding?

How are floods impacting Carolina Beach residents?

What strategies to mitigate flooding are preferred by Carolina Beach residents?



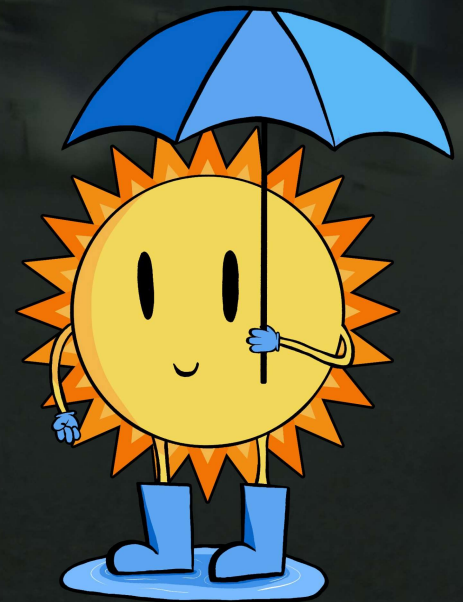
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**How often did it flood in Carolina Beach in the last year?**

How important are tides vs. wind vs. rain in causing flooding?

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What strategies to mitigate flooding are preferred by Carolina Beach residents?





# We currently maintain three flood sensors on Canal Drive



**Real-time camera**

**Real-time water levels**

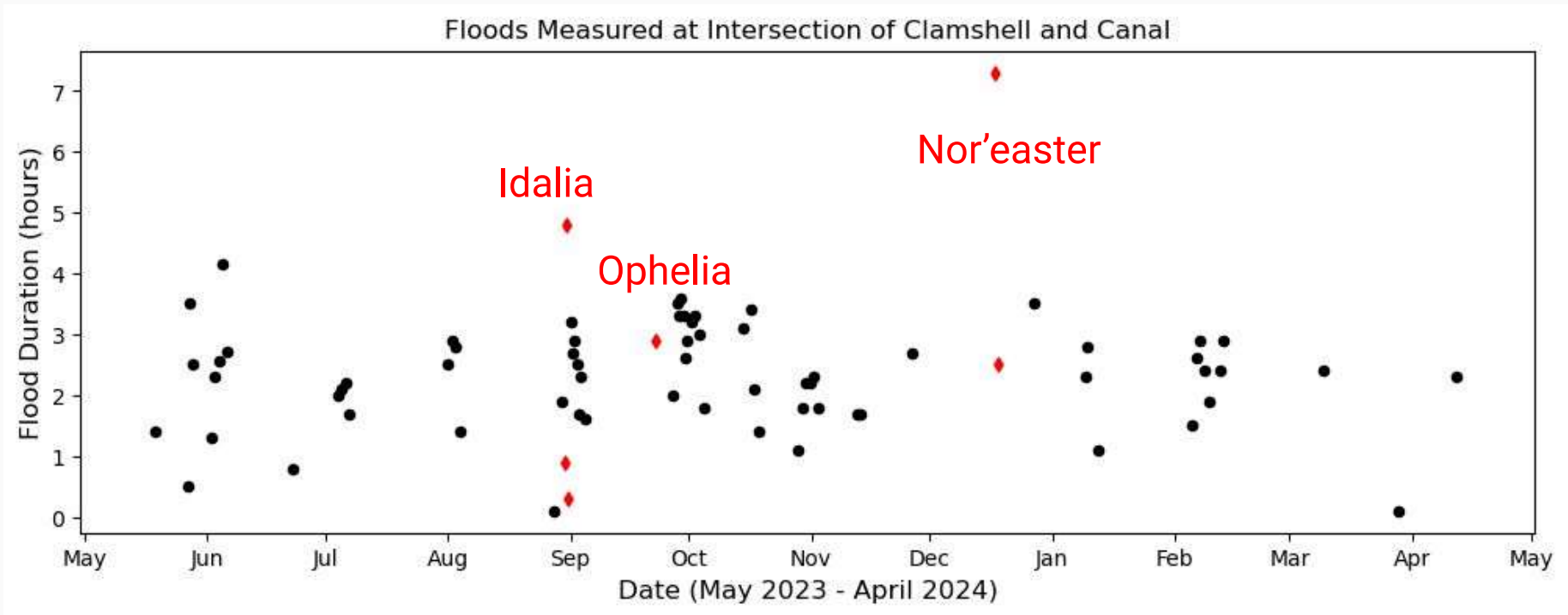
[go.ncsu.edu/cbflood](http://go.ncsu.edu/cbflood)



# May 1, 2023 to April 30, 2024 – we measured 71 floods at Clamshell & Canal



Flood = any amount of water on the road  
6 of the measured floods occurred during **extreme storms**



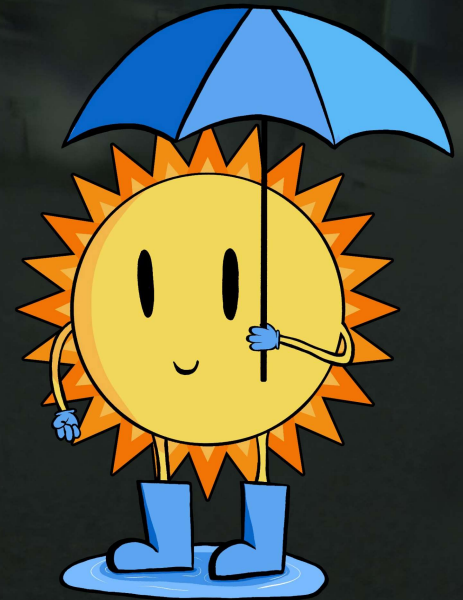
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How often did it flood in Carolina Beach in the last year?

**How important are tides vs. wind vs. rain in causing flooding?**

How are floods impacting Carolina Beach residents?

What strategies to mitigate flooding are preferred by Carolina Beach residents?





# How important are tides vs. wind vs. rain? A deeper dive on 2022-2023 data



*This manuscript is a non-peer-reviewed pre-print submitted to EarthArXiv. This manuscript has been submitted for publication in Water Research and is currently under review.*

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## **Wind and rain compound with tides to cause frequent and unexpected coastal floods**

Thomas Thelen<sup>1,\*</sup>, [ththelen@ncsu.edu](mailto:ththelen@ncsu.edu), <https://orcid.org/0000-0003-2993-6446>  
Katherine Anarde<sup>1</sup>, [kanarde@ncsu.edu](mailto:kanarde@ncsu.edu), <https://orcid.org/0000-0003-2586-0587>  
Joel Casey Dietrich<sup>1</sup>, [jcdietrich@ncsu.edu](mailto:jcdietrich@ncsu.edu), <https://orcid.org/0000-0001-5294-2874>  
Miyuki Hino<sup>2,3</sup>, [mhino@unc.edu](mailto:mhino@unc.edu), <https://orcid.org/0000-0001-9369-5769>

Data from April 2022 to April 2023. Full report available here: <https://eartharxiv.org/repository/view/7241/>



# Sensor data and model results allow identify the role of tides, wind, rain



Jan. 22, 2023: if we modeled **tides only**, water would not have reached Canal Dr.





Jan. 22, 2023: when we add **wind**, flooding reaches Canal Dr.



20% of floods occurred at forecasted tides above the threshold for closing Canal Dr.

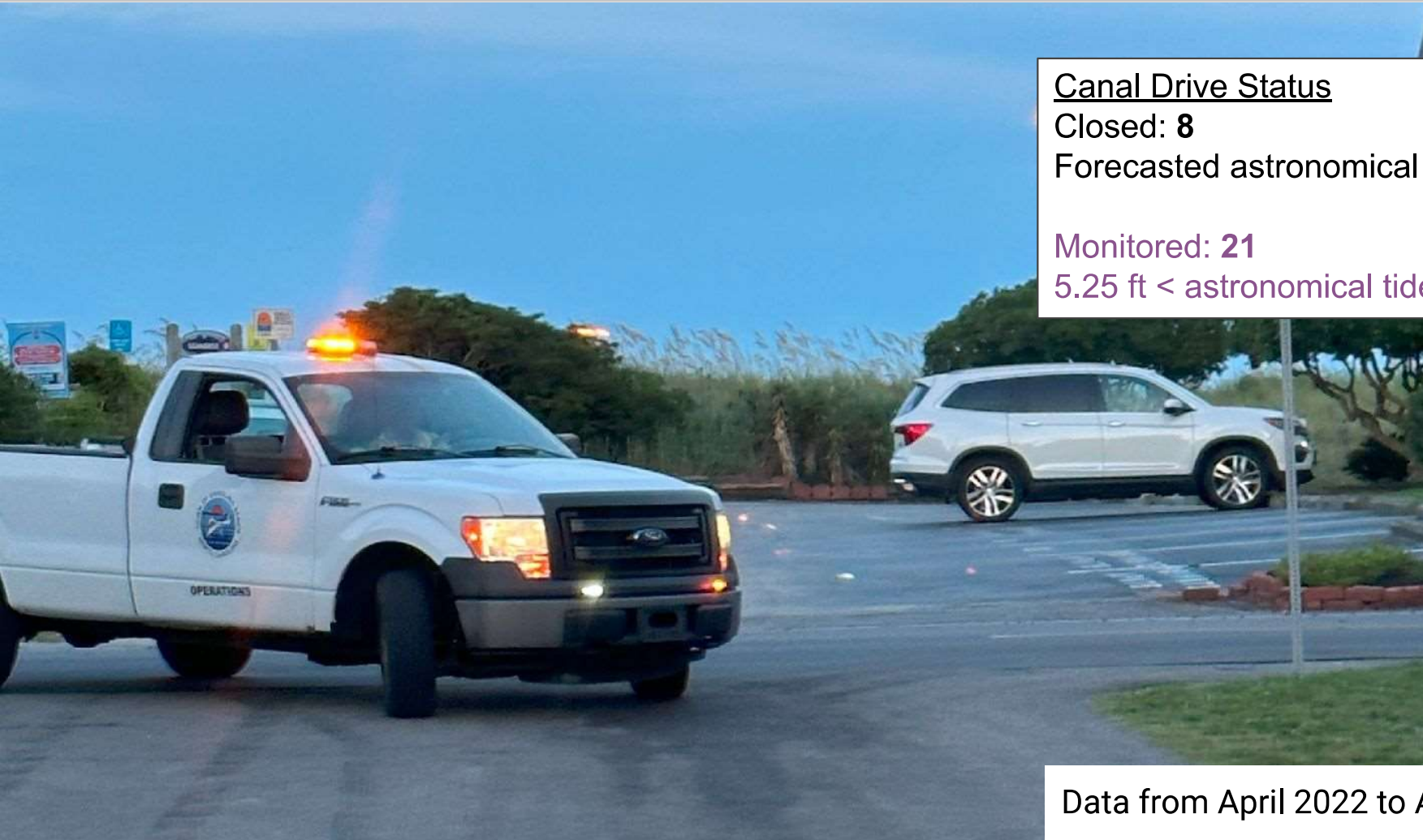


Canal Drive Status  
Closed: 8  
Forecasted astronomical tide > 6 ft

Data from April 2022 to April 2023



An additional 50% of floods occurred at tides above the threshold for monitoring Canal Dr.



Canal Drive Status  
Closed: **8**  
Forecasted astronomical tide > 6 ft  
  
Monitored: **21**  
5.25 ft < astronomical tide < 6 ft

Data from April 2022 to April 2023

30% of floods were “unexpected” based on the tidal threshold



Canal Drive Status

Closed: **8**

Forecasted astronomical tide > 6 ft

Monitored: **21**

5.25 ft < astronomical tide < 6 ft

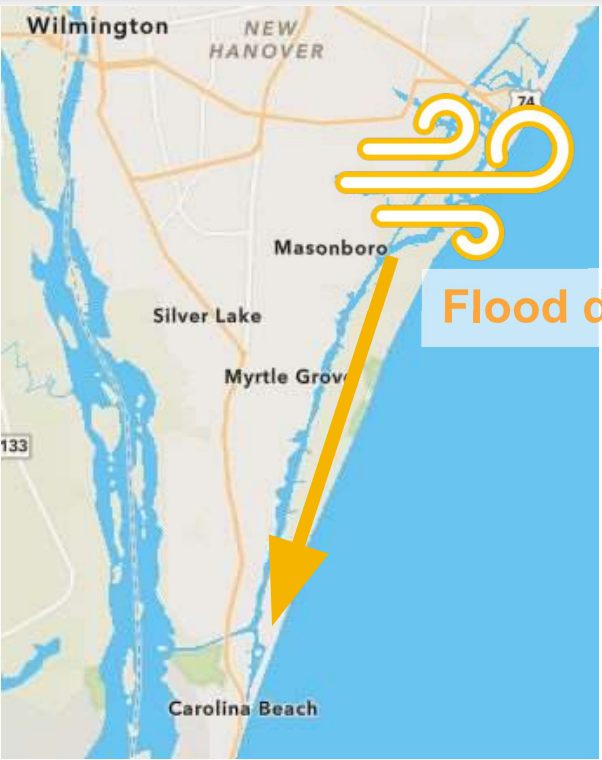
Not monitored: **14**

Forecasted astronomical tide < 5.25 ft

Data from April 2022 to April 2023



# Wind and rain compound with tides to exacerbate flooding in Carolina Beach



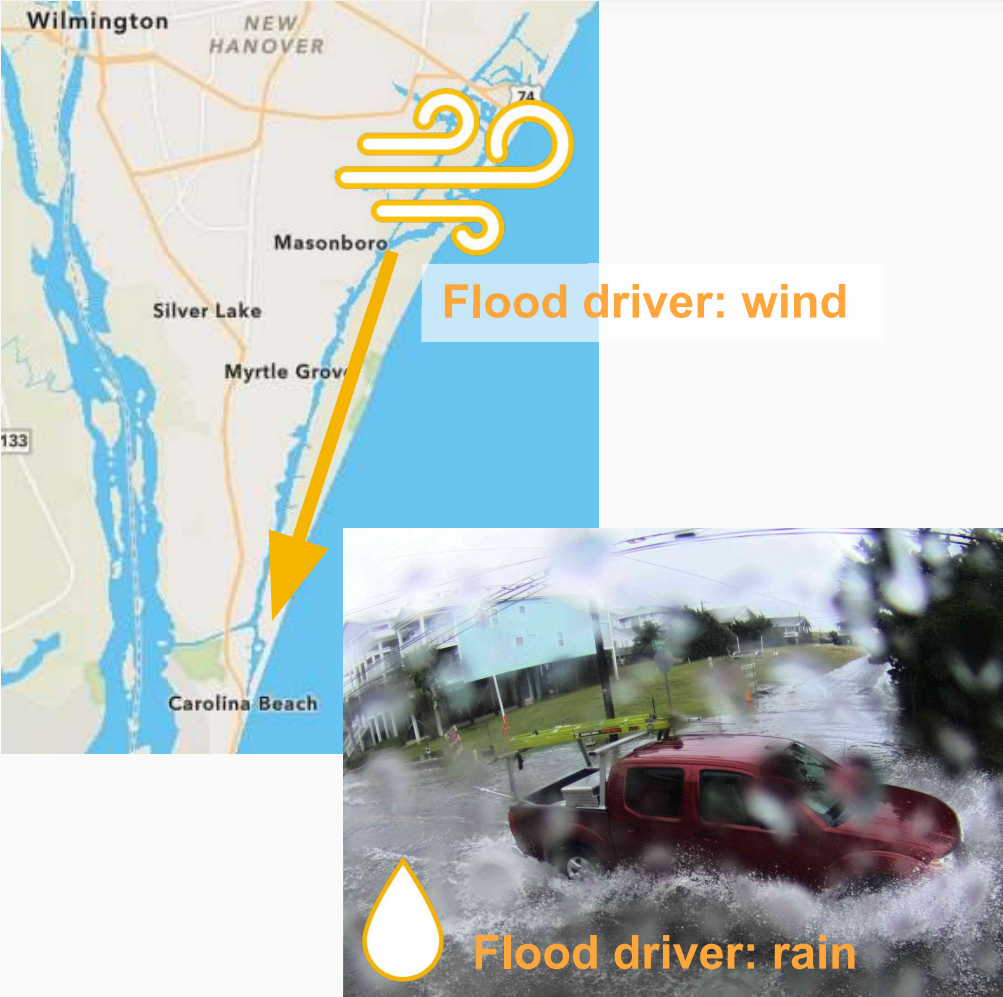
Flood driver: wind

11 of 14 unexpected floods co-occurred with wind of out the northeast

The 6 deepest floods we measured co-occurred with wind of out the northeast

Data from April 2022 to April 2023

# Wind and **rain** compound with tides to exacerbate flooding in Carolina Beach



11 of 14 unexpected floods co-occurred with **wind of out the northeast**

The 6 deepest floods we measured co-occurred with **wind of out the northeast**

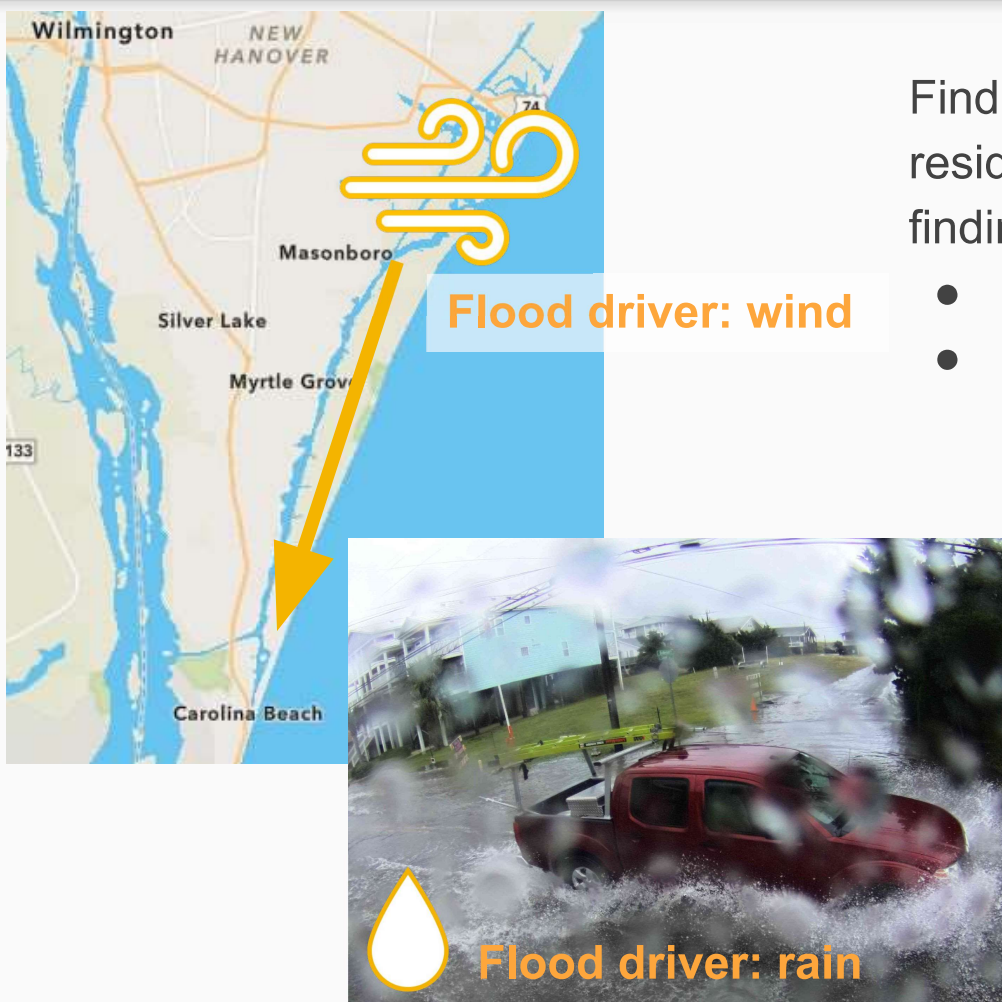
7 of 14 unexpected floods co-occurred with **rainfall**

Data from April 2022 to April 2023

## Takeaways relevant for flood monitoring and response

Findings confirm reports from Town staff and residents that wind and rain lead to flooding. Our findings can be used as:

- New evidence for grant applications
- Wind thresholds for monitoring



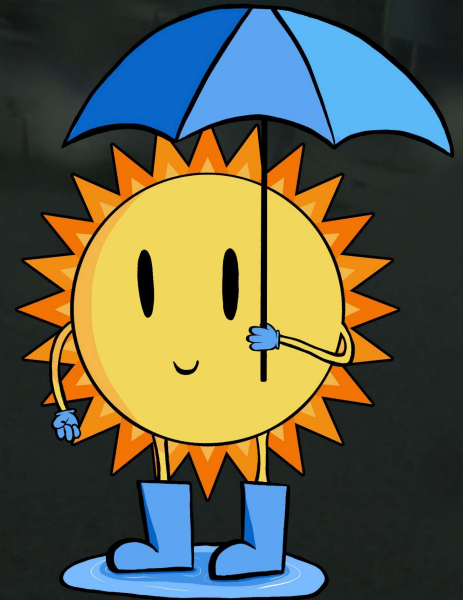
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How often did it flood in Carolina Beach in the last year?

How important are tides vs. wind vs. rain in causing flooding?

**How are floods impacting Carolina Beach residents?**

What strategies to mitigate flooding are preferred by Carolina Beach residents?





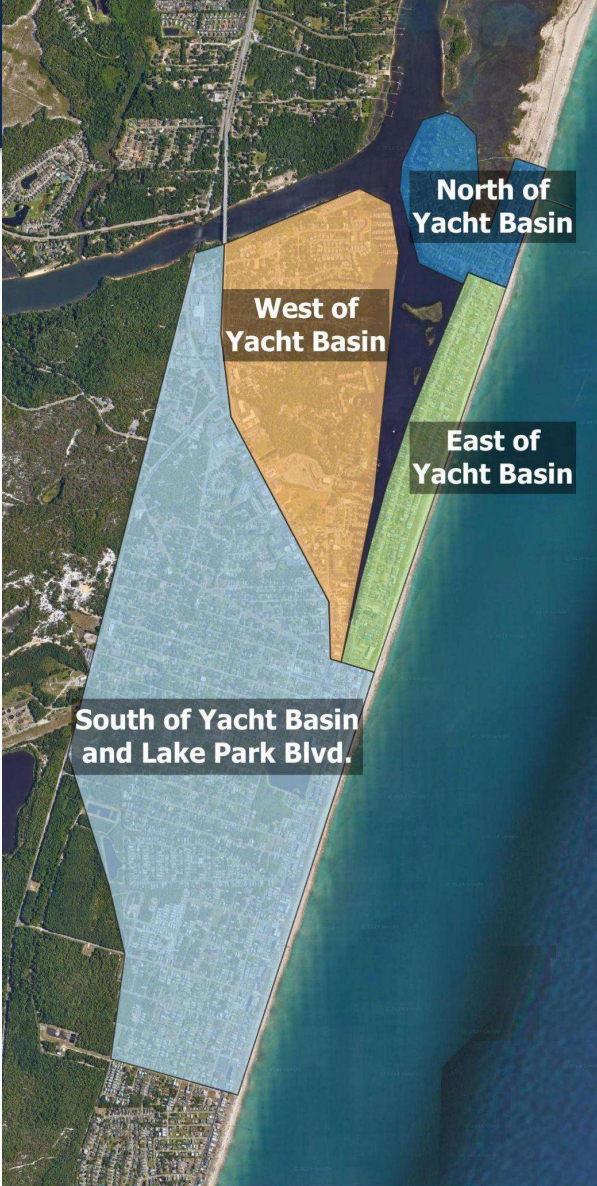
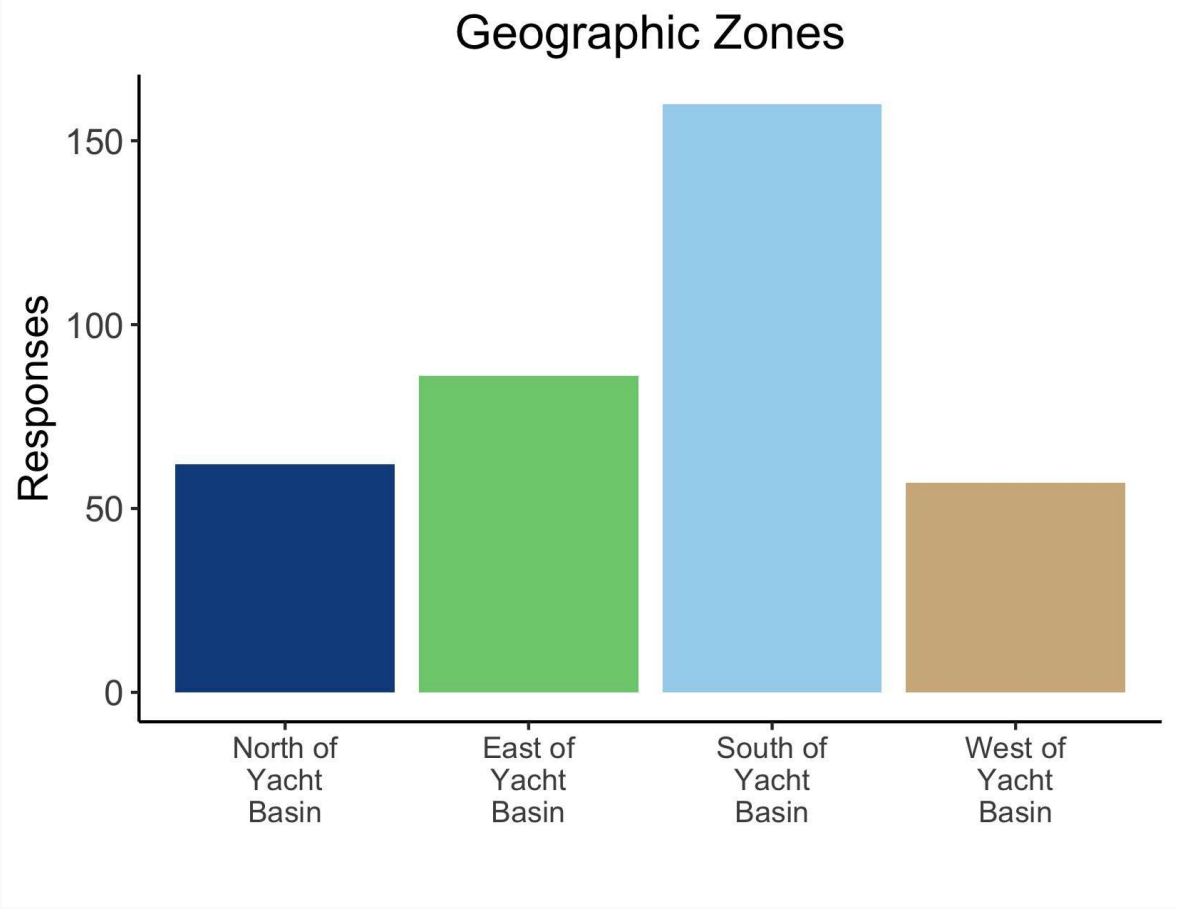
# A survey to understand flooding impacts and preferred mitigation strategies



Flooding surveys mailed to all residential addresses in Carolina Beach in early 2024

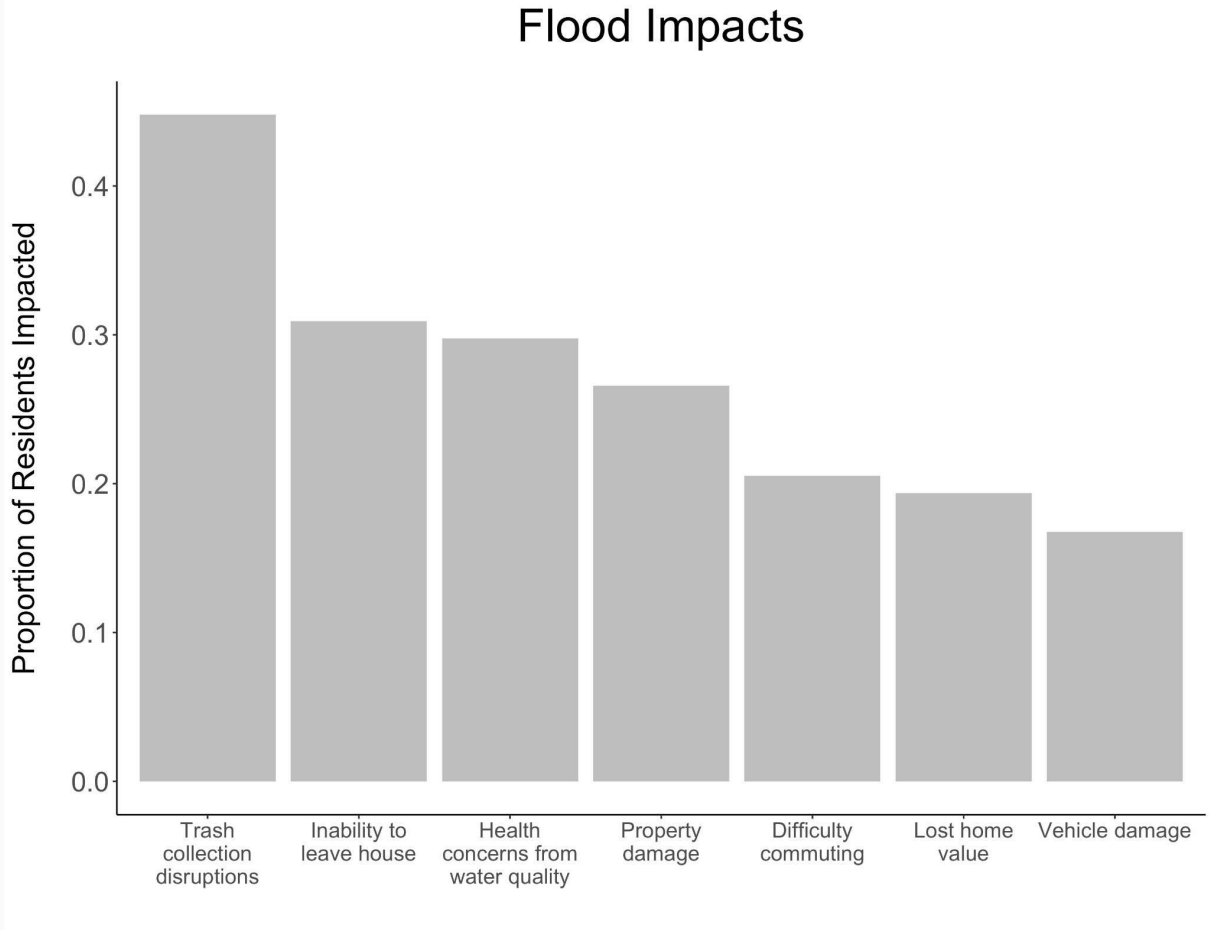


# 363 survey responses, well distributed across Carolina Beach

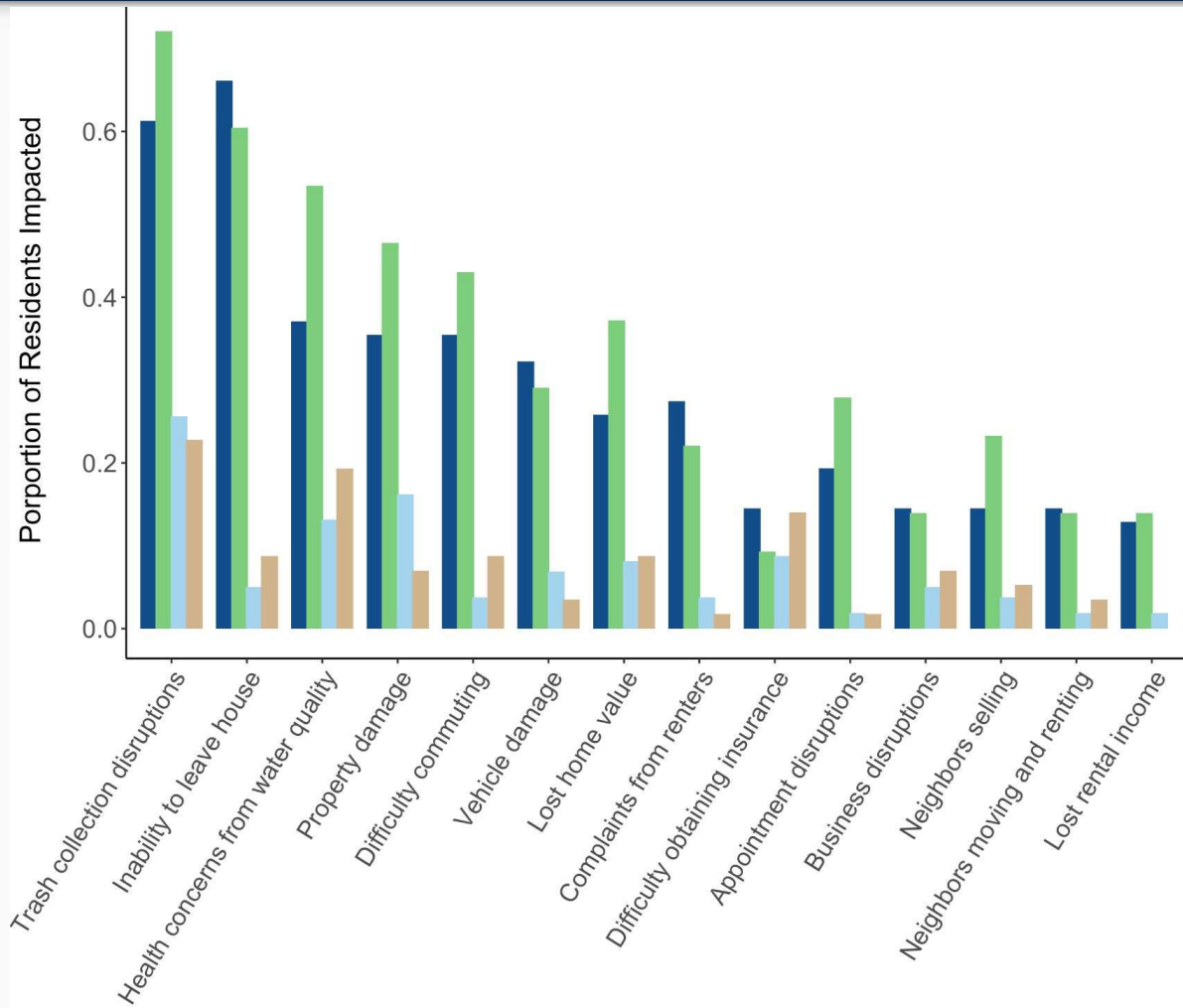




# About 40% of respondents reported impacts from flooding

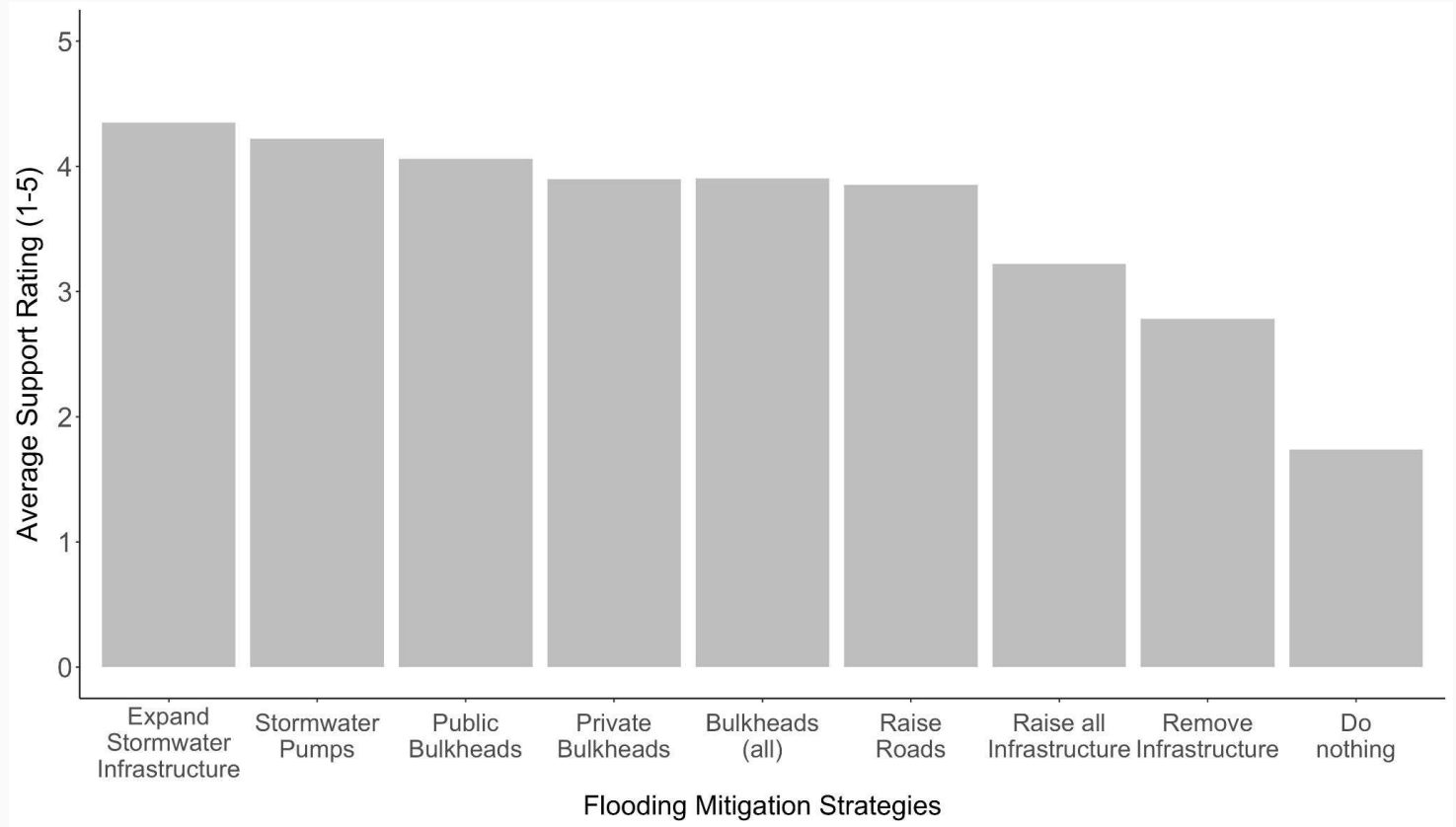


# Flood impacts reported on and beyond Canal Dr.



# Flooding Mitigation Strategies: stormwater and bulkhead interventions were popular

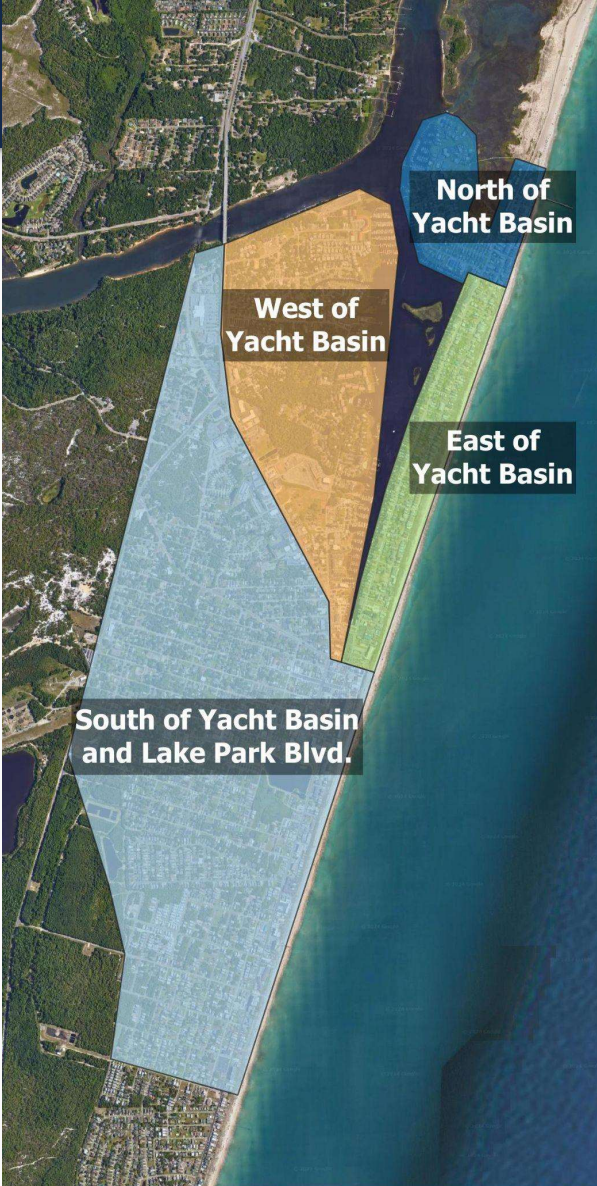
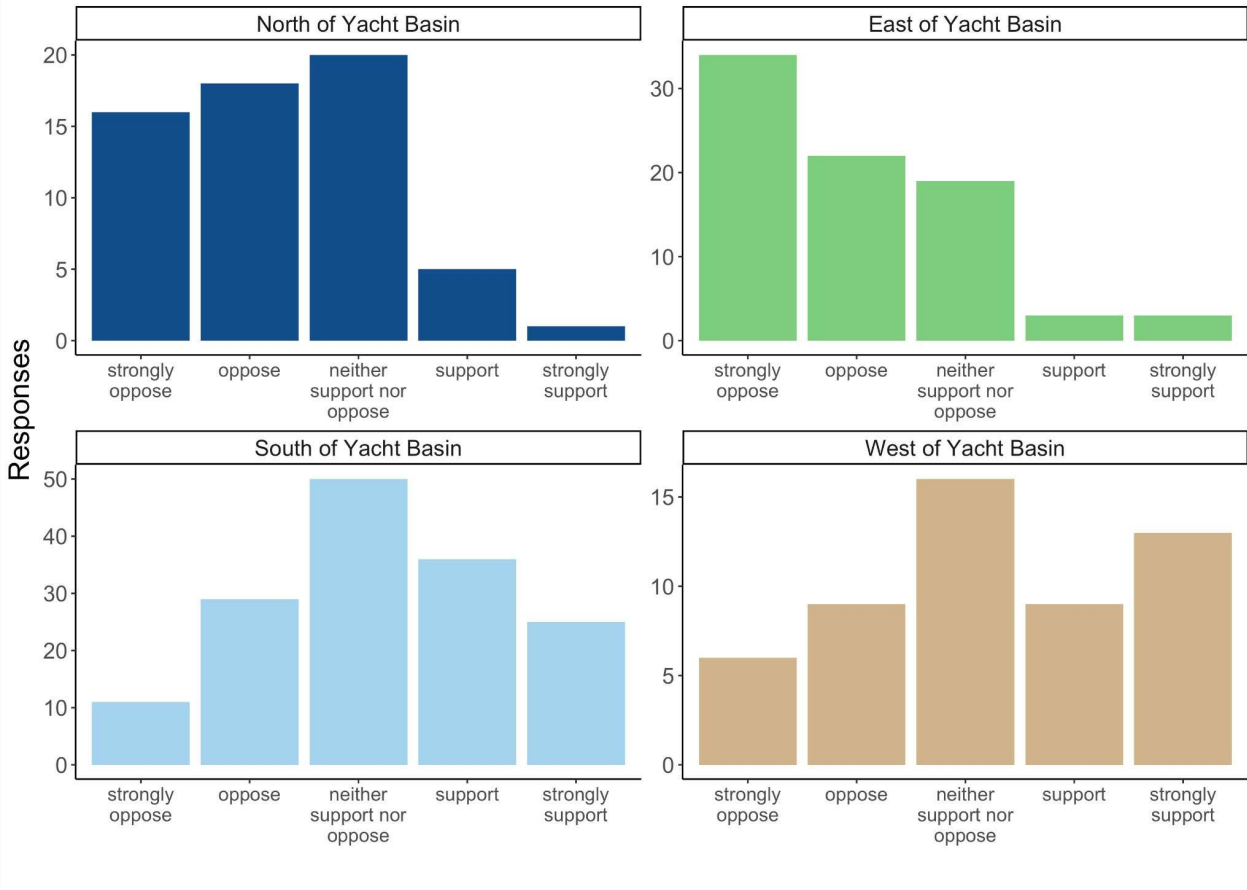
|                               |
|-------------------------------|
| 5 = Strongly Support          |
| 4 = Support                   |
| 3 = Neither Support or Oppose |
| 2 = Oppose                    |
| 1 = Strongly Oppose           |



*Note:* respondents were not asked to consider legal/permitting restrictions when stating preference for flood mitigation strategies

# Support for removing infrastructure varied by location

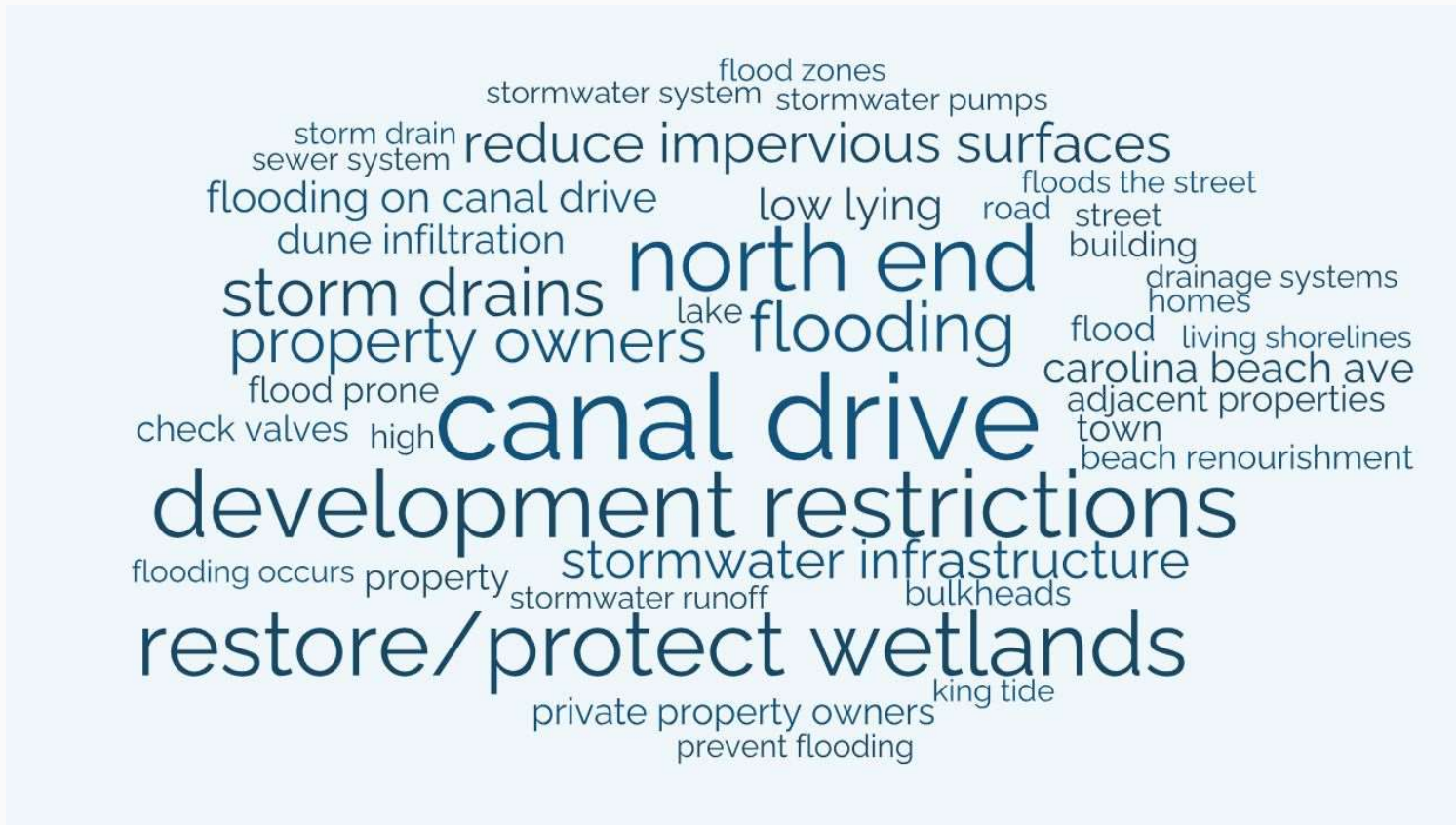
How much do you support removing infrastructure from areas that frequently flood and restoring wetlands?





Residents also suggested development restrictions, wetland protection, and dune infiltration

*From survey question: What strategies not listed in the eight options given do you think should be considered for Carolina Beach?*



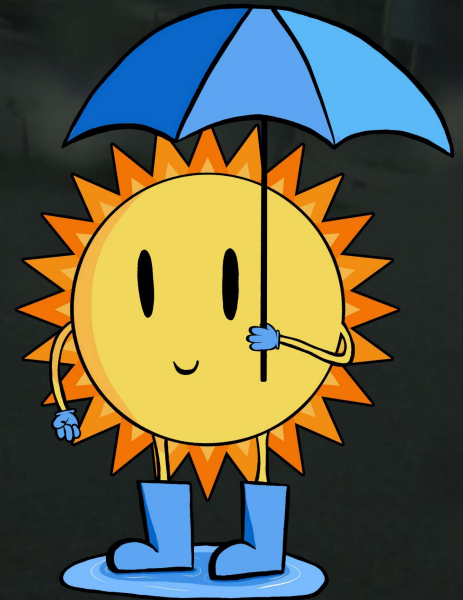
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**What strategies to mitigate flooding are preferred by Carolina Beach residents?**





## *Envision Flood Resilience Workshops: Refining, testing flood mitigation strategies*



### **Workshop goals:**

1. Identify flood mitigation strategies that are in line with residents' preferences and values
2. Test the effectiveness of those strategies today and in the future

### **Details:**

- First workshop was held on June 10
- 15 workshop participants randomly selected from interested survey respondents
- Subsequent workshops (four total) will take place from fall 2024 through spring 2025
- After the workshops are complete, a summary of results will be presented to Town Council and a report will be shared publicly

## Workshop scope



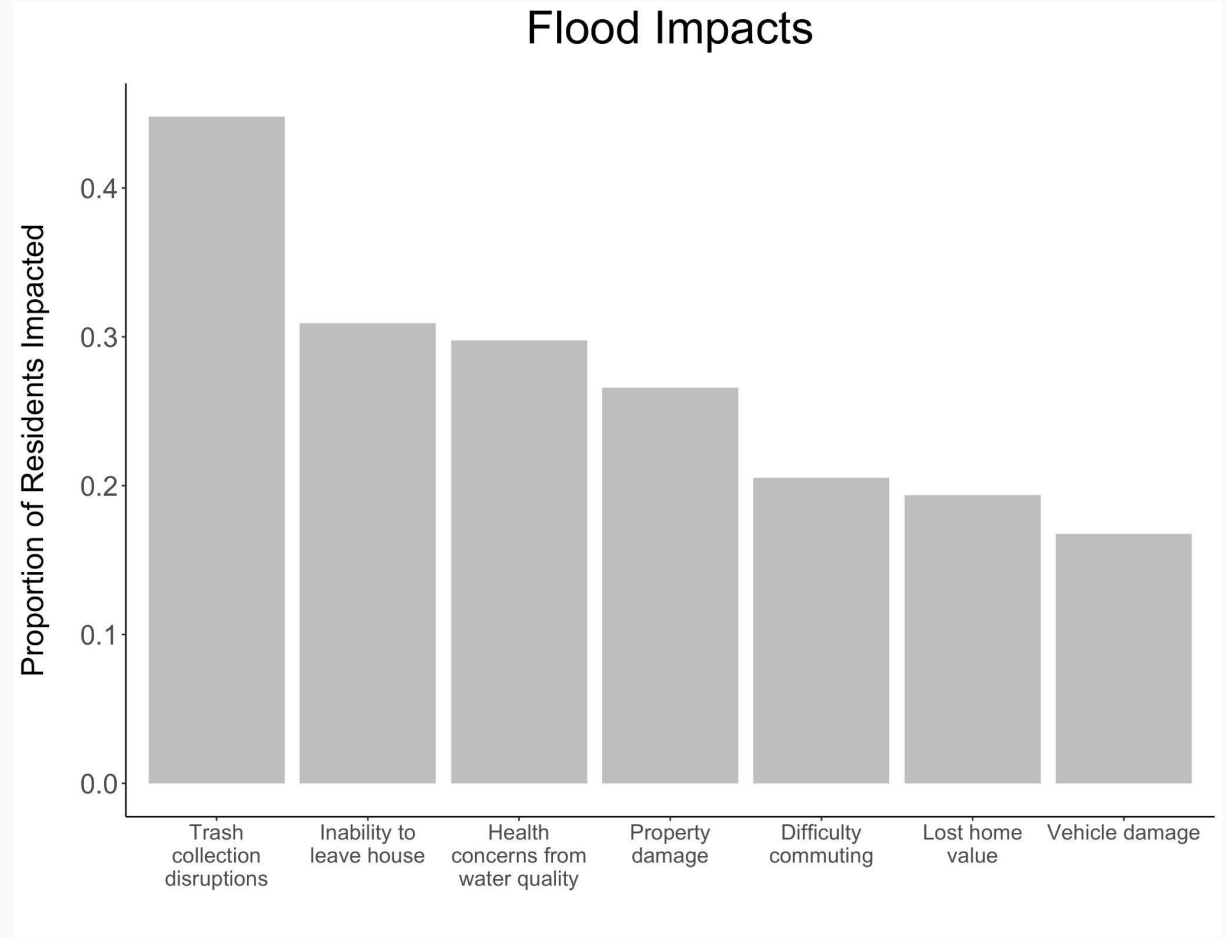
- This is a research project, so presence or involvement of town staff does not imply that a strategy will be implemented
- We are not evaluating financial or technical feasibility of specific strategies
- Some strategies may not currently be permissible or legal under state/federal regulations
  - Example: a mandatory, minimum bulkhead elevation around the Yacht Basin

| <b>GENERAL ASSEMBLY OF NORTH CAROLINA</b> |  |          |
|---|--|----------|
| <b>SESSION 2021</b>                       |  |          |
| <b>H</b>                                  |  | <b>1</b> |
| <b>HOUSE BILL 1163</b>                    |  |          |
| Short Title:                              | Bulkhead Authority for Carolina Beach.   | (Local)  |
| Sponsors:                                 | Representative Miller.<br><i>For a complete list of sponsors, refer to the North Carolina General Assembly web site.</i> |          |
| Referred to:                              | Local Government, if favorable, Rules, Calendar, and Operations of the House   |          |
| June 2, 2022                              |  |          |

# Recap from workshop #1



- The first workshop included:
- Review of survey results

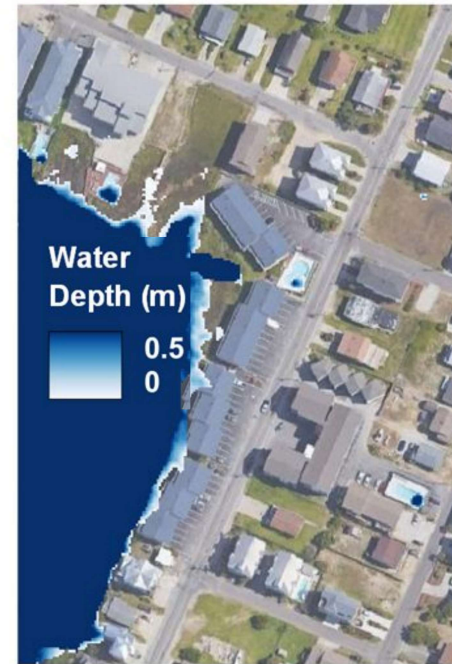




## Recap from workshop #1

The first workshop included:

- Review of survey results
- Explanation of model capabilities for testing flood mitigation strategies
- Discussion and mapping of flood mitigation strategies preferred by survey respondents and workshop participants



**Tides and wind**  
Present-day sea levels  
**Higher bulkheads**



Tides, wind, **rain**  
Present-day sea levels  
**Higher bulkheads**

## Next steps following workshop #1



We are distilling the results of the first workshop into specific strategies that can be tested in our flood model, such as:

- Pumping floodwaters (to ocean or infiltration areas)
- Continuous bulkhead around Yacht Basin
- Reconfigurations of Canal Drive
- Increasing infiltration within flooded areas (e.g., with permeable pavements)

In future workshops, we will:

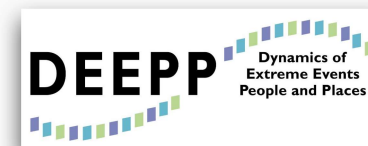
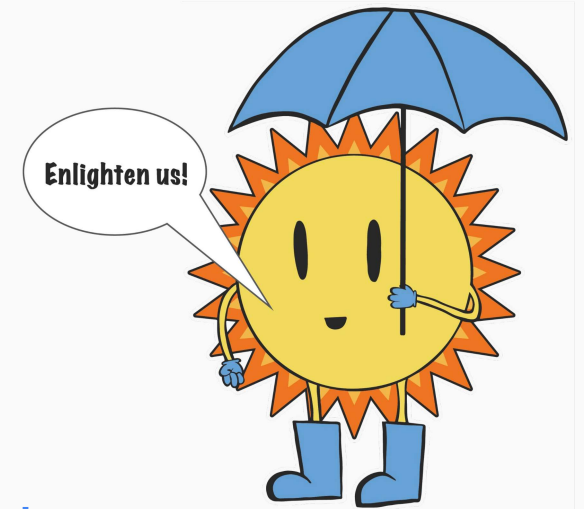
- Discuss effectiveness of different strategies for various flood drivers (rain, tides, etc.) and time periods
- Refine a set of preferred flood mitigation strategies based on the results

Thanks for your attention! Questions and feedback?

Are there ways that we can make this data more useful to the town?

Any other concerns or questions for us?

Live Carolina Beach flood sensor data available at  
[go.ncsu.edu/cbflood](http://go.ncsu.edu/cbflood)







## AGENDA ITEM COVERSHEET

**PREPARED BY:** Jeremy Hardison, Community Development Director

**DEPARTMENT:** Community Development

**MEETING:** Town Council 7/23/24

**SUBJECT:** Resolution authorizing the Town of Carolina Beach to submit an application to the Wilmington Urban Area Metropolitan Planning Organization for Surface Transportation Block Grant Program for a Sidewalk Project located adjacent to S. Lake Park Blvd from the Carolina Beach Lake to Alabama Ave.

### **BACKGROUND:**

The Town has been working with the Department of Transportation (DOT) on cost and design for a sidewalk from the Carolina Beach Lake to Tennessee Ave. DOT has approximately \$150,000 allocated to the project. The Town would be responsible to contribute funds for the rest of the project. A grant was recently announced under the Federal Infrastructure Investment and Jobs Act (IIJA) Surface Transportation Block Grant Program. These grant funds could be utilized by the Town for its portion of the contribution. The grant requires a minimum 20% local match. DOT is currently calculating the cost to extend the sidewalk to Alabama Ave and staff will send the estimated construction cost to Town Council prior to the meeting.

### **ACTION REQUESTED:**

Adopt a resolution to authorize staff to submit a grant application to the WMPO.

### **MOTION:**

Adopt a resolution authorizing staff to submit an application to the Wilmington Urban Area Metropolitan Planning Organization for a Surface Transportation Block Grant Program to construct a sidewalk located adjacent to S. Lake Park Blvd from the Carolina Beach Lake to Alabama Ave.

**RESOLUTION OF SUPPORT**

Resolution authorizing The Town of Carolina Beach to submit an application to the Wilmington Urban Area Metropolitan Planning Organization in the Amount of \$\_\_\_\_\_ for Surface Transportation Block Grant Program - Direct Attributable Funds or Transportation Alternative Set Aside - Direct Attributable for S. Lake Park Blvd Sidewalk Project located adjacent to S. Lake Park Blvd from the Carolina Beach Lake to Alabama Ave.

**LEGISLATIVE INTENT/PURPOSE:**

On July 5, 2024 the Wilmington Urban Area Metropolitan Planning Organization (WMPO) issued a call for projects to agencies in its jurisdiction for Surface Transportation Block Grant Program-Direct Attributable Funding (STBGP-OA) or Transportation Alternative Set Aside - Direct Attributable (TASA OA). A total of \$5,087,594 is available to award. STBGP-DA and TASA-DA is comprised of a collection of discretionary programs including Surface Transportation Block Grant Program for the design and construction of a new sidewalk located adjacent to S. Lake Park Blvd from the Carolina Beach Lake to Alabama Ave. The Town of Carolina Beach will provide the 20% required cash match.

Construct a new sidewalk and extend the path to connect the southern part of the island by pedestrian access adjacent to Lake Park Blvd. estimated cost is \$\_\_\_\_\_ and the Town is requesting \$\_\_\_\_\_

**THEREFORE, BE IT RESOLVED:**

That, the Town Manager is hereby authorized to submit a STBGP-DA or TASA-DA application in the amount of \$\_\_\_\_\_ and will commit \$\_\_\_\_20% as a cash match for the design and construction of a new pedestrian sidewalk S. Lake Park Blvd from the Carolina Beach Lake to Alabama Ave.



## AGENDA ITEM COVERSHEET

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**PREPARED BY:** Kim Ward, Town Clerk

**DEPARTMENT:** Clerk

**MEETING:** Town Council Meeting 7/23/2024

**SUBJECT:** Second Reading of Resolution 24-2307 supporting New Hanover County's Ordinance on Abandoned Vessels

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### **BACKGROUND:**

On June 17, 2024 New Hanover County Commissioners approved an Ordinance authorizing the Sherriff's Office to identify, and when needed, remove abandoned vessels from waterways in the unincorporated areas of the county.

New Hanover County asked that the Carolina Beach Town Council consider supporting this ordinance by approving a resolution.

The Town had a first reading of the Resolution at the July 9, 2024 Town Council meeting.

### **ACTION:**

Motion to approve Resolution 24-2307 authorizing the New Hanover County Sheriff's Office to remedy abandoned vessels within town limits.



# Resolution



Town of Carolina Beach  
Town Council

**RESOLUTION NO. 24-2307**

**RESOLUTION TO ENJOIN WITH NEW HANOVER COUNTY TO ENFORCE AND REMOVE ABANDONED VESSELS IN WATERWAYS**

**WHEREAS**, on June 17, 2024, the New Hanover County Board of Commissioners approved an amendment to Chapter 23 of the New Hanover County Code of Ordinances by the addition of Article X Abandoned Maritime Vessel(s), to regulate, enforce and dispose of abandoned vessels as authorized by North Carolina General Statute 153A-132; and

**WHEREAS**, the ordinance authorizes the New Hanover County Sheriff’s Office to investigate, seek remediation, enforce and, if necessary, dispose of abandoned vessels in waterways in unincorporated New Hanover County; and

**WHEREAS**, the Town of Carolina Beach has also identified issues with abandoned vessels on waterways within Carolina Beach Town limits; and

**WHEREAS**, authorizing the New Hanover County Sheriff’s Office to investigate, remediate, enforce and dispose of abandoned vessels in Carolina Beach would be beneficial to maintaining safety in Carolina Beach’s waterways; and

**WHEREAS**, under North Carolina General Statute 153A-122 Carolina Beach may adopt a resolution permitting county ordinances to be applicable within Carolina Beach corporate limits;

**NOW, THEREFORE, BE IT RESOLVED**, the Town of Carolina Beach as authorized by North Carolina General Statute 153A-122, permits Chapter 23, Article X Abandoned Maritime Vessel(s), of the New Hanover County Code of Ordinances and any future amendments to that article, to be applicable within Carolina Beach corporate limits to be enforced by the New Hanover County Sheriff’s Office.

**ADOPTED**, this 23<sup>rd</sup> day of July 2024.

TOWN OF CAROLINA BEACH

\_\_\_\_\_  
Albert L. Barbee, Mayor

ATTEST:

\_\_\_\_\_  
Kimberlee Ward, Town Clerk



## AGENDA ITEM COVERSHEET

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**PREPARED BY:** Kim Ward, Town Clerk

**DEPARTMENT:** Clerk

**MEETING:** Town Council Meeting 7/23/2024

**SUBJECT:** Discussion on Community Building Repairs

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**BACKGROUND:**

Mr. Oakley will review the cost estimates to repair the Community Building.

**ACTION:**

Council will give staff direction on how to move forward.