# Cedar Key ShoREs

A model for co-designing nature-based solutions in a small coastal town

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## Focus Area

• Cedar Key, FL







## Sea-level Rise & High Hazard Exposure

30 cm (11.8 inches)

**4<sup>th</sup> fastest** SLR acceleration in the USA (NOAA) Interagency Sea Level

Extrapolation of observed sea level trends **outpaces even the extreme scenario** from models

Interagency Sea Level Rise Scenario ToolalsIr.org





## G Street (2016)



## UF-Cedar Key Community Collaboration (2016-2022)



#### NATIONAL Engineering **ACADEMIES** Cedar Key ShOREs: Phase I Medicine GULF RESEARCH PROGRAM

Sciences

Interdisciplinary: Engineering, architecture & design, urban planning, city government, private sector, social science, law & policy, fisheries, ecology, and more.

# Co-design process

- Intercept survey
- Workshop series
- Deliverable: full proposal to Phase II





## "Top coastal issues in Cedar Key?"



## "What priorities should direct coastal infrastructure in Cedar Key?"



## "Whose needs should be prioritized?"

## Highest:

- 1. Residents of Cedar Key
- 2. The environment
- 3. Clam aquaculture workforce

### Lowest:

- 10. Inland residents (Levy County)
- 11. State government
- 12. Developers

## "Does Green = Effective?"



Green = Aesthetically Appealing & Aesthetically Appealing = Effective

## Principles for Engagement

Interdisciplinarity

Scientists & Community Members

**Community Education** 

Voices/Listening/Openness

Surveys, Workshops, Interviews, Focus Groups

Collaborative Conceptual Design

Regular Community Input



# Workshop 1: Stormwater Concepts

#### **OPTION 3: BIOSWALES**

#### Description

Long, channeled depression or trench that receives runoff and has a vegetation such as grass and other plants; some swales serve as conveyance and detention





#### Favored:

- Bioswale
- Tree box filter
- · In-line check valve

#### Applications

Right-of-Ways, between sidewalks and curbs, road medians, long and narrow spaces





### Less Favored:

Underground storage

#### **OPTION 5: TREE BOX FILTER**

#### Description

Small areas of plantings with vertical walls and either open or closed bottoms to collect runoff from streets, sidewalks, and parking lots







#### Applications

Downtown areas, areas with limited space, city streets, Right-of-Ways



# Workshop 2: Shoreline Concepts

Concept breakwater cross section

Benefits:

- Restores aspects of historic sand spit Wave and current attenuation along G Street
- Holistic "nature-based" approach Public access enhanced & concentrated away from road right-of-way

imitations:

- Conflicts with existing stormwater outfall May increase sedimentation around dock.
- Requires maintenance of public infrastructure and aspects of living shoreline (mangroves)

## Favored:

- Option 2
- Option 4

#### Option 2: Single Sea Groin





#### Benefits:

Options 1 and 2 combined

- Wave and current attenuation
- Extensive habitat structure
- Public access to Sea Groin
- Holistic "nature-based" approach

Limitations:

- Options 1 and 2 combined
- Stormwater outfall (G street)
- Possible sediment accretion at dock
- Requires maintenance of public infrastructure and aspects of living shoreline



#### Option 4: Mixed Design



## Workshop 3: Final Conceptual Designs



## Importance of "engaged" research

"unlike solidarity, which is horizontal and takes place between equals, charity is topdown, humiliating those who receive it and never challenging the implicit power relations".

- Eduardo Galeano



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Found by these great UF students while cleaning out the marsh on G St! Let me know if any belong to you and I will drop them off! There is also a black metal decorative anchor. Note - I did not pick up the mirror in hopes someone it ... See more



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# High Hazard Exposure

Cedar Key, FL

# Cedar Key ShOREs: Phase 2

- Continual refinement through codesign.
- Interviews & workshops with the Community.
- 90% designs for stormwater and shoreline (at 30%, 60%, 90%).
- Hydrodynamic & stormwater models.
- Legal/permitting work.





ΝΛΤΙΟΝΛΙ

ACADEMIES Medicine

**GULF RESEARCH PROGRAM** 

Sciences Enaineerina

## Shoreline Property Owner Physical (& Virtual) Workshops



#### Conceptual Plan: Mixed Design







ON & STREET, AND MARE WAVE BRAKES?









## Stormwater Interviews





## Stormwater Monitoring





# Stormwater Monitoring



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Date (M/D/2024)

# Stormwater Monitoring



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NATURE COAST

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