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Integrated Coastal Resilience: Living Shoreline Retrofits Combined with Stormwater Management Concept through Delivery Case Study

> Delaware Inland Bays Town of Dewey Beach Read Avenue Area Resilience

2021 RAE Living Shoreline Workshop Tuesday, October 19, 2021



### STRAUGHANENVIRONMENTAL



**Presenters:** 

Bob Collins, Delaware Center for the Inland Bays Larry Trout, Jr., PE, Straughan Environmental Douglas Janiec, Sovereign Consulting Inc.

### Delaware Center for the Inland Bays (CIB)



**Our Mission:** To preserve, protect and restore Delaware's Inland Bays and their watershed.



### **CIB's Comprehensive Conservation and Management Plan**



Long-Term Plan – Prioritized actions to address water quality and living resource challenges and goals.

### • Challenges:

- > Nutrient pollution
- Habitat Loss
- Increased flooding
- Increased runoff
- > Shoreline erosion
- Loss of tidal wetlands
- How to identify & prioritize projects?

### **CIB's Goals For Restoration Planning**

### Involve Partners/Stakeholders

- > Planning
- > Implementation
- > Funding
- Science-Based
- Assess Needs (multiple drivers)
- Select and Prioritize Projects
  - > Benefits,
  - Costs
  - > Iterative

### Create Conceptual Plans for High Priority Projects

- Grant Application-Level Designs
- > Background Information and Data & Permitting Information
- > Partner/Landowner Commitment
- > Nutrient Load Reductions Quantified and Other Benefits
- Cost Estimates and Contingencies

Stormwater Master Planning and BMP Implementation + Living Shoreline Retrofit Designs

**Comprehensive Flood Management Solutions** 

## **IN OTHER WORDS**

Management of Flooding Caused by Precipitation + Management of Back Bay Flooding

**Comprehensive Flood Management Solutions** 

### Town of Dewey Beach Stormwater Master Plan

**Atlantic Ocean** 

### **Rehoboth Bay**

### **Dewey Beach Phase II Stormwater Planning Background**

### Planning, Assessment and Concept Development

### Town of Dewey Beach Phase II Stormwater Planning

- Objective:
  - Develop Prioritized Green Infrastructure Stormwater Plan
  - Innovative Stormwater Management/Living Shoreline Techniques
  - > Address Stormwater Management Nutrient Reductions and Flooding

### • Project Partners:

- Delaware Center for Inland Bays (CIB)
- Fown of Dewey Beach
- Delaware Department of Transportation (DelDOT)
- > RK&K

### • Funding Sources:

- Delaware Water Infrastructure Advisory Council (DWIC) Surface Water Matching Planning Grant
- Fown of Dewey Beach
- DelDOT In-kind
- CIB In-kind

### Dewey Beach Phase II Stormwater Planning Proposed BMP Location Map

Dewey Beach Proposed BMP Location Map



### Dewey Beach Living Shoreline Retrofit Location Map



# Read Avenue Project Site



### Read Avenue Project Site – Common Flooding



### Read Avenue Project Site – Common Flooding



### Read Avenue Project Site – Prior Stop Gap Measures



### Read Avenue Project Site – Historic View

### March 2007

### July 2010

### June 2018



Monigle Park was constructed in 2008 to protect shoreline from erosion. After initial project, shoreline erosion continued to occur.

### Project Goals:

- Shoreline stabilization
- Reduce Flooding
- > Improve Water Quality
- Restore/Enhance Tidal
  Wetlands
- Improve Habitat

### • Funding Sources:

- DWIC Community Water Quality Improvement Grant
- DNREC SOFA/FHWA Green Infrastructure Techniques for Coastal Highway Resilience research project grant



Plan Vi Read Avenue Project Site

Read Avenue Project Site - Profile













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### Read Avenue Project Site – Marsh Plantings



### Read Avenue Project Site – Does the Outfall Work, Yep!









# Read Avenue Project Site - Year 1





# Read Avenue Project Site – Year 1

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### • Project Goals:

- Reduce Runoff
- > Improve Water Quality

### Funding Sources:

- DWIC Community Water Quality Improvement Grant
- DelDOT Paving and Sidewalk
  Improvements





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### Northeast Corner of Read Ave/SR 1 Intersection - Renderings



















# Northeast Corner of Read Ave/SR 1 Intersection



### Sunset Park Integrated Coastal Green Infrastructure

- > Similar to Read Avenue Living Shoreline Project but at Dagsworthy Street
- Includes WADs off the shoreline
- > Trail on top of levee



## Future Project Sunset Park

- Concept Complete
- Seeking Funding



# **Thanks to Our Partners**

- Town of Dewey Beach
- DelDOT
- RK&K
- Sovereign Consulting Inc.
- Brightfields, Inc.
- DNREC Nonpoint Source Program
- DE Water Infrastructure Advisory Council

# QUESTIONS?