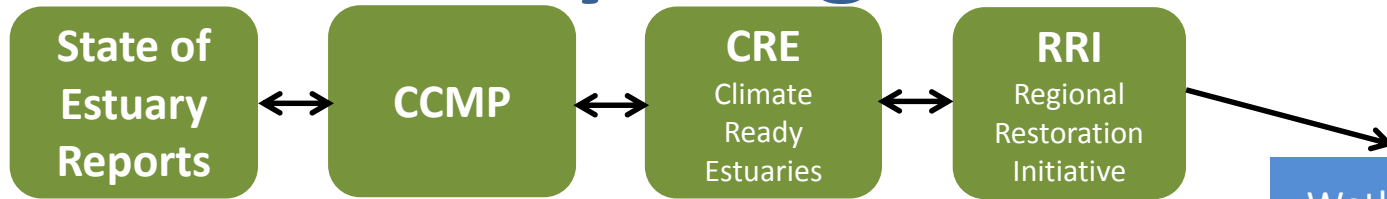




Wetland Monitoring, Restoration Planning, and Living Shoreline Implementation

Angela Padeletti
Science Program Manager
12/6/17

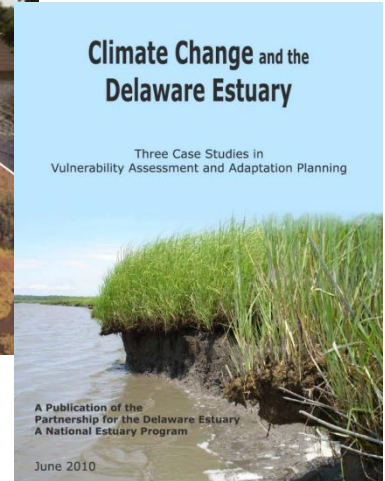
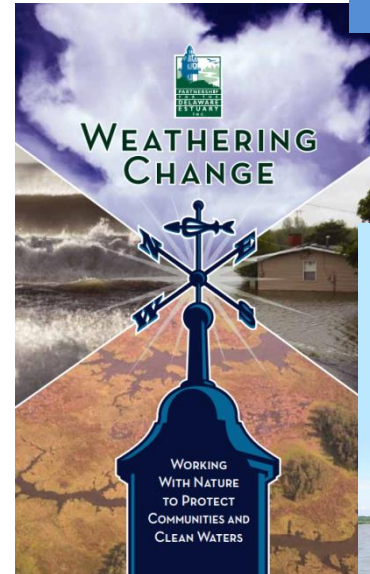
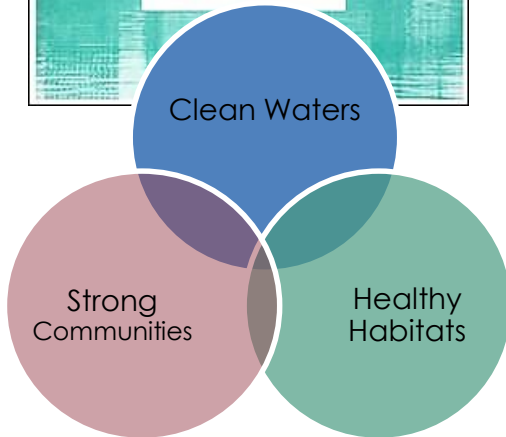
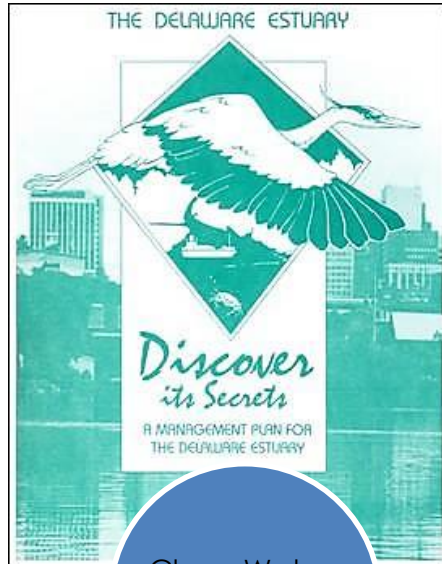
National Estuary Program Efforts



Technical Report for the Delaware Estuary and Basin



2017
Partnership for the DELAWARE ESTUARY
A publication of the Partnership for the Delaware Estuary—A National Estuary Program



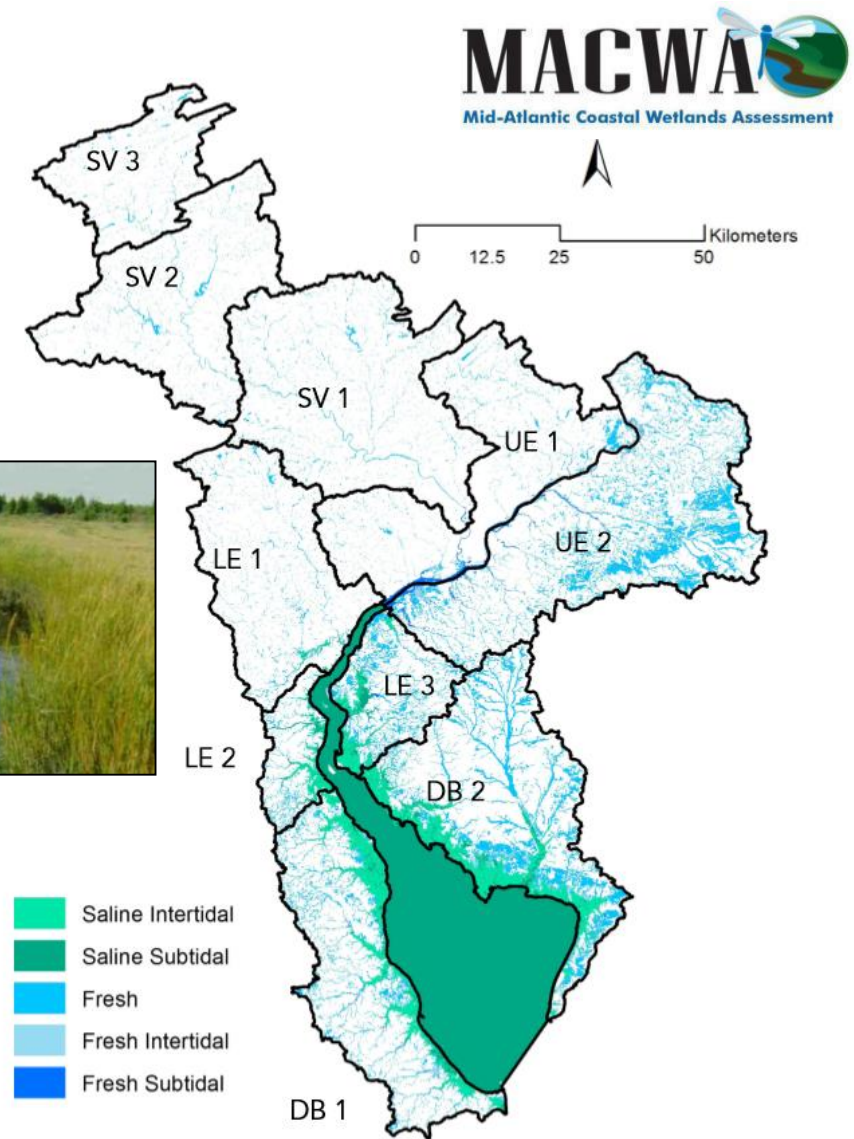
Coastal Wetland

**Abundant
Diverse**

Benefits:

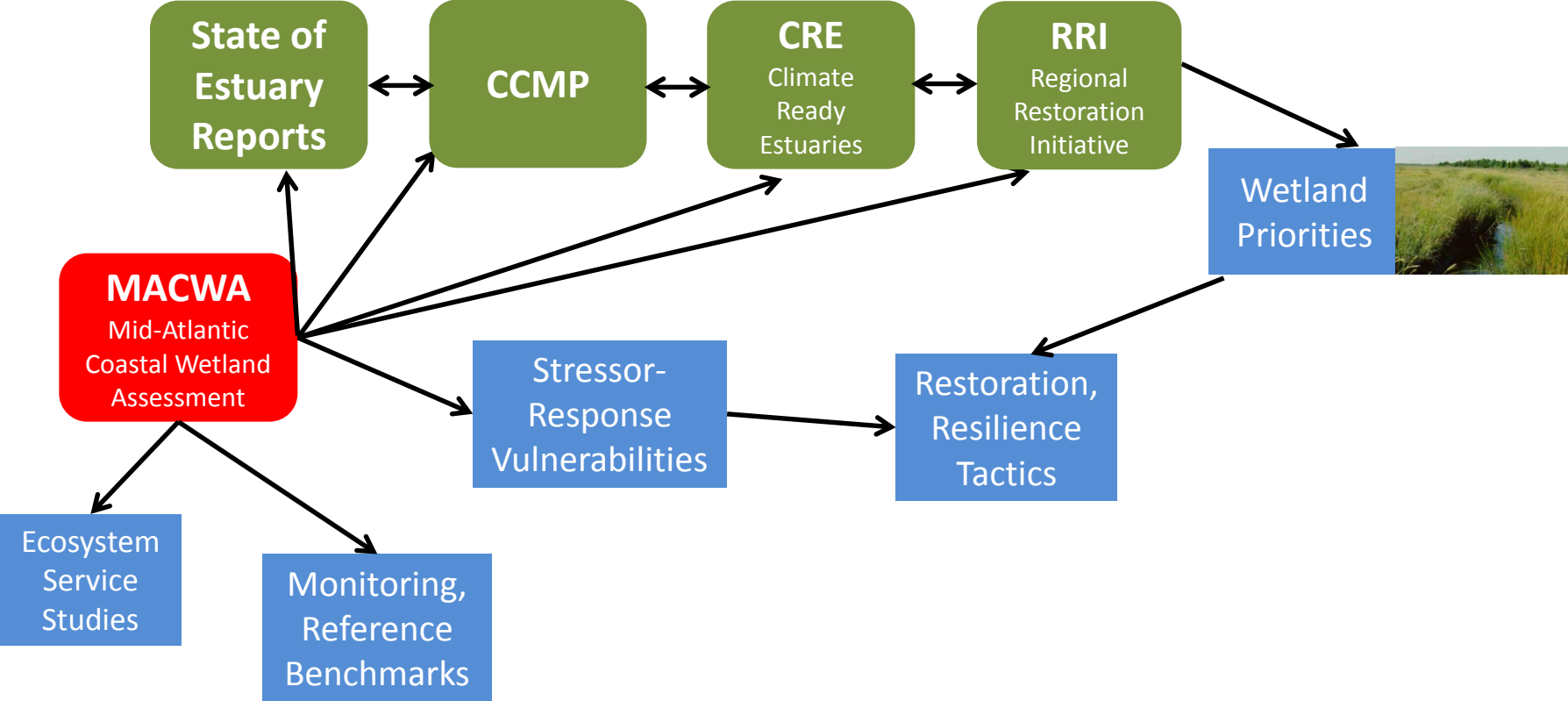
**Flood Protection
Water Quality
Fish and Wildlife
Natural Areas
Carbon Capture**

**By 2100-1m SLR predicted
loss of 119,000 acres (SLAMM)**

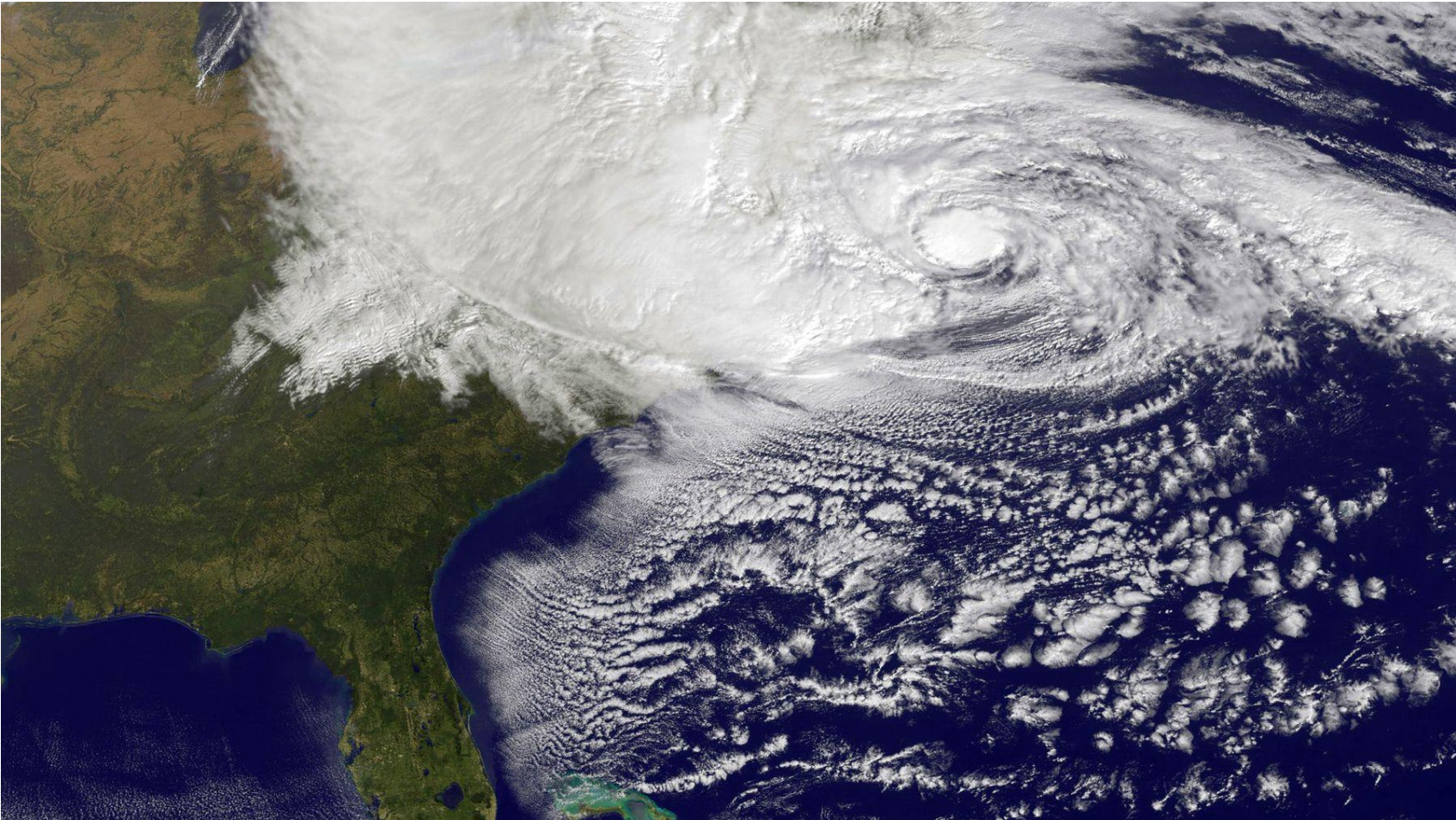


Latest NWI layer. The estuary basin was divided into 10 sub watersheds; Upper Estuary (UE), Schuylkill Valley (SV), Lower Estuary (LE) and Delaware Bay (DB).

National Estuary Program Efforts

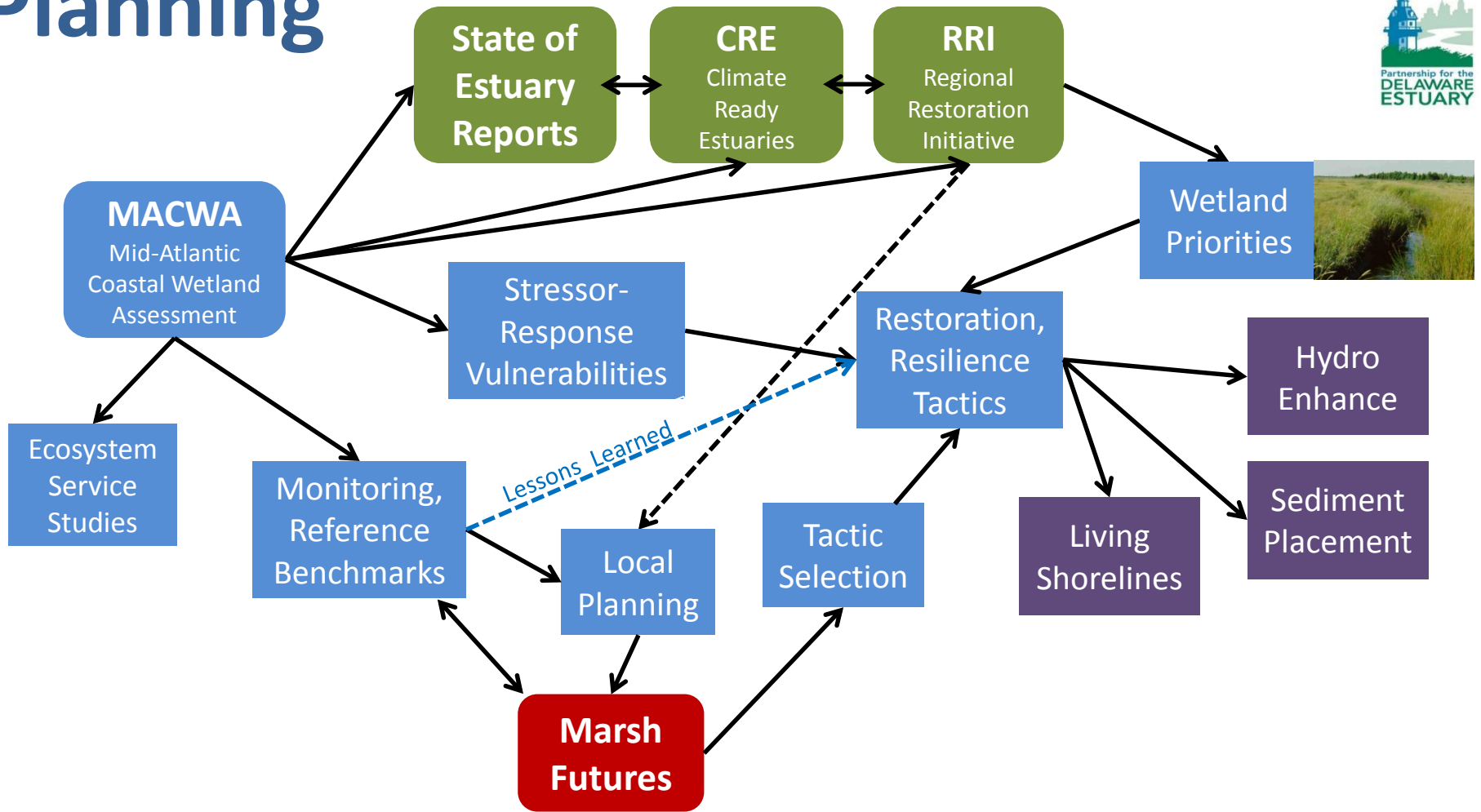


Sandy



Partnership for the
**DELAWARE
ESTUARY**

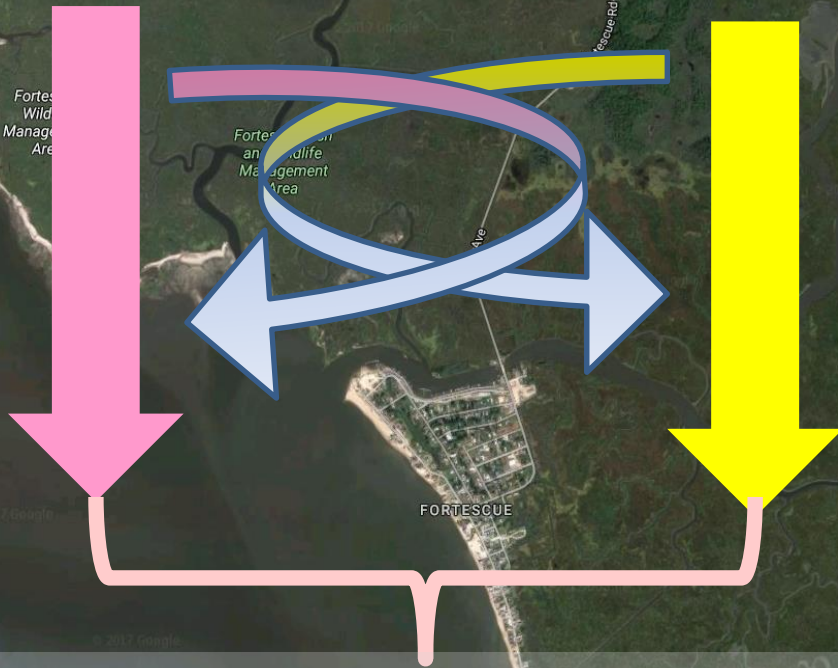
Planning



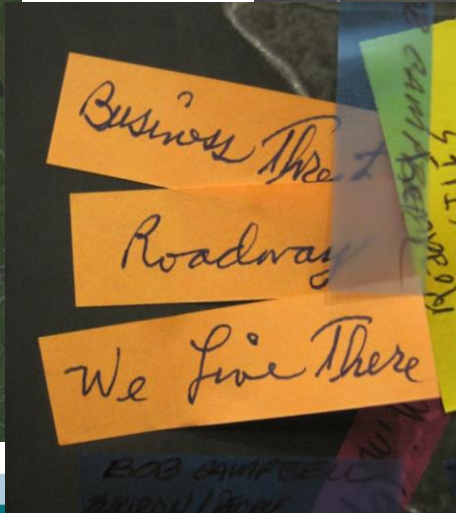
Marsh Futures

Community
Interests/Needs

Environmental
Needs/Options



Effective Resilience Projects in
Places People Care Most About



What Is Marsh Futures?

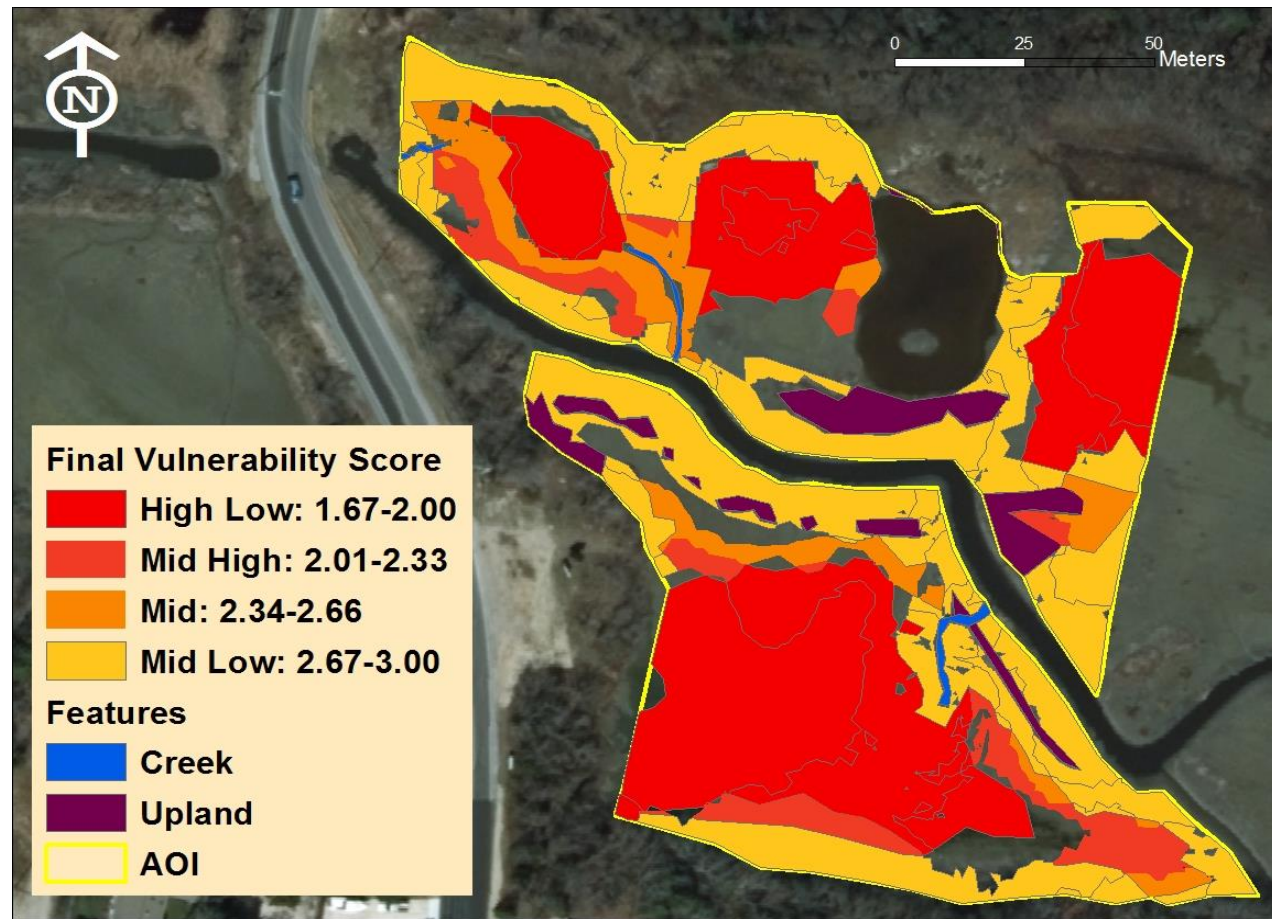
Methodology to place current conditions within the proper context of spatial and temporal trajectories for vulnerability planning

1. What are the current conditions (Site-specific)
2. Is it regionally representative? (Spatial)
3. What are the implications of these trajectories on appropriate habitat persistence? (Vulnerability Rating)
4. Are these conditions part of a trajectory? (Temporal)
5. If areas are deemed vulnerable, how can the vulnerabilities be tactically addressed?

Interpret Trajectory of Vulnerability Score

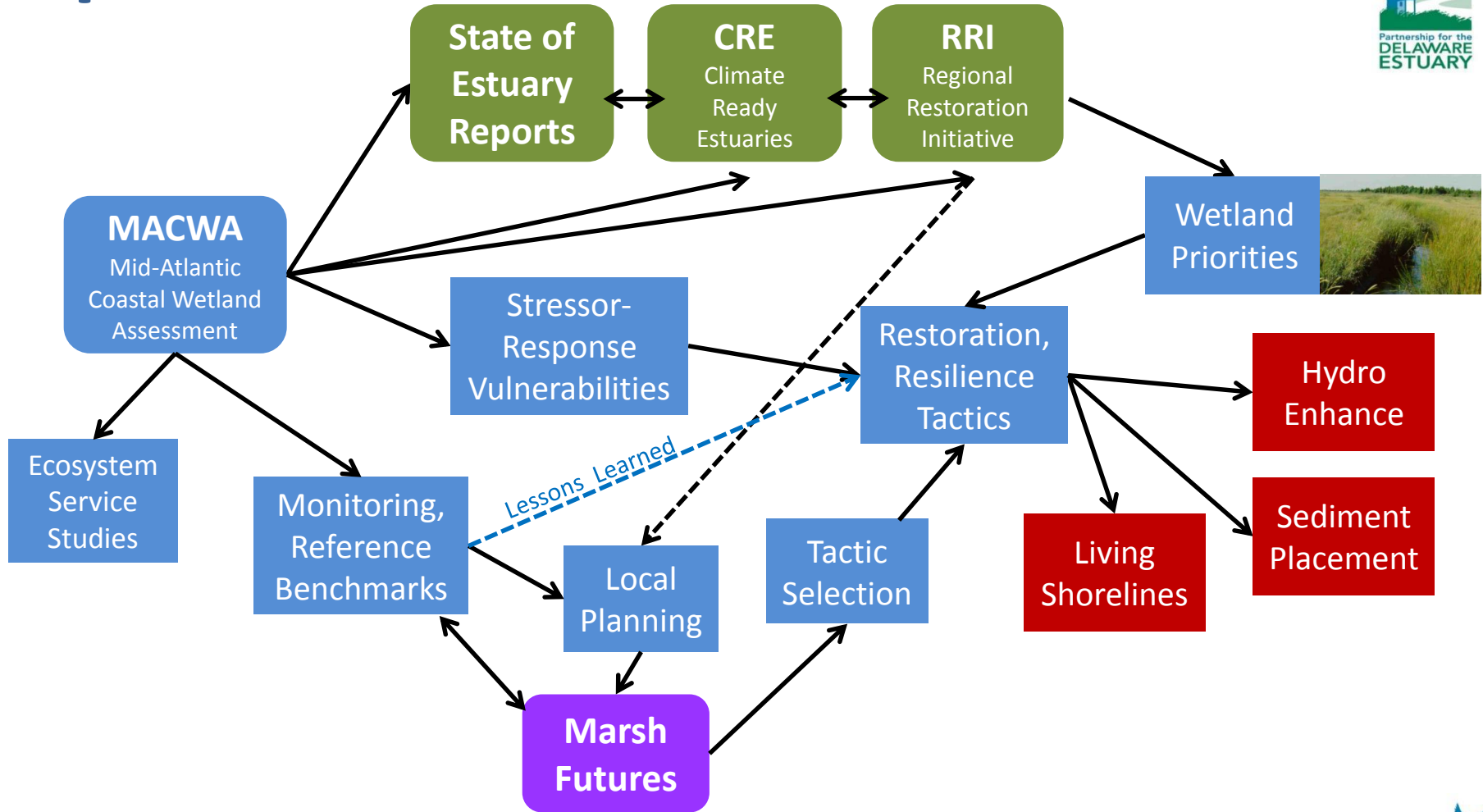
Site-specific Action Plan

- Low vulnerability along channel edges; high vegetation robustness and low bearing capacity
- Vegetation in all areas had been increasing over time
- Greater vegetation robustness was positively correlated with lower bearing capacity
- Marsh seems to be colonizing low vulnerability area



Response: Continued Monitoring of Vegetation Robustness and Bearing Capacity

Implementation





BUILDING ECOLOGICAL SOLUTIONS TO COASTAL COMMUNITY HAZARDS (BESCCH)

Three year project; \$3.4M grant

Funded by Department of the Interior and administered by the National Fish & Wildlife Foundation

Grant recipient NJDEP; Coastal Management Program-Office of Coastal and Land Use Planning

Team of nine+ technical partner organizations (public, non-profit and academic)

Multiple disciplines-engineers, planners, ecologists, environmental scientists and educators

Ten local government partners

PARTNERS



NFWF



RUTGERS
Edward J. Bloustein School
of Planning and Public Policy



Sea Grant
NJ Sea Grant Consortium



Implementation

Original Design

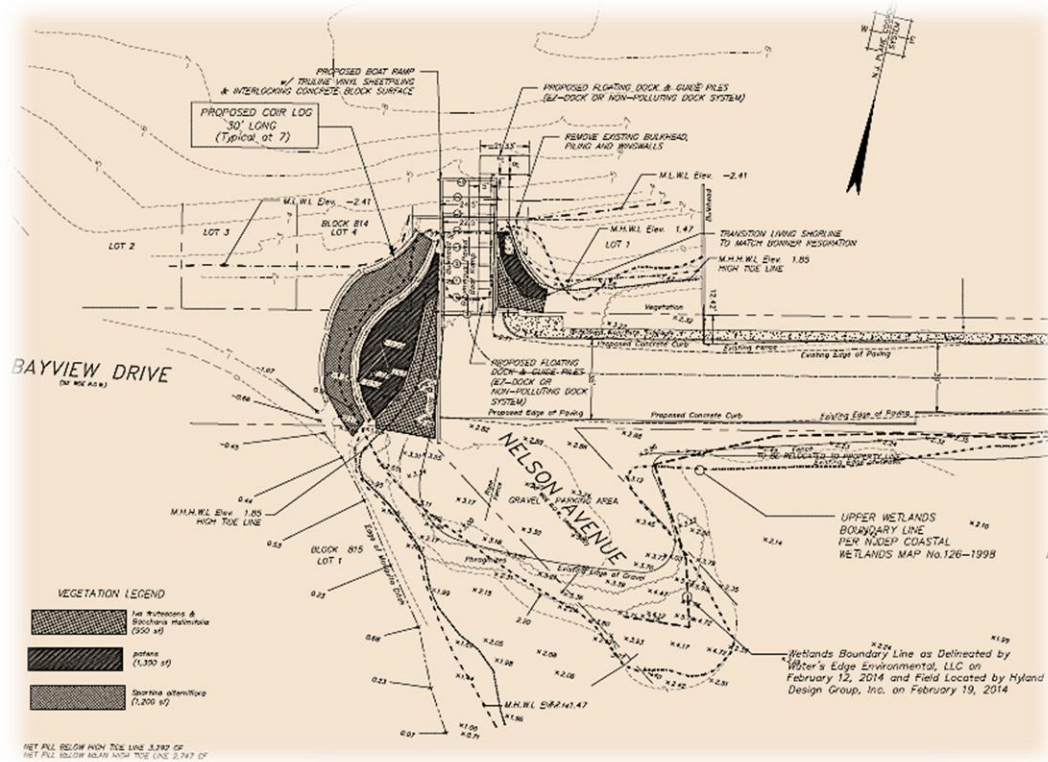
Extend boat ramp and bulkhead

Proposed Design

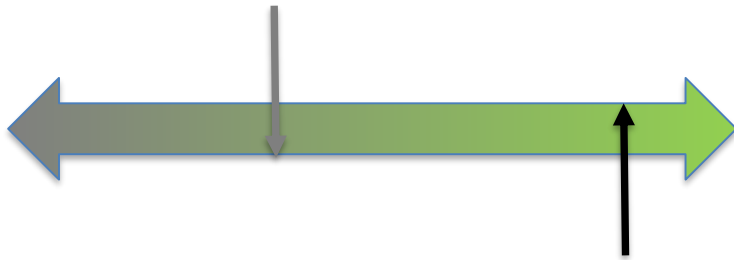
Extended boat ramp

Terraced edge with coir log toe

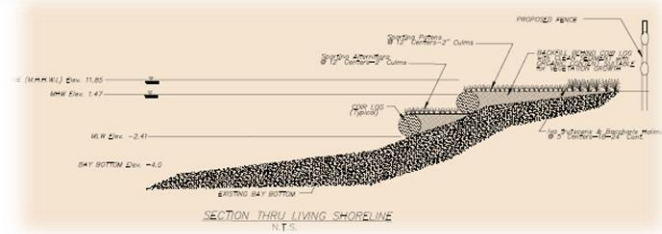
Native vegetation



Before Technical Assistance



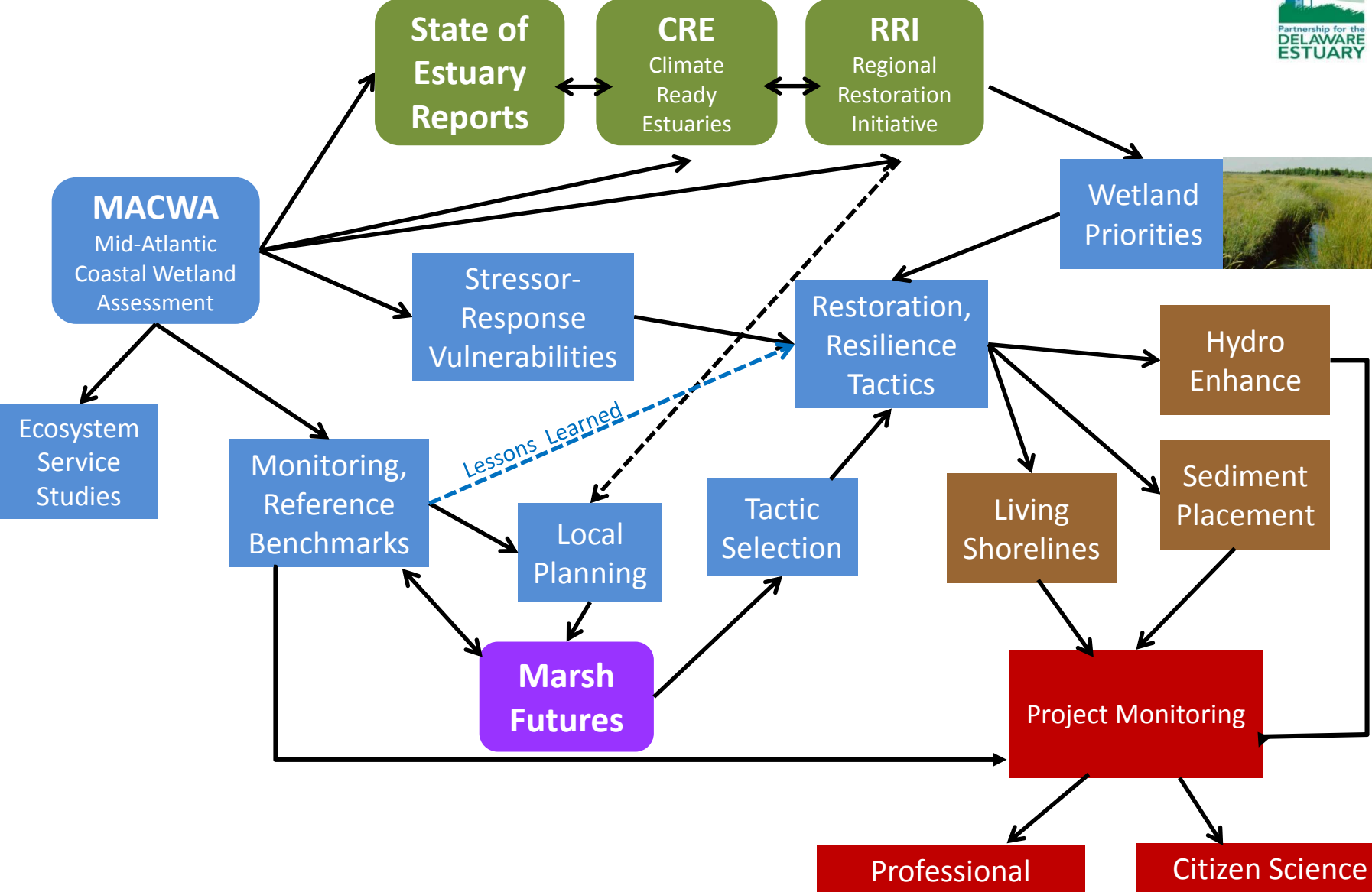
After Technical Assistance



Implementation



Sustain



Sustain

Areas of Interest for projects:

Overall changes to shoreline appearance
Changes in elevation of shoreline

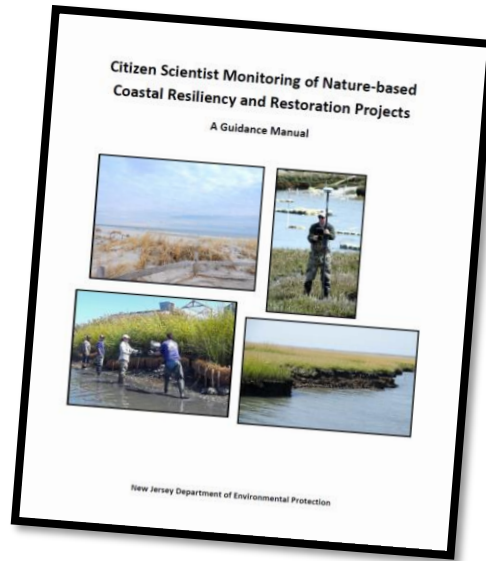
Changes in shellfish communities
Changes in vegetation communities

Goal	Objective	Metric	Methods
Erosion control	Living shoreline appears visually similar to a natural shoreline	Appearance	1. Photo-doc at fixed points
Erosion control	Erosion control structure maintains its established position	Position of erosion control structures	1. Photo-doc 2. RTK-GPS survey
Erosion control	Vegetated edge moves waterward from baseline position	Position of contiguous vegetated shoreline and community boundaries	1. Measured distance of boundaries along transects 2. RTK-GPS survey
Erosion control	Vegetation community develops to be robust	Vegetation robustness	1. Integrate: vegetation height and vertical/horizontal obstruction
Erosion control/ water quality uplift	Shellfish establish residence in the living shoreline	Shellfish population density	1. Observation across site

Green=Citizen Science Methods

Red=Professional Methods

Citizen Science Monitoring



- Citizen Science training was held in June 2017
 - Manual was developed to guide the citizen scientists
 - Easy to read maps and datasheets were developed
 - In late fall 2017 professional scientists went out with the citizen scientists for their first attempt at conducting the monitoring

Let's Collaborate



Partnership for the
**DELAWARE
ESTUARY**

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Science Programs Manager

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*Connecting people, science, and nature
for a healthy Delaware River and Bay*

Next Steps

