5-10-2019

Evolution of Living Shorelines in Maryland

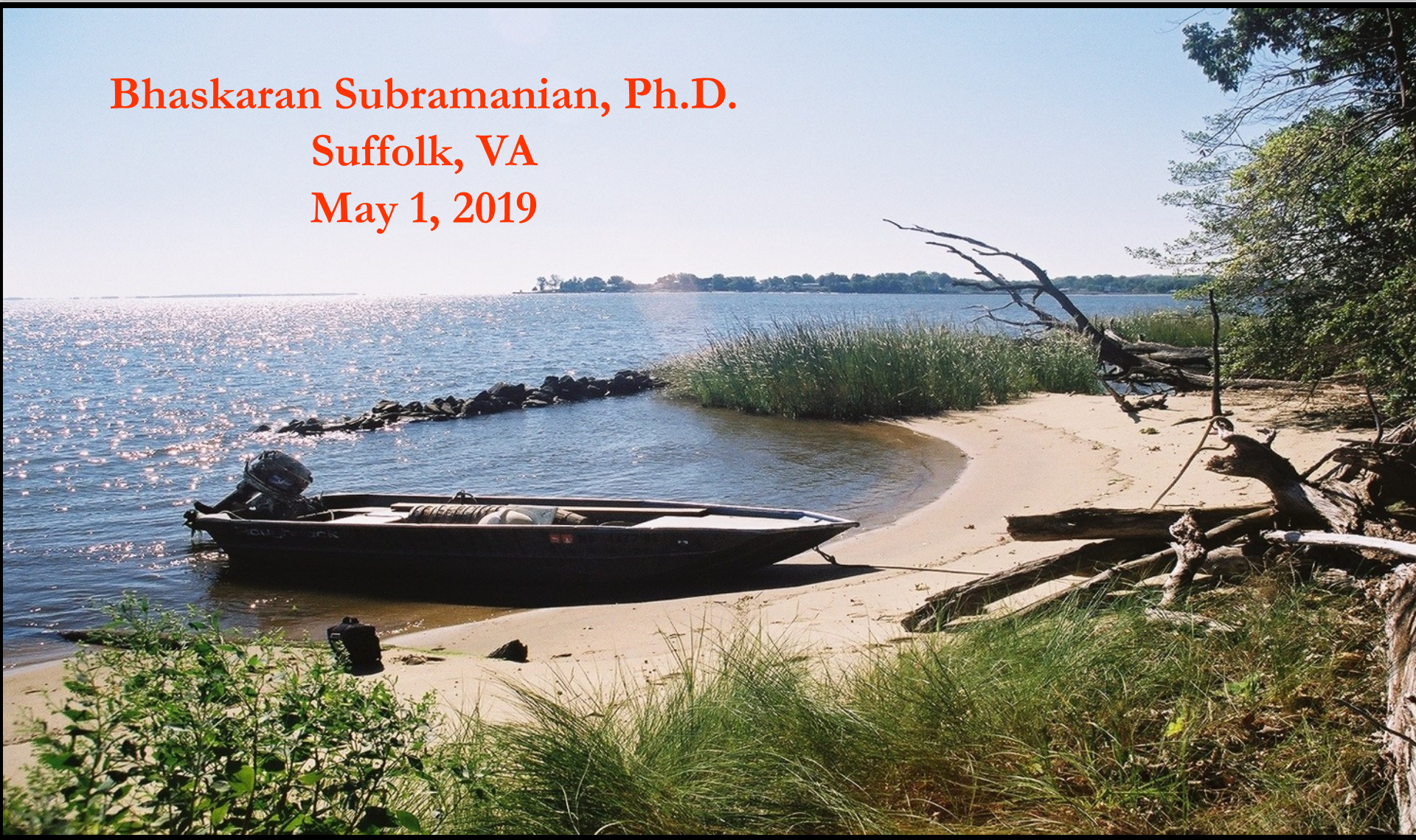
Bhaskaran Subramanian

Evolution of

Living Shorelines in Maryland

MARYLAND
DEPARTMENT OF
NATURAL RESOURCES

Bhaskaran Subramanian, Ph.D.
Suffolk, VA
May 1, 2019



MARYLAND DEPARTMENT OF NATURAL RESOURCES

Erosion Is Not Necessarily a Bad Thing

In fact, it is a necessary process which helps to maintain beach, marsh and offshore habitats. The ecological health of the estuary depends on it.

Traditional Methods of Erosion Control Methods

Rip-rap or Revetment

Wooden Bulkhead

Excessive ??

Great Wall of China

MARYLAND
DEPARTMENT OF
NATURAL RESOURCES

Over 200 Miles of Shoreline Armored in the Chesapeake Bay (and that is just Maryland)

Some Bay tributary shorelines are more than 50% hardened.

MARYLAND
DEPARTMENT OF
NATURAL RESOURCES

Rate of change	Shoreline Length	
	Miles	%
Accretion	2,006	30
No Change	75	1
Slight erosion 0 to -2 feet/year	3,740	56
Low erosion -2 to -4 feet/year	618	9
Moderate erosion -4 to -8 feet/year	173	3
High erosion Over -8 feet/year	48	1
Total	6,659	100

Shoreline Conservation Service: 1968-2018

MARYLAND DEPARTMENT OF NATURAL RESOURCES

Items	Structural Projects	Living Shoreline Projects
# of Projects	484	480
LF of shoreline protected	201,649	202,050
Sq ft of marsh created	12,412	3,859,855
Amount of State loans	$31,511,944	$3,990,381

Why Living Shorelines?

MARYLAND
DEPARTMENT OF
NATURAL RESOURCES

What Kind of Living Shoreline Project is the Best?

MARYLAND DEPARTMENT OF NATURAL RESOURCES

- One size DOES NOT fit all!!

- Energy Regime
- Project Objective(s)
- Site Conditions

How are MD Projects doing?

MARYLAND
DEPARTMENT OF
NATURAL RESOURCES

- Assessment study analyzed:
  - Marsh erosion
  - Structure condition
  - Non-planted vegetation

Results

- Out of 177 projects, **131** of them were good or better.
- Maintenance- Crucial for the success of a project.

Evolution of Living Shorelines

MARYLAND
DEPARTMENT OF
NATURAL RESOURCES

High-profile sills with no gaps

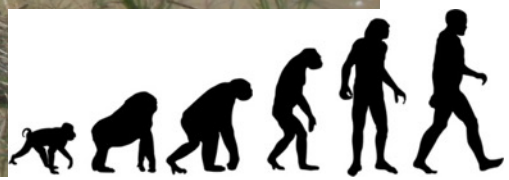
Fiber Glass Boat Analogy:

"*Less is More*"

MARYLAND DEPARTMENT OF NATURAL RESOURCES

Evolution of Living Shorelines

MARYLAND
DEPARTMENT OF
NATURAL RESOURCES



CBEC Project

Before…

After

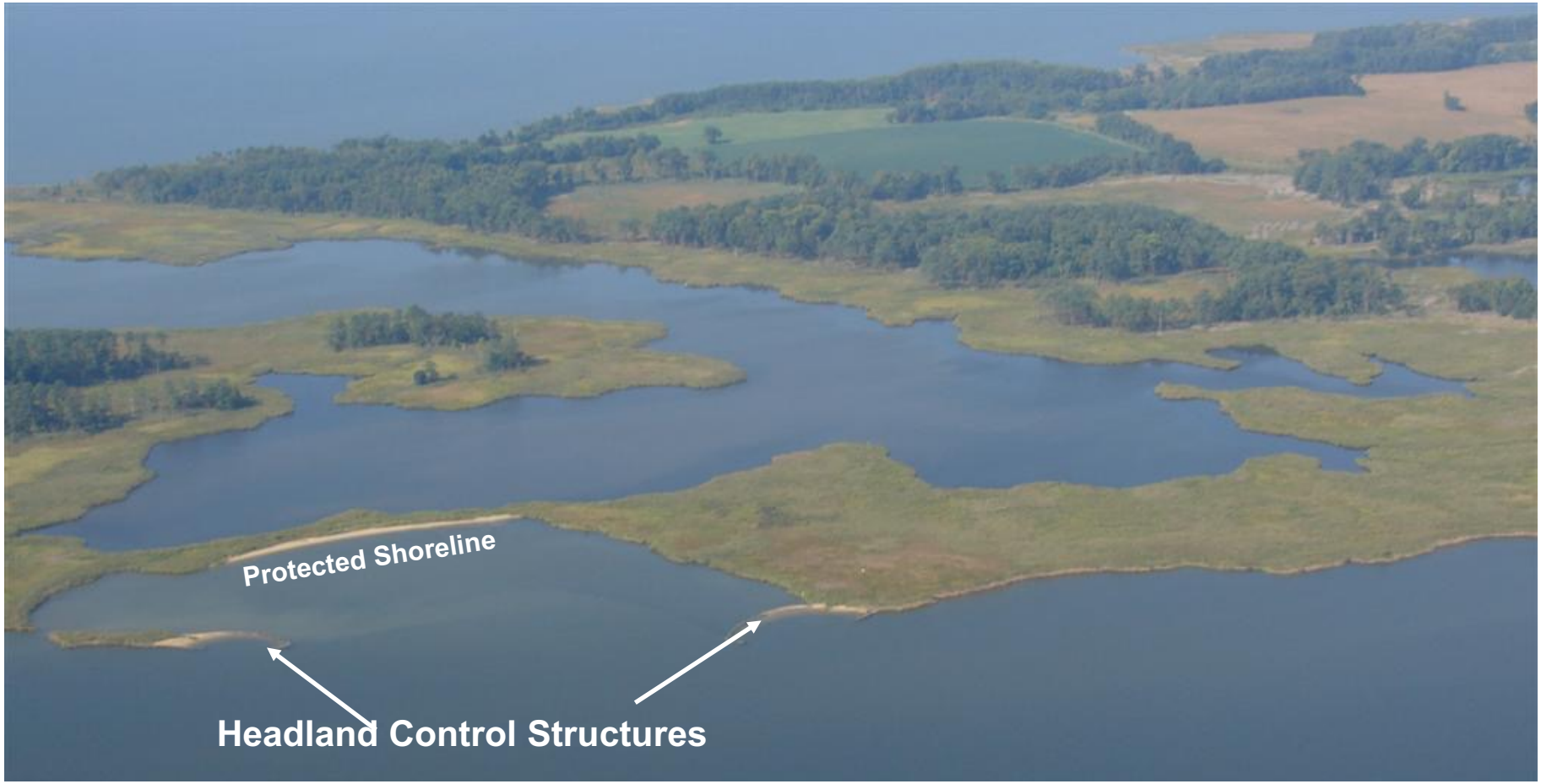
Completed: August 2003

Cost: $375,000

Cost/Linear feet: $375

Hail Cove Project, Kent Co, MD

MARYLAND
DEPARTMENT OF
NATURAL RESOURCES



Spaniard Point, Centreville, MD

MARYLAND DEPARTMENT OF NATURAL RESOURCES

Before…

After

Completed: April 2010

Cost: $131,167

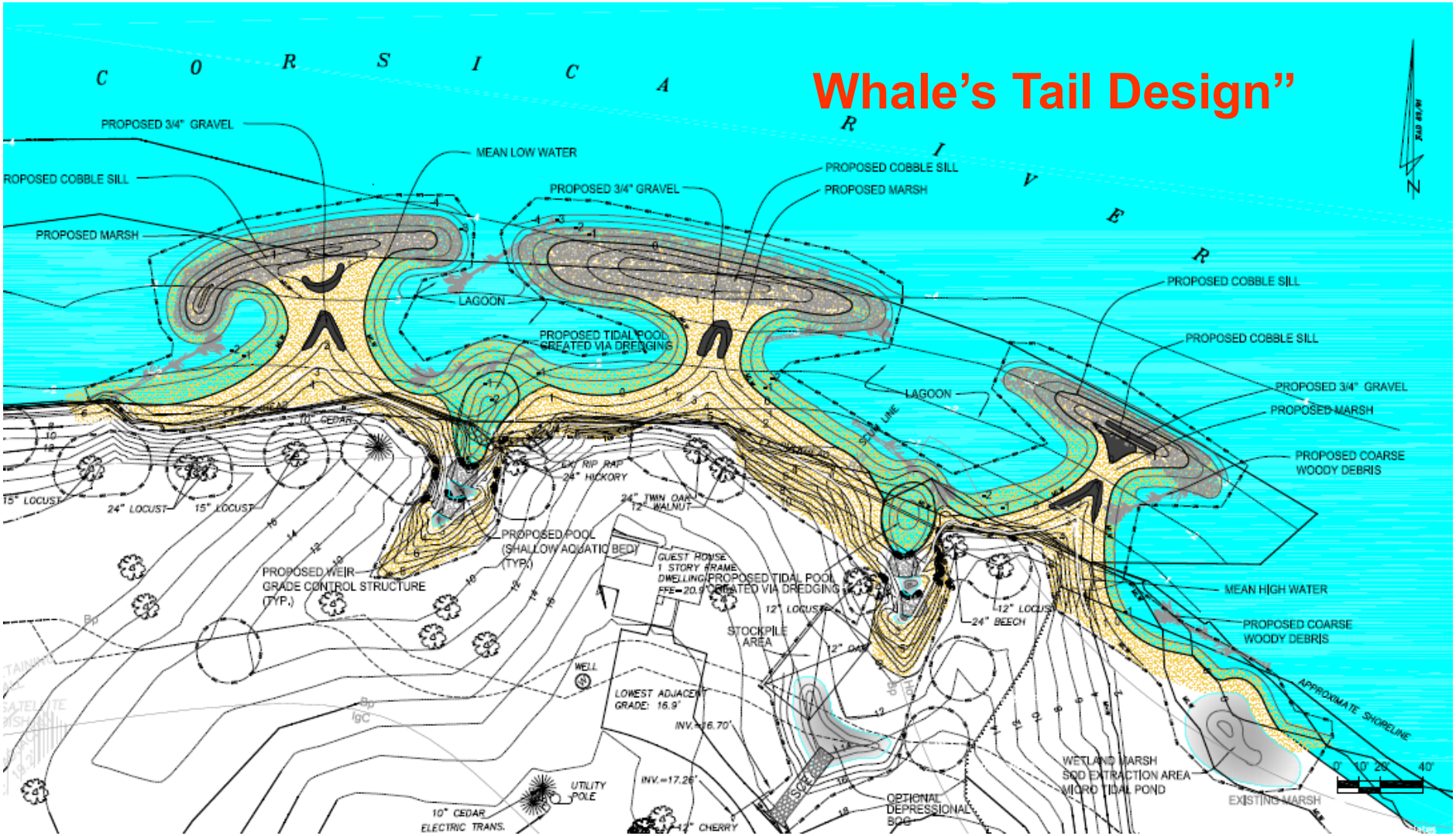
Cost/Linear feet: $205

Windy Hill Farm, Centreville, MD

MARYLAND
DEPARTMENT OF
NATURAL RESOURCES

Windy Hill Farm, Centreville, MD

MARYLAND DEPARTMENT OF NATURAL RESOURCES



Windy Hill Farm, Centreville, MD

MARYLAND DEPARTMENT OF NATURAL RESOURCES

Before…

After

Completed: July 2010

Cost: $226,302

Cost/Linear feet: $326

Windy Hill Farm, Centreville, MD

Gunston School LS Project

MARYLAND DEPARTMENT OF NATURAL RESOURCES

Wishbone Design”

Completed: August 2013

Cost: $115,000

Cost/Linear feet: $144

Ferry Point Park Project

Before…

After

Completed: Dec 2013

Cost: $822,200

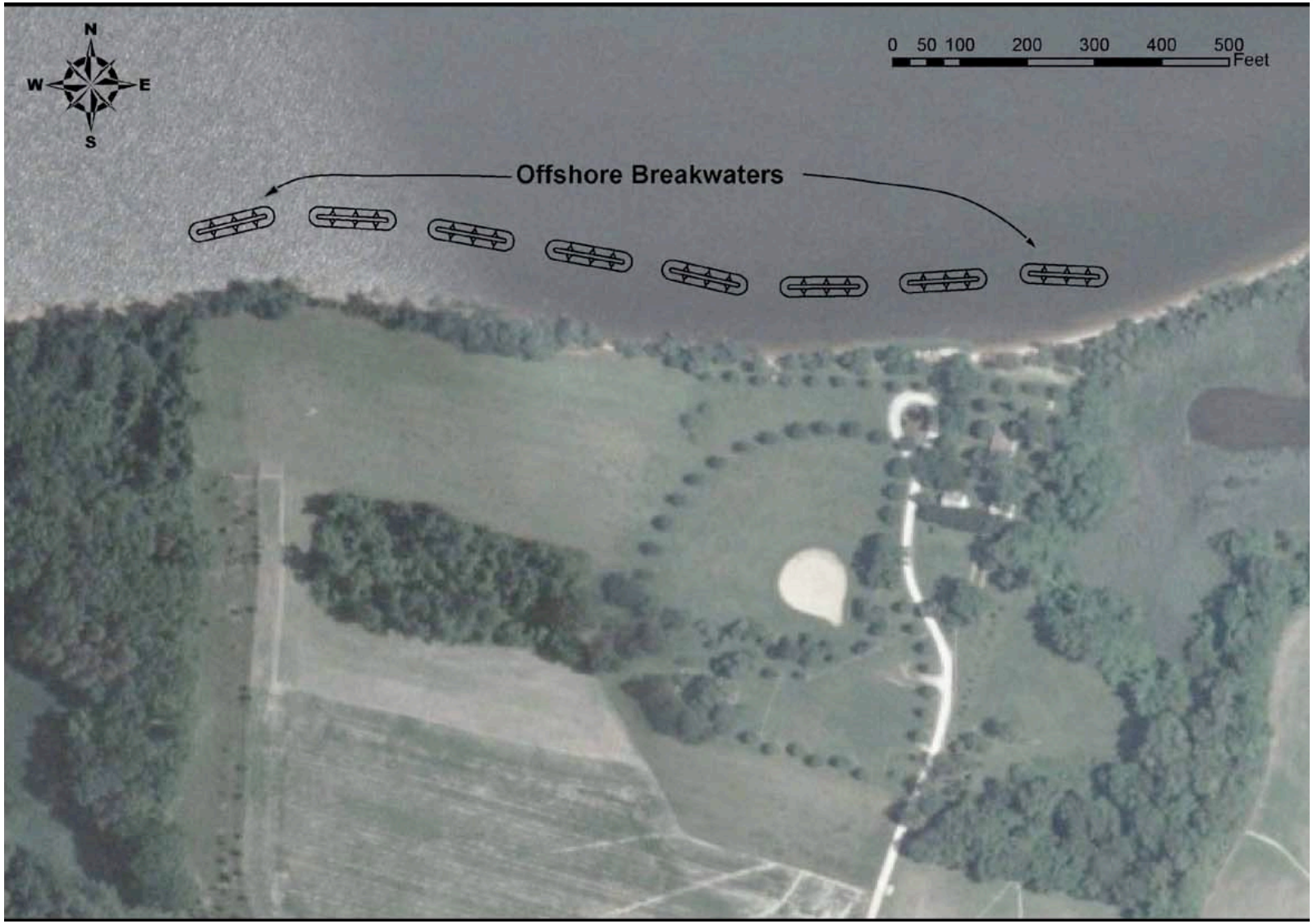
Cost/Linear feet: $135

NextGen Project: Crucial Next Step in the Evolution of LS Projects

MARYLAND DEPARTMENT OF NATURAL RESOURCES

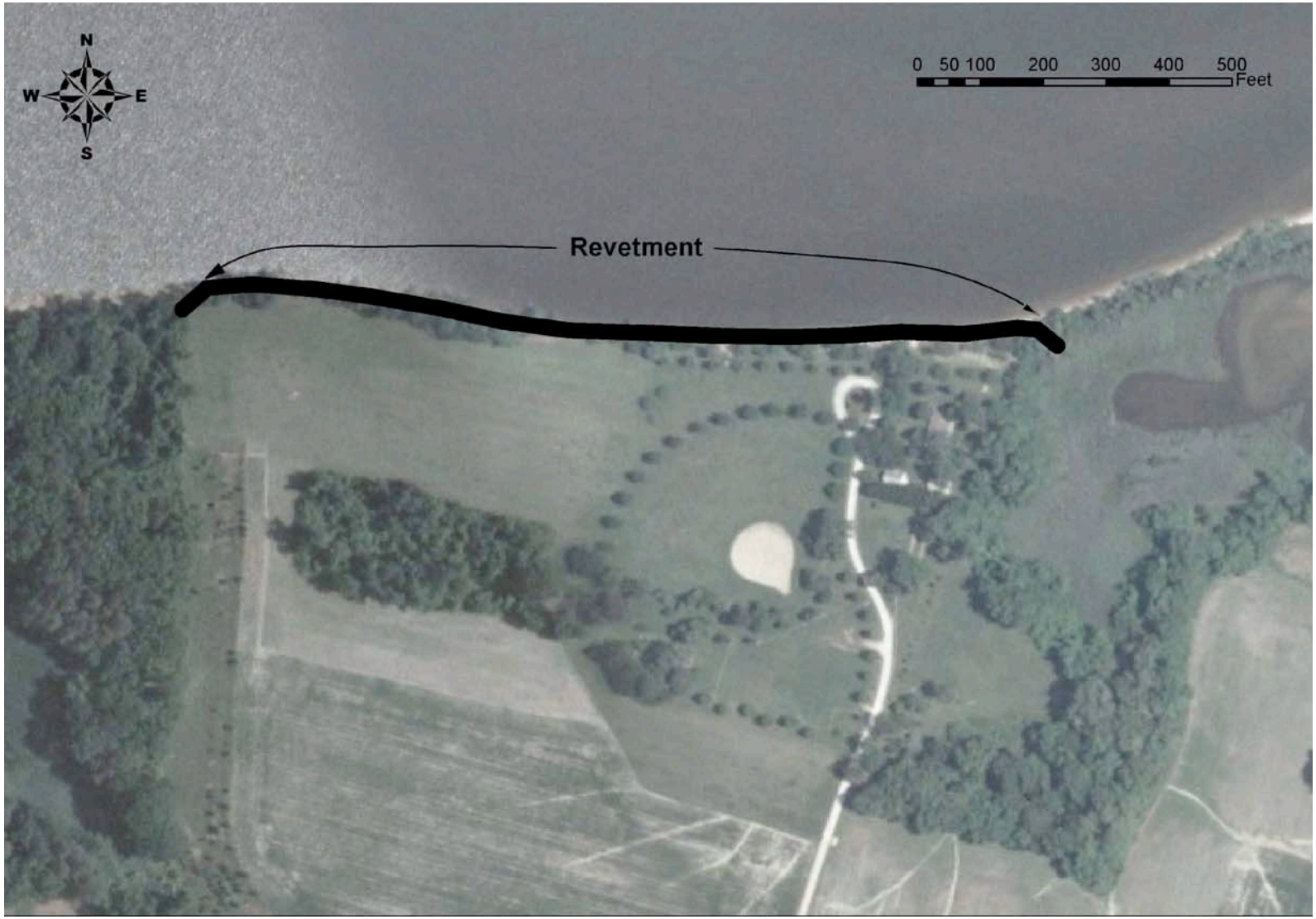
USACE Study: Alternative #1
Estimate- $1.5 mn

MARYLAND
DEPARTMENT OF
NATURAL RESOURCES



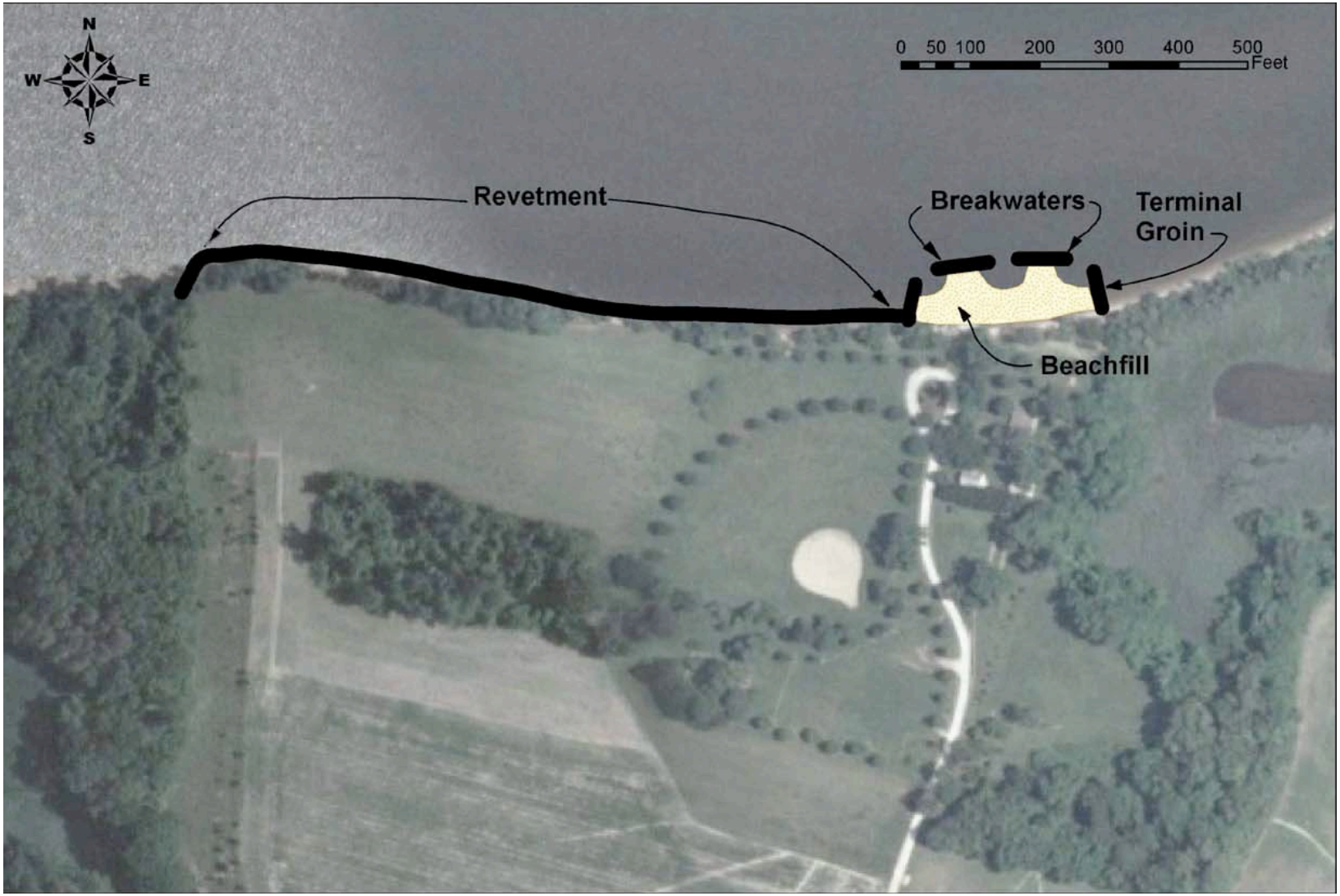
USACE Study: Alternative #2
Estimate- $1.1 mn

MARYLAND
DEPARTMENT OF
NATURAL RESOURCES



USACE Study: Alternative #3
Estimate- $1.8 mn

MARYLAND
DEPARTMENT OF
NATURAL RESOURCES



DNR Concept Plan
Estimate- $360,409

Conquest Preserve Living Shoreline Project

Before…

Completed: August 24, 2016

Cost: $271,473

Cost/Linear feet: $232

After

Take-Home Message

Vs.

Tool should match the objective/goal

MARYLAND DEPARTMENT OF NATURAL RESOURCES

http://dnr.maryland.gov/ccs/Pages/livingshorelines.aspx

Bhaskaran Subramanian, Ph.D.

Chief, Shoreline Conservation Service

bhaskar.subramanian@maryland.gov

Ph: (443) 454-1638