

Arlington Cove Living Shoreline

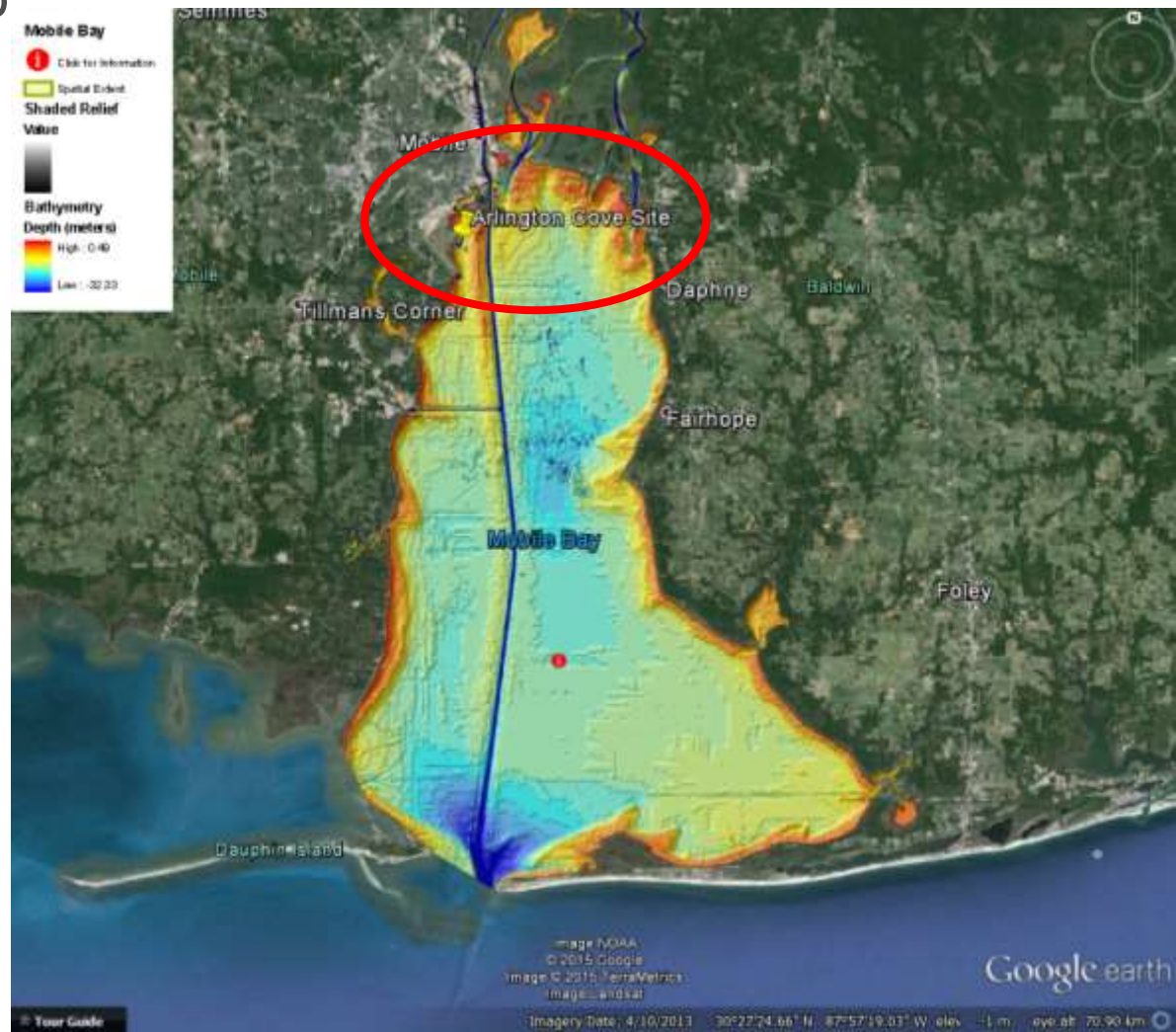
A Partnership For Natural Infrastructure
Design, Installation, and Education

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Presentation Overview

- TNC/CH2M Partnership
- Project Overview
- Design Processes and Consideration
- Reef Material Options
- Design Details
- Install Day



Arlington Cove Project Site



TNC/CH2M Partnership

- Gulf Services Contract
 - 5-year renewable partnership to work together to advance project priorities, develop shovel-ready projects, and utilized an optimized delivery model in the Gulf Coast
- Collaborative Agreement
 - 5-year renewable partnership to pursue large-scale restoration and conservation projects and programmatic issues of climate risk and resiliency, urban conservation strategies, and securing freshwater throughout the United States

Project Overview

- Objective

- Design a natural infrastructure solution that
 - Provides beach stability
 - Allows for marsh regrowth
 - Promotes aquatic habitat
 - Provides educational opportunities and civic involvement
 - Expand on knowledge-base of living shorelines in Mobile Bay and surrounding areas
 - Promote use of natural infrastructure



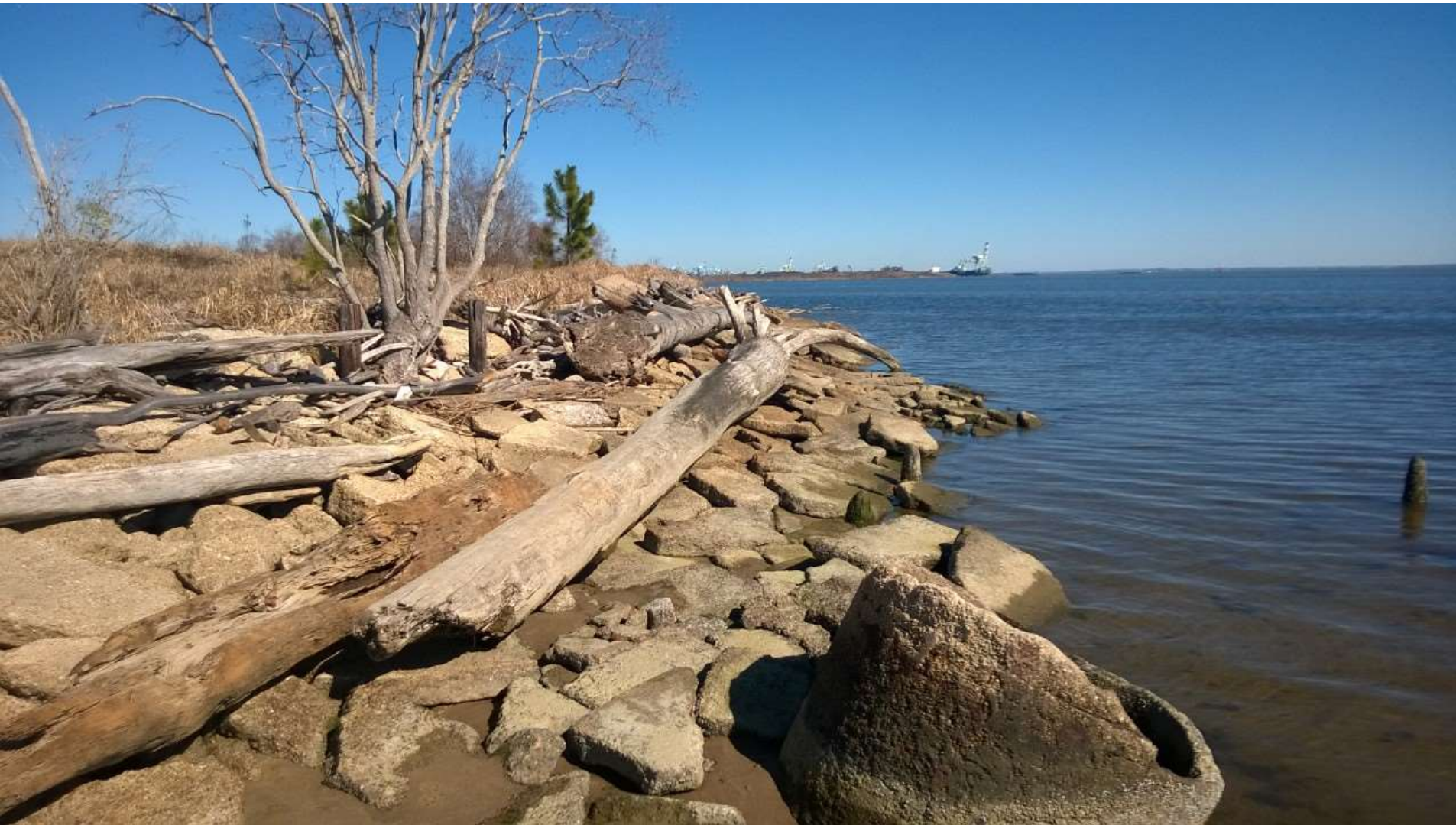
Project Overview

- Challenges

- Volunteer construction
 - Limited material of construction
 - Minimize installation complexity
 - Maintain flexibility to adjust to changes
- Aggressive design schedule
 - Less than 90 days before first construction phase due to TNC Global Meeting
- Coordination and approval from other stakeholders
 - USA Foundation - Property Owner
 - Long-term value enhancement
 - Incorporate into development plans
 - Education
 - USACE – Permitting
- Limited Design Budget



Arlington Cove Project Site



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Arlington Cove – Design Processes and Considerations

Design Process

- NOAA extreme wind and water level data
- Wave hindcasting to determine design waves
- Unit stability analysis under design wave and water level conditions
- Reef geometry determination based on published UK national guidance (authored by CH2M) and previous experience of offshore reef scheme design
- Design and performance lessons learned from similar schemes within Mobile Bay.

Arlington Cove – Design Processes and Considerations

Special Design Considerations:

- No budget/time for numerical modelling
- Constraints on crest height, reef length (visual) and reef unit size (volunteer deployment)
- Reef stability on soft foreshore
- Presence of shoreline features including outfalls and piers
- Limited published design guidance for low-crested reef structures on this scale

TECHNICAL MEMORANDUM

CH2MHILL®

Arlington Cove Reef - Basis of Design

PREPARED FOR: The Nature Conservancy
PREPARED BY: CH2M HILL
DATE: February 20, 2015
PROJECT NUMBER: 653256
REVISION NO.: 1 (March 25, 2015)

The Nature Conservancy (TNC) has been working to expand the use of natural infrastructure for protection from shoreline erosion. One of the project sites, referred to as Arlington Cove, consists of a submerged breakwater/reef that extends approximately 8,350 linear feet parallel with the shoreline along the western

Arlington Cove – Reef Material Options

- Mesh Bag Containment



Arlington Cove – Reef Material Options

- Pre-Cast Concrete Units

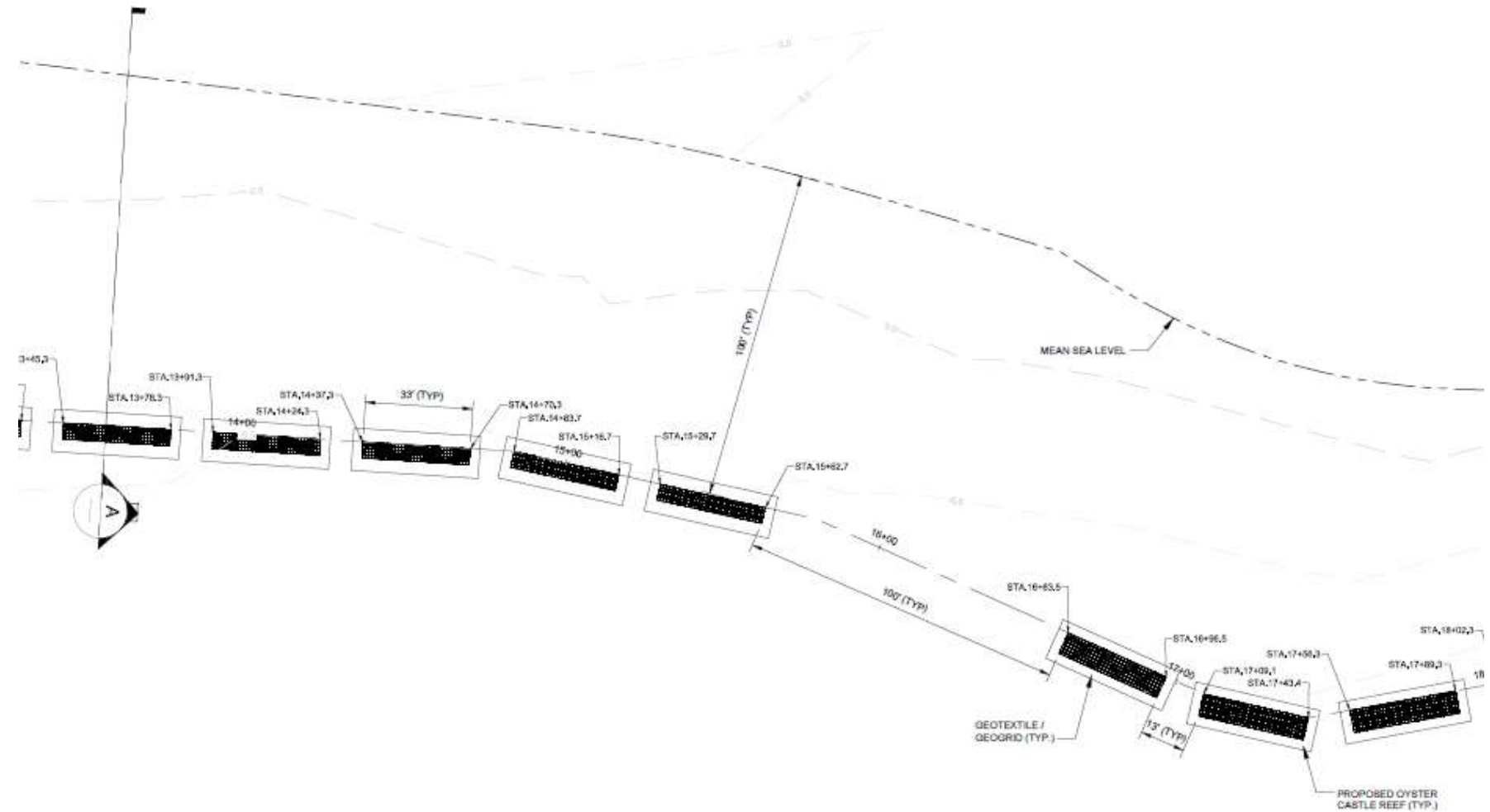


Arlington Cove – Reef Material Options

- Selected Option – Oyster Castles

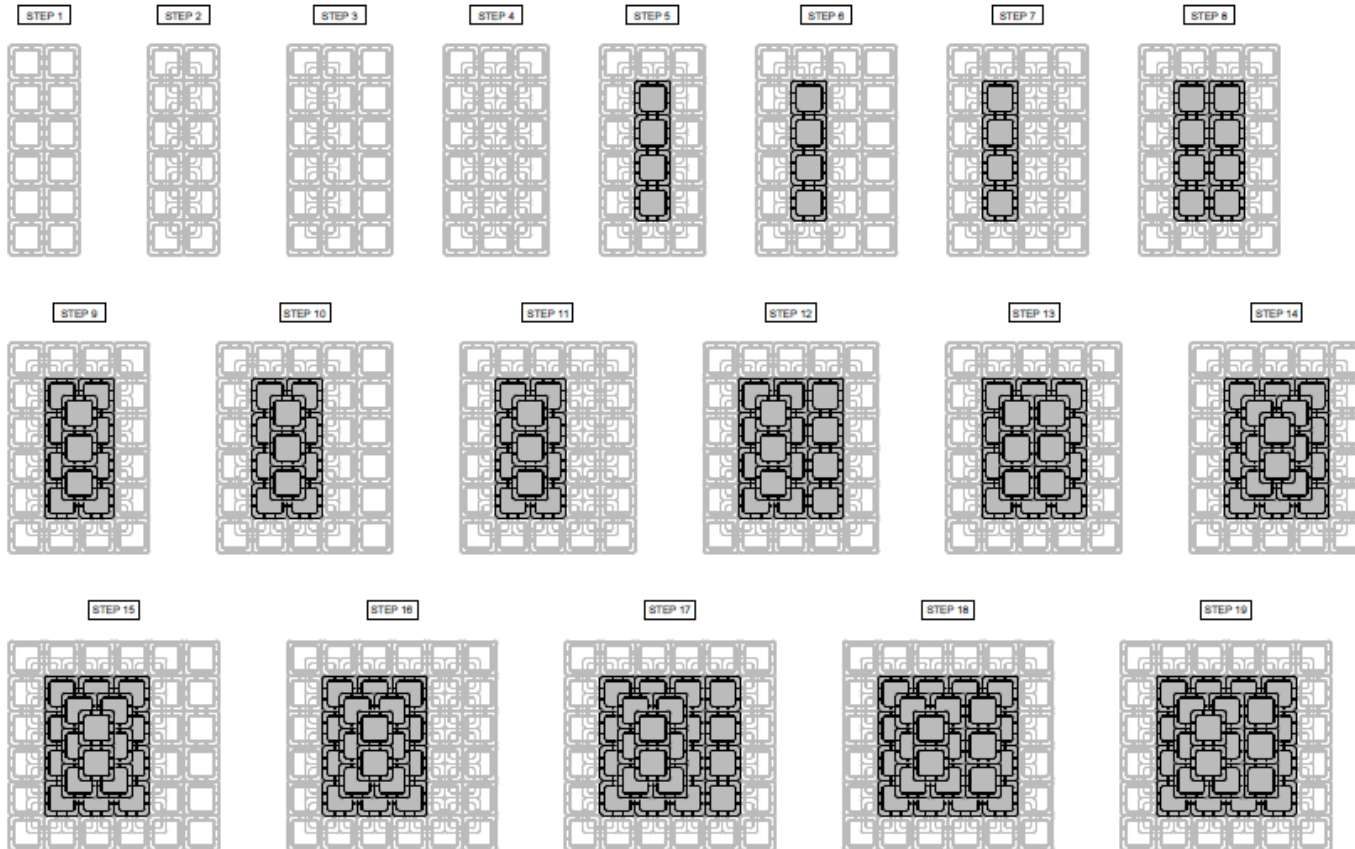


Arlington Cove Living Shoreline Design



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OYSTER CASTLE INSTALLATION SEQUENCE



- NOTES
1. PLACEMENT SEQUENCE ON THIS DRAWING IS FOR 8 CASTLE UNITS WIDE REEFS.
 2. FOR REEFS LESS THEN 8 CASTLE UNITS WIDE AT THEIR BASE, SEQUENCE SHALL BE FOLLOWED UNTIL HIGHEST CASTLE LEVEL IS TWO UNITS WIDE.
 3. FOR REEFS 7 CASTLE UNITS WIDE 1 MORE LEVEL OF CASTLE UNITS WILL BE REQUIRED.

Arlington Cove Living Shoreline – Install Day



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Special Thanks to

- The Nature Conservancy – Judy Haner, Mary Beth Charles, Mary Kate Brown, Jeff DeQuattro and Many Others
- CH2M Team
- McCrory and Williams, Inc, Crowder-Gulf
- USA Foundation
- USFWS, NOAA, ACF, ADCNR, Mobile BayKeepers, Others I know I am missing so I apologize now...
- JL Bedsole Foundation, Sybil Smith Foundation, Lyda Hill Foundation

Thank You

For more information about this project, contact

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