

EDISTO BEACH

Colleton County, South Carolina
Coastal Storm Damage Reduction Study

Civil Works Review Board
March 20, 2014

Presented by
U.S. Army Corps of Engineers
South Atlantic Division
Charleston District

Version 3.19.14



US Army Corps of Engineers
BUILDING STRONG



Agenda

1300 Welcome and Introductions

MG John Peabody

*CWRB Chair and Deputy Commanding General
for Civil and Emergency Operations*

1310 Division Opening Remarks

COL Donald Walker

Deputy Commander, South Atlantic Division

1315 Project Briefing

LTC John Litz

District Commander, Charleston District

1345 Sponsor Support

Honorable Burley Lyons

Mayor, Town of Edisto Beach

1350 Division Support

COL Donald Walker

Deputy Commander, South Atlantic Division

1405 Agency Technical Review

Mr. J. Bailey Smith

*ATR Team Leader, National Planning Center of Expertise
for Coastal Storm Risk Management*

1420 Break (15 minutes)



Agenda

1435 Policy Review Assessment

Mr. Jeff Strahan

Review Manager, Office of Water Project Review

1445 Board Discussion

Member Questions
Office of ASA(CW), OMB Questions

MG John Peabody

CWRB Chair

1515 Action

Mr. Theodore Brown

Chief, Planning Community of Practice

1520 Lessons Learned/
After Action Report

LTC John Litz

District Commander, Charleston District

1525 Lessons Learned

SAD, OWPR, Sponsor, Others

1530 Close

MG John Peabody

CWRB Chair



Edisto Beach

Investing in our coastal communities

Economic Investment

Initial Construction:	\$21M
3 Nourishments:	\$33M
<u>Operation/Maintenance:</u>	<u>\$83K/yr</u>
Project First Cost:	\$54M
Average Annual Cost:	\$1.5M

Economic Returns (average annual)

Storm Damage Reduction:	\$3M
<u>Recreation:</u>	<u>\$573K</u>
Total Benefits:	\$3.5M
Net Benefits:	\$2M

Benefit/Cost Ratio: 2.3

Other Returns

- Protects the Island's only evacuation/return route
 - Socio-economic benefits to local area
 - Protects important habitat

Federal Interest:

Return of \$2.30+ for every \$1 invested



Edisto Beach at a Glance



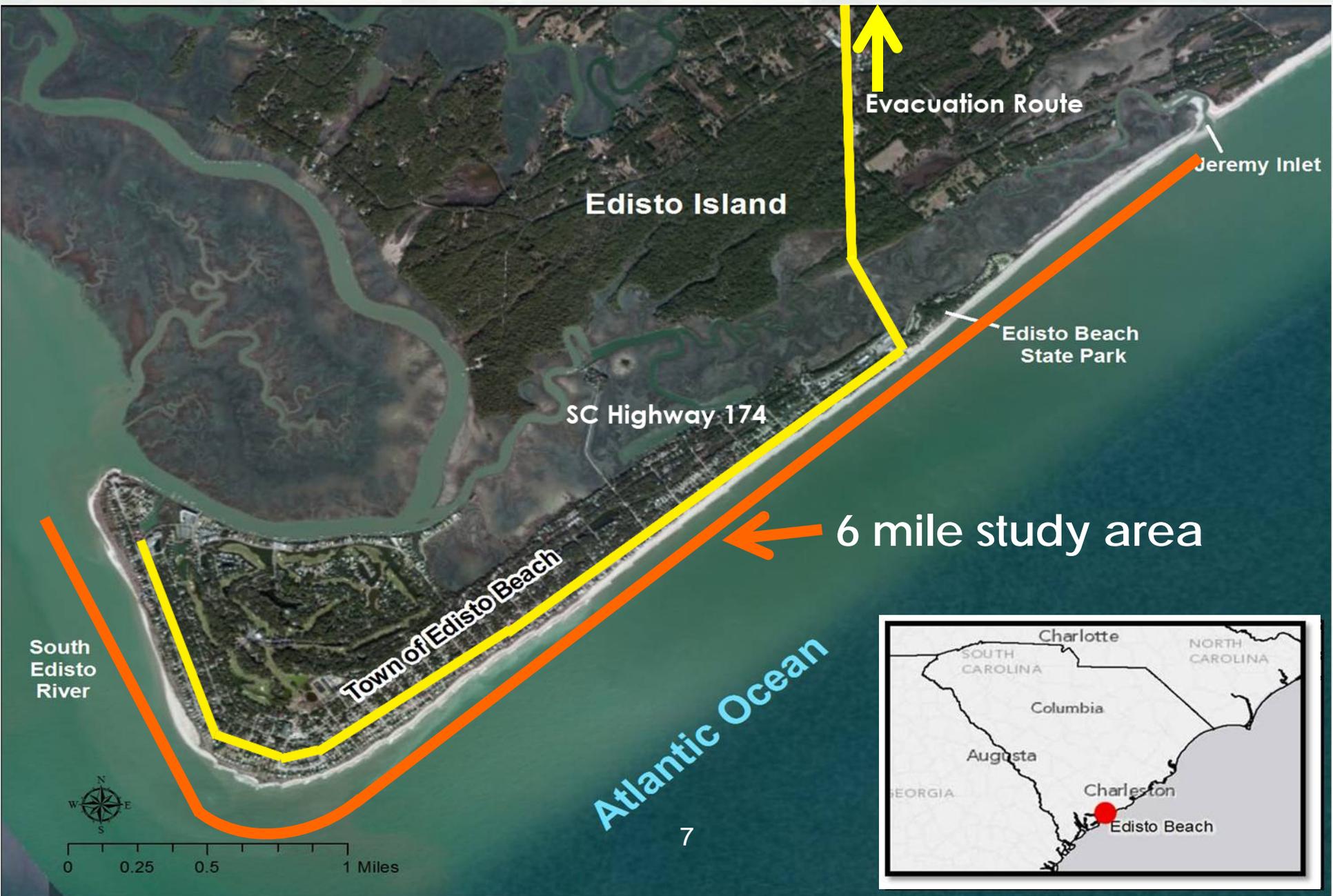
Study Authority

"...that the Secretary of the Army in accordance with the provisions of Section 110 of the River and Harbor Act of 1962, is hereby authorized to study, in cooperation with the State of South Carolina, its political subdivisions and agencies and instrumentalities thereof, the entire Coast of South Carolina in the interests of beach erosion control, hurricane protection and related purposes...."

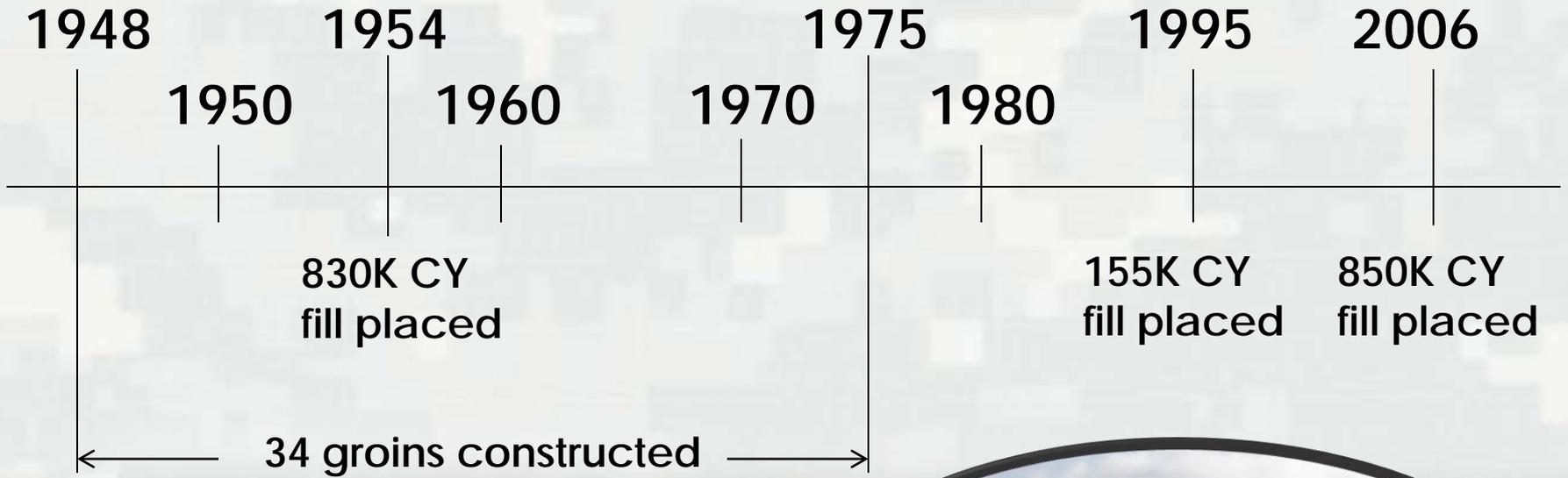
**Senate Committee on Environment and
Public Works Resolution, April 22, 1988**



Location



History



Problems Opportunities	Objectives Constraints	Existing Conditions	Future Without-Project	Plan Formulation	Recommended Plan
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Problems:

- Risks to buildings, roads and infrastructure
- Risks to sea turtle nesting habitat



Opportunities:

- Reduce storm damage risks
- Improve long-term sea turtle nesting and shorebird habitat



Problems Opportunities	Objectives Constraints	Existing Conditions	Future Without-Project	Plan Formulation	Recommended Plan
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Contribute to National Economic Development by reducing adverse economic effects of coastal storms

Primary Objectives:

- Reduce risks to structures
- Minimize risks of damage to hurricane evacuation route, SC Hwy 174
- Minimize and avoid impacts to natural resources



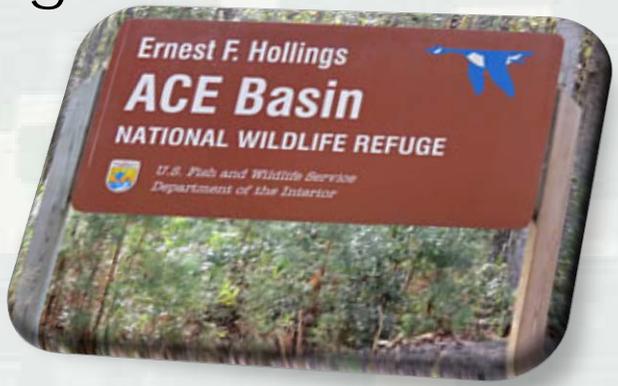
Incidental Benefits:

- Preserve existing sea turtle & shorebird habitat
- Maintain/enhance recreational opportunities

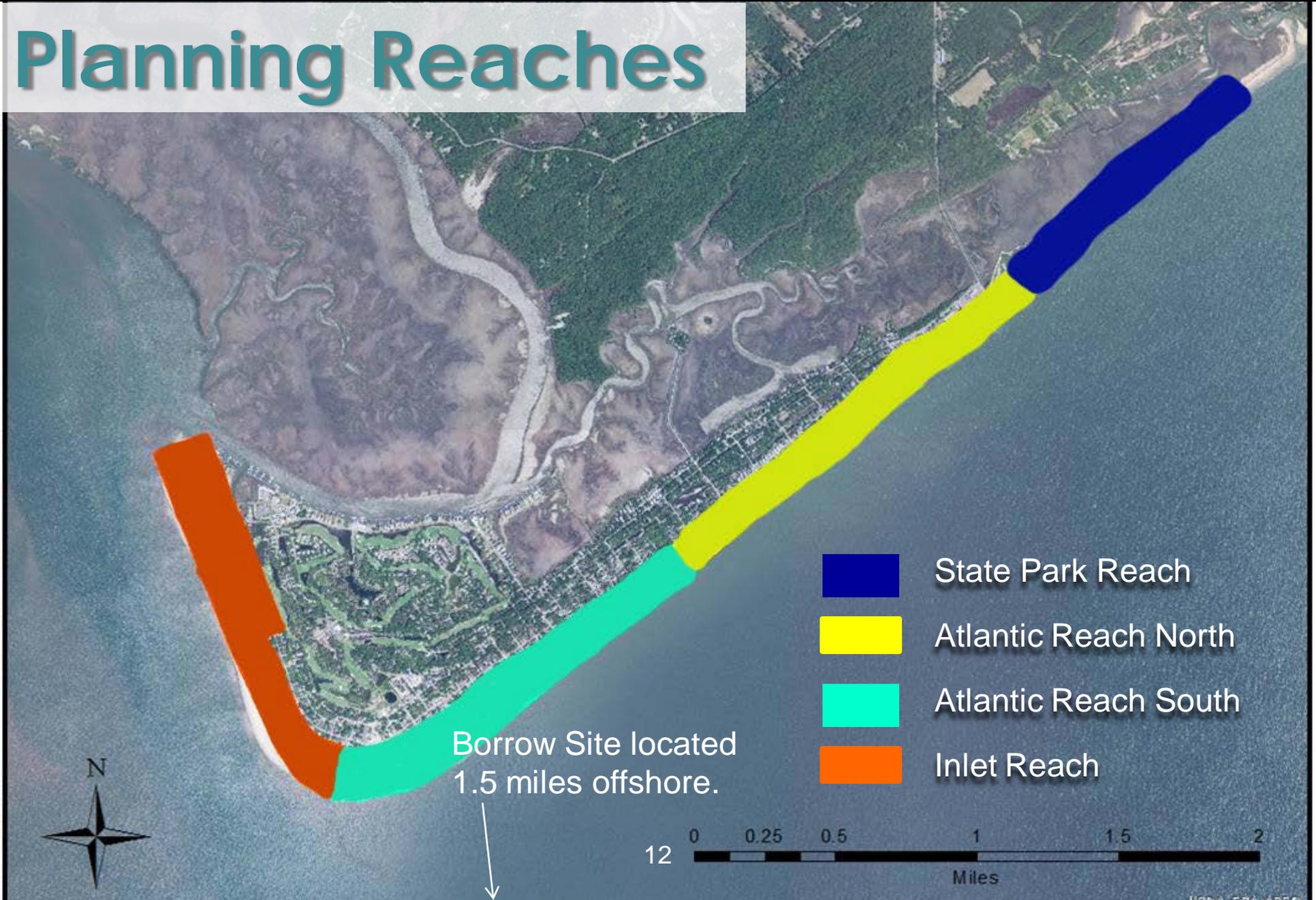


Constraints

- Land Availability
 - Limits relocation of structures
- Natural Resources
 - ACE Basin
 - Bird & sea turtle nesting habitat

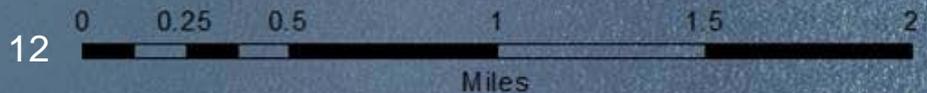


Planning Reaches



- State Park Reach
- Atlantic Reach North
- Atlantic Reach South
- Inlet Reach

Borrow Site located
1.5 miles offshore.



Problems Opportunities	Objectives Constraints	Existing Conditions	Future Without-Project	Plan Formulation	Recommended Plan
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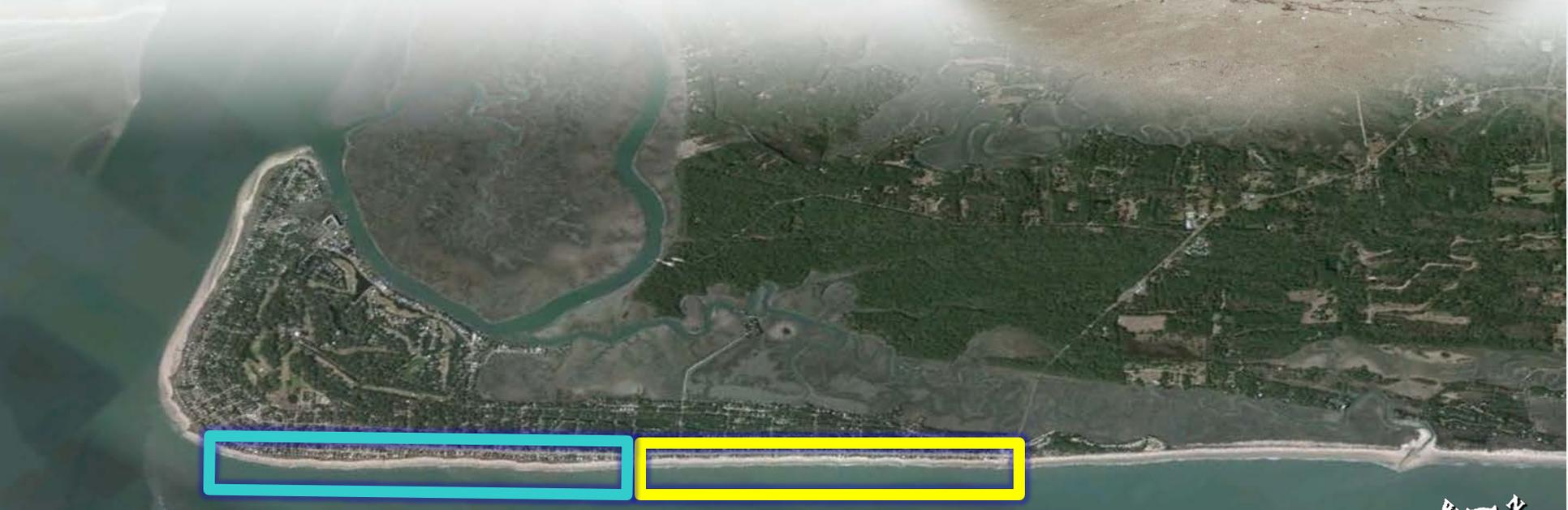
State Park Reach

- Highly erosive
- Sea turtle nesting
- 300,000+ visitors per year
- Steep beach with washover fans



Atlantic Reach North and South

- Extensive groin field
- Steep beach profile
- Sand fencing
- Houses on active beach
- Coarse sands/shell hash



Inlet Reach

- Wide beach
- Extensive vegetation
- Low-profile natural dunes



Environmental Resources



Habitat for variety of shorebirds



3rd highest number of sea turtle nests in South Carolina



Problems Opportunities	Objectives Constraints	Existing Conditions	Future Without-Project	Plan Formulation	Recommended Plan
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Assumptions

Maintenance of existing groins



Overwash of existing dune system – impacts recreation and houses



Armoring of sole hurricane evacuation route

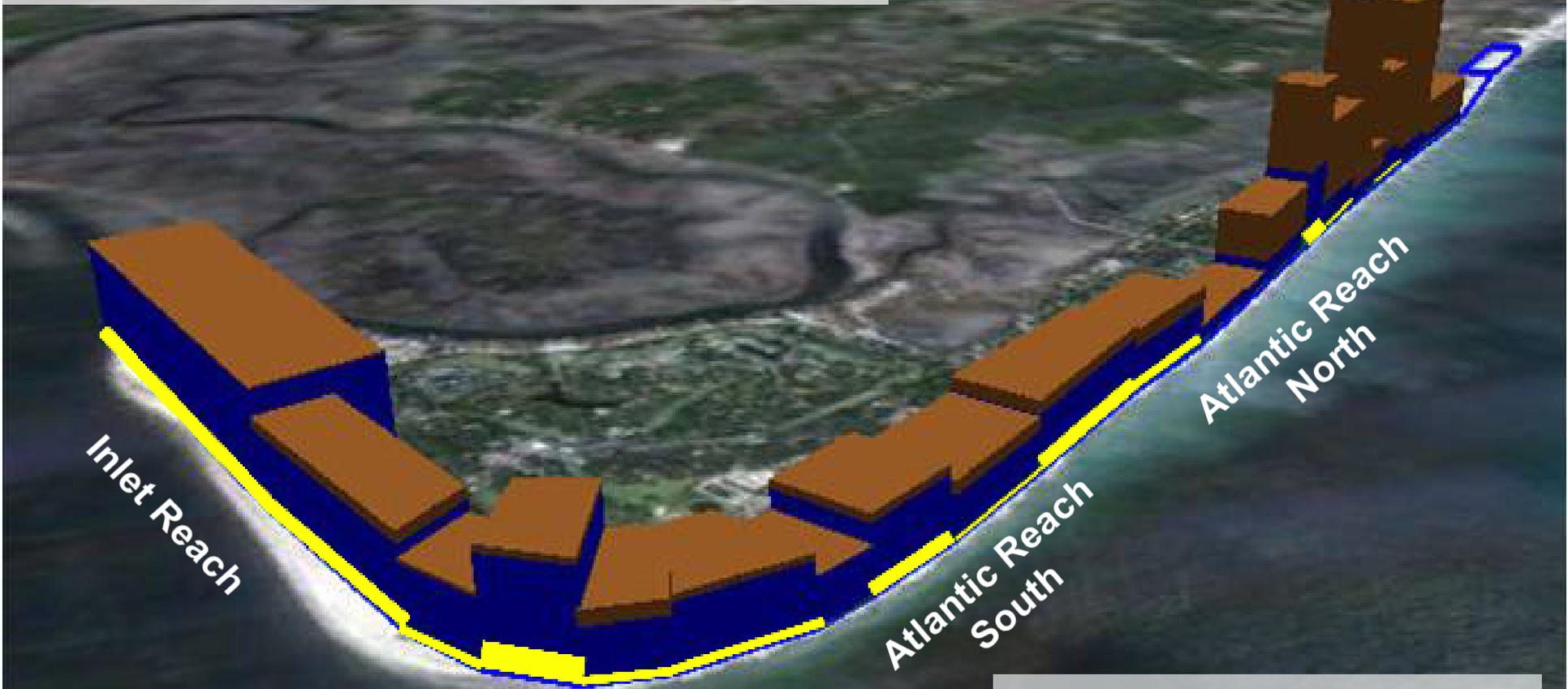


Negative impacts to wildlife habitat



Problems Opportunities	Objectives Constraints	Existing Conditions	Future Without-Project	Plan Formulation	Recommended Plan
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Relative Damages



Brown – Erosion
 Blue – Waves
 Yellow - Flooding



Problems Opportunities	Objectives Constraints	Existing Conditions	Future Without-Project	Plan Formulation	Recommended Plan
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Measures Evaluated

- **Carried forward**
 - Dunes, berms & combinations
 - Vegetation
 - Sand fencing
 - Lengthened groins
 - Demolition



- **Screened out**
 - Flood proofing
 - Retreat/Relocation
 - Elevating structures
 - Regulations
 - Seawalls
 - Revetments
 - Emergent breakwaters
 - Submerged artificial reefs
 - New groins



Problems Opportunities	Objectives Constraints	Existing Conditions	Future Without-Project	Plan Formulation	Recommended Plan
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Final Array of Action Alternatives

➤ Alternatives 1–3

- Varying configurations of dune and berm
- Groin lengthening

➤ Alternative 4

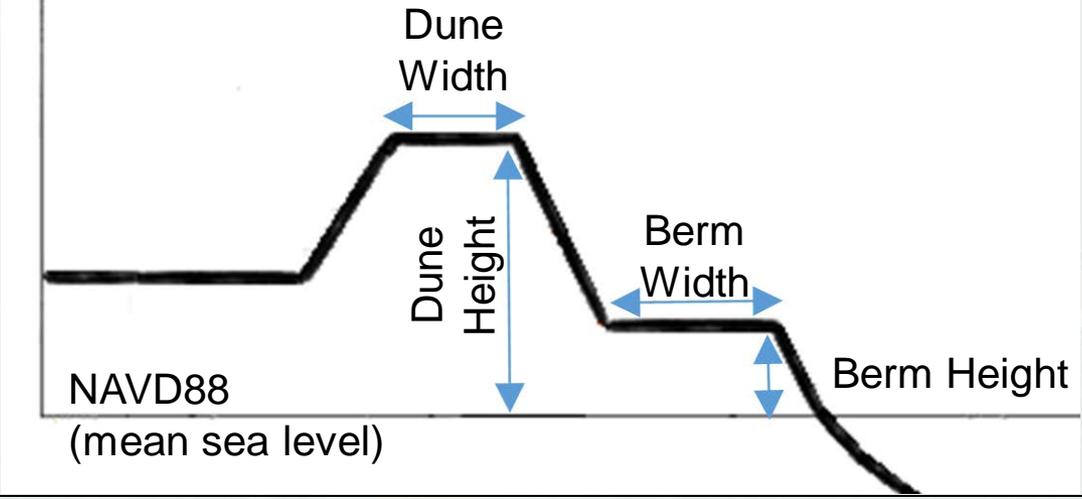
- Mid-size dune and berm fill
- (economic bracketing)
- Groin lengthening

➤ Alternative 5

- Dune sand fencing on Inlet Reach
- Dune and berm fill on Atlantic Reaches

➤ Alternative 6

- Demolition/Removal (Part of Atlantic Reach North)



Alternatives – Results

Net Benefits				
Reach	Alt 1	Alt 2	Alt 3	Alt 4
Size	Mid-sized	Minimum	Maximum	Economic Bracketing
Inlet Reach	\$213,290	\$27,553	\$386,954	\$386,954
Atlantic Reach South	\$244,010	\$235,136	\$241,996	\$287,289
Atlantic Reach North	\$880,268	\$580,798	\$903,515	\$945,230
Total	\$1,337,568	\$843,487	\$1,532,465	\$1,619,473



Problems Opportunities	Objectives Constraints	Existing Conditions	Future Without-Project	Plan Formulation	Recommended Plan
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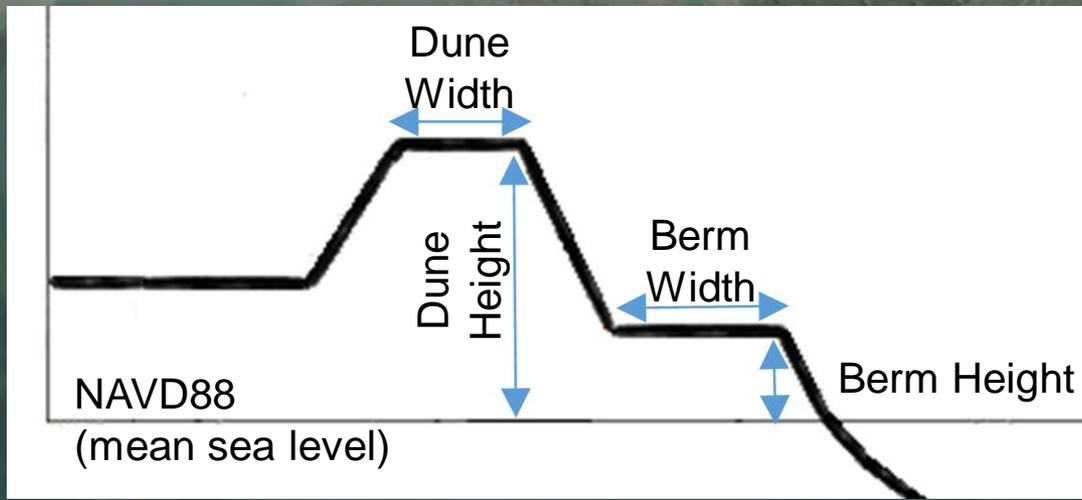
Recommended Plan

➤ Features

- Dune and berm
- Groin lengthening
- Vegetation plan

➤ Benefits

- \$3M annual damage reduction
- \$573K annual recreation
- Sea turtle & bird habitat
- Life safety/evacuation
- Socio-economic benefits



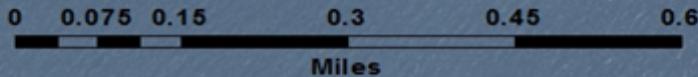
Atlantic Reach North



- **Dune:** 15 feet above Mean Sea Level (MSL), 15 feet wide
- **Berm:** 7 feet above MSL, 75 feet wide
- **Length:** 7,740 feet, tapering into State Park Reach
- **Groins:** 14 lengthened a total of 930 feet



- █ Groins-Proposed for Lengthening
- █ Groins-No Lengthening
- █ Project Footprint



Problems Opportunities	Objectives Constraints	Existing Conditions	Future Without-Project	Plan Formulation	Recommended Plan
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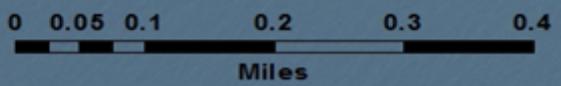
Atlantic Reach South



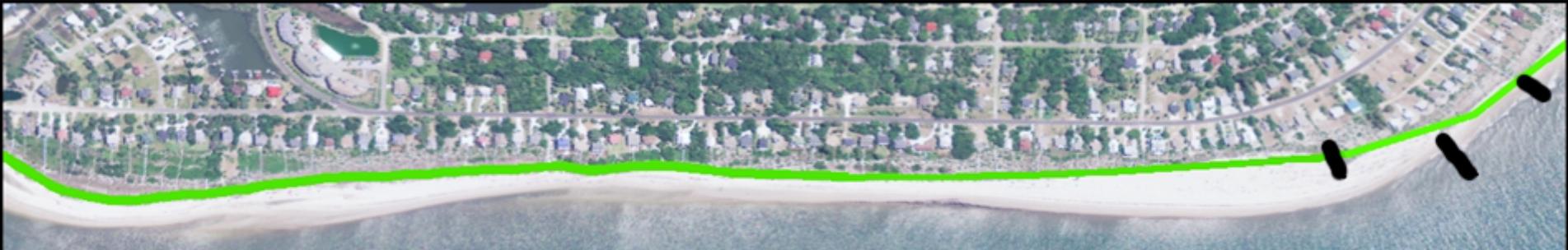
- **Dune:** 15 feet above MSL, 15 feet wide
- **Berm:** 7 feet above MSL, 50 feet wide
- **Length:** 8,790 feet
- **Groins:** 9 lengthened a total of 200 feet



█ Groins-Proposed for Lengthening
█ Groins-No Lengthening
█ Project Footprint



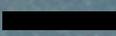
Inlet Reach



- **Dune:** 14 feet above MSL, 15 feet wide
- **Length:** 5,290 feet



Project Footprint



Edisto Beach Groins

0 0.05 0.1 0.2 0.3 0.4



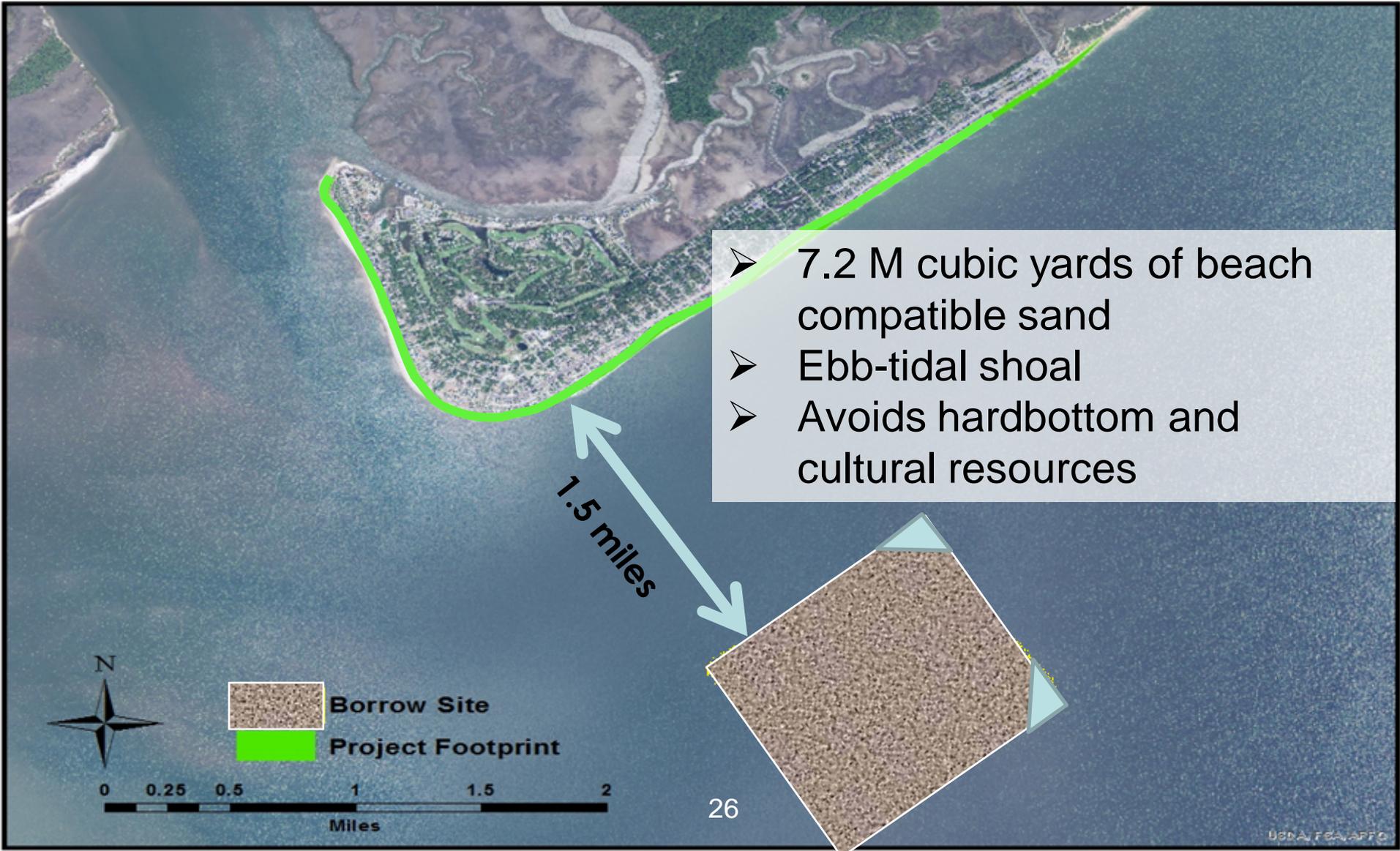
Miles



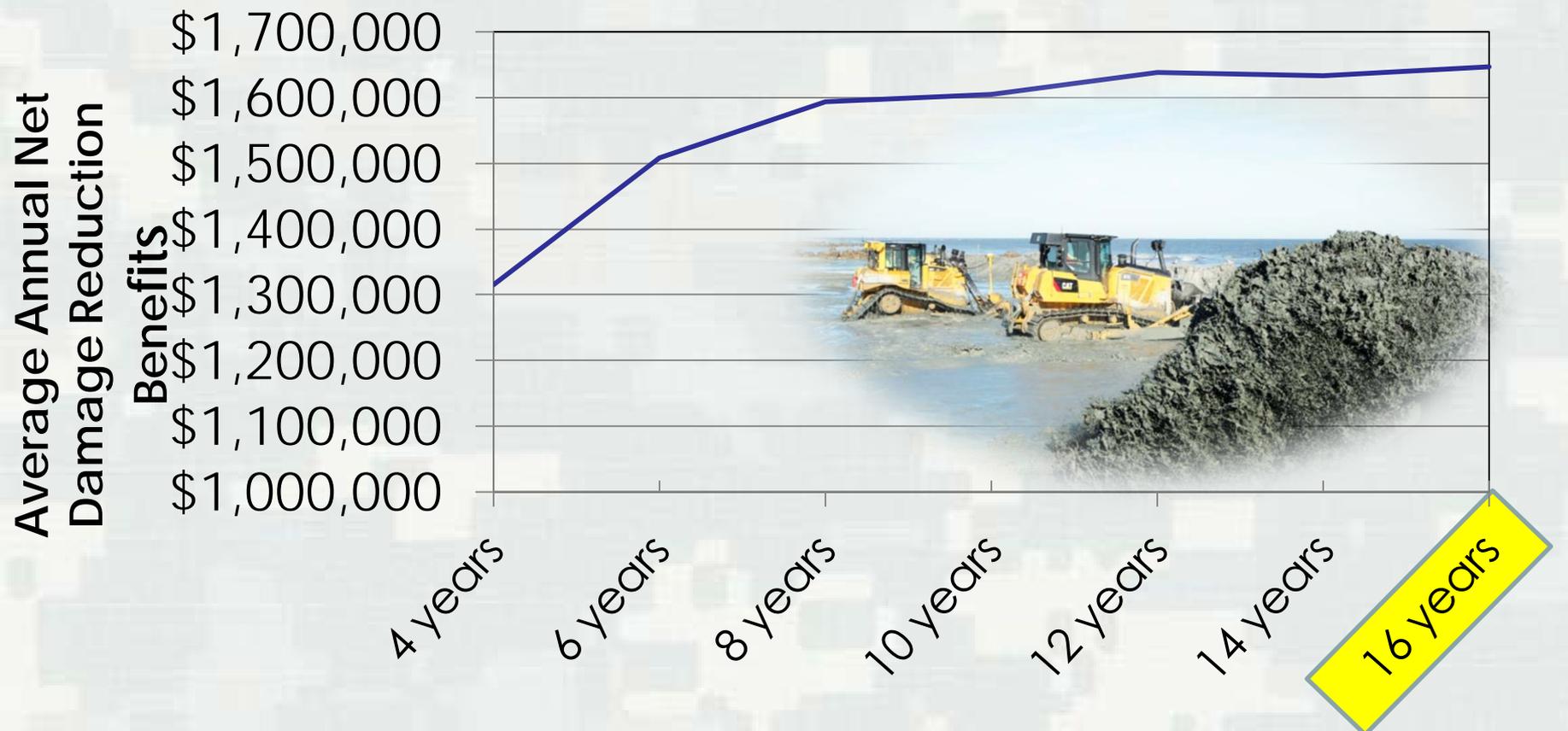
0 0.125 0.25 0.5 0.75 1
Miles

Problems Opportunities	Objectives Constraints	Existing Conditions	Future Without-Project	Plan Formulation	Recommended Plan
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Borrow Site



Nourishment Interval



Parking and Access

- 113 on-street parking spaces
- 206 parking spaces at 38 access points
- Average 400 ft between access points, longest is 1,425 ft
- Existing access exceeds minimum standards for cost shared projects
- Policy compliant



★ Beach access points

Environmental Compliance



Draft EA prepared and coordinated



Endangered Species Act Coordination (USFWS)



Endangered Species Act Coordination (NMFS)



Essential Fish Habitat Coordination (NMFS)



Cultural Resources Coordination (SCDAH)

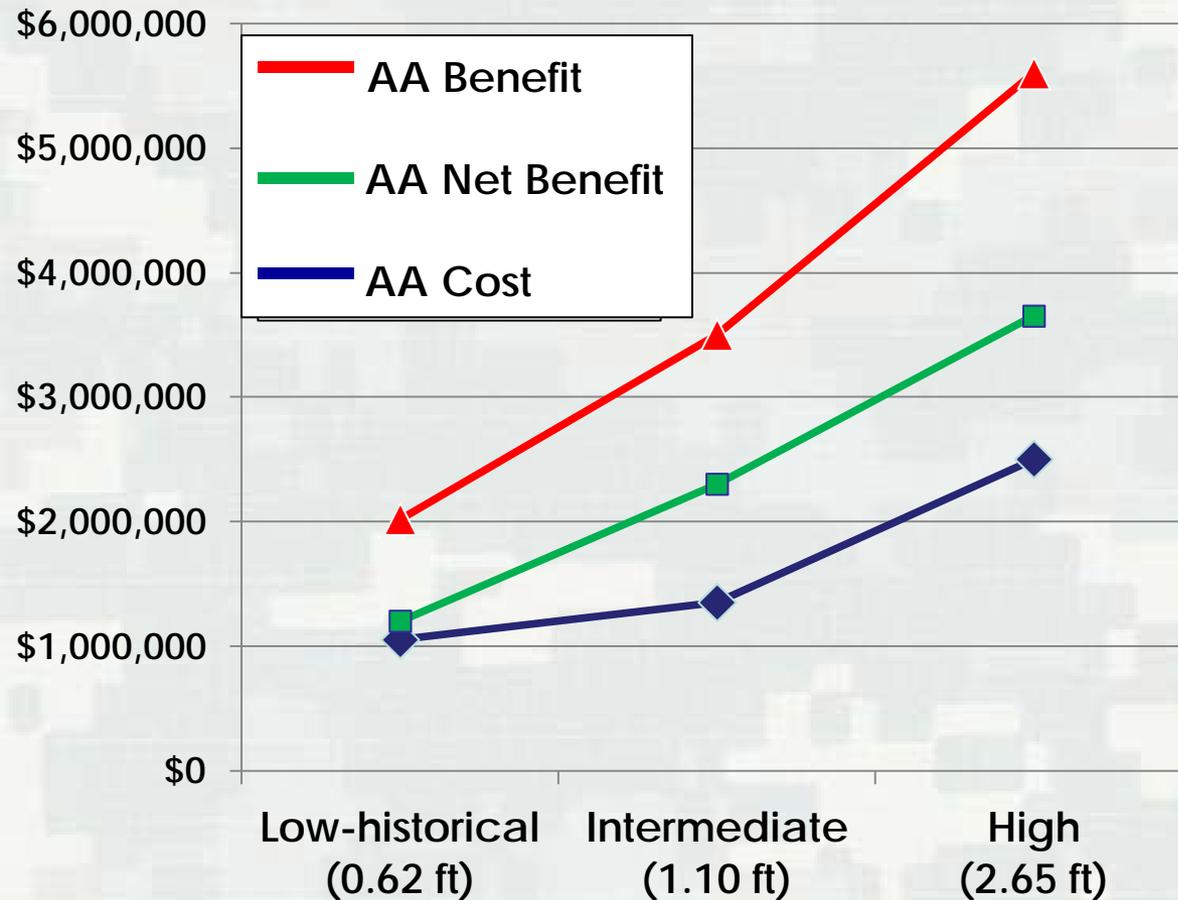


Coastal Zone Consistency (SCDHEC-OCRM)



Sea Level Change

Effect on Economic Performance



Used current guidance (EC 1165-2-212)

Overall increase in net benefits under higher SLC scenarios



Public and Agency Involvement

➤ Public Involvement

- Scoping meeting- October 23, 2009
- Draft EA released- August 2013
- Public comment period- Aug – Sept, 2013
- Public meeting- August 26, 2013
- Town Council meeting- October 22, 2013



➤ Agency Involvement

- Scoping letters- August 2008
- Plan formulation meeting- January 2010
- Pre FSM meeting- July 2012
- Agency comment period- Aug – Sept, 2013

U. S. ARMY ENGINEER DISTRICT, CHARLESTON
CORPS OF ENGINEERS
CHARLESTON, SOUTH CAROLINA

Subject: Edisto Beach Page: 1

Computation: _____

Computed by: _____

Checked by: _____ Date: 10/10

Name	Agency/Assoc	Telephone
Brin Williams	U.S. Army Corps of Engineers	843-327-8153
Mark Callahan	US FWA	843-953-9247-211
Susan Owens	SLOAR	843-953-9000
Tommy Maul	Edisto Beach Council	843/864-5247
Bill Eisler	DHEC-OCRM	843-953-0257
Matt Stage	DHEC-OCRM	843-953-2033
Steve Johnson	DHEC-OCRM	843-953-0256
Steven Ferguson	CSE	843-744-3999
William Sanders	DHEC-OCRM	843-953-0258
Doug Simms	SEPRE - OPS	803-794-0258
Race Wilbur	NOAA Fisheries	843-953-7800
Dora Burghart	SCDNR	843-953-9079
Bob Martore	SCDNR	843-953-9303
Barbara Hance	SCDHEC-OCRM	843-953-0254
Jicia Hill	Town of Edisto Beach	843-864-2805-7211
Patrick Brown	Town of Edisto Beach	843-864-2805
Jessica Kennedy	Town of Edisto Beach	843-864-3165
LARRY HART	Town of Edisto Beach	843-864-4013
Pat O'Donnell	USACE	843-329-8050
Mark Meserovich		
Annelle		



Policy Compliance

- Planning Models: Beach-fx (Certified Model)
- Value Engineering (PM) Certification on July 17, 2013
- IEPR exclusion waiver approved on February 12, 2014
- Cost MCX Certification on December 17, 2013
- Certification of Legal Review on January 8, 2014
- ATR Completion Certification on January 28, 2014



Project Milestone Timeline



Sponsor Support

- Has the financial resources and commitment
- Understands the magnitude of the investment
- Enforces land use control and flood damage prevention ordinances
- Enforces strict building codes adopted by the state for construction in flood zones and high wind areas
- Understands and will accept operation and maintenance requirements
- Is prepared for storm events

The Town of Edisto Beach supports the Recommended Plan because it provides safeguards to homes and businesses, roads, infrastructure, public utilities, tax base, habitat for sea turtles, recreational areas, and because it supports the national and local economy.



SAD DIVISION COMMANDER

BLUF: Approve final report, release for State/Agency review, complete Chief's Report, and submit for authorization

Strategic Value

- Coastal flood risk management projects provide a significant value in reducing damage and reducing the recovery effort. This project provides a 59% damage reduction to structures valued at approximately \$110, 000,000
- Economic benefit (BCR 2.3) provides value to the nation, with average annual net NED benefits of \$2,000,000
- The recommended plan includes non-monetary, yet significant incidental benefits related to life-safety and the protection of important habitats
- Fully supported by community, state, and Federal agencies

Feasibility Report is Legally and Policy Compliant

- ATR conducted by CFRM-PCX, all comments resolved, and ATR certified
- IEPR exclusion granted
- Cost DX certified/VE completed/BeachFx used for Economic modeling

Quality Assurance: continuous involvement in the formulation and evaluation of this project throughout the Feasibility Study.

A Team Effort: Thanks to the entire team (internal and external, horizontal and vertical)



EDISTO BEACH

Colleton County, South Carolina
Coastal Storm Damage Reduction Study

Civil Works Review Board
March 20, 2014

Agency Technical Review (ATR)

Mr. J. Bailey Smith, P.G. – ATR Lead
National Planning Center of Expertise for Coastal Storm
Risk Management



ATR Team

Team Member	ATR Role	Corps of Engineers Office Symbol
J. Bailey Smith, P.G.	ATR Team Lead/Plan Formulation	CENAP-PL-PC
Ed O’Leary	Economics	CENAE-EP-VC
Cathy Rogers	Environmental	CENAE-EP-VE
Mike Wutkowski	H&H	CESAW-TS-EW
Randy Wise	H&H	CENAP-EC-EH
Jim Neubauer, P.E.	Cost Engineering	CENWW-EC-X
Patricia Bolton	Cost Engineering	CENAE-EP-DE



ATR Scope/Charge

- Reviews completed for:
 - ▶ Draft Integrated Feasibility Report and Environmental Assessment: Feasibility Scoping Meeting (FSM) Report dated 28 March 2012 – 39 comments.
 - ▶ Groin Lengthening dated 13 February 2013 – 3 comments.
 - ▶ Renourishment Cycle dated 12 April 2013 – 8 comments.
 - ▶ Cost MCX Certification dated 17 December 2013.
 - ▶ Final Integrated Feasibility Report and Environmental Assessment dated/certified 28 January 2014 – 50 comments.



ATR Overview – Detailed Analysis

28 January 2014 ATR Certification

- * Economic Modeling (*Beach-fx*)
- * Economic Benefits
- * Renourishment cycle
- * Groin lengthening



All DrChecks comments for Edisto Beach have been resolved and closed out. Therefore, Agency Technical Review was completed on January 28, 2014 and certified in accordance with EC 1165-2-214.



HQUSACE POLICY REVIEW CONCERNS

Civil Works Review Board

Edisto Beach, Colleton County, South Carolina Coastal Storm Damage Reduction Project

Jeff Strahan
Office of Water Project Review
Planning and Policy Division
Washington, DC – 20 March 2014



HQUSACE Team Reviews:

- Draft report September 2013
- Final Feasibility Report /EA: current review being completed by HQUSACE team



Policy Issues from Draft Report Review

- ❑ Discount Rate
- ❑ Economic Analyses (Inventory, Content Value, Land Loss)
- ❑ **Renourishment Cycle**
- ❑ Depth Damage Curves
- ❑ Local Cooperation Requirements
- ❑ Sponsor Letter of Intent
- ❑ Sponsor statement of financial capability
- ❑ Real Estate Cost
- ❑ Real Estate Plan
- ❑ **Biological Opinion**
- ❑ Risk and Uncertainty



Significant Areas of Policy Concern:

- Renourishment Cycle
- Biological Opinion



Renourishment Cycle

- **CONCERN:** Draft report documentation recommended a plan with a renourishment cycle that provided fewer net benefits at a higher annual cost than the NED Plan.
- **REASON:** ER 1105-2-100, 2-3 requires that the alternative that reasonably maximizes net economic benefits consistent with protecting the Nation's environment, the NED plan, be selected. If net benefits are not significantly different, the less costly plan is to be the NED plan.
- **RESOLUTION:** The NED plan with a 16-year estimated renourishment cycle was recommended.
- **RESOLUTION IMPACT:** The concern is resolved.



Biological Opinion

- **CONCERN:** The final biological opinion the Corps received raised concerns due to some of the requirements it contained.
- **REASON:** The Corps was to conduct post construction lighting surveys, and to assess whether artificial lights from nearby structures would result in disorientation of sea turtles. The Corps has no authority to regulate artificial lights that are not a part of the Federal project and hence that measure had to be changed in the biological opinion.
- **RESOLUTION:** The Biological Opinion was clarified to indicate that it would be the responsibility of the sponsor to address any issues resulting from artificial beachfront lighting.
- **RESOLUTION IMPACT:** The concern is resolved.



HQUSACE POLICY COMPLIANCE REVIEW TEAM RECOMMENDATION

Approval to release the draft Chief's Report – Feasibility Report and EA for S&A Review.



Lessons Learned

- Regional Project Delivery Team
- Managing risks
- Public education
- Collaboration with the Sponsor and Stakeholders
- Documentation/Team Turnover



Edisto Beach

