

REPORT SUMMARY
Walton County Hurricane and Storm Damage Reduction General Investigation Study

******Cost/Benefit values need to be updated to FY13******

Feasibility Scoping Meeting:	18 JAN 2006
Alternative Formulation Briefing:	18 DEC 2009
AFB Guidance Memorandum:	15 FEB 2010
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30-Day S&A Review end:	TBD
FEIS filed with EPA:	TBD

STUDY INFORMATION

Study Authority. This study was authorized both within the United States Senate and the U.S. House of Representatives. In the Senate, the Committee on Environment and Public Works adopted a committee resolution (unnumbered) on July 25, 2002, which reads as follows:

“Resolved by the Committee on Environment and Public Works of the United States Senate, That in accordance with Section 110 of the Rivers and Harbors Act of 1962, the Secretary of the Army is requested to review the feasibility of providing beach nourishment, shore protection and related improvements in Walton County, Florida, in the interest of protecting and restoring the environmental resources on and behind the beach, including the feasibility of providing shoreline and erosion protection and related improvements consistent with the unique characteristics of the existing beach sand, and with consideration of the need to develop a comprehensive body of knowledge, information, and data on coastal area changes and processes as well as impacts from Federally constructed projects in the vicinity of Walton County, Florida.

In the House, the Committee on Transportation and Infrastructure adopted a resolution, Docket 2690, dated July 24, 2002, which reads as follows:

“Resolved by the Committee on Transportation and Infrastructure of the United States House of Representatives, That in accordance with Section 110 of the Rivers and Harbors Act of 1962, the Secretary of the Army is requested to review the feasibility of providing beach nourishment, shore protection and environmental restoration and protection in the vicinity of Walton County, Florida.

Section 110 of the Rivers and Harbors Act of 1962, Public Law 87-874, authorized a number of navigation surveys in various locations and subjected them to “all applicable provisions of

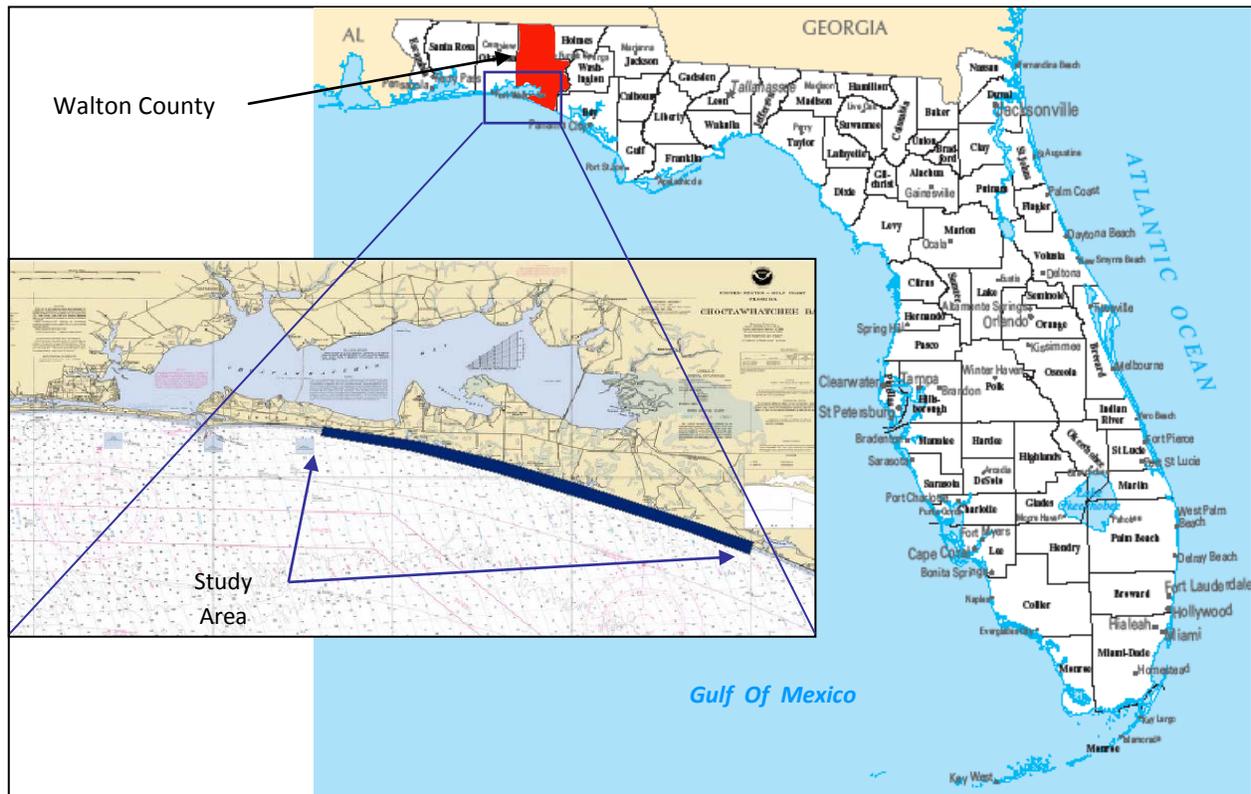
section 110 of the River and Harbor Act of 1950.” Section 110 of the Rivers and Harbors Act of 1950, Public Law 81-516, reads:

The Secretary of the Army is hereby authorized and directed to cause preliminary examinations and surveys to be made at the following-named localities, the cost thereof to be paid from appropriations heretofore or hereafter made for such purposes: *Provided*, That no preliminary examination, survey, project, or estimate for new works other than those designated in this title or some prior Act or joint resolution shall be made: *Provided further*, That after the regular or formal reports made as required by law on any examination, survey, project, or work under way or proposed are submitted, no supplemental or additional report or estimate shall be made unless authorized by law: *Provided further*, That the Government shall not be deemed to have entered upon any project for the improvement of any waterway or harbor mentioned in this title until the project for the proposed work shall have been adopted by law: *Provided further*, That reports of surveys on beach erosion and shore protection shall include an estimate of the public interests involved, and such plan of improvement as is found justified, together with the equitable distribution of costs in each case: *And provided further*, That this section shall not be construed to interfere with the performance of any duties vested in the Federal Power Commission under existing law....

Study Sponsor. The Non-Federal Sponsor is the Walton County Board of Commissioners. Their central point of contact is the Executive Director, Walton County Tourist Development Council (TDC). A Feasibility Cost Sharing Agreement (FCSA) was executed between the U.S. Army Corps of Engineers (Corps) and Walton County in December 2003, that defined the cost share responsibilities for conducting the feasibility study. The agreement provided that the feasibility costs would be shared 50/50 between the Corps and Walton County and that 50 percent of Walton County’s share would be provided in cash with the remainder provided as in-kind services.

Study Purpose and Scope. This study is a final response to the study authority. The purpose of this study is to assess the needs for hurricane and storm damage reduction and opportunities for environmental restoration and protection along the Gulf Coast of Walton County, Florida. The purpose of this report is to document the economic investigations, engineering analyses, and environmental considerations conducted to formulate a shore protection project for Walton County, Florida, which will reduce the damaging effects of hurricanes and severe storms to properties along the coast. The project will be constructible, acceptable to the public, environmentally sustainable and justified by an economic evaluation.

Project Location/Congressional District. According to census data, Walton County’s 2010 residential population totaled 55,043 persons. This population, spread throughout the county and its three municipalities is located in Florida’s 2nd Congressional District, represented by Congressman Steve Southerland (R) and U.S. Senators Marco Rubio (R) and Bill Nelson (D). Walton County is located approximately 103 miles east of Pensacola, Florida and 98 miles west of Tallahassee, Florida, Figure 1. The beaches of Walton County encompass approximately 26 miles of shoreline extending from the City of Destin in Okaloosa County, Florida (about six miles to the east of East Pass) to the Walton/Bay County line near Phillips Inlet. The western two-thirds of Walton County are comprised of a coastal peninsula extending from the mainland, and the eastern third is comprised of mainland beaches. Choctawhatchee Bay lies north of the peninsula. Walton County includes 11.9 miles of state-designated critically eroding areas and three State of Florida park areas that cover approximately six miles of the 26-mile shoreline.



Prior Reports and Existing Water Projects. Previous investigations and reports have been completed for the area. The most recent studies pertinent to the erosion problems at Walton County are summarized below:

- (1) Leadon, M.E., Nguyen, N.T., and Clark, R.R., 1998. *Hurricane Opal: Beach and Dune Erosion and Structural Damage Along the Panhandle Coast of Florida*, Florida Department of Environmental Protection, Bureau of Beaches and Coastal Systems Report No. BCS-98-01, 102 p.

(2) Leadon, M.E., Clark, R.R., and Nguyen, N.T., 1999. *Hurricane Earl and Hurricane Georges, Beach and Dune Erosion and Structural Damage Assessment and Post-Storm Recovery Plan for the Panhandle Coast of Florida*, Florida Department of Environmental Protection, Bureau of Beaches and Coastal Systems Report No. BCS-99-01, 43 p.

(3) “State of the Beaches” of Walton County, Florida 2001, 2002, 2003, 2004, and 2005 Walton County Tourism Development Council. These reports present data, analysis, and recommendation for managing the Florida coastline. Specific emphasis is placed on determining trends in beach width and explaining the physical and coastal processes that cause the changes.

(4) Beach Management Feasibility Study for Walton County and Destin Florida, Taylor Engineering, Inc., April 2003. The purpose of this study was to determine the most technically feasible and financially acceptable alternatives for protecting 9.2 miles of “critically eroding shoreline.” The feasibility study is a six-part study funded by Walton County.

(5) Leadon, M.E. et al, 2004. *Hurricane Ivan: Beach and Dune Erosion and Structural Damage Assessment and Post-storm Recovery Plan for the Panhandle Coast of Florida*, Florida Department of Environmental Protection, Bureau of Beaches and Coastal Systems, 64 p.

(6) Pickle B., 2005. An Evaluation of Storm Impacts, Cumulative Effect and Long-Term Recovery for Walton County, Florida. Coastal Disasters 2005, Proceedings to Solutions to Coastal Disasters 2005. Retson V.A. America Society of Engineers

(7) Clark, R.R., and LaGrone, J., 2006b. *Hurricane Dennis & Hurricane Katrina Final Report on 2005 Hurricane Season Impacts to Northwest Florida*. Publication of the Bureau of Beaches and Coastal Systems, April, 2006, 116 p.

(8) Taylor Engineering, Inc. June 2006. *Post Hurricane Dennis Beach Assessment, Shorefront Development Risk Analysis, and Project Prioritization, Walton County*.

(9) Florida Department of Environmental Protection. *Critically Eroded Beaches in Florida*, Bureau of Beaches and Coastal Systems, June 2007.

(10) Trammell M., and Trudnak, M., 2010. Walton County/Destin Beach Restoration Project, Walton County and Okaloosa County, Florida, 2010. Three-Year Post-Construction Monitoring Report, Taylor Engineering, Inc.

There are four existing Federal projects in or adjacent to Walton County. In Walton County and its neighboring counties of Okaloosa and Bay, there is the Gulf Intracoastal Waterway. The existing project, authorized by the River and Harbor Acts of 1942, 1943, and 1966, provides for a through waterway with minimum dimensions of 12 by 125 feet from Apalachee Bay, Florida, to the Mexican Border via coastal bays, sounds and lands cuts. The existing project from Carrabelle (east of Walton County) to the Rigolets, Louisiana was completed in 1957. Maintenance on the waterway is sporadic across its length but on an annual basis. In Walton

County the waterway transits through Choctawhatchee Bay and a land cut to St. Andrew Bay on the east. In neighboring Bay County there are three other existing projects:

a. Panama City Harbor, Florida. The existing project provides for an entrance channel 38 feet deep and 450 feet wide in the Gulf of Mexico, thence 38 feet deep and 300 feet wide across Lands Ends Peninsula to deep water in St. Andrew Bay, with a branch channel 36 feet deep and 300 feet wide, leading from the inner end of the main entrance channel westward to the Port Authority Terminal at Dyers Point. The entrance channel is protected by east and west jetties extending 2,075 feet and 2,896 feet, respectively. The existing project was completed in 2003. Suitable sands dredged from the entrance channel are bypassed to down drift beaches on a 24 – 36 month cycle. Prior to the recently completed modifications, the project provided for a 32-foot deep project which was begun in 1933 and completed in 1949.

b. Panama City Beaches, Florida. A hurricane and storm damage reduction project for 18.5 miles of the Panama City Beaches was authorized by the Water Resources Development Act of 1986. This project extends from Phillips Inlet near the Walton County line eastward to the Panama City Harbor entrance channel. The authorized plan consisted of a 7-foot elevation berm landward of the erosion control line with a 50-foot top width over approximately 16.8 miles of shoreline. Approximately 6.4 million cubic yards (cy) of sand was dredged from six borrow sites approximately 2000 feet offshore and from the Panama City Harbor entrance channel. Renourishment was estimated to be required at five-year intervals. A slightly modified plan was constructed by the Bay County Tourist Development Council between 1998 and 2000 under the authority of Section 203 of the Water Resources Development Act (WRDA) of 1996. Bay County was approved for reimbursement of the Federal share for the authorized project.

c. East Pass Channel, Florida. The existing East Pass Channel from the Gulf of Mexico into Choctawhatchee Bay, Florida, located east of Walton County, was authorized by the River and Harbor Act Of 1965 and consists of a channel 12 feet deep, 180 feet wide, and 1.5 miles long from the Gulf into the bay via East Pass and a spur channel six feet deep and 100 feet wide from the main channel into Old Pass Lagoon to the harbor at Destin, a distance of about 0.2 miles. The main entrance channel from the Gulf is protected by two converging rock jetties, spaced 1,000 feet apart at the seaward end. This channel was completed in 1969. An extension of the 6 by 100-foot channel into Old Pass Lagoon was authorized by the Energy and Water Development Appropriation Act of 1981 and completed in 1983. Project maintenance is on an 18-month cycle with most of the dredged sands being passed down drift as part of the regional sediment management plan.

Federal Interest. The primary Federal objective is to formulate alternatives and make recommendations for Federal participation in construction of a project that will offer the most significant contribution to the National Economic Development (NED) account and that is consistent with protecting the Nation's environment.

STUDY OBJECTIVES

Problems and Opportunities. Walton County's shoreline is receding and its protective dunes and high bluffs are being adversely impacted by hurricane and coastal storm forces. The impacts of these storms to property and infrastructure have been considerable. Erosion is also having an impact on the environment due to decreased beach area and elevation. Such impact directly affects the availability of suitable nesting habitat required for nesting sea turtles and the areas needed by shorebirds to forage and rest. Damage to the previously established dune system destroyed much of the existing vegetation that provides stabilization. The absence of the dunes and associated vegetation eliminates much of the suitable habitat required to sustain beach mice populations and other wildlife that relies on these types of habitats for their continued survival. These problems can be summarized by the following statements which will be used by the study team in developing the planning objectives:

- Damage to properties and infrastructure due to hurricane and storm induced erosion.
- Damage to beach and dune habitats due to hurricane and storm induced erosion.
- Reduced beach recreational opportunities due to hurricane and storm induced erosion.

Because of the damaging effects of hurricanes and severe storms to properties and infrastructure along the coast, there is an opportunity for a hurricane and storm damage reduction project for Walton County, Florida. Such a project can reduce damage caused by wind-generated and tide-generated waves and currents by stabilizing or restoring the eroded shoreline. Stabilizing or restoring the shoreline provides environmental restoration opportunities within the proposed project area. Restoring a beach-dune system allows greater stability and sustainability of the coastal environment once it has become re-established. Restoring the beach and dune habitats that support a variety of associated flora and fauna can contribute to the success and continual survival of several threatened or endangered species. The restoration effort will also contribute to the well-being of various other flora and fauna that naturally occur in the immediate vicinity. Restoration opportunities include increasing both the beach berm and dune widths to reduce, stabilize and/or restore the shoreline to provide protection to properties and infrastructure, increase sea turtle nesting habitat, and provide numerous benefits to a variety of shore birds, beach mice, and natural vegetation as well as other inhabitants of the coastal environment. These opportunities can be summarized by the following statements which, in addition to the problem statements, will be used by the study team to develop the planning objectives:

- Reduce damages to properties and infrastructure along Walton County's coastline.
- Restore wildlife habitat along Walton County's coastline.
- Provide increased recreational opportunities along Walton County's coastline.

Planning Objectives. The primary goal of this study is to investigate, analyze and recommend solutions to provide for hurricane and storm damage reduction opportunities along the coastline of Walton County, Florida. Over the years coastal erosion in the project area has seriously reduced the ability of the shoreline to provide adequate protection from routine coastal storms. Planning objectives were identified based on the problems, needs, and opportunities as well as existing physical and environmental conditions present in the project area and consist of:

- a. Reduce shoreline erosion along the shoreline of Walton County.
- b. Reduce the potential for storm damages caused by hurricanes and storms along the shoreline of Walton County.
- c. Restore beach and dune ecosystem habitats along the shoreline of Walton County.
- d. Increase the recreational opportunities along the shoreline of Walton County.

Planning Constraints. Planning constraints are statements of things unique to a specific planning study that alternative plans should avoid. The constraints for this study are:

- This analysis considers applicable Federal and State laws.
- Sufficient parking must be available within a reasonable walking distance on free or reasonable terms. Reasonable public access must be furnished to comply with the planned recreational use of the area; however, public use is construed to be effectively limited to within one-quarter mile from available points of public access to any particular shore.
- There is a requirement for the benefit-to-cost ratio (BCR) to be greater than 1-to-1.
- The project will be formulated to avoid impacts to dune, lake and Gulf connections.
- Insure that no Federal funds are expended on work within Coastal Barrier Resources Act Zones.
- Private beaches owned by beach clubs and hotels cannot be included in Federal shore protection activities if the beaches are limited to use by members or paying guests.
- Consideration should be given to public health, safety, and social well-being, including possible loss of life.
- Wherever possible, provide an aesthetically balanced and consistent appearance without changing the existing natural berm or dune height.
- Avoid detrimental environmental and social effects, specifically eliminating or minimizing the following where applicable:
 - a. Air, noise and water pollution;
 - b. Destruction or disruption of manmade and natural resources, aesthetic and cultural values, community cohesion, and the availability of public facilities and services;
 - c. Adverse effects upon employment as well as the tax base and property values;

- d. Displacement of people, businesses, and livelihoods; and,
 - e. Disruption of normal and anticipated community and regional growth.
- Maintain, preserve, and, where possible and applicable, enhance the following in the study area:
- a. Water quality;
 - b. The beach and dune system together with its attendant fauna and flora;
 - c. Wetlands and other emergent coastal habitats;
 - d. Commercially important aquatic species and their habitats;
 - e. Nesting sites for colonial nesting birds;
 - f. Habitat for endangered and threatened species.

ALTERNATIVES

Plan Formulation Rationale. The plan formulation process for this study applied the Corps' six step planning process described in the Economic and Environmental Principles and Guidelines (P&G) for Water and Related Land Resources Implementation Studies (P&G, 1983). This planning process is more fully specified in Corps of Engineers' Engineering Regulation (ER) 1105-2-100 (the Planning Guidance Notebook, 22 April 2000). Steps in the plan formulation process include:

1. The specific problems and opportunities to be addressed in the study are identified, and the causes of the problems are discussed and documented. Planning goals are set, objectives are established, and constraints are identified.
2. Existing and future without-project conditions are identified, analyzed and forecast. The existing condition resources, problems, and opportunities critical to plan formulation, impact assessment, and evaluation are characterized and documented.
3. The study team, including Federal, State, County and local officials and interested individuals, formulates alternative plans that address the planning objectives. A range of alternative plans are identified at the beginning of the planning process and screened and refined in subsequent iterations throughout the planning process.
4. Alternative project plans are evaluated for effectiveness, efficiency, completeness, and acceptability. The impacts of alternative plans will be evaluated using the system of accounts framework (NED, EQ, RED, OSE) specified in the Principles and Guidelines and ER 1105-2-100.
5. Alternative plans will be compared. Contributions to National Economic Development (NED) will be used to prioritize and rank alternatives that are consistent with protecting the nation's environment and are publically acceptable. The public involvement program will be used to obtain public input to the alternative identification and evaluation process.
6. A plan will be selected for recommendation, and a justification for plan selection will be prepared.

Management Measures and Alternative Plans. A number of measures were initially considered for alternative development to provide hurricane and storm damage reduction for the Walton County shoreline. Those measures can be classified as either non-structural or structural in nature. Non-structural measures consist of actions that: control or regulate the use of land and buildings such that damages to property are reduced or eliminated; acquire threatened or damageable property; or, consist of retreat which is relocation of threatened property. Structural measures are composed of those actions that block or otherwise retard erosive coastal processes, or restore or nourish beaches to compensate for erosion. Typically, the hardened structural

measures consist of seawalls, bulkheads, revetments, breakwaters, or groins. Beach and dune fill is considered a soft structural measure.

A matrix was developed by the PDT to compare and screen the various measures against the initial screening criteria to determine which measures could be carried forward and formulated as alternative solutions to the study needs.

The initial list of measures were qualitatively screened for:

- Engineering Feasibility
- Economic Feasibility
- Environmental Feasibility

Table 8 on the next page displays this matrix and shows what measures demonstrate promise for continued consideration.

Also of concern is assuring that the proposed measures fulfill the stated objectives for the study. A matrix was also developed to compare the success of the various measures against the objectives:

- Reduce shoreline erosion
- Reduce potential for storm damages
- Protect fish and wildlife resources
- Restore beach and dune ecosystem habitats
- Increase recreational opportunities

Table 8A displays the results of the comparison of the measures against the objections.

**TABLE 8
INITIAL SCREENING MATRIX**

		Non-Structural Measures			Structural Measures					
Screening Criteria	No Action	Regulations	Acquisition	Retreat	Seawall	Bulkhead	Revetment	Breakwater	Groin	Beach Fill
Engineering Feasibility	N/A	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes
Economic Feasibility	No	No	No	No	No	No	No	No	No	Yes
Environmental Feasibility	No	No	Short Term	Short Term	No	No	No	No	No	Yes

**TABLE 8A
OBJECTIVES-MEASURES SUCCESS ASSESSMENT MATRIX**

		Non-Structural Measures			Structural Measures					
Objectives	No Action	Regulations	Acquisition	Retreat	Seawall	Bulkhead	Revetment	Breakwater	Groin	Beach Fill
Reduce shoreline erosion	No	No	No	No	Yes	Yes	Yes	Yes	Yes	Yes
Reduce potential for storm damages	No	No	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes
Protect fish and wildlife resources	No	Yes	Short Term	Yes	No	No	No	No	No	Yes
Restore beach and dune ecosystem habitats	No	No	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes
Increase recreational opportunities	No	Yes	Yes	Yes	No	No	No	No	No	Yes

No Action Alternative. The no action plan assumes that no additional actions, other than those currently occurring, will be undertaken to provide hurricane storm damage and erosion protection to damageable properties in Walton County. The No Action Alternative uses emergency nourishment as the plan to provide hurricane storm damage and erosion protection to damageable properties in Walton County. There are no costs or benefits associated with this plan.

Non-Structural Alternatives. While non-structural alternatives serve to reduce damages to the development or structures that have developed along the beach, they do not reduce land loss or damage to the shoreline and dunes.

Regulation - Regulation of land use may establish oceanfront setback limits or restrict building below a certain elevation; however, the study area is nearly fully developed and implementation of additional land use regulations will not serve to reduce the threat of damage to the existing structures. Additionally, there are already regulations in place for building and development along the shoreline of Walton County to minimize the threat of damage to shoreline structures. The county, along with the state, has established evacuation zones and evacuation routes and has in place procedures to alert affected residents and visitors regarding potential storm threats that could impact the coastal shoreline.

Retreat - Because of the small size of the existing lots, the structures could not be relocated further from the shoreline nor is there available property to relocate the structures upon. Retreat was therefore not considered a viable option and dropped from further consideration.

Acquisition - Property acquisition would involve the purchase of the damageable property that is threatened by extra-tropical and tropical storms, and relocating the residents.

Structural Alternatives. These were developed to reduce land loss or damage to the shoreline and dunes, and as a consequence also reduce damages to the development or structures along the beach. Structural alternatives for this study included the construction of hard structures and/or beach fill.

In the initial consideration of using hard structures it was determined that there were both engineering and environmental factors that would preclude their use. As there were no concentrated locations of erosion the usage of groins was not appropriate. Other hard structures would also disrupt the normal natural dispersal of material down drift. Additionally, the State of Florida provides guidance on criteria that must be met for use of coastal structures within the state. The use of coastal structures in this case would likely have a negative impact on listed species inhabiting the area and would not be consistent with state policy for a shore-wide solution for Walton County. For these reasons, hard structures were screened out and not further evaluated.

For the beach and dune fill alternatives, it was recognized that the dunes along the Walton County shoreline provide the principal protection for the damageable structures. Likewise, the dunes are protected by the shoreline berm. It was decided early in the study process that alternative plans would not change the existing natural berm or dune heights. As such, a range of beach and dune fill alternative plans were formulated to evaluate both berm width and dune width alternatives. The evaluation approach adopted a two-phase process with the first phase of the evaluation optimizing the proposed berm width. The second phase would build on the results of the first phase by optimizing the dune width. Thus the resulting beach and dune fill alternative is a combination of the optimized berm width and the optimized dune width evaluations. Four berm width alternatives were evaluated with an additional two added to confirm optimization. After the optimized berm width alternative was determined five dune width alternatives were evaluated.

These evaluations resulted in an economically justified beach fill alternative plan that could be implemented to provide hurricane and storm damage reduction for the Walton County shoreline. This plan is considered the National Economic Development (NED) Plan as it maximizes beneficial contributions to the Nation while satisfying the study objectives. The NED Plan is composed of a 50-foot berm width that includes a 25-foot berm and an additional 25 feet of advanced nourishment along approximately 15.2 miles of the Walton County Shoreline. The project will also include added dune widths of either 10 or 30 feet in other areas.

After consultation with the non-Federal sponsor, a locally preferred plan (LPP) was developed to include the work contained in the NED Plan and include additional shoreline length of about 3.6 miles to provide consistent shoreline protection in areas that were not economically justified. The non-Federal sponsor is willing to provide funding for work in this area. The LPP, similar to the NED Plan, will include a 50-foot berm with added dune widths of either 10 or 30 feet throughout the project length. Per ER 1105-2-100, the recommended plan may deviate from the NED Plan if the non-Federal sponsor agrees to pay the cost difference between the NED Plan and the LPP, the LPP has outputs similar in-kind, and the LPP has benefits that are equal or greater to the NED benefits. A waiver, that the LPP be considered for recommendation, was requested and on 7 February 2012, was approved by the Assistant Secretary of the Army for Civil Works (ASA(CW)). As such, the LPP is the Selected Plan.

******For remaining pages, Cost/Benefit values need to be updated to FY13******

Final Array of Alternatives. The final array of alternatives consisted of the No Action alternative, the Acquisition Plan, the NED Plan, and the LPP Plan.

The acquisition alternative that was developed removes all damageable structures from the front lots and would eliminate storm damage to approximately 81 percent of the study area. This

results in about a \$57,819,000 reduction of the total average damages and about a \$3,106,000 reduction of the average annual damages. The cost of this alternative is significant with the resulting approximate cost being about \$3.42 billion dollars.

A range of beach and dune fill alternative plans were formulated to evaluate both berm width and dune width alternatives. The evaluation approach adopted a two-phase process with the first phase of the evaluation optimizing the proposed berm width. The second phase would build on the results of the first phase by optimizing the dune width. Thus the resulting beach and dune fill alternative is a combination of the optimized berm width and the optimized dune width evaluations. Four berm width alternatives were evaluated with an additional two added to confirm optimization. After the optimized berm width alternative was determined five dune width alternatives were evaluated.

These evaluations resulted in an economically justified beach fill plan that could be implemented to provide hurricane and storm damage reduction for the Walton County shoreline. This plan is considered the National Economic Development (NED) Plan as it maximizes beneficial contributions to the Nation while satisfying the study objectives. The NED Plan is composed of a 50-foot berm width at elevation 5.5 NAVD that includes a 25-foot berm and an additional 25 feet of advanced nourishment along approximately 15.2 miles of the Walton County Shoreline. It will also include added dune widths of either 10 or 30 feet at elevation 15 NAVD with a shoreward slope of 3H:1V. Material would come from an offshore borrow site in state waters known as BA-4.

After consultation with the non-Federal sponsor, a locally preferred plan (LPP) was developed to include the work contained in the NED Plan and include additional shoreline length of about 3.6 miles to provide consistent shoreline protection in areas that were not economically justified. The non-Federal sponsor is willing to provide funding for work in this area. The LPP, similar to the NED Plan, will include a 50-foot berm with added dune widths of either 10 or 30 feet throughout the project length.

Comparison of Alternatives. The Principles and Guidelines prescribe for an comparison of project benefits for the final array of alternatives and the selected plan according to the four accounts: National Economic Development (NED), Regional Economic Development (RED), Other Social Effects (OSE), and Environmental Quality (EQ).

The NED benefits were fully and illustratively presented throughout the economic analysis. Regional Economic Development Benefits are calculated using the Economic Impact Forecasting System (EIFS). EIFS is a regional economic impact assessment model that uses economic multipliers and a database of economic and financial statistics by county to measure the economic and financial impact to a community through various increases and/or decreases in economic activity in that community.

The Other Social Effects (OSE) account, would report that there are either no negative impacts on community cohesion or community growth. There will be minor to no appreciable impacts on tax or property values. There will be a small positive impact to front row residents who are likely to incur less impacts from erosion and wave action due to the project.

Based on the comparison of the final array of alternatives, it was apparent that implementation of a beach fill plan satisfies the study objectives, provides hurricane and storm damage reduction, and promotes environmental restoration along the coastline of Walton County, Florida. Further, both the NED and LPP beach fill plans were found superior to the Acquisition and No Action plans in each of the System of Accounts. The Acquisition Plan would cost nearly 40 times more than the NED and LPP beach fill plans while providing less economic benefit and the no action plan would provide no economic benefit. The NED Plan would have an annual cost of about \$4,332,000 with the LPP annual cost totaling about \$5,044,000. The annual benefits of the NED Plan would total about \$7,380,000 with the LPP annual benefits totaling about \$7,570,000. The BCR of the NED Plan is about 1.70 while the BCR of the LPP is about 1.50. The NED Plan would protect about 15.2 miles of the Walton County shoreline while the LPP would protect about 18.8 miles.

Key Assumptions. The key assumptions made for this study were that the present physical and social trends will continue into the 50-year project life. We assume that damaging storms will continue to occur with comparable strength and frequency as have occurred in the past. The demand for vacation and permanent homes at the beach will result in new structures being built on any suitable remaining property and existing structures rebuilt after being destroyed by storms. The replacement structures will have to conform to property line and ocean front setback restrictions, with minimum Federal Flood Insurance elevations, and with new and stronger building codes, which will result in more damage-resistant structures.

Recommended Plan. Per ER 1105-2-100, the recommended plan may deviate from the NED Plan if the non-Federal sponsor agrees to pay the cost difference between the NED Plan and the LPP, the LPP has outputs similar in-kind, and the LPP has benefits that are equal or greater to the NED benefits. A waiver, that the LPP be considered for recommendation, was requested and approved by the Assistant Secretary of the Army for Civil Works (ASA(CW)). As such, the LPP is the Recommended Plan.

Plan Comparison
Project Features and Economics, NED Plan and LPP Plan

(Note – Monetary amounts are shown in FY 2014 Dollars)

Category	NED Plan	LPP Plan
Project Length	15.2 Miles	18.8 Miles
Initial Beach Fill Quantity	3,273,000 cy	3,868,000 cy
Renourishment Cycle	10 years	10-years
Renourishment Quantity	1,585,000 cy	1,789,000 cy
2014 Initial Construction Cost	\$53,765,000	\$63,548,000
2024 Renourishment Cost	\$15,774,000	\$17,784,000
2034 Renourishment Cost	\$10,916,000	\$12,307,000
2044 Renourishment Cost	\$7,554,000	\$8,517,000
2054 Renourishment Cost	\$5,228,000	\$5,894,000
Total Economic First Cost	\$93,237,000	\$108,049,000
Interest During Construction	\$1,154,000	\$1,338,000
Total Economic Project First Cost	\$94,391,000	\$109,387,000
Average Annual Economic First Cost	\$4,207,000	\$4,876,000
Annual O&M	\$124,500	\$168,000
Total Average Annual Economic Cost	\$4,332,000	\$5,044,000
Average Annual HSDR Benefits	\$7,365,000	\$7,555,000
Average Annual Recreation Benefits	\$15,000	\$15,000
Total Average Annual Benefits	\$7,380,000	\$7,570,000
Benefit-to-Cost Ratio	1.70	1.50
Net Benefits	\$3,048,000	\$2,526,000

The recommended plan (LPP) is composed of a 50-foot berm width that includes a 25-foot berm and an additional 25 feet of advanced nourishment in all construction reaches. The project will also feature added dune width in all construction reaches of either 10 or 30 feet.

Systems / Watershed Context. The report describes the cumulative environmental effects that could occur with the implementation of this project in addition to other potential federal and non-federal projects in the area. The study was coordinated and cooperated with the USFWS, NMFS, Florida Division of Historic Resources, and the Florida Department of Environment and Protection.

Environmental Operating Principles. The recommended plan was developed in a manner that is consistent with the EOPs. Construction of the recommended plan would incorporate all reasonable measures for minimizing the impacts to the environment. Additionally, the recommended plan would provide incidental benefits to habitat for threatened and endangered species.

Peer Review. District Quality Control Reviews (DQC's) and Agency Technical Reviews (ATR's) were performed on both the draft report and the draft final report. The ATR of this report was conducted in accordance with the Corps' "Peer Review of Decision Documents" process and has been reviewed by Corps staff outside the South Atlantic Division. The ATR review was coordinated by the Hurricane and Storm Damage Reduction (HSDR) National Planning Center of Expertise, North Atlantic Division, U.S. Army Corps of Engineers. An Independent External Peer Review (IEPR) was conducted on the draft report after approval for public release of the draft report. The IEPR was conducted by a non-Corps national team of experts in the field, and coordinated by the HSDR Planning Center of Expertise. All of these reviews are recorded in Dr. Checks and all comments have been evaluated, back-checked and closed.

On September 22, 2010 a value engineering team conducted a VE Study at Mobile District on the Walton County Hurricane and Storm Damage Reduction Feasibility Report. The project approach and fundamentals were reviewed by the team and found to be both technically and fiscally sound.

EXPECTED PROJECT PERFORMANCE

Project Costs. The following table presents all project costs by category (including construction elements by project purpose, LERRD, PED, and construction management (E&D and S&A)).

Cost Summary
Walton County Hurricane and Storm Damage Reduction General Investigation Study
(October 2014 Price Levels)

Construction Item	Cost
Lands & Damages	\$ 762,000
Elements	
Dredging	\$49,231,000
Beach Work	\$6,192,000
Planting	\$4,162,000
Environmental	\$188,000
Subtotal	\$ 59,773,000
Preconstruction Engineering & Design (PED)	\$1,807,000
Construction Management (E&D, S&A)	\$1,205,000
Total First Cost	\$63,548,000

Average Annual Costs and Benefits.

The following Table lists all project costs and benefits computed to an average annual basis, including results of risk and uncertainty analyses.

Average Annual Benefits and Costs	
Walton County	
October 2014 Price Level, 50-year period of Analysis, 3.75 Percent Discount Rate	
Investment Cost	
Total Project Construction Costs	\$105,811,000
Interest During Construction	<u>\$1,397,000</u>
Total Investment Cost	\$107,208,000
Average Annual Costs	
Interest and Amortization of Initial Investment	\$4,876,000
(additional annual costs, if applicable)	<u>\$168,000</u>
Total Average Annual Costs	\$5,044,000
Average Annual Benefits	\$7,555,000
Net Annual Benefits	\$2,526,000
Benefit-Cost Ratio	1.5
Benefit-Cost Ratio (computed at 7%)	1.1

Cost Sharing. Table 3 shows the apportionment of the first costs, including associated costs, between the Federal government and the non-Federal sponsor(s). Cost apportionment is in accordance with the Water Resources Development Act of 1986, as amended and adjustments were made for land use and limited public access in some reaches.

Table 3 Walton County HSDR GIS - Cost Sharing (October 2014 Price Level)			
Item	Federal Cost	Non-Federal Cost	Total Cost
Hurricane and Storm Damage Reduction (HSDR)	\$ 16,736,440(28)	\$ 43,036,560 (72)	\$ 59,773,000
PED ¹	\$ 505,960(28)	\$ 1,301,040(72)	\$ 1,807,000
LERR&D	\$ 213,360 (28)	\$548,640 (72)	\$762,000
Construction Management	\$ 337,400 (28)	\$ 867,600 (72)	\$ 1,205,000
Total Project	\$ 17,793,440 (28)	\$ 45,754,560 (72)	\$ 63,548,000

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Sponsor contributes 25% of the PED costs during the design phase. The remaining PED funds owed to the government are contributed during the construction phase

The Federal share of the total renourishment cost would be about \$24,529,000 (23 percent) and the non-Federal share would be about \$82,119,000 (77 percent).

Project Implementation. The Non-Federal Sponsor is the Walton County Board of Commissioners. Their central point of contact is the Executive Director, Walton County Tourist Development Council (TDC). A design agreement and PPA will be executed between the U.S. Army Corps of Engineers (Corps) and Walton County that will define the cost share responsibilities for execution of the project during the PED and construction phase.

Operation, Maintenance, Repair, Rehabilitation, and Replacement (OMRR&R). Periodic renourishment is classified as continuing construction, not as OMRR&R. OMRR&R requirements will consist of project inspections and dune vegetation maintenance. Dune vegetation maintenance includes watering, fertilizing, and replacing dune plantings as needed. Other maintenance is reshaping of any minor dune damage, repairs to walkover structures, and grading of any large escarpments. Estimated OMRR&R annual costs are estimated at \$168,000.

Key Social and Environmental Factors. A key social factor is recreational use of the beach by residents and visitors. Increased recreational value was not a major factor in formulation of the plan. Efforts were made during the planning process, in coordination with the resource agencies, to minimize impacts to high valued resources. Therefore, there were no significant unavoidable impacts associated with this project and thus no required mitigation actions. Specific environmental planning measures were developed including avoidance of the closure of outfalls from coastal lakes.

Stakeholder Perspectives and Differences. Public support for this project is especially important considering the cost sharing requirements. The non-Federal sponsor has been very proactive in insuring that the public has been informed of the process as well as status of the study. The non-Federal sponsor's leadership is a matter of public record. In the last two years the non-Federal sponsor conducted two workshops regarding this Hurricane and Storm Damage Reduction (HSDR) study. Most recently, the draft report was made available to the public for their review and comment per announcement in the local newspaper and through mail-out to interested individuals and agencies.

In addition to the public engagement described above, environmental coordination included numerous stakeholder and support agencies as required by NEPA and other Federal laws and regulations. Such engagement included: Meetings with state and local agencies to determine the appropriate level of NEPA documentation for this project.

- Formal endangered species consultation with USFWS and NOAA National Marine Fisheries Service (NMFS) as required by the Endangered Species Act.
- Formal consultation with NMFS regarding Essential Fish Habitat as required the Magnuson–Stevens Fishery Conservation and Management.
- Formal consultation with the USFWS regarding the consistency of proposed actions with the requirements of Coastal Barrier Resources Act required to ensure that the expenditure of Federal funds do not enhance the potential for development within these units.
- Formal cultural resources consultation with the Florida State Historic Preservation Officer regarding potential impacts to historic resources as required by the National Historic Preservation Act

STATUS OF AGENCY COORDINATIONS AND CONSULTATIONS

APPLICABLE LAW/REGULATION	AGENCY	COORDINATION/CONSULTATION	
		INITIATED	STATUS
National Environmental Policy Act (NEPA)		Public Notice Issued April 27,2010	No objection comments received.
Endangered Species Act (ESA)	U.S. Fish and Wildlife Service	Consulted initiated January 15, 2010	In August, 2011, the USFWS finalized the Statewide Programmatic Biological Opinion (PBO) for Shore Protection Activities along the coast of Florida. The PBO indicates that for actions such as this in Florida, the USFWS has determined that the proposed action would not jeopardize the continued existence of nesting sea turtles. The final coordination for the piping plover was completed in October 2012.
	NOAA-National Marine Fisheries Service, Office of Protected Resources	Consultation initiated January 15, 2010	Email dated March1, 2010, concurring that project would not result in additional impacts already coordinated for the non-Federal sponsor
Fish and Wildlife Coordination Act (FWCA)	U.S. Fish and Wildlife Service	Request for Fish and Wildlife Coordination Act Report (FWCAR) initiated January 8, 2010.	Final report received October 2012.
Magnuson-Stevens Fishery Conservation and Management Act (MSFCMA) – Essential Fish Habitat (EFH)	NOAA-National Marine Fisheries Service, Habitat Conservation Division	EFH consultation initiated January 8, 2010	Letter received October 6, 2010, NMFS, Habitat Conservation Division determined that they do not have any EFH additional consultation recommendations to offer.
Coastal Barrier Resources Act (CBRA)	U.S. Fish and Wildlife Service	CBRA consultation initiated January 13, 2010	Letter received February 22, 2010 indicating USFWS's determination that project is not consistent with the purpose of CBRA. Areas within CBRA will be constructed using non-Federal funds
National Historic Preservation Act (NHPA)	Florida Division of Historic Resources	Cultural resources consultation initiated January 8, 2010	Letter received March 11, 2010 that FLSHPO concurred the action will have no effect on historic properties.
Clean Water Act (CWA)	Florida Department and Environmental Protection (FDEP)	The water quality certification application is being prepared for submittal to FDEP	Draft 404(b)(1) Evaluation Report prepared. Currently coordinating with the FDEP and non-Federal sponsor for final preparation.
Coastal Zone Management Act (CZMA)	Florida Department and Environmental Protection (FDEP)	The water quality certification application is being prepared which also includes the Coastal Zone Consistency (CZC) determination	Currently coordinating with the FDEP and non-Federal sponsor for final preparation.

Environmental Compliance. On 29 June 2004, an interagency meeting was held at the Walton County, Tourist Development Council facility in Santa Rosa Beach, Florida. The purpose of the meeting was to initiate environmental coordination with the interagency team involved in the permitting and environmental compliance processes for the Walton County Shore Protection Feasibility Study. The meeting's primary objects were to identify and discuss environmental issues and opportunities, permitting issues, and environmental compliance requirements associated with the proposed Walton County project. In attendance were representatives from the Corps, Walton County, USFWS, FDEP, and FWCC. Communications with the Habitat Conservation Division expressed that the project did not raise issues that would require their representation.

An important topic of discussion at the interagency meeting dealt with the National Environmental Policy Act (NEPA) process that should be conducted for the Walton County project, specifically whether the project would require an EA or Environmental Impact Statement (EIS). The USFWS expressed that their agency is not viewing this project as one that would require an EIS. Although the project area encompasses some 26 miles of shoreline, the activities will be comprised of segmented beach nourishment and/or dune restoration. The group in attendance felt that given the project characteristics, low level of controversy, absence of contamination, and precedent set by other local beach projects that an EA would be the appropriate level of environmental documentation for the Walton County project. An EA was developed during this study process and resulted in a Finding of No Significant Impact (FONSI).

State and Agency Review. State and Agency review has not yet been performed and will be initiated after recommendation is received from the CWRB.

Certification of Peer and Legal Review. The dates of the certifications of the technical and legal adequacy of the final feasibility report are as follows:

Independent External Peer Review – August 09, 2012
District Quality Control Review - September 12, 2012
Agency Technical Review – October 15, 2012
Cost Engineering DX Cost Certification – October 15, 2012
Legal Certification – October 19, 2012

Policy Compliance Review. Policy compliance reviews have been conducted to date for the Feasibility Scoping Meeting (FSM), Alternative Formulation Briefing (AFB), and Draft Report milestones.

The FSM submittal was received in September 2005. HQUSACE staff conducted a policy review of the documentation and issued comments in December 2005. CESAM provided responses to the comments on 10 January 2006 and the FSM was held on 18 January 2006. A Project Guidance Memorandum (PGM) was issued on 3 February 2006.

In response to the FSM PGM and continued study efforts, CESAM prepared the Alternative Formulation Briefing submittal, dated October 2009. The HQUSACE staff conducted a policy review of the AFB submittal, as contained below. The AFB was conducted via video-teleconference on 18 December 2009. The AFB concluded that additional work was needed to further strengthen and support the plan selection and implementation rationale to reach agreement on the Tentatively Selected Plan. Therefore the District was required to address all the policy review comments contained below and submit a complete Draft Report submittal for conducting a Feasibility Review Conference. The AFB PGM was issued on 22 January 2010.

In response to the AFB PGM and continued study efforts, CESAM prepared the Draft Report submittal, dated April 2011. HQUSACE staff conducted a policy review of the documentation and issued comments in June 2011. CESAM provided responses to the comments and a Feasibility Review Conference was held on 11 August 2011. A PGM was issued on 24 August 2011. The FRC concluded with the determination that the study recommending the Locally Preferred Plan (LPP) may not be released for concurrent public and policy review until the district requests and the Assistant Secretary of the Army for Civil Works (ASA(CW)) approves such a recommendation. The ASA(CW) approved the waiver request on 7 February 2012.

In response to the FRC PGM and continued study efforts, CESAM prepared the Draft Report submittal, dated April 2012. The HQUSACE staff conducted a policy review of the Draft Report submittal and issued comments on 3 July 2012. CESAM provided responses to the comments and a second FRC was conducted via teleconference on 13 August 2012. A Draft Report PGM was issued on 11 September 2012.

Policy Review of the final Feasibility Report, dated November 2012, is underway.