

**RECONNAISSANCE REPORT**  
**Section 905(b) Analysis**  
**Walton County, Florida, Shore Protection**



**US Army Corps of Engineers**  
**Mobile District**

**June 2003**

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2	Board of County Commissioners for Walton County, Florida (Non-Federal Sponsor) Letter of Intent

# Reconnaissance Study

## Section 905(b)(WRDA 86) Analysis

### Walton County, Florida Shore Protection

**1. STUDY AUTHORITY.** The authority for conducting this study is contained in House Resolution 2690 adopted 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.

**2. STUDY PURPOSE.** The purpose of this study is to assess the needs for hurricane and storm damage protection and opportunities for environmental restoration and protection along the Gulf Coast of Walton County, Florida. The most immediate and critical needs of the local communities are to address gulf front beach and dune erosion and include environmental protection opportunities. However, opportunities still exist for addressing issues within the Choctawhatchee Bay and embayment areas which the non-Federal sponsor may want to pursue at a later date. This study will determine Federal interest in participating in locally supported, cost-shared feasibility studies addressing issues along the Gulf Coast of Walton County.

### **3. LOCATION OF PROJECT/CONGRESSIONAL DISTRICT.**

**a. Location.** The study area for the Walton County, Florida, Reconnaissance Study extends for a distance of about 26 miles along the Walton County, Florida, gulf front shoreline and associated Choctawhatchee Bay area. Walton County begins from the City of Destin in Okaloosa County, Florida; eastward to the beginning of Bay County, Florida. Walton County is situated approximately 103 miles east of Pensacola, Florida and 98 miles west of Tallahassee, Florida.

**b. Access.** East-West access to the study area is provided by U.S. Highway 98 and State Highway 30A. North-South access is provided by U.S. Highway 85 and State Highway 293 just beyond the western end of the study area, and U.S. Highway 331 which connects to Interstate 10, 35 miles to the north.

**c. Congressional District.** According to census data, Walton County's 2000 residential population totaled 40,601 persons. This population, spread throughout the county and its three municipalities is located in Florida's 2nd Congressional District, represented by Congressman F. Allen Boyd, Jr. (D) and U.S. Senators Bob Graham (D) and Bill Nelson (D).

**d. Climate.** Mild winters and hot summers characterize the project area, with an average in excess of 280 days a year of sunshine. The average daily temperature is 67 degrees Fahrenheit and the average water temperature is about 70 degrees Fahrenheit. The months from June through November constitute the hurricane storm season, and this area is subject to tropical storm and strong hurricane conditions. The average annual rainfall is 64 inches.

**4. DESCRIPTION OF THE STUDY AREA.** The study area covers about 26 miles of shoreline, including approximately 6 miles in three parks that are managed by the State of Florida. For this report, the study area is divided into 10 reaches (Figure 1), which are described, from west to east, in the following paragraphs.

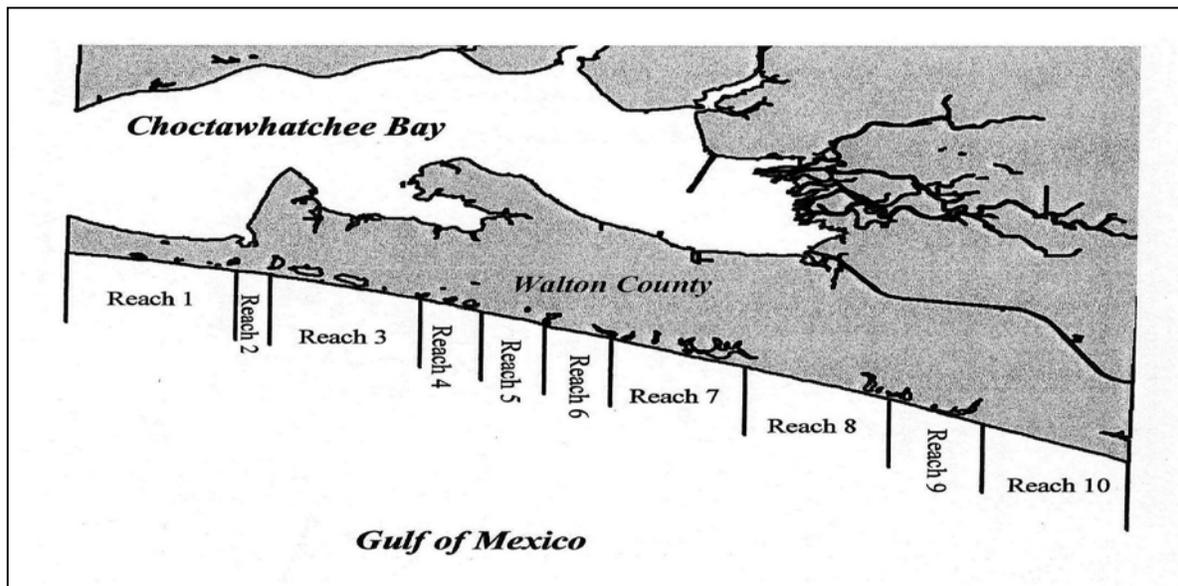


FIGURE 1. REACH BY REACH BREAKDOWN OF THE WALTON COUNTY SHORELINE

### Reach 1 - Miramar Beach to Sandestin

This reach begins at the western end of Walton County, which is also the western end of the study area.



The total shoreline distance of this reach is 4.2 miles. It includes the Miramar Beach Regional Access recreation area, which is one of the largest county-owned recreation facilities in the study area. This reach contains about 125 to 150 structures, including both condominiums and single family residential homes. There are over 250 public parking spaces and six public beach access

points in this reach. A portion of Scenic Gulf Drive runs in close proximity to the beach and is subject to damage due to coastal erosion.

**Reach 2 - Sandestin to Four Mile Village**

This reach has one mile of shoreline. Development includes eight large condominiums and a dozen single-family homes. The Sandestin development is very large and includes several hundred parking spaces that are privately owned, but available to the public. In addition, the Sandestin development provides nine privately owned walkovers that may be used by members of the public. A privately operated shuttle service moves visitors around the Sandestin development and to local beaches. This reach of the study area is of concern due to erosion, although it is not currently designated as a critically eroding area by the State of Florida.

**Reach 3 - Topsail Hill State Preserve**

This reach is approximately 3.4 miles in length. It is owned entirely by the State of Florida and has no commercial or residential property. The area contains critical habitat for the Choctawhatchee beach mouse, a Federally listed endangered species. There is a large day use recreation area in this preserve, with a significant amount of public parking and a tram to move visitors from the parking area to the beach.



**Reach 4 - Beach Highlands/Dune Allen.**

This reach contains about 1.5 miles of shoreline.

There are approximately 75 primarily residential structures, plus one large condominium complex. This area is critically eroding and the structures are threatened by erosion and storm damage. Public access in this area includes four walkovers. There are about 45 public parking spaces. This area consists primarily of relatively flat beaches with minimal dune structures.

### Reach 5 - Santa Rosa Beach



This reach is 1.5 miles in length. It contains a mixture of approximately 70 condominiums and single-family residential homes. The area has high bluffs located right along the coast on its easternmost end. The reach has three public access points and, in addition, there are two private access points that are available for use by the public. There are 60 public parking spaces and 75

private parking spaces that are available to the public. The erosion is of less concern in this reach than in others, however it is located between two areas where erosion is a major concern.

### Reach 6 - Blue Mountain Beach

The length of the shoreline is approximately two miles in this reach. Development includes about 60 residential structures and six condominiums. This area has the highest bluffs in the study area. Some exceed 60 feet in height. There is significant



concern about bluff erosion and undercutting in this area due to the interface of relatively low flat beaches and the bluff toe. There are four public access points, and one private one that are used by the public. There are 20 public parking spaces and 30 private parking spaces that are available for use by the public.

### Reach 7 - Gulf Trace, Grayton Beach, Grayton Beach State Park, WaterColor

This reach contains about three miles of shoreline. There are about 50 structures in the area and the communities are interlaced with the Grayton Beach State Park. This area contains the communities of Gulf Trace, Grayton Beach, and a new development, the WaterColor Community.

This reach has three public access points and 25 public parking spaces. In addition, the WaterColor development has three walkovers that are used by the public and they have about 50 private parking spaces that are used by the public. The WaterColor Community has deeded the beach as a public recreation easement.



### Reach 8 - Seaside and Seagrove Beach



This reach includes 3.5 miles of shoreline. There are 210 structures, including a mixture of condominiums, residential homes and one hotel/motel complex. The coastal development is located behind high bluffs. There are 15 public access and 45 public parking spaces. The erosion threat in this reach is primarily in the Eastern Lake area, which is in the eastern portion of the reach. Development in this area has experienced repetitive losses and contains historically flooded properties.

### Reach 9 - Deer Lake State Park, Watersound, and Seacrest (west)

This reach has a total length of two miles of shoreline. The first one-half mile is Deer Lake State Park followed by the communities of Watersound and Western Seacrest Beach. Western Seacrest Beach is located in the eastern one-half mile of this reach, and it is threatened by erosion. Western Seacrest Beach contains about 27 single-family residential structures and three condominiums. There are two public access points and about five public parking spaces in this reach. The structures are located on bluffs. The reach borders a critically eroding area at its eastern end.

### Reach 10 - Seacrest (east), Rosemary Beach, Inlet Beach

This reach has a total shoreline length of approximately 3.5 miles. It includes 160 single-family residential structures and condominiums. There are eight public access points and about 130 parking spaces. In addition, Rosemary Beach has four private access points that allow public use and an additional 30 parking spaces. The Inlet Beach Regional Access is located near the eastern boundary of Walton



County and is the largest county owned coastal recreation facility in the study area. This area consists of developments with varying ages including Inlet Beach, which is one of Walton County's earliest developments, and a 160-acre development that is currently in the planning stages. This reach is critically eroded.

**5. ENVIRONMENTAL IMPACT.** This reconnaissance level study evaluates the possible impacts associated with environmental restoration and storm damage reduction related activities along the Walton County Gulf of Mexico and the Choctawatchee Bay shorelines. As such there could be both beneficial and negative environmental impacts including the borrow of sand from a suitable location, placement of sand in critically eroding areas, and protection/restoration of significant natural resources. Applicable laws under which these impacts will be evaluated in the feasibility study include the National Environmental Policy Act (NEPA), Endangered Species Act, the Clean Water Act, the Clean Air Act, the U.S. Fish and Wildlife Coordination Act, National Historic Preservation Act, Coastal Barrier Resources Act, Magnuson – Stevens Fishery Conservation and Management Act, and Coastal Zone Management Act.



The Walton County shoreline is characterized by high dune elevations partly due to the presence of Pleistocene bluffs formed as a result of an exposed submarine berm formed during inundation of the Florida Peninsula during that geologic period. Natural resources within the areas being evaluated for storm damage reduction along the gulf shoreline include the coastal sand dune/beach, intertidal/swash, and nearshore marine habitat beyond the 30-foot depth contour.

Coastal sand dune/beach communities range from undeveloped pristine systems found within state owned recreation areas to highly developed to severely disturbed systems found within the densely developed residential areas of the county. Dune systems fronting development range from areas with little or no dune to larger relatively healthy dune systems. Topsail Hill State Preserve, Grayton Beach State Recreation Area, and Deer Lake State Recreation Area all feature relatively unaltered beach and dune ecosystems. An unusual attribute of the coastal sand dune community is the presence of coastal dune lakes. Such lakes, very rare worldwide, are almost exclusive to the Gulf Coast within the United States. The mesotrophic dune lakes generally acquire water through lateral groundwater seepage and are shallow with depths typically around five feet. The most distinct characteristic of these lakes is their intermittent connection with the Gulf of Mexico. Sometimes the lake waters reach a critical height causing a lake to 'blow out' and connect with the gulf allowing for the exchange of fresh and salt water. The result is an unusual estuarine environment that hosts a very diverse biological community.

The sandy substrate of the intertidal swash zone provides habitat for benthic and infaunal communities characterized by low species diversity. This portion of the beach also provides for foraging and resting habitat for numerous seabirds and shorebirds. The nearshore marine community is typical of the northern Gulf of Mexico. Community structure and species diversity varies greatly with depth and distance from shore. These communities are highly adapted to the dynamic high energy environment.

The ecosystem associated with Choctawhatchee Bay is typical of northern gulf coast estuaries including *Spartina alterniflora* and *Juncus roemerianus* wetlands and submerged aquatic vegetation. Primary faunal resources include oyster reefs, shrimp, crabs and finfish. Upland areas are characterized by single family residential areas and non-developed natural pine forests. Significant conservation areas are known to exist and are located north of the Gulf Intracoastal Waterway (GIWW) on the eastern end of the bay.



It is likely that significant opportunities exist to assist in the protection and recovery of Federal or state listed threatened or endangered species including: the Choctawhatchee beach mouse which inhabits the coastal dune areas, and black skimmer, least tern, southeastern snowy plover, and piping plover which occupy the coastal dune and intertidal swash zones. In addition, the beaches of Walton County provide nesting habitat for marine turtles including the Atlantic loggerhead, green turtle, leatherback, Kemp's Ridley and hawksbill sea turtles. The anadromous Gulf sturgeon may occasionally feed on invertebrates in the gulf waters of Walton County. On April 18, 2003, the U.S. Fish and Wildlife Service (FWS) and National Marine Fisheries Service (NMFS) designated this area as critical habitat for Gulf sturgeon. Five whale species, although rarely seen, may occasionally visit the northern Gulf of Mexico including areas which may be identified as possible borrow site locations.

Compliance with National Environmental Policy Act (NEPA) requires the preparation of a decision document detailing the impacts associated with the proposal and alternatives to that proposal. For the purpose of this Reconnaissance Report and the subsequent Project Management Plan (PMP) it has been assumed that an Environmental Impact Study (EIS) will be required as part of the feasibility study. Early in feasibility study a meeting will be set with all possible cooperating Federal and state agencies to discuss the proposed action, alternatives to the proposed action and the level of impacts which may result from implementation of the action. Should the agencies concur that the impacts are not significant then an Environmental Assessment will be prepared as part of the feasibility study.

Of additional concern is compliance with the Clean Water Act. Potential water quality impacts associated with the borrowing and placement of fill material associated with beach nourishment operations must be considered. Such activities will include evaluation of sediment from identified borrow sources for placement within the littoral

zone throughout the study area. Sediment characteristics of concern are sediment grain size and color. Borrow sediments identified as suitable must match, as closely as possible, the sediment characteristics at the nourishment site. This information will be utilized in the preparation of the Section 404(b)(1) evaluation and also in developing the management requirements to minimize impacts to threatened and/or endangered species under Section 7 of the Endangered Species Act.



Additional issues to be addressed in the feasibility study will include coordination with the FWS on five Coastal Barrier Resource System Units. The Coastal Barrier Resources Act (CBRA) limits the expenditure of Federal funds in designated system units if that expenditure would enhance future/further development of the area. It is likely that the activities proposed within these units will be environmental restoration/enhance in nature

which may be allowable under CBRA. The Magnuson-Stevens Fishery Conservation and Management Act (MSFCMA) identified habitats within the marine and estuarine areas of the US that were essential to the management of certain specific fin and shellfish. Areas identified by the Gulf of Mexico Fishery Management Council as essential fish habitat (EFH) include all the marine and estuarine areas of Walton County. Consultation with the NMFS will focus on activities to minimize impacts to EFH or the enhancement of EFH.

All activities associated with coastal projects must be consistent with the State of Florida's coastal zone management practices and criteria to the maximum extent practicable. These activities will be evaluated to assess coastal zone management compliance. This information will be included in the preparation of a Coastal Zone Management Consistency Report. In addition, water quality certification from the State of Florida would be required for all actions to be implemented as a result of the feasibility study. The feasibility study will be conducted in compliance with State of Florida's Beach Management Plan.

Cultural resources both terrestrial and submerged must be investigated within the study area. Existing literature and site files concerning known cultural resources will be examined and maps showing locations of identified resources will be prepared. Based on the preliminary findings, reconnaissance level surveys of the on-shore portion of the project may have to be conducted for terrestrial cultural resources. If underwater borrow areas are considered, remote sensing surveys will have to be conducted. If

cultural resources are identified, a plan for public involvement will have to be developed. Coordination with the Florida State Historic Preservation Officer (FL SHPO) will be required.

A Public Information Strategy (PIMS) will be implemented to ensure coordination occurs with all interested stakeholders, including Federal, state and local agencies, environmental groups, and residents of Walton County. The PIMS will identify avenues for effective communication including workshops, newsletters, and public meetings. An important aspect of the PIMS will be the development of the scoping process should an Environmental Impact Statement be required. The roles and responsibilities of the members of the project delivery team (PDT), the non-Federal sponsor, and the Federal and state agencies will be clearly defined in the PIMS.

## **6. PRIOR STUDIES, REPORTS AND EXISTING WATER RESOURCES PROJECTS.**

### **a. Prior Studies and Reports.**

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) "State of the Beaches" of Walton County, Florida 2002, Walton County Tourism Development Council. This report presents 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.

(2) 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.

### **b. Existing Water Resources Projects.**

(1) 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 it's 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.

(2) 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 downdrift 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.

(3) **Panama City Beaches, Florida.** A hurricane and storm damage protection project for 18.5 miles of the Panama City Beaches was authorized by the Water Resources Development Act of 1986. 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 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 5-year intervals. A slightly modified plan was constructed by the Bay County Tourist Development Council (TDC) between 1998 and 2000 under the authority of Section 203 of the Water Resources Development Act of 1996. The TDC was approved for reimbursement of the Federal share for the authorized project.

(4) **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 6 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.

## 7. PLAN FORMULATION.

**a. Identified Problems.** The condition of a shoreline (stable, erosional, or accretional) depends on various complex interrelated processes. The primary problem in the study area is the vulnerability of oceanfront development to damage during storm events. Four recent storm events: Hurricanes Erin and Opal (1995), Danny (1997), and Earl and Georges (1998) have seriously eroded the beaches in some areas. Although the four recent hurricanes were only small to moderate in size, and were not direct “hits” on the Walton County shoreline, the lack of adequate beach width and dune height resulted in extensive hurricane damage to beachfront condominiums, hotel, and restaurant properties through the developed Gulf-front areas. The combined effect of wind, waves, and tides amplified during storm conditions resulted in erosion and

lowering of the beach profiles of Walton County as well as recession of the shoreline and bluffs.

(1) **Existing Conditions.** Walton County comprises 26 miles of shoreline including six miles of state parks. A coastal peninsula extending west from the mainland characterizes the western two-thirds of the coastline, and mainland beaches characterizes the eastern third. Choctawhatchee Bay lies north of the peninsula.



Behind the dune system, upland drainage feeds several freshwater lakes that intermittently breach the dune system and discharge directly into the gulf. Primary dune elevations range from 13 to 45 feet National Geodetic Vertical Datum (NGVD) and average 26 feet NGVD. During the late 1990s, the area endured several strong hurricanes resulting in extensive shoreline erosion (Taylor Engineering, 2003). Some sections of beachfront are highly developed, both publicly and privately, while other sections remain undeveloped.

Due to the variable wave climate, storm conditions, and coastal processes as well as private and commercial construction along the Walton County shoreline, coastal erosion continues to be a problem that threatens commercial and residential structures.

**Tides and Storm Surge.** Tides in the region are semi-diurnal. Water level variations average 2.5 feet, while maximum and minimum water levels under average conditions can approach 2.6 and 0 feet, respectively. Peak storm surge values for 10, 20, 50, and 100-year return period storms were developed by Dean et al. (1988) by combining historical hurricane statistics with numerical model simulations. Table 1 provides the resulting storm surge values for various return periods.

Return Period (years)	Walton County Storm Surge (feet-NGVD)		
	East	Middle	West
10	3.8	3.8	4.0
20	6.2	6.5	6.9
50	8.9	9.4	9.8
100	10.5	11.2	11.4

**Waves.** Wave information was obtained from the Wave Information Study (WIS) hindcast database (USACE 1995). Winds provide the primary wave-generating mechanism along the Walton County coast. The predominant waves are characterized by a wave height and period of 1-foot and 3-second. These wave characteristics are indicative of locally generated waves, or sea conditions. Swell waves of higher wave height and wave period have limited occurrence. On average, higher wave heights occur during the winter months and smaller wave heights occur during the summer months. Absolute maximum wave heights indicate that extreme wave heights associated with hurricanes and tropical storms can occur during the summer months (Taylor Engineering, 2003).

**Winds.** Wind information was obtained from the WIS 1976 to 1995 hindcast dataset (USACE 1995). Winds blow from a wide variety of directions; however, the winds blow from the east the highest percentage of the time (10.4 percent occurrence). Overall, winds blow less than 25 mph 90 to 95 percent of the time (Taylor Engineering, 2003).

**Storm Conditions.** With the warm waters in the Gulf of Mexico, it is not uncommon for extra-tropical storms (i.e., tropical depressions, tropical storms, and hurricanes) to impact the Florida Panhandle. Although the extra-tropical storms are generally fast moving storms, their impact on the beach can be devastating. Over the past 10 years, the area has been impacted by six Hurricanes: Erin and Opal (1995), Danny (1997), Earl and Georges (1998), and Isidore (2002). Erin and Opal both made landfall almost directly over Walton County and damaged most of the area (Taylor Engineering, 2003).

**Nearshore Sediment Transport.** Wave-generated longshore currents have the most apparent effect on sediment transport. The net longshore sediment transport rate determined from dry beach and nearshore profile changes over Walton County indicate net transport is to the west at a rate of approximately 60,000 cubic yards per year at the Bay/Walton County line to 40,000 cubic yards per year at the Okaloosa/Walton County line (Taylor Engineering, 2003).

**Shoreline Change.** Walton County is a highly variable shoreline with long-term erosion rates of -42 feet/year and accretion rates of 25 feet/year. Approximately 90 percent of Walton County beaches are narrower in 2002 than in 1995 (Pickle, 2002; Taylor Engineering, 2003).

A recent analysis conducted by Pickel 2002 concludes the following erosional and accretional trends along the ten (10) Walton County reaches:

**Reach 1 – Miramar Beach to Sandestin:**

Reach 1 consists of the westernmost 4.2 miles of Walton County. The general shoreline change trend for this reach has historically been between slightly erosional to slightly accretional. The maximum accretion rate was 13.6 feet/year and the maximum erosion rate was 26.8 feet/year. The Florida Department of Environmental Protection (DEP) has designated this reach of shoreline as “critically eroding.”



**Reach 2 – Sandestin to Four Mile Village:** Reach 2 consists of approximately one mile of shoreline between Sandestin and the Topsail Hill State Preserve. The general shoreline change trend for this reach has historically been between slightly accretional to stable. The maximum accretion rate was 3.8 feet/year and the maximum erosion rate was 20.8 feet/year.

**Reach 3 – Topsail Hill State Preserve:**

Reach 3 is approximately 3.4 miles long and consists entirely of the state preserve. The general shoreline change trend for this reach has historically been between slightly erosional to slightly accretional. The maximum accretion rate was 12.2 feet/year and the maximum erosion rate was 30 feet/year.

**Reach 4 – Beach Highlands/Dune**

**Allen:** Reach 4 consists of approximately 1.5 miles of shoreline adjacent to the

eastern side of the Topsail Hill State Preserve. The general shoreline change trend for this reach has historically been between slightly accretional to slightly erosional. The maximum accretion rate was 5 feet/year and the maximum erosion rate was 25 feet/year. The Florida DEP has designated this reach of shoreline as “critically eroding.”

**Reach 5 – Santa Rosa Beach:** Reach 5 consists of approximately 1.5 miles of shoreline between Beach Highlands/Dune Allen and Blue Mountain. The general shoreline change trend for this reach has historically been between slightly accretional to slightly erosional. The maximum accretion rate was 10 feet/year and the maximum erosion rate was 25 feet/year.

**Reach 6 – Blue Mountain Beach:**

Reach 6 consists of approximately 2.0 miles of shoreline. The general shoreline change trend for this reach has historically been between slightly accretional to slightly erosional. The maximum accretion rate was 11 feet/year and the maximum erosion rate was 40 feet/year. Recent tropical storms have eliminated the current berm such that the bluffs next to the development are being eroded by undermining the toe.

**Reach 7 – Gulf Trace, Grayton Beach, Grayton Beach State Park, WaterColor:**

Reach 7 consists of approximately 3.0 miles of shoreline that includes three residential areas and Grayton State Recreational Area. The general shoreline change trend for this reach has historically been between slightly accretional to slightly erosional. The maximum accretion rate was 25 feet/year and the maximum erosion rate was 30 feet/year.

**Reach 8 – Seaside and Seagrove Beach:** Reach 8 consists of approximately 3.5 miles of shoreline. The general shoreline change trend for this reach has historically been between slightly accretional to slightly erosional. The maximum accretion rate was 13 feet/year and the maximum erosion rate was 35 feet/year.

**Reach 9 – Deer Lake State Park, WaterSound and Seacrest (west):** Reach 9 consists of approximately 2.0 miles of shoreline. The general shoreline change trend for this reach has historically been between slightly accretional to slightly erosional. The maximum accretion rate was 13 feet/year and the maximum erosion rate was 30 feet/year.

**Reach 10 – Seacrest (east), Rosemary Beach, Inlet Beach:** Reach 10 consists of the easternmost 3.5 miles of shoreline adjacent to Bay County. The general shoreline change trend for this reach has historically been between slightly accretional to slightly erosional. The maximum accretion rate was 28 feet/year and the maximum erosion rate was 42 feet/year. The Florida DEP has designated this reach of shoreline as “critically eroding.”

**(2) Expected Future Conditions.**

Without Federal action erosion is expected to continue in the study area. The beaches will continue to recede and structural damage will occur with increasing frequency. This condition will be especially critical when storms and hurricanes impact the study area. At the present time Walton County is developing an emergency plan to nourish a

critically eroding portion of the shoreline located at the western end of the study area. In the past the county has also done some small-scale dune restoration after major storm events. These actions by Walton County will serve as a baseline for the Walton County Shoreline Feasibility Study and will be included in the without project condition.

**Storm Damages.** Walton County has developed some preliminary estimates of the number of structures that would be impacted by a direct “hit” from various future storm and hurricane events. This information is provided in the following Table 2.

<b>Reach</b>	<b>10-Year</b>	<b>20-Year</b>	<b>50-Year</b>	<b>100-Year</b>
1	3	64	99	99
2	0	37	90	100
3	-	-	-	-
4	0	80	100	100
5	0	66	89	92
6	0	9	95	95
7	0	36	68	69
8	0	7	86	95
9	0	24	100	100
10	3	66	91	97

As previously indicated the study area has been impacted by several recent hurricanes in the recent past. Hurricanes Erin and Opal battered the study area and did extensive damage in 1995. Hurricane Danny did minor damage in 1997, while Earl and Georges impacted the study area in 1998. Earl was a category one hurricane with maximum sustained winds of 85 miles per hour. Georges was a category two hurricane that had maximum sustained winds of 105 miles per hour and a storm surge of 7.7 feet (NGVD) along the northwest Florida coast. Earl destroyed or substantially damaged ten major structures, 900 feet of roadway and about 1,300 feet of bulkheads and revetments. Georges destroyed a total of 69 major structures and 2,425 feet of wall/revetment damage along the northwest Florida coast. Tropical Storm Isidore impacted the study area in 2002 and did minor damage. It is anticipated that these types of storms will continue to impact the area in the future, causing continued erosion and damage.

**b. Summary of Problems, Needs, and Opportunities.** Hurricane and storm damages are occurring along the 26 miles of gulf front shoreline of Walton County. Also there exists degradation of several environmental habitats including dunes, beach, shoreline and wetlands. Opportunities are present to protect unique habitats such as threatened and endangered species; both plants and animals. Loss of beach reduces visitation capacity and greatly effects regional economic development.

**c. Planning Objective.** The following planning objectives will guide the planning process in the feasibility study:

- To reduce hurricane and storm damages along the 26-mile gulf front shoreline of Walton County, Florida.
- To increase the recreational opportunities for the local and regional area.
- To increase quality of suitable habitats for the threatened and endangered species along the beachfront and bay areas.
- Offer greater protection for unique habitats.
- Seek opportunities for beneficial use of dredged material.

**d. Potential Solutions to Problems.** The alternative of taking no action must be included throughout the planning process. Beach nourishment and periodic renourishment will meet the study objectives for shoreline erosion protection in the most economically efficient and environmentally acceptable manner. The State of Florida discourages hard structures along the coastline, such as groins, breakwaters, and seawalls. Therefore, these types of structures are not proposed as potential shore protection alternatives. Beach nourishment and dune restoration is recommended along the heavily developed portions of the Florida coast experiencing erosion.

**Sand Sources.** The Beach Management Feasibility Study for Walton County and Destin, Florida investigated three potential sand borrow sites: (1) the East Pass ebb tidal shoal vicinity, (2) the region-wide offshore area in 20 to 45 feet water depths, and (3) an offshore sand ridge between 60 and 70 feet water depths (Taylor Engineering, 2003). Reconnaissance level investigations revealed that the region-wide offshore area consists of pockets of beach quality material in terms of grain size and composition; however the color is incompatible to the native beach sand. Similarly, the offshore sand ridge contains significant volumes of beach quality material in terms of grain size and composition, but the color, though generally lighter than nearshore sands, is also incompatible with the native beach sand. The East Pass shoal contains beach quality material in terms of grain size and composition and most closely matches the native beach in terms of color. Additional geotechnical investigations are required to locate additional borrow areas as well as provide more comprehensive sediment characteristics in the areas previously investigated.

**Potential Project Construction Costs.** Beach nourishment is estimated to cost \$3.5 - \$4 million per mile in Fiscal Year (FY) 2003 dollars, based on current estimates. These beach fill alternatives are based on 100 CY/linear foot and would require transition zones at the ends of the project. A rough order of magnitude cost to provide beach fill is provided below:

Reach 1:	4.2 miles, \$14.7 - \$16.8 million
Reach 2:	1 mile, \$3.5 - \$4 million
Reach 4:	1.5 miles, \$5.25 - \$6 million
Reach 5:	1.5 miles, \$5.25 - \$6 million
Reach 6:	2 miles, \$7 - \$8 million

½ of Reach 8:	1.75 miles, \$6.1 - \$7 million
½ of Reach 9:	1 mile, \$3.5 - \$4 million
Reach 10:	3.5 miles, \$12.25 - \$14 million

No cost estimate was provided for Reach 3 or Reach 7. Reach 3 consists entirely of Topsail Hill State Preserve, which is a relatively pristine habitat with no gulf-front development or sensitive environmental habitat at risk. Reach 7 includes Grayton Beach State Recreational Area and the communities of Gulf Trace and Grayton Beach. Due to the presence of the State Park and large setback, this area is not considered to be an area of need for beach nourishment. If protection were provided for the entire area identified above, the total estimated construction cost would be in the range of \$57.6 - \$65.8 million.

Dune restoration is estimated to cost \$525 - \$600,000 per mile in FY 2003 dollars, based on current estimates. These beach fill alternatives are based on 15 cubic yards per linear feet (cy/lf) and would include vegetation and dune stabilization structures (i.e. sand fencing). A rough order of magnitude cost to provide dune restoration for areas not receiving beach fill is provided below:

1/3 of Reach 7:	1.0 mile, \$525,000 - \$600,000
(not including the Grayton Beach SRA)	
1/2 of Reach 8:	1.75 miles, \$919,000-1,050,000
1/2 of Reach 9:	1.0 mile, \$525,000 - \$600,000

Total estimated construction cost for dune restoration would be in the range of \$1,969,000 - \$2,250,000.

**8. SOCIOECONOMIC DATA.** The population of Walton County has increased significantly in recent years and this trend appears to be continuing. The county population totaled 40,601 persons in the 2000 census, which was an increase of 10,341 persons from the 1990 census. The vast majority of this increase was due to net in migration. The labor force in 2001 totaled 18,113 persons and the unemployment rate was 3.3 percent. The median household income in the county was \$29,551 in that year.

**Recreation.** Recreation and tourism are the primary economic activities in Walton County. According to information provided by the South Walton County Tourist Development Council the county has approximately 677,000 overnight visitors per year. These visitors generate about \$135 million in wages and salaries and \$412 million in total sales locally. Tourism creates nearly 7,250 direct and indirect jobs. Approximately \$51.5 million in total tax revenue is generated by tourism. The county maintains two large recreation areas along the coast: Miramar Beach, and Inlet Beach, as well as several smaller parks. The State of Florida maintains three large coastal recreation facilities: Topsail Hill State Preserve, Grayton Beach State Park and Deer Lake State Park.

**Traffic Counts.** Average daily traffic counts are collected by the Florida Department of Transportation. They confirm the large amount of recreational activity in the study area. The annual average daily traffic count at the Okaloosa/Walton County line is 42,500 vehicles. Near the main entrance to the Sandestin Resort the annual average daily traffic count is 34,000 vehicles, while at County Road 30A annual average daily traffic counts vary from 19,000 to 21,000 vehicles.

**9. FEDERAL INTEREST.** Examination of the erosion problem that exist on the Walton County shoreline indicates that there are opportunities for Federal project participation in the study area. Estimates of potential damages from hurricanes and storms far exceed the costs of providing a measure of shore protection. As mentioned, coastal restoration is needed to address erosion within the study area. Accordingly, there is strong Federal interest in proceeding to the feasibility phase.

- a. Anticipated Product.** The anticipated product would be a feasibility report for the Walton County Beaches, Florida, Shore Protection, accompanied by appropriate NEPA documentation. The feasibility report would provide all the necessary documentation to permit authorization by the U. S. Congress for construction of a Federal project(s), if justified. The feasibility report would be built upon the information contained in this reconnaissance report and would incorporate management opportunities in the areas of hurricane and storm damage reduction and beach erosion control measures.
- b. Feasibility Cost-Sharing Agreement.** Administration policy permits the expenditure of Federal funds for all costs associated with the reconnaissance phase. Section 105(a)(1) of the Water Resources Development Act of 1986, however, requires that the cost of a subsequent feasibility phase be shared equally between the Federal government and a non-Federal sponsor(s).

The entire portion of the non-Federal contribution of the feasibility phase may be in the form of in-kind services. In-kind services are those tasks performed and paid for by the non-Federal sponsor(s) which are in direct support of the feasibility study effort. While all in-kind services should be in support of the particular study, it is permissible for non-Federal sponsors to reorient existing programs and on-going work to compliment the feasibility study.

To proceed beyond the reconnaissance phase, the Federal government and the non-Federal sponsor(s) must agree that the proposed project is in the Federal and non-Federal interest and then negotiate a Feasibility Cost-Sharing Agreement (FCSA) that commits the Federal government and the non-Federal sponsor(s) to equally share the feasibility phase cost. The FCSA is intended to promote a partnership for conduct of the feasibility phase. It sets forth the management structure, obligations of the signatories, methods of payment, approach to resolve disputes, methods for termination or suspension of the feasibility study, and other general contractual matters.

Federal funds to initiate the feasibility phase may be allocated only after a negotiated FCSEA has been prepared, a letter of intent to sign the negotiated FCSEA has been furnished by the non-Federal sponsor(s), and the Corps' higher authority has certified all documents. The feasibility phase can then begin after execution of the FCSEA and receipt of funds.

- c. Project Management Plan.** As part of the FCSEA, a Project Management Plan (PMP) will be prepared and negotiated. The PMP documents the specific Federal and non-Federal efforts, which would be required to conduct a particular feasibility phase. The PMP is appended to the FCSEA and lays out the work tasks, costs, and schedules for the entire feasibility phase. It also furnishes a basis for identifying the in-kind services to be provided by the non-Federal sponsor and for negotiating the value of these services. Significant changes to the PMP during the feasibility study would require a modification of the FCSEA.
- d. Identification of Potential Non-Federal Sponsor.** The potential non-Federal sponsor is the Board of County Commissioners for Walton County, Florida. They have been extensively involved during the preparation of the reconnaissance study. A letter of intent, dated 17 June 2003, from the potential sponsor stating their concurrence with the reconnaissance report recommendations and their willingness to proceed toward negotiation of an FCSEA is included in Attachment 2. Walton County is also expected to serve as the primary Non-Federal sponsor if the project continues into the construction phase. In addition, the Florida Department of Environmental Protection (DEP) may also provide non-Federal implementation funds if portions of the project are constructed within the State of Florida designated "Critically Eroded Areas" of Walton County.

**10. PRELIMINARY FINANCIAL ANALYSIS.** Walton County Board of Commissioners acting through the Tourist Development Council of Walton County stands financially ready and able to fund the non-Federal share of the feasibility study. Walton County has been generating funds through a "bed tax" of 3 percent since February 1998, with 1.5 percent designated for the sole purpose of beach restoration. The County is in position to initiate the feasibility phase this current fiscal year.

**11. ASSUMPTIONS AND CONSTRAINTS.** Water resources studies undertaken by the Corps of Engineers are conducted in two phases: a reconnaissance phase and a feasibility phase. The two-phase study procedure is designed to encourage non-Federal participation throughout the study process and to increase the certainty that planned projects will be implemented. The following critical assumptions and constraints will provide a basis for development of a solution to the identified problems.

**a. Assumptions:**

- Period of analysis will be 50 years and consider expected future beachfront development.
- Critically eroding beach along Reach 1 will be protected to some level by local project to be constructed as a one-time fill funded by state and county jointly.
- Adequate supply of suitable beach quality sand exists within state designated waters.
- Structure values will be based on depreciated replacement costs.
- Land use zoning and construction codes will remain the same.
- Damaged or destroyed properties will be repaired to pre-storm conditions.
- Lost land will be valued at nearshore prices.
- Empirical storm frequencies assumed to be predictive of the probability of future events.
- Beach mice will continue to be a protected species and no relaxation of current environmental laws.
- Existing state and county owned public park limits would remain the same in the future.

**b. Constraints:**

- State of Florida Coastal Zone Management
- Threatened and Endangered Species Act
- Coastal Barrier Resources Act
- Sufficient quantity of suitable sand for placement
- Requirement for benefit to costs ratio to be greater than 1
- Avoid impacts to dune, lake and gulf connections

**12. FEASIBILITY PHASE MILESTONES.** The major milestones for the feasibility phase are shown in Table 3. Milestone dates assume an October 31, 2003 study start and will be adjusted proportionally if study initiation occurs earlier or later.

**TABLE 3  
MAJOR MILESTONES FOR FEASIBILITY STUDY**

<b>Feasibility Phase Milestones</b>	<b>Duration (mo)</b>	<b>Date</b>
District & Non-Federal Sponsor Sign & Execute FCSA		Aug 2003
Initiation of Feasibility Phase Study		Oct 2003
Public Workshop/Initial Scoping Meeting		Dec 2003
Feasibility Scoping Meeting (FSM) (Existing Conditions & Without Project)		Mar 2005
Alternative Formulation Briefing (AFB)		May 2005
Draft Feasibility Report & NEPA Document for Review		Jan 2006
Public Meeting		Mar 2006
Final Report to SAD		Apr 2006
Division Engineer's Public Notice		Oct 2006

**13. FEASIBILITY PHASE COST ESTIMATE.** The Feasibility Phase Study is estimated to cost \$2,657,000 at this time. The estimate does include costs for in-kind services anticipated to be provided by the non-Federal sponsor. The cost estimate may require adjustment following review and negotiations of the FCSA with the non-Federal sponsor.

**TABLE 4  
COST ESTIMATE FOR FEASIBILITY STUDY**

<b>WBS#</b>	<b>DESCRIPTION</b>	<b>COST (\$)</b>
JAA00	Surveys and Mapping	40,000
JAB00	Hydrology and Hydraulics Studies/Report	161,000
JAC00	Geotechnical Studies/Report	895,000
JAF00	Model Studies	175,000
JAG00	All Other Engineering	100,000
JAH00	Engineering Management (PAE)	46,000
JB000	Economic and Socioeconomic Studies	170,000
JC000	Real Estate Analysis/Report	35,000
JD000	Environmental Studies/Report	300,000
JDD00	Biological Assessment	40,000
JDH00	Section 404(b)1 Evaluation	30,000
JDM00	Coastal Zone Management Consistency Determination	5,000
JE000	Fish and Wildlife Coordination Act Report	35,000
JF000	HTRW Studies/Report	5,000
JG000	Cultural Resources Studies/Report	125,000
JH000	Cost Estimates	30,000
JI000	Public Involvement Program	50,000
JJ000	Plan Formulation and Evaluation	150,000
JL000	Report Preparation	40,000
JLD00	Independent Technical Review Documents	25,000
JPA00	Project Management and Budget Documents	50,000
XXXXX	Sponsor Project Management	50,000
JPB00	Supervision and Administration	60,000
JPC00	Contingencies	
<b>SUBTOTAL</b>	Cost-shared Watershed Management Study	<b>2,632,000</b>
-	PMP Preparation (100% Fed)	25,000
<b>TOTAL</b>		<b>2,657,000</b>

**14. POTENTIAL ISSUES EFFECTING INITIATION OF FEASIBILITY PHASE.**

Currently, funds to initiate the feasibility study in FY 03 and continue the study into FY 04 have not been authorized or appropriated by Congress. One of two scenarios are needed to initiate the feasibility study in FY 03 and continue the study into FY 04. The

first scenario would be to request reprogramming authority from USACE Headquarters for FY 03 and FY 04 to reallocate funds from within the General Investigation (GI) program to the Walton County, Florida shore protection project. However, this option would require a large amount of funds in FY 04, at a level higher than is typically reprogrammed in the General Investigations Program (GI). The second scenario would be to again seek reprogramming authority for the funds needed in FY 03 and receive a Congressional Add for the feasibility study funds needed in FY 04.

**15. VIEWS OF OTHER RESOURCE AGENCIES.** Preliminary coordination with the Florida Department of Environmental Protection, the U.S. Fish and Wildlife Service, and the National Marine Fisheries Service indicate that these agencies support the project in concept, however, additional coordination is required to determine the specific concerns of each of these agencies as it would relate to the alternatives under consideration. Issues needing to be addressed include endangered and threatened species, essential fish habitat, and the cumulative impacts of borrow sites on marine species.

**16. RECOMMENDATIONS.** It is recommended that this study continue into the feasibility phase based on the likelihood that a Federal project may be justified and implementable.

**17. STUDY AREA MAP.** A map of the study area is enclosed (Attachment 1).



**ROBERT B. KEYSER**  
COL, EN  
District Engineer

## **REFERENCES**

Pickel, Bradley 2002. State of the Beaches of Walton County, Florida: 2002. Walton County Tourist Development Council, Walton County, FL.

Taylor Engineering, 2003. Beach Management Feasibility Study for Walton County and Destin, Florida. Taylor Engineering, Jacksonville, FL.

U. S. Army Corps of Engineers (USACE), 1995. Hindcast Wave Information for the U.S. Gulf Coast: 1976 –1995. USACE Waterways Experiment Station, Coastal Engineering Research Center, Vicksburg, MS.

# WALTON COUNTY, FLORIDA STUDY AREA MAP



**WALTON COUNTY, FLORIDA  
Board of County Commissioners**

LARRY JONES, *District 3, Chairman*  
TIM PAULS, *District 5, Vice Chairman*  
LANE REES, *District 1*  
KENNETH PRIDGEN, *District 2*  
RO CUCHENS, *District 4*



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**County Administrator**  
Michael D. Underwood  
**Assist. County Administrator**  
Shirl Williams

JUN 17 2003

Colonel Robert B. Keyser  
District Engineer  
Mobile District  
US Army Corps of Engineers  
Post Office Box 2288  
Mobile, Alabama 36628-0001

Dear Colonel Keyser:

Walton County has reviewed the draft reconnaissance report for the Walton County Beaches, Florida Shore Protection Project. We understand that the feasibility phase must be cost-shared equally (50/50) between a non-federal sponsor and the US Army Corps of Engineers. We also understand that up to 100% of the non-federal share may consist of in-kind services and/or product instead of cash.

We further understand that the purpose of this letter is to establish our intent to enter into negotiations of a Feasibility Cost Sharing Agreement as the non-federal sponsor and that it does not financially or legally obligate Walton County or the Federal Government until the agreement is signed. The Walton County Board of Commissioners voted to send this letter on June 10, 2003.

We look forward to working with you and your staff during the next phase of the study process. If you have any questions, please contact Brad Pickel, Director of Beach Management for the Walton County Tourist Development Council, at (850) 267-1216.

Sincerely,

Larry Jones  
Chairman, Board of County Commissioners