

1 GENERAL PROJECT INFORMATION

1.1 Background

The West Terminus Cross-Florida Greenway comprises of a number of facilities within the Cross Florida Barge Canal system. **Figure 1** illustrates the Cross-Florida Barge Canal system and its components. The system was partially constructed in the 1960s and abandoned in the early 1970s. Authorized by the U.S. Congress during the 1940's, the project was intended to facilitate the movement of ocean going vessels traveling between the Atlantic Ocean and the Gulf of Mexico, the Caribbean Sea, and the Panama Canal. The Barge Canal facilities were designed by the U.S. Army Corps of Engineers (ACOE). Significant elements of the overall project completed by the ACOE within the West Terminus area include the following: (1) the portion of the canal from the Gulf of Mexico to the Inglis Lock; (2) the Inglis Lock; (3) the Inglis Dam; (4) the Bypass Channel and Spillway; and (5) the Rock Dam/Flood Control Levee.

Construction of the Barge Canal system was halted during the Nixon administration in 1971 because of concerns related to cost and the project's effect on the environment. Although construction activities ended three decades ago, it was not until 1990 that the official construction de-authorization was approved by Congress and signed by President Bush (after an extensive study by the ACOE). Subsequent to its de-authorization, the Inglis Lock and associated facilities became part of the Cross-Florida Greenway State Recreation and Conservation Area that was established by the Florida State Legislature through the enactment of a law (F.S. 90-328). Currently, the Cross-Florida Barge Canal facilities constructed near Inglis are owned by the Florida Department of Environmental Protection (FDEP). With the exception of the Main Dam and Bypass Channel Spillway, these facilities are operated by FDEP's Office of Greenways and Trails. The dam and spillway are operated and maintained by the Southwest Florida Water Management District (District) under contract with the FDEP.

1.2 Purpose

The portion of the Withlacoochee River downstream of Inglis Dam has undergone significant alteration since the turn of the twentieth century. The construction of the Cross-Florida Barge Canal in the 1960s created additional impacts to the segment of the river downstream of the canal. Construction of the barge canal included a dam on the Withlacoochee River known locally as the "Rock Dam." This dam effectively severs all flows released from the Inglis Dam main gates including large flood flows. The lower segment of the river, downstream of the Rock Dam, receives flows only from the Bypass Channel System via a spillway at its western terminus. **The maximum flow rate from this bypass system is estimated to be 1,540 cfs, considerably less than maximum normal flow rates and flood flow rates for the river system. The changes described above have altered the historic flow regime of the Withlacoochee River downstream of Inglis Dam, creating environmental impacts.** It should be noted, pursuant to the findings of a previously completed dam safety planning study, the Rock Dam was recently reconstructed as a flood control levee. The flood control levee (FCL) is designed to offer full protection to structures on the lower segment of the Withlacoochee River in case of failure of the Inglis Dam.

EXECUTIVE SUMMARY

ES-1 GENERAL PROJECT INFORMATION

A Basin Initiative was requested by the Withlacoochee River Basin Board in fiscal year 2003 to evaluate restoration alternatives for the portion of the Withlacoochee River downstream of Inglis Dam. The purpose of this study is to carry out this Basin Initiative and evaluate a number of restoration alternatives, which are intended to mitigate some of the environmental impacts created by the construction of the Cross-Florida Barge Canal system.

The West Terminus Cross-Florida Greenway comprises a number of facilities, within the Cross Florida Barge Canal system, (illustrated on **Figure 1**). Currently, the Cross-Florida Barge Canal facilities are owned by the Florida Department of Environmental Protection (FDEP). With the exception of the Main Dam and Bypass Channel Spillway, these facilities are operated by FDEP's Office of Greenways and Trails. The dam and spillway are operated by the Southwest Florida Water Management District (District).

The portion of the Withlacoochee River downstream of Inglis Dam has undergone significant alteration since the turn of the twentieth century. The lower segment of the river receives flows only from the Bypass Channel System via a spillway at its western terminus. The maximum flow rate from this bypass system is considerably less than maximum normal flow rates and flood flow rates for the river system. The changes described above altered the historic flow regime of the Withlacoochee River downstream of Inglis Dam, creating environmental impacts.

ES-2 RESTORATION ALTERNATIVES DESCRIPTION

Listed below are the four (4) alternatives that were provided in the District's scope-of-work for this study. Each of the alternatives was evaluated with respect to their impact on flooding, natural systems, water quality, and navigation. Additionally, each alternative was assessed with respect to permitability and implementation costs. Please see **Figure 3** through **Figure 12** for plans and details of these facilities. *It is important to note that the proposed alternatives do not impact water levels in Lake Rousseau. These alternatives simply facilitate redistribution of flows presently carried by the Barge Canal to the lower segment of the river.*

Alternative 1 consists of: (1) removing the Rock Dam; (2) constructing an operable control structure in the Barge Canal; and (3) replacing the US-19 bridge over the Withlacoochee River. Alternative 2 consists of: (1) removing the Rock Dam and replacing it with an operable control structure (at the same location); (2) constructing an operable control structure in the Barge Canal; and (3) constructing a lock in the Barge Canal. Alternative 3 consists of reconstructing the existing Bypass Channel and Spillway with increased discharge capacity. Alternative 4 represents existing conditions with no improvement planned (baseline condition).

ES-3 HYDRAULIC MODEL DEVELOPMENT

HEC-RAS models were developed from previous studies of the Western Terminus area. Separate computer models were developed for each of the four (4) alternatives evaluated as part of this study. Model simulations for long term, 100-year flood and dam failure conditions were

conducted using these models. Results of the long-term simulations were used in the natural systems, flooding and water quality assessments. Results of the 100-year flood and dam failure simulations were used in the flooding assessment.

ES-4 RESTORATION ALTERNATIVES ASSESSMENT

Natural Systems Assessment

A natural systems assessment was conducted to determine the impact that each of the proposed alternatives would have on wetlands and other systems in the West Terminus Cross-Florida Greenway area.

Implementation of any of the three alternatives will increase freshwater down the river. Within the study area, most of the vegetation along the river consists of freshwater species, including the bald cypress (*Taxodium distichum*), red maple (*Acer rubrum*), and loblolly bay (*Gordonia lasianthus*). The increase in freshwater should not affect the community's composition along the river. However, downstream of the study area, the increase in freshwater may decrease salinities within the river.

Finally, depending on construction methodologies, implementation of the alternatives may impact the wetlands within and adjacent to the construction area.

Flooding Assessment

A flood assessment was conducted to determine the impact that each of the proposed alternatives would have on structure flooding within the floodplain of only the upper and lower segments of the Withlacoochee River. The structures that were considered part of this analysis included primarily residential dwellings, with some commercial and publicly owned buildings.

Navigation Assessment

A navigation analysis was conducted to assess the navigational impact of the proposed alternatives in the West Terminus Cross-Florida Greenway area. The navigation analysis compared travel times to the Gulf of Mexico (Gulf) from selected locations within the study area.

Results of the navigation analysis indicate that Alternative 1 would require an additional 2.23 hour travel time relative to existing conditions. The travel time for Alternative 2 will increase by 0.5 hours over existing conditions, and the travel time for Alternative 3 is identical to existing conditions.

Water Quality Assessment

A water quality assessment was conducted to determine the impact on salinity levels of each of the proposed alternatives within the West Terminus Cross-Florida Greenway area. The water quality analysis was limited to a general estimate of the location of the saline-water front within the Withlacoochee River study segment. The saline-water front, determined from the long-term

simulation model results, was taken to be the upstream-most cross-section where negative flows occur.

Water quality is predicted to improve in the Withlacoochee River Lower Segment for all of the proposed alternatives, due to the decrease in the duration of negative flows. Water quality is predicted to improve in the Withlacoochee River Upper Segment, for Alternatives 1 and 2, due to the decrease in the duration of negative flows. However, water quality will decrease under Alternative 3 due to increased duration of negative flows.

IMPLEMENTATION COST

A conceptual level estimate of probable construction costs was developed for each of the proposed alternatives. The conceptual level plans, cross-sections, and details referenced above in the restoration alternatives description were used as a basis for the estimate.

Table ES-1 presents a summary of probable implementation costs for each of the proposed alternatives. This table provides the total cost including real estate, permitting and contingencies.

Table ES-1
Implementation Cost Summary

Alternative	Estimated Construction Cost
1	\$41,843,063
2	\$26,311,222
3	\$12,320,751
4	\$0

PERMITTING REQUIREMENTS

All three proposed alternatives will likely require permits from the U.S. Army Corps of Engineers (ACOE) and the Florida Department of Environmental Protection (FDEP).

The Cross-Florida Barge Canal is a federally designated navigable waterway. As such, Alternative 1, which would impede navigation within the Canal, will require a permit pursuant to Sections 9 and 10 of the Rivers and Harbors Act of 1899. De-authorization of the waterway would require approval by the U.S. Congress. Because of the potential effects this alternative may have on the human environment, an EIS will most likely be required.

Alternative 2 will alter navigation in the Cross-Florida Barge Canal just below the Withlacoochee River with the construction of a control structure and lock. This action will not result in the loss of navigation above the proposed structure, will likely result in fewer environmental impacts, and will likely require the development of an Environmental Assessment (EA). Alternative 3 will not result in the loss of navigation on the Florida Barge Canal and as a result, the development of the environmental document for this proposed action would be less complex than either Alternatives 1 or 2.

Based on the ERP regulations, an individual ERP would be required for any of the three proposed alternatives associated with this project.

COMPARISON MATRIX

A comparison matrix was developed as a tool to aid in the evaluation of the proposed alternatives. Table ES-2 shows the grading matrix. The grading matrix was prepared based on the assessment results as well as implementation costs and permitting requirements.

The comparison matrix provides a numeric value for each alternative by the category shown. Within a particular category the alternatives are graded from 1 to 4 (best to worst) based on the performance criteria for that particular category. The notes at the bottom of Table ES-2 describe each category's performance criteria.

**Table ES-2
 Comparison Matrix**

Grade Category	Relative Grade Values			
	Alternative 1	Alternative 2	Alternative 3	Alternative 4
Natural Systems ^(a)	1	1	1	2
Flooding ^(b)	2	1	1	1
Navigation ^(c)	3	2	1	1
Water Quality ^(d)	1	1	2	3
Permitability ^(e)	4	3	2	1
Cost ^(f)	4	3	2	1
Values Summation	15	11	9	9

- (a) Considers the creation of wetland habitat and improvement to estuary systems.
- (b) Considers the number of buildings flooded.
- (c) Considers travel time to the Gulf.
- (d) Considers the location and duration of salt water in the river.
- (e) Considers the feasibility and ease of obtaining permits.
- (f) Considers construction, design, permitting and land acquisition dollar costs.

