US Army Corps
of Engineers
Mobile District

SECTION 216
REVIEW OF COMPLETED PROJECTS

INITIAL APPRAISAL REPORT
GULF INTRACOASTAL WATERWAY (LAKE WIMICO, GULF COUNTY, FL)

MOBILE DISTRICT
U.S. ARMY CORPS OF ENGINEERS

November 2023

SECTION 216

REVIEW OF COMPLETED PROJECTS

Initial Appraisal
Gulf Intracoastal Waterway (Lake Wimico, Gulf County, FL)

1. PURPOSE

The purpose of this Initial Appraisal (IA) Report is to determine whether there is potential Federal interest to undertake modifications to the existing U.S. Army Corps of Engineers (Corps) project, the Gulf Intracoastal Waterway (GIWW), shown in blue, and the Gulf County Canal, a component of the GIWW shown in yellow, located in Gulf County, Florida. The project includes approximately 20 miles of the GIWW between Lake Wimico and Saint Andrews Bay and 6 miles of the Gulf County Canal extending from St. Joseph's Bay at the city of Port St. Joe to the Gulf Intracoastal Waterway near White City (Figure 1).

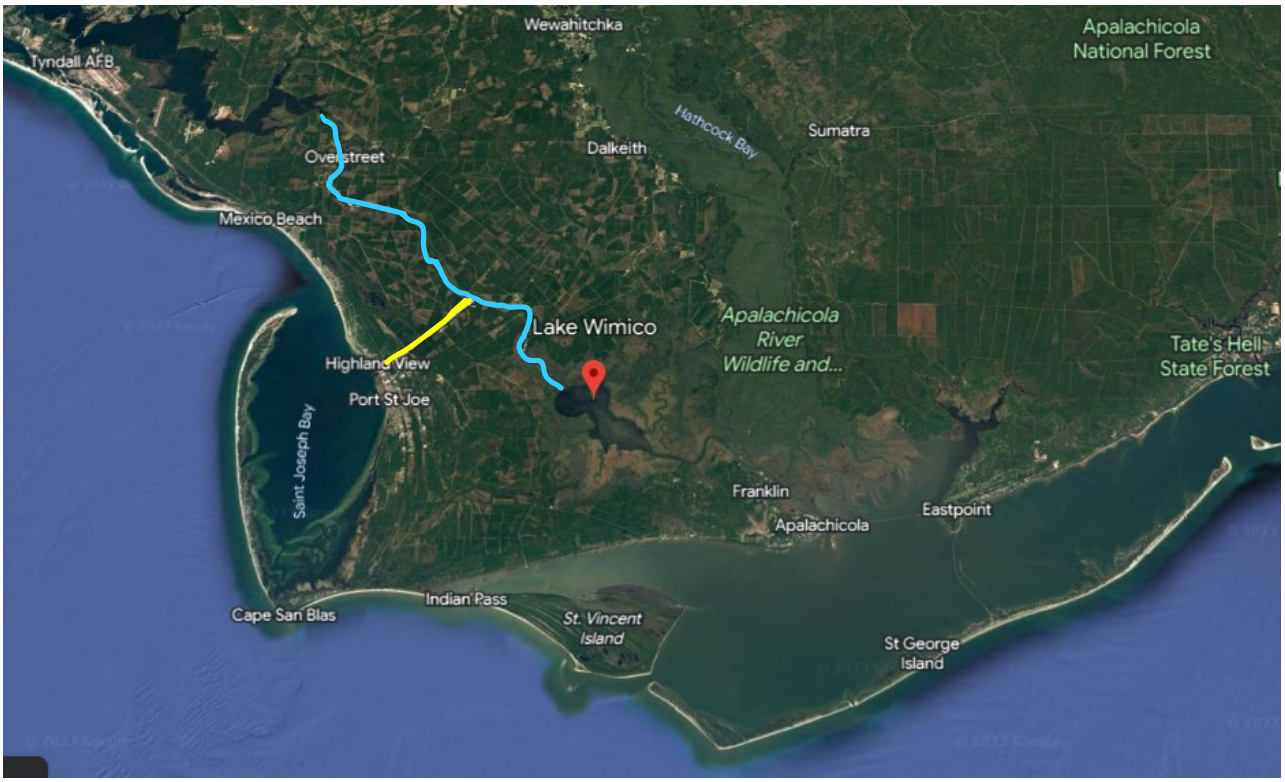

Figure 1: Google Earth Imagery of the Gulf County Canal highlighted in yellow and GIWW highlighted in blue.

The Gulf County, Florida, Board of County Commissioners submitted a letter to the Mobile District Commander dated March 28, 2023 requesting that the Mobile District, U.S. Army Corps of Engineers investigate water quality impacts caused by the Gulf Intracoastal Waterway and Gulf County Canal. This letter was preceded by a letter from Baysavers, a non-profit organization, on March 24, 2023 requesting that the Mobile District investigate salinity intrusion into Lake Wimico which has acted to destroy the natural marsh and reduce the lake's ability to filter river sediment that now flows directly into Apalachicola Bay, St. Joseph Bay, and St.

Andrew Bay causing algae blooms in the bays and increasing turbidity of the water which has led to a decrease in submerged aquatic vegetation that supports the bays' ecosystems.

This Initial Appraisal will determine whether it is in the Federal interest for the Corps to participate in an aquatic ecosystem restoration study of Lake Wimico and the surrounding bays. The study will investigate solutions that would return Lake Wimico and the surrounding bays to a healthy aquatic habitat. This evaluation is consistent with the general Corps' policy that completed projects be observed and monitored to ascertain whether they continue to function in a satisfactory manner as well as whether improved performance could occur that may better serve the public's best interests.

Due to the time and funding limitations under the Section 216 authority, this Initial Appraisal is limited to reviewing existing information. There may be potential Federal interest in modifying this project to correct hydrological flows and lessen unacceptable environmental impacts so that the project may better serve the public's best interest while maintaining the originally authorized function of navigation. If the study is realized, the next phase (Feasibility) would include additional studies requiring data collection and detailed analyses.

2. STUDY AUTHORITY

This Initial Appraisal is authorized by Section 216 of the Flood Control Act of 1970 (Public Law 91-611) as amended, which states:

"The Secretary of the Army, acting through the Chief of Engineers, is authorized to review the operation of projects the construction of which has been completed and which were constructed by the Corps of Engineers in the interest of navigation, flood control, water supply, and related purposes, when found advisable due to significantly changed physical or economic conditions, and to report thereon to Congress with recommendations on the advisability of modifying the structures or their operation, and for improving the quality of the environment in the overall public interest."

The natural ecosystem of the Apalachicola Bay and Marsh, St. Joseph Bay, St. Andrew Bay, and Lake Wimico has been physically altered overtime due to the hydrodynamic changes as a result of the construction of the GIWW and Gulf County Canal. The changed conditions may be the cause of significant environmental degradation within the system. The Section 216 process starts with the preparation of an Initial Appraisal.

3. EXISTING AUTHORIZED PROJECT

a. Name of Completed Project: Gulf Intracoastal Waterway

b. Authorized Purpose: The Gulf Intracoastal Waterway was established to provide commercial navigation.

c. Date Constructed: The GIWW channel within this reach was initially authorized to be constructed to 5-foot deep and 65-foot wide between 1911 and 1915. Congress authorized

dimensions of 9-foot by 100-foot in 1935 and the Army Engineers completed this enlargement in 1937. The Gulf County Canal was constructed in 1938 by the town of St. Joseph. In 1939, the Army Engineers assumed maintenance of the Gulf County Canal and enlarged the channel to those prevailing along the GIWW. Modification of the Gulf County Canal to provide a 12-foot by 125-foot channel was completed in June 1969. Construction of the existing GIWW is complete except for that portion between Apalachicola Bay and St. Marks, Florida which has been deauthorized.

d. Non-Federal Project Sponsor: The Panama City Area Chamber of Commerce (Chamber) was the original sponsor of the GIWW within this reach. The Chamber acquired some of the real estate, but much of the real estate needs of the project had to be condemned by the Federal Government because the Chamber did not have the power of eminent domain. Although the original Chamber has gone defunct, the Corps has not been relieved of having a non-Federal sponsor for this reach. As a result, any actions or project modifications will require a new project sponsor. Gulf County, Florida is the non-Federal sponsor for the Gulf County Canal.

e. Project Location and Description: The existing GIWW project provides for a waterway 12 feet deep and 125 feet wide at mean low water from Apalachee Bay, FL, to Mobile Bay, AL, and 12 feet deep and 150 feet wide from Mobile Bay, AL, to the Rigolets, LA (Lake Borgne Light No. 29). The tributary channel of the Gulf County Canal is 12 feet deep, 125 feet wide, and about 6 miles long connecting the GIWW waterway at White City, FL with St. Joseph Bay, FL. The GIWW between the 12-foot contours in Apalachee Bay and Lake Borgne Light No. 29 at the Rigolets is 379 miles long. Plane of reference is mean low water. The existing project was authorized by the 1966 River and Harbor Act (House Document 481, 89th Congress, 2nd Session), as amended, and prior acts.

4. REVIEW OF EXISTING STUDIES

Numerous reports have been prepared for the area of East Bay, Saint Joseph Bay, the Gulf Intracoastal Waterway, Lake Wimico, Apalachicola River, and Apalachicola Bay. The following reports provided reference information used to complete this Initial Appraisal.

The Ecology of the Apalachicola Bay System: An Estuarine Profile, USFWS, FWS/OBS-82/05, September 1984. This report on a multidisciplinary study determines the response of the Apalachicola estuary to a series of environmental variables. Data concerning the geography, hydrology, chemistry, geology, and biology of the Apalachicola Bay drainage area are included.

Environmental Assessment, Maintenance Dredging of the Gulf Intracoastal Waterway from Alabama/Florida Stateline to Carabelle, Florida, A Federally Authorized Project, USACE, Mobile District, April 2014. This Environmental Assessment addresses the potential environmental impacts associated with the maintenance dredging and disposal activities for the Florida portion of the Gulf Intracoastal Waterway. Physical environment descriptions, including sediment characteristics and hydrology data, and biological resource inventories for the entire Florida panhandle reach of the GIWW are included.

Gulf Intracoastal Waterway Seagrass Survey: Apalachicola River, Franklin County, Florida, USACE, ERDC, February 2018. This report describes the submerged aquatic vegetation and bathymetry in the Lake Wimico and Jackson River sections of the Gulf Intracoastal Waterway.

Technical Memorandum, Lake Wimico Dredged Material Stability Evaluation, Anchor QEA, April 2019. This technical memorandum describes the evaluation of dredged material stability at open water placement areas within Lake Wimico and the GIWW. This evaluation used a two-dimensional hydrodynamic model to simulate tidal flows in Lake Wimico and the GIWW to compute associated bed shear stresses within the open water placement areas under existing conditions.

Environmental Assessment (EA), Additional Placement Areas for Maintenance Dredging of Lake Wimico, Gulf Intracoastal Waterway, Gulf County, Florida, A Federally Authorized Project, USACE, Mobile District, June 2022. This EA was prepared to address the potential impacts of dredged material placement in new open-water placement areas within Lake Wimico.

5. RESOURCE SIGNIFICANCE

Institutional Recognition

According to the Planning Guidance Notebook (ER 1105-2-100), institutional recognition of a resource or effect means its importance is recognized and acknowledged in the laws, plans, and policies of government and private groups. The Endangered Species Act (1973) requires the Corps to ensure that actions that are authorized, funded, or carried out do not jeopardize a listed species or destroy the designated habitat of that species. Species that are found in Lake Wimico and the surrounding areas that are also listed in the Endangered Species Act (1973) as endangered, threatened, or are proposed or candidate species include Gulf sturgeon, West Indian manatee, Eastern black rail, Red knot, Wood stork, Alligator snapping turtle, Eastern indigo snake, Purple bankclimber (mussel), Monarch butterfly, and multiple flowering plants. Additionally, the Apalachicola River and Apalachicola Bay are designated critical habitat for the Gulf sturgeon. Critical habitat is defined by the U.S. Fish and Wildlife Service as areas, "occupied by the species at the time it was listed, that contain the physical or biological features that are essential to the conservation of endangered and threatened species, and that may need special management or protection." The surrounding wetlands are protected by Section 404 of the Environmental Protection Agency's Clean Water Act. Additionally, Florida's first law directed specifically to preserve and protect the state's wetlands, the Warren S. Henderson Wetlands Protection Act, was passed in 1984 (Smallwood et al., 1985). This law prevents any activity that may significantly change the wetlands or impair the flow of water, such as extensive logging or clear-cutting. Laws pertaining to the protection and preservation of the wetlands and federally listed species exemplify an institutional recognition and importance of the natural resources and biodiversity in the area.

Public Recognition

According to the Planning Guidance Notebook (ER 1105-2-100), public recognition suggests that some segment of the general public considers the resource or effect important. This may be revealed through controversy, support, or opposition expressed formally or informally.

The project area encompasses some of the most biologically diverse bays in North America and includes the richest and most abundant concentrations of marine grasses along the Northwest Florida Coast. The project area includes the Florida Fish and Wildlife Commission Box-R Wildlife Management Area, the Apalachicola National Estuarine Research Reserve, as well as multiple national and state parks such as the T.H. Stone Memorial St. Joseph Peninsula State Park, Little Saint George Island State Reserve, and the St. Vincent National Wildlife Refuge.

A partnership between the National Fish and Wildlife Foundation, the Florida Department of Environmental Protection, the Florida Fish and Wildlife Conservation Commission, and the Nature Conservancy to conserve natural resources surrounding Lake Wimico with the desire to protect the habitat and resources resulted in the acquisition of a 20,161-acre parcel in 2019 and exemplifies a significant public interest in the potential project.

Additionally, Bay County, Florida and Florida State University are partnering to establish the St. Andrew & St. Joseph Bays Estuary Program. This program will be modeled after the Environmental Protection Agency's National Estuary Program. It is funded by The Nature Conservancy, Bay County, and Florida State University Panama City, and is facilitated by the Florida State University Consensus Center. Florida State University has also assembled a group of community leaders and scientists to create the Apalachicola Bay System Initiative (Florida State University, 2023) to uncover: "the root causes of decline in the bay's ecosystem and the deterioration of oyster reefs" (Florida State University, 2023) starting with changes in water salinity. This indicates a direct interest in the potential ecosystem restoration project. In 2021, the group unveiled a comprehensive ecosystem restoration plan aimed at working with local fishermen and stakeholders to revitalize the oyster industry. These efforts taken among the local community indicate a public significance of the Apalachicola Bay area, St. Joseph Bay, St. Andrews Bay, Lake Wimico, and the surrounding region and their far-reaching environmental and economic impacts.

Technical Recognition

According to the Planning Guidance Notebook (ER 1105-2-100), technical recognition of a resource or an effect is based on scientific or technical criteria that establishes significance. The Apalachicola River and Bay system is an extremely ecologically diverse and significant natural area in the southeastern United States (Florida State University, 2023). The Apalachicola River and Bay are also designated critical habitat for the threatened Gulf sturgeon. The Gulf sturgeon was listed as threatened by the US Fish and Wildlife Service and National Marine Fisheries Service in 1991 and designated critical habitat in 2003. Threats that were identified to the species included modifications to habitat associated with navigation channel maintenance and disposal activities, poor water quality, and incidental take by commercial fisherman. Before changes in water salinity and other factors occurred, Apalachicola Bay was responsible for harvesting 90% of wild oysters in the State of Florida – 10% of the nation's wild oyster supply (Binns & Hansen, 2021), highlighting that the area's habitat and biodiversity is critical in supporting the local economy and community. The Apalachicola River, bay, and drainage system was designated as a Biosphere Region in 1983 by the UNESCO Man and Biosphere Program, which aims to offer local communities the means to sustainably use local, natural resources while conserving important biological diversity (Apalachicola National Estuarine Research Reserve, 2023).

6. PROBLEMS AND OPPORTUNITIES

Problems

At 2,500 acres, Lake Wimico was once a major source of freshwater for the ecosystem in Apalachicola Bay by collecting, filtering, and feeding it through the Jackson River. Conversely, the saline environments of St. Joseph Bay and St. Andrew Bay supported a variety of plant and marine animal life while receiving little to no natural freshwater runoff. As a result of the construction of the GIWW and Gulf County Canal, freshwater flow is diverted away from Apalachicola Bay, Jackson River, and Lake Wimico, and into St. Joseph and St. Andrew Bays, and sediment is likely being carried away from Lake Wimico and deposited into St. Joseph and St. Andrew Bays.

Baysavers, a non-profit organization whose goal is to restore clear waters in St. Andrews and St. Joseph Bays and the sediment-rich waters of Apalachicola Bay to their natural state (*Baysavers*, 2019), has expressed concerns to the USACE about the impact that the construction of the GIWW and Gulf County Canal has had on the ecosystem of Lake Wimico and the surrounding bays. These concerns include the decline of SAV's in Lake Wimico, the decline of natural oyster reefs in Apalachicola Bay, and the decline of SAV's and scallops in St. Joseph Bay – all of which it believes could be the result of, or exacerbated by, the construction of the GIWW and Gulf County Canal. As a result of such concerns, an assessment of water flows through the GIWW and Gulf County Canal was conducted through a collaboration between the Northwest Florida Water Management District and the Florida Department of Environmental Protection. The initial findings indicated that approximately 1.395 trillion gallons of freshwater flow was diverted through the GIWW and Gulf County Canal (Thurman, 2023).

Due to the hydrodynamic changes caused by the canals, there is also concern that Lake Wimico's natural marsh is losing resiliency, reducing the lake's ability to filter river sediment that now flows directly into Apalachicola Bay, St. Joseph Bay, and St. Andrew Bay. This changed hydrology may negatively impact aquatic species, particularly SAVs, that support the ecosystems within the bays. A specific concern is that the nutrient rich sediment deposited directly into the bays has caused algae blooms that also increase the turbidity of the water (Allison, et al., n.d.).

Lake Wimico along with the surrounding land, connected rivers, streams, and bays provide habitat to a multitude of plants and animals including several federally listed threatened and endangered species and designated critical habitat. In general terms, the construction of the GIWW and Gulf County Canals may have impacted the spawning, nursery, and foraging habitat that supports threatened and endangered species such as Gulf sturgeon, shellfish, West Indian manatees, and other economically important marine fishery species. The canals may have also impacted migratory bird species utilizing the Atlantic Flyway corridor by decreasing foraging and roosting habitat. Additionally, persistent low flow periods cause extreme degradation to the cypress trees and all freshwater vegetation in Lake Wimico due to increases in salinity. These low flow periods are likely due to upstream land use changes.

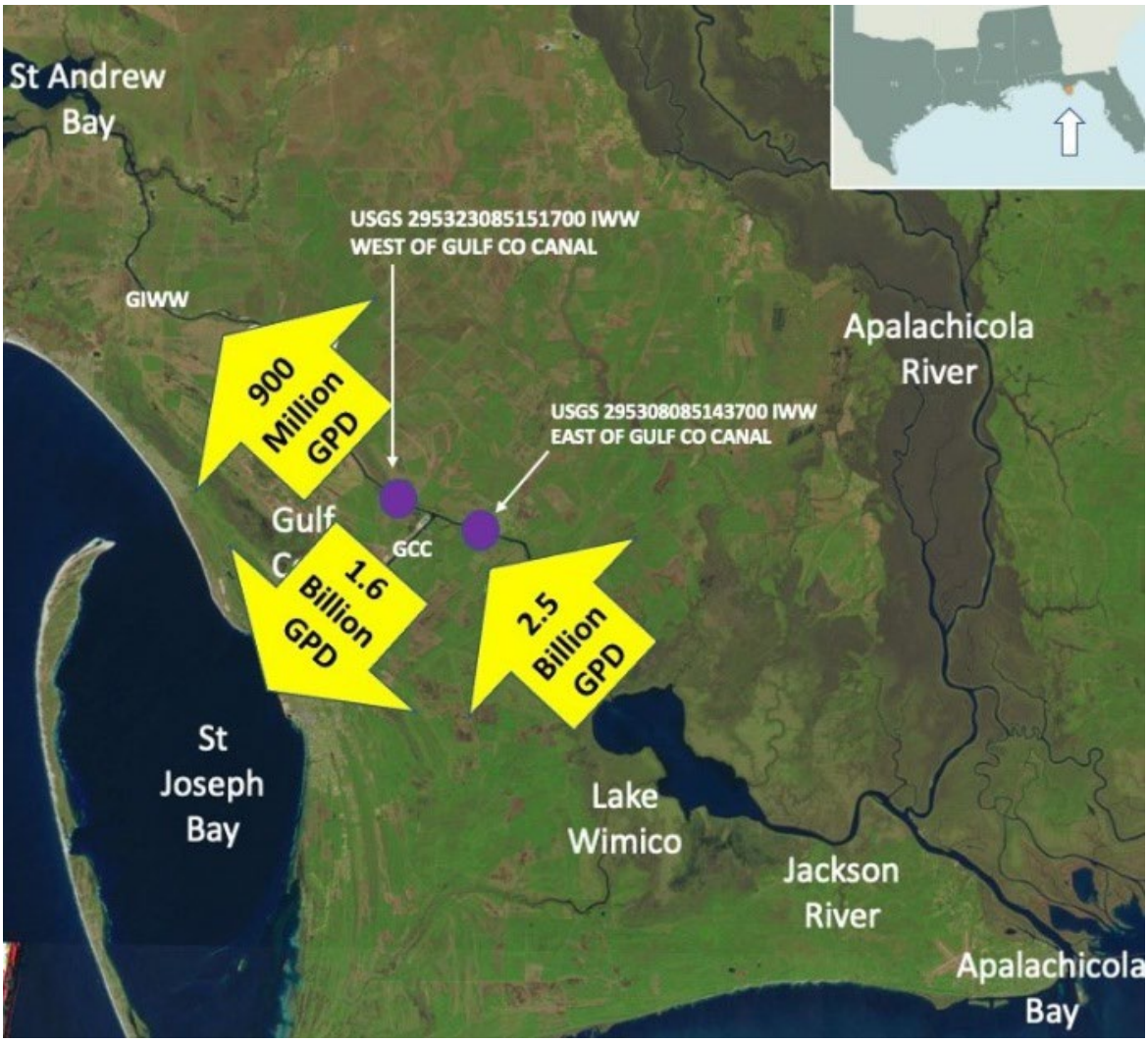

Figure 2: Lake Wimico USGS Data (Imagery Courtesy Baysavers)

Opportunities

Based on the problems discussed above, the following opportunities have been identified:

- If needed, restore degraded habitat, structure, and dynamic processes in the Apalachicola Bay and Marsh, St. Joseph Bay, St. Andrew Bay, and Lake Wimico ecosystems to support federally listed threatened and endangered species such as the Gulf sturgeon; economically important marine fisheries species such as oysters; and designated critical habitat that encourages spawning, nursery, and foraging habitats which provide benefits to migratory bird species that use the Atlantic Flyway corridor to forage and roost. Restoring hydrologic flows between Lake Wimico and the adjacent Apalachicola, St. Joseph, and St. Andrews Bays sustains essential fish nurseries and shellfish beds, such as the American oyster, scallops, tarpon, and red fish, which area depended upon at the regional and national levels. Additionally, restoring the hydrology and function of the ecosystem ensures that it will be more self-sustaining in the future and continue to support

these important species.

- If needed, improve Lake Wimico's natural ability to filter and cleanse sediments and other pollutants from runoff from upland areas by restoring the natural hydrology and habitat. Restored flows can carry sediments and nutrients to sustain emergent tidal marsh and other habitats. Restoration is critical to ensuring future healthy populations of wildlife and marine organisms that provide economic, environmental, and aesthetic functions that sustain coastal Florida.
- If needed, improve the health of submerged aquatic vegetation (SAV), which is recognized as an important habitat for fish and other aquatic species. Returning flows to the historic conditions would directly benefit SAV, scallops, oyster populations, and provide critical spawning, nursery, and foraging habitats.
- If needed, replenish Lake Wimico's natural marsh to improve ecosystem function and resilience.

Objectives

Based on the problems, opportunities, and existing conditions, anticipated objectives could include:

- Restore degraded habitat, structure, and dynamic processes in the Apalachicola Bay and Marsh, St. Joseph Bay, St. Andrew Bay, and Lake Wimico to a healthy aquatic habitat over the 50-year period of analysis.
- Improve Lake Wimico's natural ability to filter river sediment over the 50-year period of analysis.
- Improve the health of submerged aquatic vegetation (SAV) to support the bays' ecosystems over the 50-year period of analysis.
- Reduce salinity intrusion into Lake Wimico by replenishing the natural marsh over the 50-year period of analysis.

Constraints

Based on preliminary analysis the below study specific constraints were identified.

- Avoid/minimize adverse impacts to existing habitat and threatened and endangered species.
- Avoid increasing exotic/invasive species distribution.
- Minimize increases in flood elevations that would require mitigation of adverse effects.
- Abide by all legal rulings within the ACF basin.
- Minimize impacts to existing authorized project purposes of navigation in the GIWW and Gulf County Canal.

7. PRELIMINARY ALTERNATIVES

The following preliminary alternatives are initially recommended for subsequent development. Due to the limited nature of this Initial Appraisal, the use of only existing information, and current lack of scientific data clearly articulating the nature, scope, and extent of the hydrodynamic impacts to the study area directly related to the existing Gulf Intracoastal

Waterway and Gulf County Canal projects, these alternatives have not been developed in detail but are presented for consideration in further establishing the Federal interest.

- No Action
- Incorporate channel modifications to reduce flows
    - Widen or narrow channel in locations to beneficially modify flow
    - Gate structure east of Gulf County Canal on GIWW
    - Underwater weir at Gulf County Canal
    - Flow director at Apalachicola/Jackson River
    - Removal of Gulf County Canal
    - Small by-pass at Gulf County Canal
- Incorporate a sediment trap to control sedimentation and erosion
- A combination of these measures

8. RECOMMENDATION

Based on concerns regarding negative environmental impacts caused by changed hydrological conditions due to the construction of the GIWW and Gulf County Canal, there is sufficient Federal interest in investigating the feasibility of the Lake Wimico, Gulf County, Florida Aquatic Ecosystem Restoration Study. There is also the potential for improving the quality of the environment in the public interest within the study area. A cost-shared Feasibility Phase report should be initiated to analyze alternatives for addressing the identified problems by means of modifications to the project.

9. REFERENCES

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