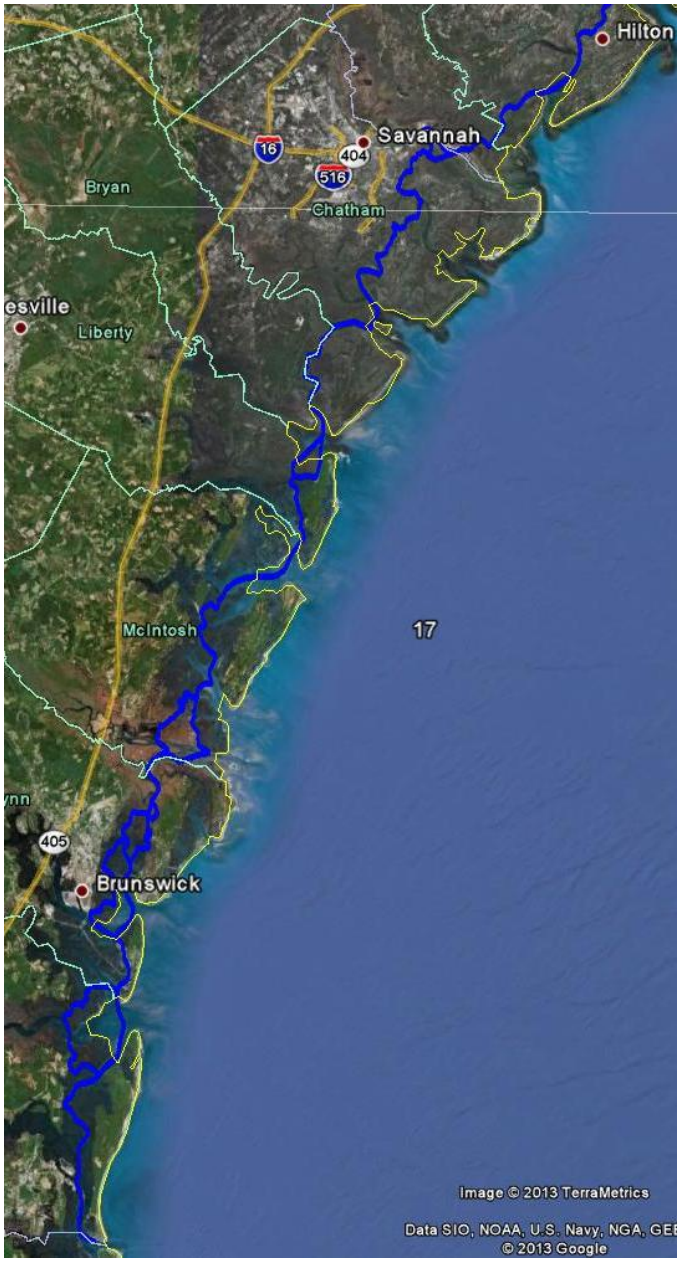
Draft Dredged Material Management Plan
Atlantic Intracoastal Waterway

Port Royal Sound, South Carolina to Cumberland Sound, Georgia

March 2014

Appendix G: Draft Fish and Wildlife Coordination Act Report



US Army Corps of Engineers®
South Atlantic Division
Savannah District

Draft Fish and Wildlife Coordination Act Report
GEORGIA AND SOUTH CAROLINA ATLANTIC INTRACOASTAL WATERWAY DREDGED MATERIAL MANAGEMENT PLAN

Chatham, Bryan, Liberty, McIntosh, Glynn, and Camden Counties, Georgia
and Jasper and Beaufort Counties, South Carolina

MARCH 2014

Prepared for

US Fish and Wildlife Service Townsend GA Ecological Services Field Office

by

US Army Corps of Engineers Savannah District South Atlantic Division

EXECUTIVE SUMMARY

The U.S. Army Corps of Engineers (USACE) Savannah District is responsible for maintenance dredging of the federally authorized, 12-foot-deep and 150-foot-wide Atlantic Intracoastal Waterway (AIWW) between Port Royal Sound, South Carolina (northern limit) and Cumberland Sound and Florida state line (southern limit). Dredge spoil from the Savannah District's portion of the AIWW has historically been deposited in saltmarsh tracts adjacent to the AIWW in easements purchased in 1937. Currently, the majority of the maintenance sediment is deposited in these mostly undiked marsh areas adjacent to the waterway, a practice no longer acceptable to the Georgia Department of Natural Resources (GDNR) or the South Carolina Department of Natural Resources (SCDNR). Therefore, USACE is now charged with identifying the best plan for long-term placement of maintenance dredging materials. The current project, the Dredged Material Management Plan (DMMP), comprises USACE investigations and evaluations of alternate dredge disposal options (for this 161-mile portion of the AIWW) that will be used for the next 20 years.

The Fish and Wildlife Coordination Act (FWCA) (16 U.S. Code Sections 661 through 667e; the Act of March 10, 1934; Ch. 55; 48 Stat. 401) provides the basic authority for the U.S. Fish and Wildlife Service's (USFWS) involvement in evaluating impacts to fish and wildlife from proposed water resource development projects, such as that described above. An evaluation of impacts through a Fish and Wildlife Coordination Act Report (CAR) is authorized under the FWCA. In this CAR, USFWS evaluates existing fish and wildlife resources within the project area of the USACE's AIWW DMMP (drafted 2012) and affected areas, provides an analysis of project impacts and mitigation plans, and provides recommendations to USACE regarding anticipated impacts and mitigation.

Proposed action. USACE's proposed DMMP comprises the following:

1. *Existing diked disposal areas.* These would be used where available.

2. *Ocean disposal of dredged material*. Much of the maintenance material that would be dredged from the AIWW in the future will be placed into U.S. Environmental Protection Agency (USEPA)-approved Ocean Dredged Material Disposal Sites (ODMDS). Ocean disposal would involve use of two existing ODMDSs (Savannah Harbor and Brunswick Harbor) and the establishment of two new ODMDSs off Sapelo Sound and Altamaha Sound.

3. *Open-water disposal within the State of Georgia in conjunction with confined disposal*. The GDNR has indicated they would consider continued use of some of the existing open water disposal sites provided the material is at least 80% sand. Material not meeting this criterion would be placed on existing dredged material deposits within the current disposal easements for that reach of the waterway.

Affected resources. Resources that were addressed in the CAR that may be directly or indirectly affected by the proposed activity included conservation lands and wildlife

management areas; upland and wetland habitats; the water column/water quality; fish (including diadromous and gamefish species) and shellfish communities; Essential Fish Habitats (EFHs) and managed fish/shellfish species; species protected by state jurisdictions and/or the federal government; and migratory birds.

Mitigation for unavoidable impacts. The amount of wetland impacts due to the implementation of the preferred plan for the proposed DMMP would be 37.5 acres. Under its proposed mitigation plan for the AIWW DMMP, the USACE would provide funds to a land trust or state resource agency for the purpose of restoration of saltmarsh. As with an in-lieu-fee program, the receiving entity would be responsible for selecting, designing, implementing, and monitoring the restoration sites. The USACE would as a result of this plan transfer its obligation to provide compensatory mitigation to the receiving entity. The amount of funds to be provided by the USACE would be calculated at $10,000 per acre for 37.5 acres of saltmarsh in the impacted portions of three undiked marsh disposal tracts for the expected future impacts if the DMMP is implemented. Funds would be provided in the amount of $375,000. A separate action, releasing disposal easements on a number of tracts, would not directly mitigate for wetland impacts, but indirectly would encourage restoration of these tracts by a third party in the future.

Recommendations. USFWS recommendations regarding limiting potential effects to other fish and wildlife resources include the following:

- Sampling and testing before dredging to avoid contaminated materials, and when unavoidable, placing contaminated materials in disposal areas that are designed to minimize exposure to fish and wildlife.

- Use of measures to avoid and minimize the suspension of contaminated sediments following any necessary deposition of dredged material on confined disposal sites.

- Investigation of opportunities for reusing non-contaminated, dredged material to restore coastal habitats in coordination with local, state, and federal resource agencies.

- Use of measures to protect the ecological integrity of public lands managed for natural resources values that are located along or near the AIWW.

- USFWS will provide detailed coordination for protected species under Section 7 of the Endangered Species Act.

Pursuant to coordination with NOAA, the State of Georgia and the State of South Carolina, USFWS made several other additional recommendations, including those relating to (a) the need for additional field studies to determine past impacts, (b) limiting deposition of sediments to easement boundaries, (c) use of best practices to confine fine materials to disposal sites, (d) indefinite removal from consideration unconfined disposal (but for permitted offshore dredged material disposal sites and eroded beaches), (e) restoration of previously impacted areas, and (f) use of dredging windows to protect marine species.

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LIST OF ACRONYMS

AIWW	Atlantic Intracoastal Waterway
BMP	Best Management Practices
CAR	Coordination Act Report
DMMP	Dredge Material Management Plan
DPS	Distinct Population Segment
EFH	Essential Fish Habitat
ESA	Endangered Species Act
FMC	Fishery Management Council
FMP	Fisheries Management Plan
FWCA	Fish and Wildlife Coordination Act
GDNR	Georgia Department of Natural Resources
HAPC	Habitat Areas of Particular Concern
JIA	Jekyll Island State Park Authority
JIA	Jekyll Island State Park Authority
MHW	Mean High Water
MLW	Mean Low Water
MMPA	Marine Mammal Protection Act
MSFCMA	Magnuson-Stevens Fishery Conservation and Management Act
NEPA	National Environmental Protection Act
NGSSCES	Northern Georgia/Southern South Carolina Estuarine System
NWR	National Wildlife Refuge
NWR	National Wildlife Refuge
ODMDS	Ocean Dredged Material Disposal Site
PNA	Primary Nursery Area
SAFMC	South Atlantic Fisheries Management Council
SCDNR	South Carolina Department of Natural Resources
SGES	Southern Georgia Estuarine System
SOP	Standard Operating Procedure
TBRE	Turtle/Brunswick River Estuary
USACE	U.S. Army Corps of Engineers
USEPA	U.S. Environmental Protection Agency
USFWS	U.S. Fish and Wildlife Service
WMA	Wildlife Management Area

Draft Fish and Wildlife Coordination Act Report for Georgia and South Carolina Atlantic Intracoastal Waterway Dredged Material Management Plan

Chatham, Bryan, Liberty, McIntosh, Glynn, and Camden Counties, Georgia
and Jasper and Beaufort Counties, South Carolina

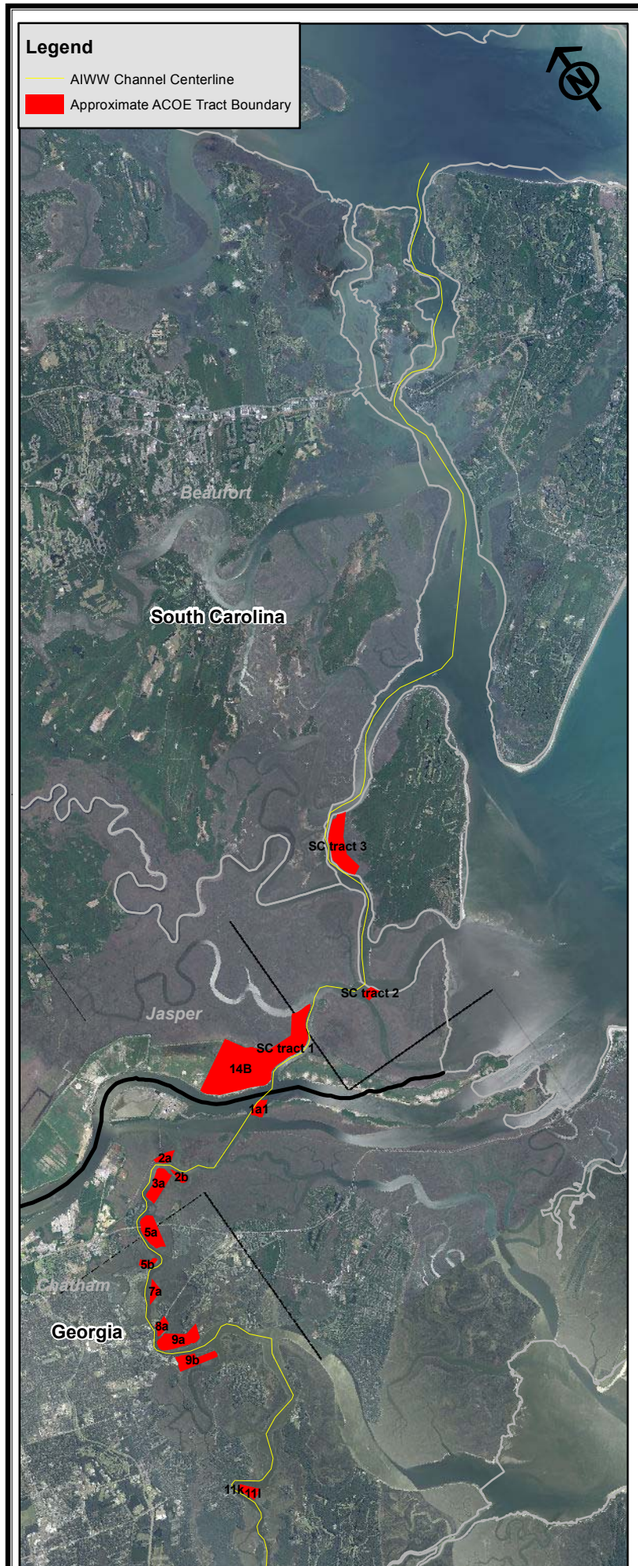
INTRODUCTION

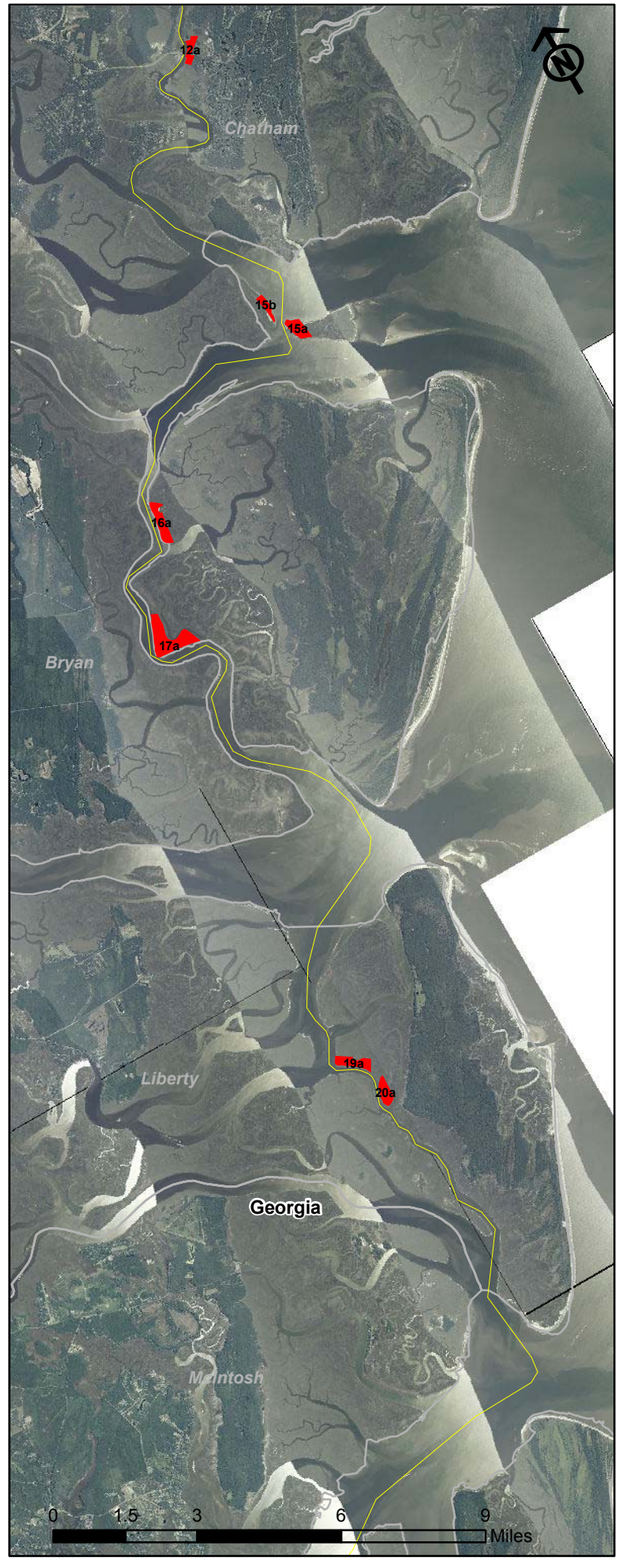
Project Overview

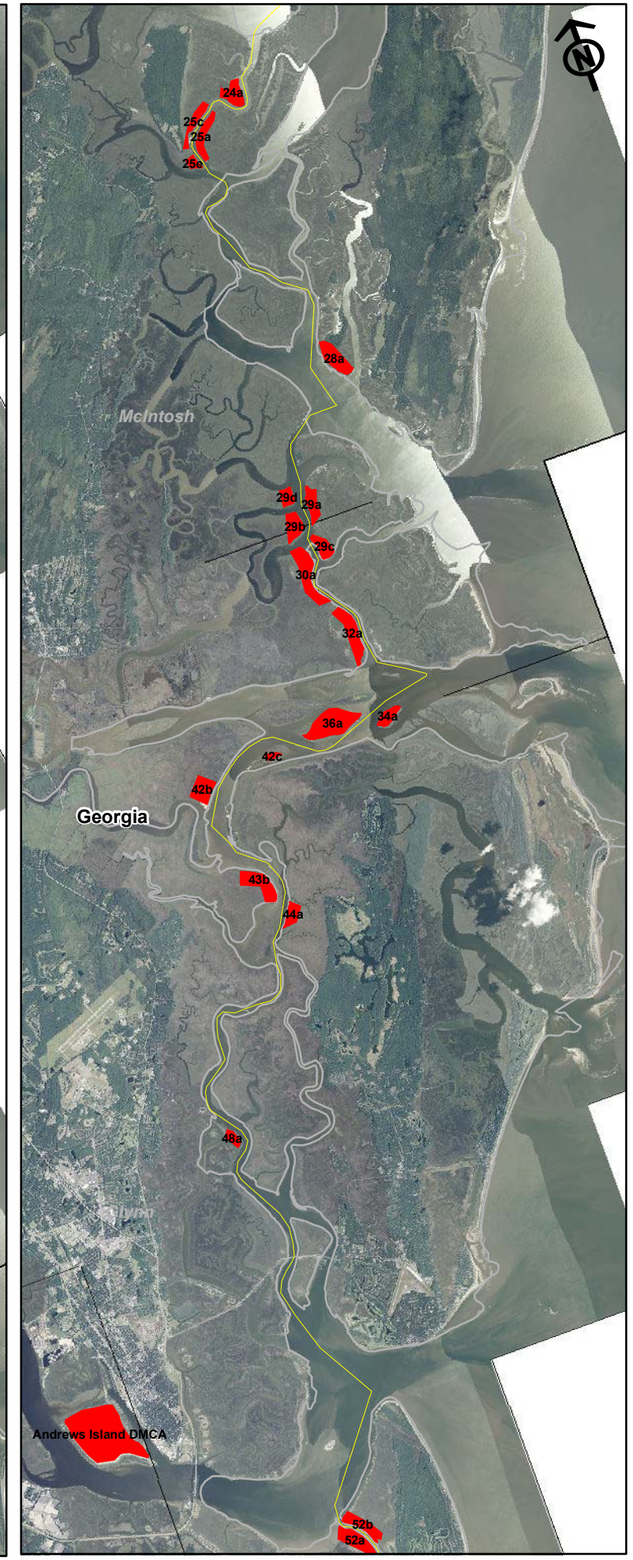
The Atlantic Intracoastal Waterway (AIWW) is a 739-mile inland waterway system between Norfolk, Virginia, and St. John's River, Florida, which provides a continuous, sheltered passage between these two destinations. U.S. Army Corps of Engineers (USACE) Savannah District is responsible for maintenance dredging of the federally authorized 12 foot-deep and 150 foot-wide AIWW between Port Royal Sound, South Carolina, (mile 552) on the north and Cumberland Sound (mile 713) on the South, which is located at the Cumberland Sound/ Florida border (Figure 1). The 161-mile section of this portion of the AIWW is comprised of a 24-mile section in the State of South Carolina with the remaining 137 miles located in the State of Georgia. The U.S. Navy dredges the southernmost reach of the AIWW in Georgia, located near the Kings Bay Naval Submarine Base. Dredge spoil from the Savannah District's portion of the AIWW has historically been deposited in saltmarsh tracts adjacent to the AIWW in easements, which were purchased from the owners in 1937. Currently, the majority of the maintenance sediment is deposited in these mostly undiked marsh areas adjacent to the waterway, a practice no longer acceptable to the Georgia Department of Natural Resources (GDNR) or the South Carolina Department of Natural Resources (SCDNR). Therefore, USACE is now charged with identifying the best plan for long-term placement of maintenance dredging materials. The current project, the Dredged Material Management Plan (DMMP) comprises investigations and evaluations of alternate dredge disposal options for the 161-mile portion of the AIWW that will be used for the next 20 years, and comprises the primary material discussed in this document.

Authority and Project History

The AIWW is a federally authorized inland waterway created to provide a continuous sheltered route for shallow-draft vessels along the Atlantic coast. The purpose of the proposed DMMP is to ensure that the Savannah District portion of the AIWW has sufficient dredged material disposal capacity for a minimum of 20 years. As required by USACE Planning Guidance Notebook (ER1105-2-100), all federally maintained navigation projects must demonstrate that there is sufficient dredged material disposal capacity for a minimum of 20 years.







ACOE TRACT LOCATIONS	
Georgia AIWW Draft Fish and Wildlife Coordination Act Report	
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	Figure 1

The 13 Savannah operational reaches that lack sufficient 20-year disposal area capacity drove the requirement for Savannah District to prepare an update to its 1983 DMMP (USACE 1983). The new DMMP is being analyzed via an Environmental Assessment (EA). Dredging and disposal activities prior to 1976 were addressed in the 1976 AIWW EIS (USACE 1976).

The construction and maintenance of the AIWW between Savannah, Georgia, and Fernandina, Florida, was initially authorized by the Rivers and Harbors Act of 1882 (House Document 19, 46th Congress), which authorized modification for portions of the waterway. Additional sections of the AIWW that were not included in the 1882 Act were authorized and incorporated into the project in 1892. The Rivers and Harbors Act of 1892 (House Document 41, 52nd Congress, 1st Session), authorized a 7-foot channel between Savannah and Fernandina. The AIWW between Beaufort, South Carolina, and Savannah, Georgia, was originally authorized by the Rivers and Harbors Act of 1896 (House Document 295, 53nd Congress, 3rd Session). It also authorized a 7-foot channel. After authorization and construction, several other congressional acts modified the route of the waterway to abandon old sections and include new ones which were either more convenient to traffic or easier to maintain. In 1936, the authorized project consisted of a channel 7-feet deep at Mean Low Water (MLW) with a width of 75-feet between Beaufort, South Carolina, and Savannah, Georgia, and a width of 150-feet between Savannah, Georgia, and Fernandina, Florida.

In 1937, the first piece of legislation that created the waterway with the currently-authorized dimensions was passed. The Rivers and Harbors Act of 1937 authorized a 7-foot protected route around St. Andrew Sound, Georgia (Senate Committee Print, 74th Congress, 1st Session) and for a 12-foot channel between Beaufort, South Carolina, and Savannah, Georgia (Rivers and Harbors Committee Doc. No. 6, 75th Congress, 1st Session). On 20 June 1938, a 12-foot channel was authorized between Savannah, Georgia, and Fernandina, Florida. The authorization included various cut-offs, and an anchorage basin at Thunderbolt (House Doc. No. 618, 75th Congress, 3rd Sess.). The widths of the AIWW were to be 90 feet in land cuts and narrow streams and 150 feet in open waters. Dredging of the 12-foot channel between Beaufort, South Carolina, and Fernandina, Florida, was initiated in 1940 with the excavation of 507,275 CY. It was completed in 1941 with the removal of 6,168,556 CY.

In addition to the main route and the protected route around St. Andrew Sound, the project includes two alternate channels. An alternate 7-foot route was constructed from Doboy Sound to Brunswick, Georgia. It was incorporated into the project in 1912, because it provide more protection for vessels.. The River and Harbors Act of 1945 authorized an alternate 9-foot deep and 150-foot wide route in the Frederica River. This alternate route did not require dredging since it had been the main route prior to its abandonment in 1938. The route was substituted for a new route via the Mackay River. Although all three of these routes are part of the AIWW project today, maintenance is only performed in the protected route around St. Andrews Sound.

In addition to authorizing the 12-foot deep channel between Beaufort, South Carolina, and Fernandina, Florida, the River and Harbors Acts of 1937 and 1938 mandated all lands, easements, rights-of-way, and sediment disposal areas needed for the project be furnished free of cost to the Federal Government.

Titles to all lands and easements needed for the 7-foot protected route around St. Andrews Sound were accepted as satisfactory by the Chief of Engineers on March 28, 1939. Titles to all necessary rights-of-way and sediment disposal areas for the 12-foot channel between Savannah, Georgia, and Beaufort, South Carolina, were accepted as satisfactory on March 27, 1939. Rights-of-way and sediment disposal areas needed for initial work and for subsequent maintenance of the 12-foot channel between Savannah, Georgia, and Fernandina, Florida, were approved by the Chief of Engineers on April 4, 1940.

USACE has prepared this Fish and Wildlife Coordination Act Report (CAR) in cooperation with U.S. Fish and Wildlife Service (USFWS), who will ultimately issue the CAR to USACE for its consideration. The CAR is authorized by the Fish and Wildlife Coordination Act (16 U.S. Code Sections 661 through 667e; the Act of March 10, 1934; Ch. 55; 48 Stat. 401). The Fish and Wildlife Coordination Act (FWCA) provides the basic authority for the Fish and Wildlife Service's involvement in evaluating impacts to fish and wildlife from proposed water resource development projects.

Purpose and Scope

Through this CAR, USFWS evaluates existing fish and wildlife resources within the project area of the USACE's AIWW Dredge Material Management Plan (DMMP) (drafted 2012) and affected areas, provides an analysis of project impacts and mitigation plans, and provides recommendations to USACE regarding anticipated impacts and mitigation.

Prior Studies and Reports

The following documents are relevant to the proposed project (dredged material management for the AIWW):

- US Army Corps of Engineers, Savannah District. 1976. Final Environmental Impact Statement, Maintenance Dredging, Atlantic Intracoastal Waterway (Port Royal Sound, South Carolina, to Cumberland Sound, Florida.

  This document described AIWW maintenance dredging and disposal from initial construction of the waterway beginning in 1938 through November 1975. The proposed action was to continue the ongoing practice of placement of dredged sediments into a combination of previously used disposal sites: 1) existing unconfined saltmarsh sites, 2) existing open water sites, and 3) existing confined disposal sites depending on location and the type of sediments to be dredged. The EIS concluded that the proposed action would continue existing impacts to saltmarsh in the previously used disposal sites, but would not have "any appreciable long-term impacts on the existing marshlands…" and would "keep the impacts on the ecology of the salt marshes to a minimum."

- US Army Corps of Engineers, Savannah District. 1983. Atlantic Intracoastal Waterway (AIWW) Maintenance Disposal Study.

  This study was conducted to formulate a 50-year maintenance plan and identify and evaluate problems associated with the maintenance of the Savannah District portion of the AIWW, focusing on the maintenance of the AIWW during the period 1942 – 1980. Although not specifically identified as such, this report is effectively a Dredged Materials Management Plan and is frequently referred to as "the 1983 DMMP." Georgia Department of Natural Resources – Coastal Resources Division participated in the study and determined that approximately 1,548 acres out of a total of 4,636 acres of saltmarsh in the actively used disposal easements had been impacted by placement of dredged material. This study evaluated alternatives to unconfined saltmarsh tracts: 1) construction of dikes within existing disposal easements, 2) construction of dikes at new upland sites, 3) open water disposal, 4) open water disposal intended to provide substrate for new saltmarsh development, 4) beneficial use of dredged sediments, 5) continued undiked disposal into existing saltmarsh tracts, and 6) elimination of the use of some active disposal tracts by concentrating the material into disposal tracts that are the most adversely impacted. This study concluded that continued placement of dredged materials into existing deposits in disposal tracts adjacent to the AIWW was the recommended alternative for most of the 20 shoaling areas identified. This practice was considered to be less damaging than some of the other alternatives, particularly constructing dikes to enclose existing saltmarsh disposal tracts.

- US Army Corps of Engineers, Savannah District. 1998. Draft Section 1135 Ecosystem Restoration Report and Draft Environmental Impact Statement, Latham River/Jekyll Creek, Glynn County, Georgia.

  This document examined a plan to modify the AIWW project to restore the environment under Section 1135 of the 1986 Water Resources Development Act. The report presented a plan that included dredging portions of Latham River to restore historic tidal flushing, construction of a bridge on the Jekyll Island Causeway to reconnect two portions of the river that were separated by construction of the Jekyll Island Causeway, and closure of a man-made cut which was constructed to drain the lower portion of Latham River. The Draft EIS concluded that the environmental impacts on the local estuarine ecosystem would be important in scope, extensive in size, long lasting in duration, and very positive in nature. This Draft EIS was circulated for public and environmental agency review. However, during the review of the Draft EIS, it became apparent that the proposed restoration of flows in Latham River would require that two bridges be constructed, and the project was not pursued further due to costs.

- Dial Cordy and Associates. 2002. Vegetation Characterization and Wetland Delineation of Dredge Material Disposal Areas Along the Atlantic Intracoastal Waterway in Georgia. Prepared for USACE Savannah District, Savannah, Georgia. 8 pp.

  This document produced a wetland delineation of four AIWW disposal tracts (total of 600 acres) and vegetation mapping of 34 tracts (comprising 4,200 acres). For the tracts for which wetlands were delineated, the contractor surveyed the area of impact from placement of dredged materials.

- Dial Cordy and Associates. 2004. Identification and Evaluation of Potential Saltmarsh Mitigation Sites Along the Atlantic Intracoastal Waterway, Georgia. Prepared for USACE Savannah District, Savannah, Georgia. 27 pp.

  This document examined 40 potential saltmarsh mitigation sites along the AIWW in Georgia. The Savannah District's Standard Operation Procedure (SOP) for wetland mitigation was used to determine the mitigation credits that each site could potentially generate through preservation and restoration/enhancement of the existing tidal wetlands. Sites examined included impoundments (17 sites); dredged material disposal tracts (11 sites); general saltmarsh restoration opportunities, usually impacts from the construction of highway or interstate crossings (9 sites); and creation or preservation of saltmarsh and uplands (3 sites).

- Tidewater Environmental Services Inc. 2011. Wetland and Upland Assessment of Dredged Material Placement Areas, Atlantic Intracoastal Waterway (AIWW). Prepared for USACE Savannah District, Savannah, Georgia. 47 pp.

  This document provided findings for wetland delineations and ecological functional assessments for wetlands and uplands for selected dredged material placement areas along the AIWW that have been previously impacted by deposition of spoil material. A total of 45 tracts, encompassing approximately 6,043 acres, were mapped based on vegetative communities and upland/wetland boundaries. In addition, two undisturbed reference sites were review for comparison to the dredge disposal sites. Field investigations for the vegetative mapping and upland/wetland delineation were conducted during October and November 2010.

- US Army Corps of Engineers, Savannah District. 2012. Draft Dredged Materials Management Plan for the Atlantic Intracoastal Waterway, Port Royal Sound, South Carolina to the Georgia-Florida Border.

  This study formulated a 20-year maintenance plan for the Atlantic Intracoastal Waterway (AIWW) within Savannah District. The primary objective of this study was to identify the best maintenance scheme that would allow continued use of the

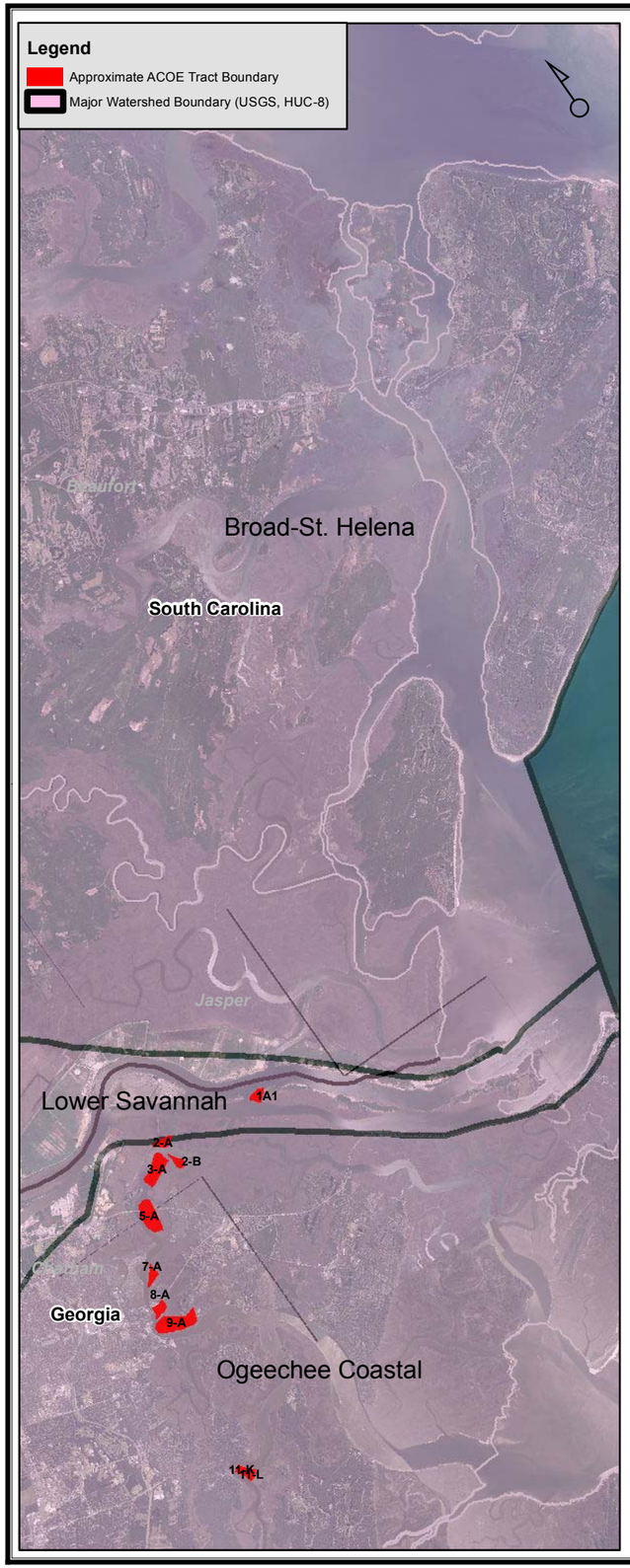
waterway and minimize adverse environmental impacts associated with the dredging and sediment disposal. The report outlined a long-term (20-year) maintenance plan that identified and evaluated problems associated with the maintenance of the AIWW. Based on the analysis of studies and collaboration with other agencies, a recommended alternative and Dredged Material Management Plan was formed that allows continued use of the waterway and minimizes adverse environmental impacts. Currently, the majority of the maintenance sediment is deposited in mostly undiked marsh areas adjacent to the waterway [Figure 1]: a practice no longer acceptable to the Georgia Department of Natural Resources, Coastal Resources Division. USACE has a need to develop and identify the best plan for long-term maintenance dredging, where to place maintenance dredging materials, and how best to mitigate for damages to saltmarshes that may occur in the future if the new DMMP is implemented..

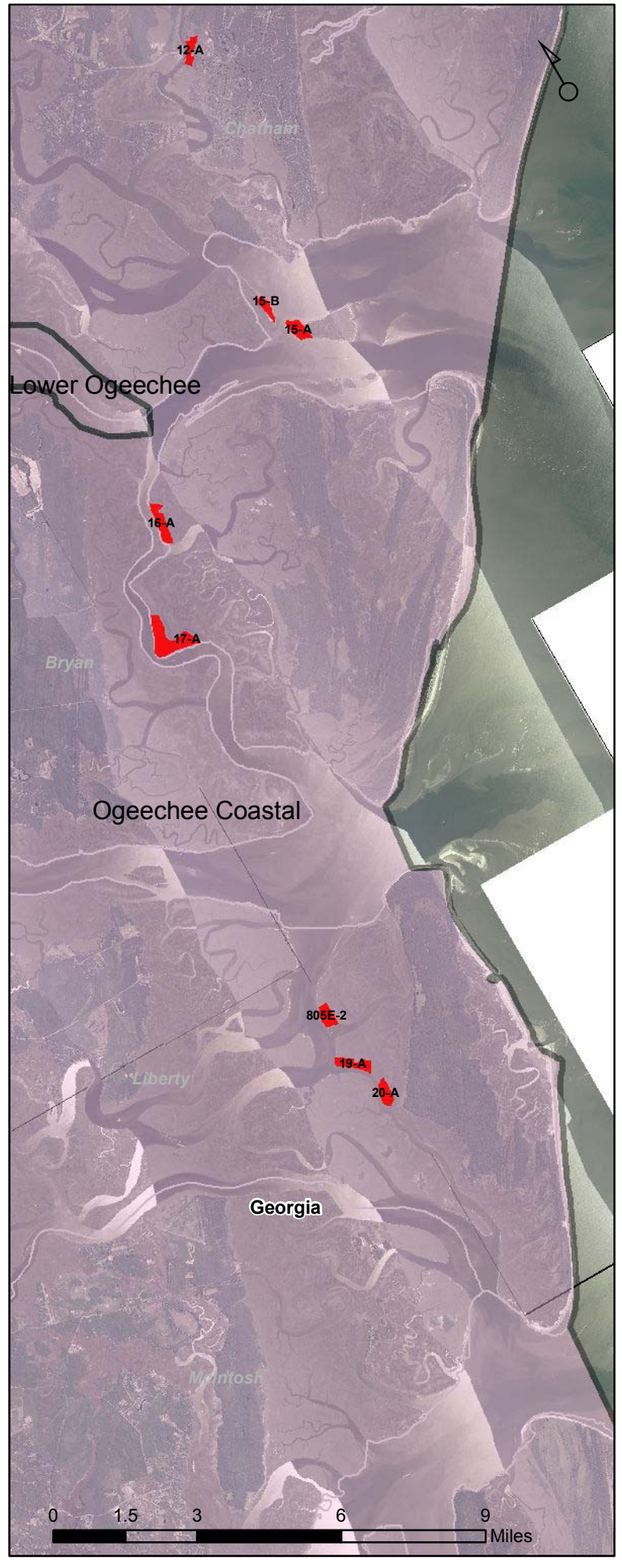
DESCRIPTION OF STUDY AREA

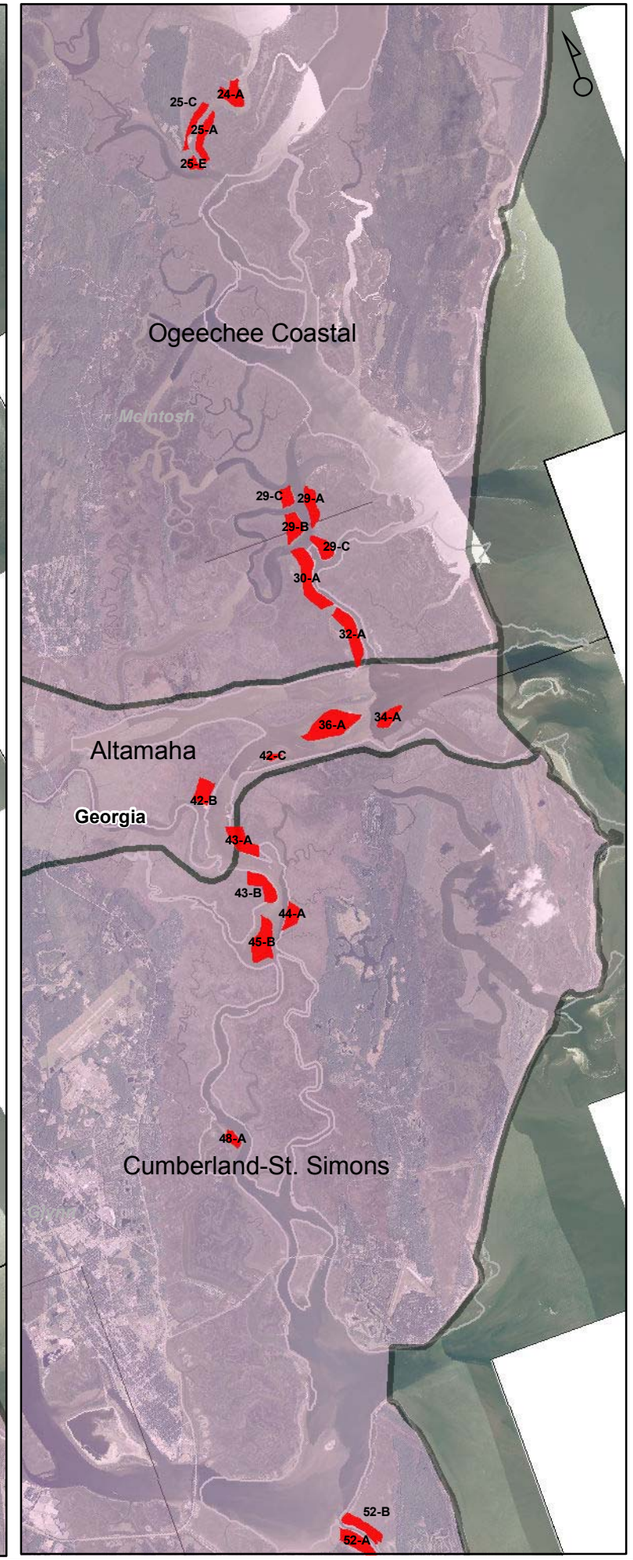
Geography. The AIWW between Port Royal Sound/Hilton Head Island (AIWW Mile 552) and the Cumberland Sound Georgia/Florida border (AIWW Mile 713) has been a federally authorized and maintained inland waterway since 1940. This portion of the waterway spans 161-miles and consists of 36 defined reaches which are maintained by USACE. The AIWW historically supported commercial trade/traffic among the major port cities (and smaller towns) of the southeast, including Jacksonville, Brunswick, Savannah, and Hilton Head/Port Royal. Most traffic during recent decades is recreational in nature, although commercial fishing enterprises still greatly depend on the AIWW and associated rivers, harbors, ports, and marinas.

Hydrography. The AIWW is regularly crossed by major rivers, including the Altamaha River, the Ogeechee River, and the Savannah River, which originate in the Piedmont and cross the coastal plain before forming major estuaries along the Georgia coast and northern border with South Carolina. Many other rivers also drain to the project area; major watershed boundaries are shown in Figure 2.

Land Cover and Use. The project site and vicinity is situated among some urban/developed lands, but principally coastal saltmarshes that drain into tidal creeks, the estuaries of coastal rivers, and/or the Atlantic Ocean are the major habitats (Figure 3). These lands and marshes reside in an ecoregion (see Griffith et al. 2002) classified as the *Sea Islands/Coastal Marsh* portion of the *Southern Coastal Plain*. "The *Sea Islands/Coastal Marsh* region contains the lowest elevations in South Carolina and is a highly dynamic environment affected by ocean wave, wind, and river action. Mostly sandy soils are found on the barrier islands, while organic and clayey soils often occur in the freshwater, brackish, and saltmarshes. Maritime forests of live oak, red cedar, slash pine, and cabbage palmetto grow on parts of the Sea Islands, and various species of cordgrass, saltgrass, and rushes are dominant in the marshes.







MAJOR WATERSHED BOUNDARIES	
Georgia AIWW Draft Fish and Wildlife Coordination Act Report	
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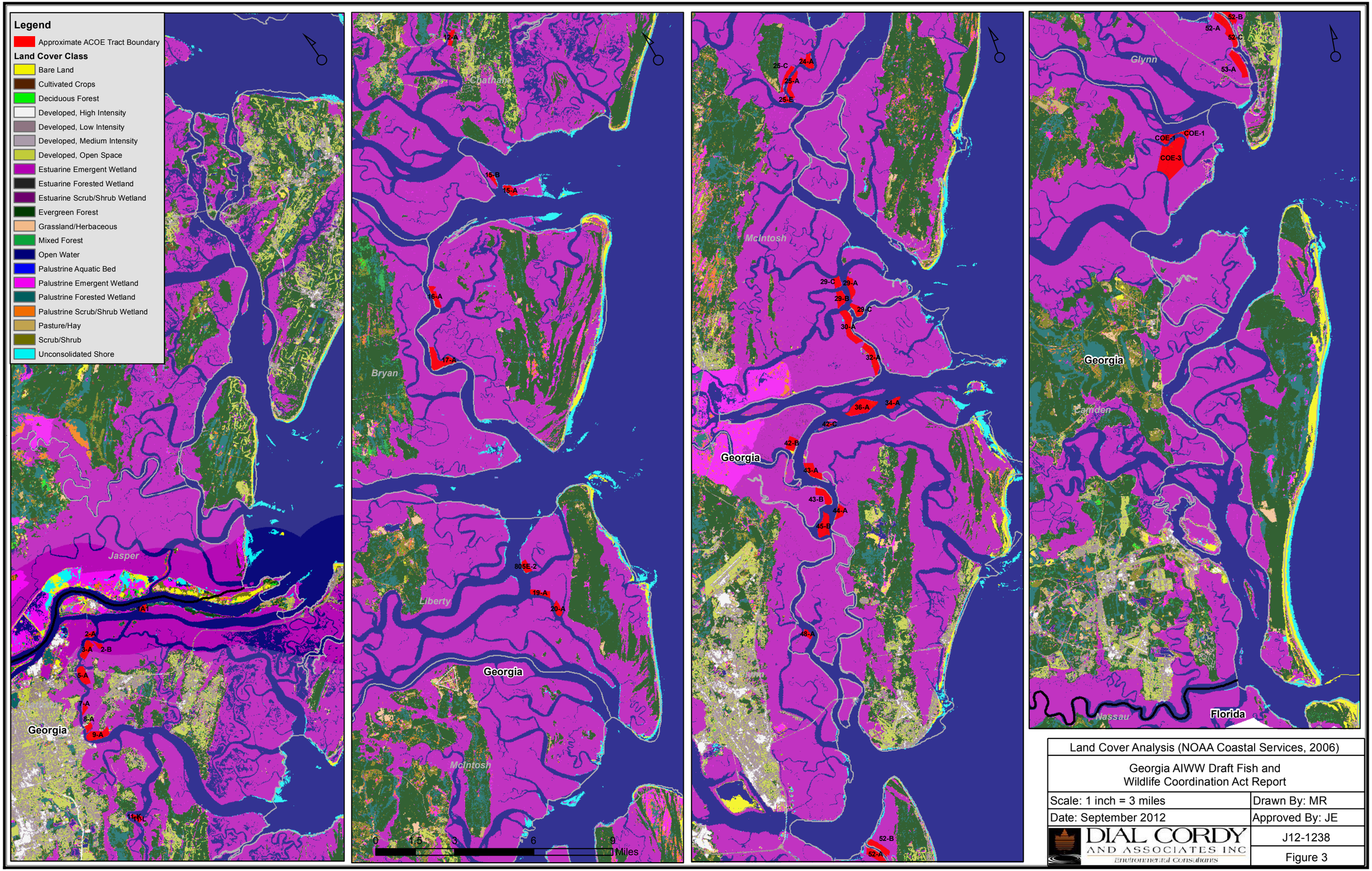
Date: September 2012	Approved By: JE
DIAL CORDY AND ASSOCIATES INC Environmental Consultants	J12-1238
	Figure 2



Land Cover Analysis (NOAA Coastal Services, 2006)	
Georgia AIWW Draft Fish and Wildlife Coordination Act Report	
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	Figure 3

Geologic and Coastal Processes. The AIWW is contained entirely within the Coastal Plain geological province. As indicated by Johnson, et al., (1974) the Coastal Plain is overridden by many sedimentary strata tilted towards the sea. These deposits were formed during the many changes in sea level associated with glaciations during the Tertiary and Quaternary periods. The thickest deposits are in the coastal area (about 6,000 feet at Savannah), tapering to a thin edge at the Fall Line (the approximate location of which extends in a diagonal line across the state from the city of Columbus, Georgia through Macon to the city of Augusta), where the oldest (Cretaceous) sediments are exposed. Limestone of Tertiary and Quaternary age underlies the Coastal Plain to form one of the most productive aquifer systems in the United States. The principal artesian aquifer beneath the city of Savannah is the primary bed for this aquifer system. The Tertiary limestone is several thousand feet thick, ranging in age from the Paleocene to the Pliocene. As indicated by Johnson, et al., (1974) the chain of barrier islands extending from the South Carolina border into the State of Florida were formed during the last 10,000 years probably as a result of dune ridges and sea level dropping; they formed at low stands of the sea and were inundated when sea level rose again. Barrier beaches formed on the islands from littoral sands. Wind blown sand from the beaches became trapped by pioneering vegetation to form the dune ridges which were ultimately stabilized by salt tolerant vegetation. The dunes protected the island from sea winds, salt spray, and storm tides and allowed the establishment of forest vegetation. The major habitats of the island interior are live oak forests, pine forests, fields, and sloughs. The lagoonal systems behind the barrier island became filled with sediments to form marshes. Deposition on the marsh continues as the waters spill onto the marsh at high tide, but increases in marsh elevation due to deposition are nearly offset by rising sea levels. Few plant species can withstand the stress imposed by high salinity and daily inundation by tidal waters, and marsh vegetation is monotonously uniform. The tidal marsh is predominantly smooth cordgrass (*Spartina alterniflora*), although there is a zonation of species related to gradients in salinity and elevation.

Barrier Islands. Barrier island formation has given Georgia and South Carolina both their expansive saltmarshes and the "Golden Isles" beaches. Varying mean sea level elevations, sedimentation and the hydraulics of the nearshore area have produced a succession of roughly parallel barrier island shores; the three most evident and geologically most recent in formation are the eastern edge of the mainland, the seaward sides of the intermediate line of barrier islands, and the shores of the Golden Isles. Because of the wide saltmarshes, access to the islands has been difficult and expensive. The lack of easy access and a history of large land holdings on the islands have left the majority of them nearly untouched. At present, extensive development has occurred only on Tybee Island, St. Simons Island, and Jekyll Island. The greatest *existing* problem of the more inaccessible islands is overgrazing, while the greatest *potential* problem is over-development. Federal and state acquisitions of much of these coastal lands provided some protection against over-development. The Georgia Bight, consisting of the curvature of the Atlantic Ocean from Cape Romain, South Carolina, to Cape Canaveral, Florida, represents an area of significant mixing of freshwater from the upland rivers and the sea water brought to the area by the Gulf Stream that flows along the east coast of North America.

Hydrology. Tides and currents in the AIWW vary since it traverses rivers, sounds, estuaries, and land cuts as it winds its way along the coast between the barrier islands of Georgia (and extreme southern South Carolina) and the mainland. Generally, the waterway can be considered to have semidiurnal tides; high tide usually varies between 6 and 10 feet above, mean low water. Most of the saltmarshes that lie adjacent to the waterway are covered, twice daily by tidal waters. The few areas that are not covered by normal tides are saturated by seasonal high tides.

Sediment Transfer. The flow from most of the coastal rivers, including the Savannah River and the Altamaha River, constitutes a large source of turbid freshwater, which mixes in the coastal area and slows in velocity. The sediment loads, upon slowing, tend to be deposited and moved according to the tidal regime into the saltmarsh areas. This provides a substrate for the vegetation present as well as part of the nutrient supply.

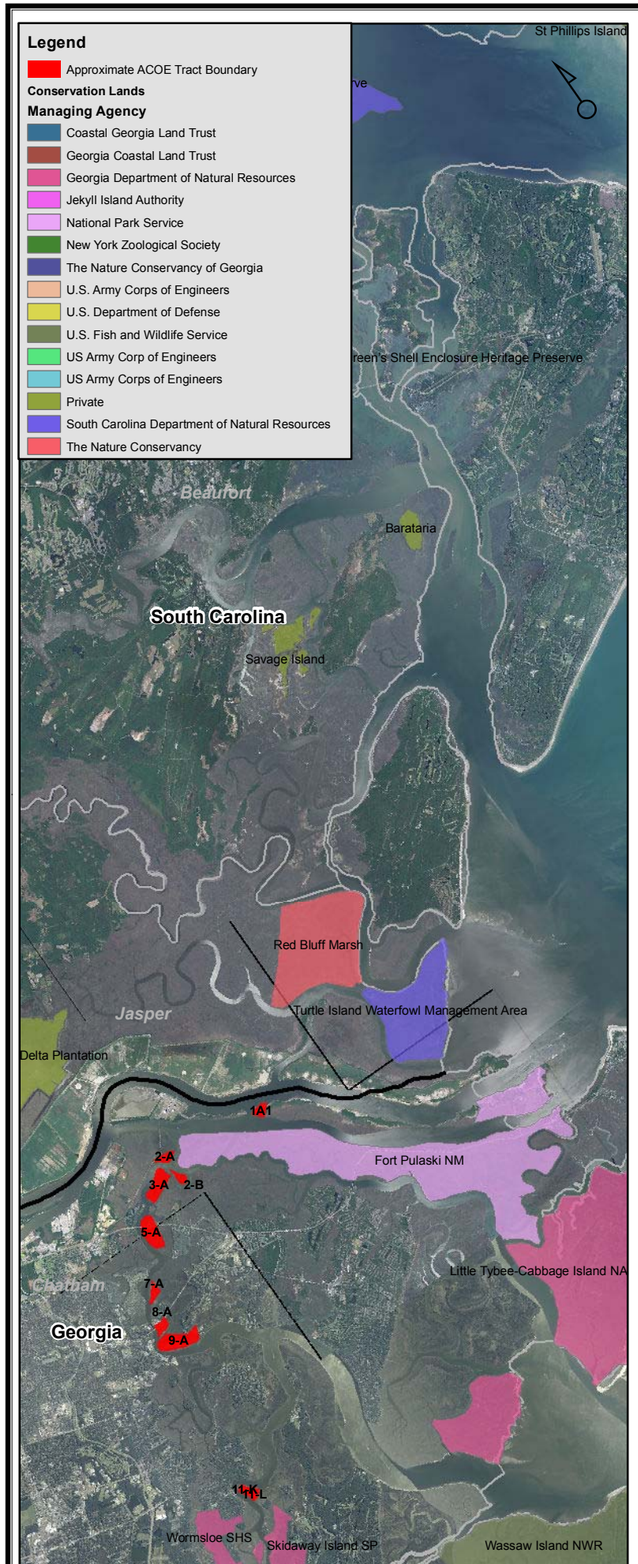
Climate. The climate of southeast South Carolina and Georgia through which the AIWW extends is classified as temperate. Summers are warm and humid and winters are mild. Rainfall is abundant and most of the soils are moist or saturated during most of the year. The total annual rainfall is 50.1 inches ranging from a monthly precipitation of 3.18 in January to 8.94 inches in August. The average annual temperature is 66.4°F with an average temperature of 44.1°F in January and 81.4°F in August.

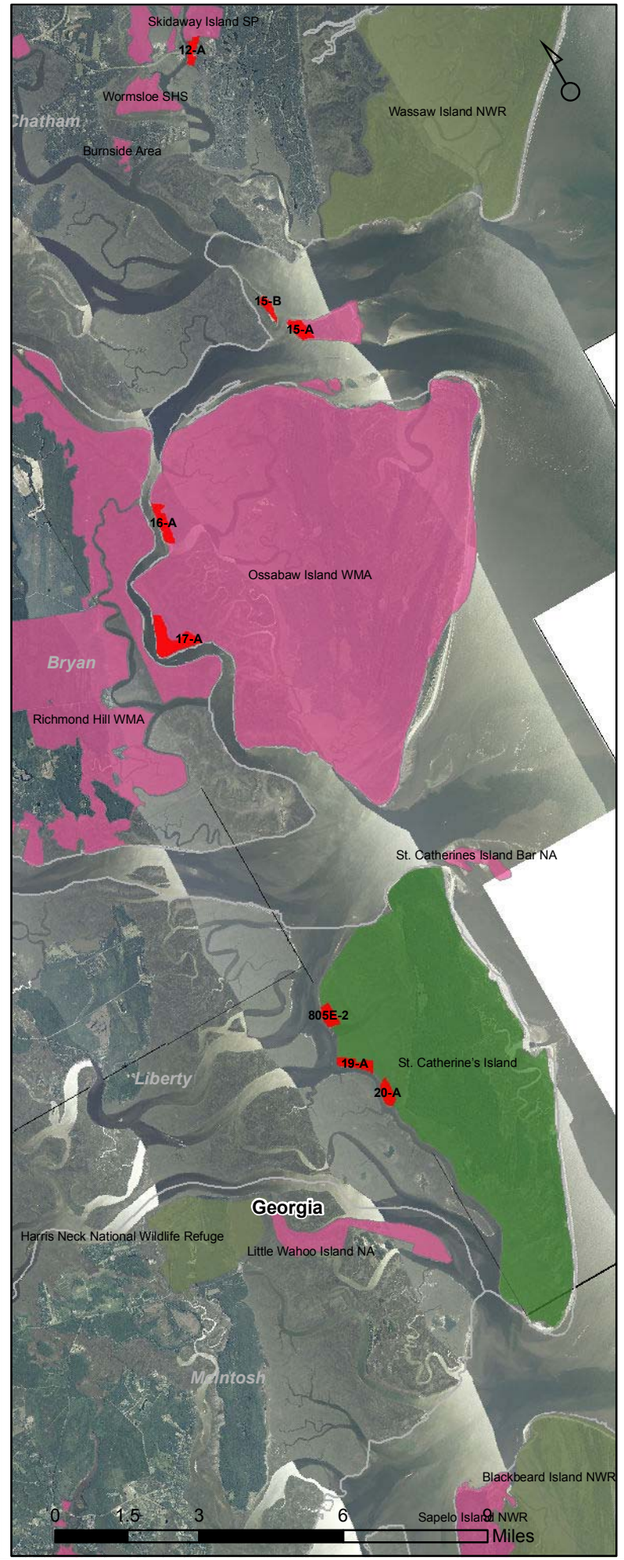
Water Quality. Water quality in the AIWW depends greatly on the water quality of the rivers and tidal exchange which move seawater through the system as well as non-point effluent across several watersheds into the AIWW.

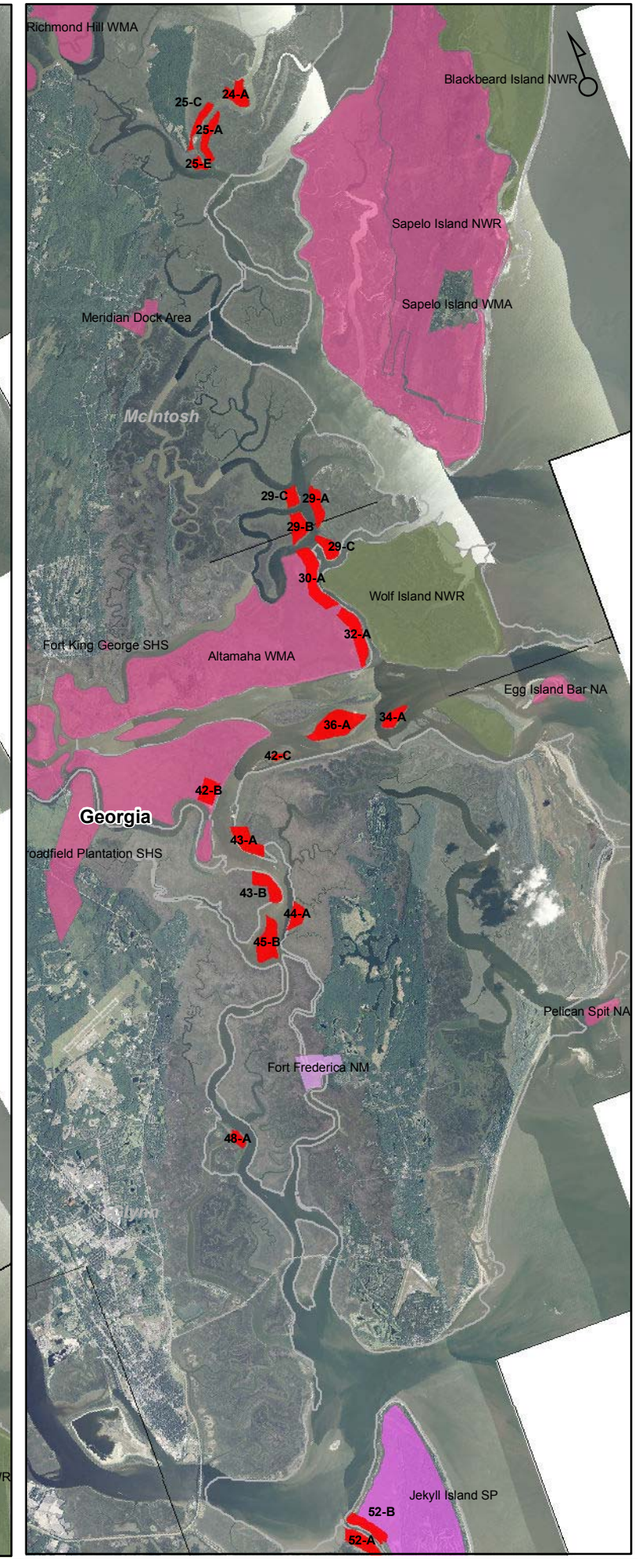
FISH AND WILDLIFE RESOURCES

Conservation Lands and Wildlife Management Areas

A number of protected areas and managed lands exist within the project area from Port Royal south through Cumberland Sound (see Figure 4). In general, the eastern side of the AIWW in Savannah District is made of barrier islands, many of which are protected natural areas. The western border of the AIWW is mainland coastal marsh and coastal residential or municipal property. Protected and natural lands within the project area fall under a number of different federal, state, local and private jurisdictions/ownership, such as USFWS, National Park Service, New York Zoological Society, The Nature Conservancy of Georgia, Coastal Georgia Land Trust, Georgia Department of Natural Resources, and South Carolina Department of Natural Resources. The largest of these areas and those closest to potential disposal sites are described below (via direct transcription of text from the respective parent entity's website).







CONSERVATION LANDS	
Georgia AIWW Draft Fish and Wildlife Coordination Act Report	
Scale: 1 inch = 3 miles	Drawn By: MR
Date: September 2012	Approved By: JE
DIAL CORDY AND ASSOCIATES INC Environmental Consultants	J12-1238
	Figure 4

Turtle Island Wildlife Management Area. Administered by South Carolina DNR, Turtle Island WMA is located between Savannah, Georgia and Daufuskie Island, South Carolina. It encompasses 1,700 acres of saltmarsh, maritime forest and barrier beach (SCDNR 2007). The western end of Turtle Island is a 57-acre disposal easement used until 1980 for disposal of dredged materials from the AIWW.

There are seven refuges (see details below) administered by the Savannah Coastal Refuges Complex. This chain of national wildlife refuges extends from Pinckney Island National Wildlife Refuge (NWR) near Hilton Head Island, South Carolina, to Wolf Island NWR near Darien, Georgia. Between these lie Savannah (the largest unit in the complex), Wassaw, Tybee, Harris Neck, and Blackbeard Island refuges. Together they span a 100-mile coastline and total over 56,000 acres. The Savannah Coastal Refuges are administered from headquarters located in Savannah, Georgia.

> *Pinckney Island National Wildlife Refuge*. "The 4,053 acre refuge includes Pinckney Island, Corn Island, Big and Little Harry Islands, Buzzard Island and numerous small hammocks. Pinckney is the largest of the islands and the only one open to public use. Nearly 67% of the refuge consists of saltmarsh and tidal creeks. A wide variety of land types are found on Pinckney Island alone: saltmarsh, forestland, brushland, fallow field and freshwater ponds. In combination, these habitats support a diversity of bird and plant life. Wildlife commonly observed on Pinckney Island include waterfowl, shorebirds, wading birds, raptors, neo-tropical migrants, white-tailed deer and American alligators, with large concentrations of white ibis, herons, and egrets" (USFWS 2012f). The AIWW runs between Pinkney Island NWR and Hilton Head Island but this reach is naturally deep and no disposal areas are located there.
>
> *Tybee National Wildlife Refuge*. Tybee NWR was established on May 9, 1938, by an executive order of President Franklin D. Roosevelt, as a breeding area for migratory birds and other wildlife. Located in the mouth of the Savannah River, the 100-acre refuge began as a one-acre oyster shoal, Oysterbed Island, used by USACE as a spoil disposal site to support their mandated harbor dredging activity. As a result, the majority of the refuge is now covered with sand deposits. The more stable portions of the island are densely covered with such woody species as eastern red cedar, wax myrtle, and groundsel. Saltmarsh borders parts of the island. The refuge is an important resting and feeding area for migratory birds including gulls, terns, neotropical migratory songbirds, and shorebirds. Least terns, black skimmers, Wilson's plovers, and several other shorebird species have nested on the spoil deposits on Tybee. During all seasons, the refuge's shoreline and open spoil deposits are used as resting sites for brown pelicans, gulls, and terns. Endangered species, including piping plovers and wood storks, have been observed on the refuge land, while shortnose sturgeon and manatees have been found in the waters bordering Tybee. The site is closed to public use (USFWS 2012d).

Wassaw Island National Wildlife Refuge. "Refuge visitors may enjoy recreational activities such as birdwatching, beachcombing, hiking and general nature studies. The 20 miles of dirt roads on Wassaw Island and seven miles of beach provides an ideal wildlife trail system for hikers. Bird watching is particularly fruitful during the spring and fall migrations. The island supports rookeries for egrets and herons, and a variety of wading birds are abundant in the summer months. In summer, telltale tracks on Wassaw's beach attest to nocturnal visits by the threatened loggerhead sea turtles which come ashore for egg laying and then return secretively to the sea…" (USFWS 2012e).

Harris Neck National Wildlife Refuge. "Harris Neck's 2,762 acres consists of saltwater marsh, grassland, mixed deciduous woods, and cropland. Because of this great variety in habitat, many different species of birds are attracted to the refuge throughout the year. In the summer, thousands of egrets and herons nest in the swamps, while in the winter, large concentrations of ducks (especially mallards, gadwall and teal) gather in the marshland and freshwater pools. Over 15 miles of paved roads and trails provide the visitor easy access to the many different habitats. Chosen for it's accessibility and bird diversity, Harris Neck is one of 18 sites forming the Colonial Coast Birding Trail, inaugurated in 2000…" (USFWS 2012c).

Blackbeard Island National Wildlife Refuge. "The island is comprised of interconnecting linear dunes thickly covered by oak/palmetto vegetation. There are approximately 1,163 acres of open freshwater or freshwater marsh, 2,000 acres of regularly flooded saltmarsh, 2,115 acres of maritime forest, and 340 acres of sandy beach. The primary objectives of the refuge are to provide wintering habitat and protection for migratory birds; provide protection and habitat to promote resident and migratory wildlife diversity; and to provide protection and management for endangered and threatened species (loggerhead sea turtle, wood stork, piping plover). Notable concentrations of waterfowl, wading birds, shorebirds, songbirds, raptors, deer, and alligators can be seen at various times of the year…" (USFWS 2012a).

Wolf Island National Wildlife Refuge. "Wolf Island was designated a National Wilderness Area in 1975, therefore no public use facilities exist or are planned on the refuge. Though the refuge's saltwaters are open to a variety of recreational activities, all beach, marsh, and upland areas are closed to the public. Visitors must make their own arrangements to reach the refuge. Marinas in the Darien, Georgia area may offer transportation to the refuge…" (USFWS 2012g).

Cumberland Island National Seashore. Cumberland Island is the largest and southernmost barrier island in Georgia. With little commercial development, Cumberland has remained relatively stable over the last several hundred years, though barrier islands are typically dynamic environments (NPS 2012a).

Sapelo Island National Estuarine Research Reserve. "Sapelo Island, Georgia's fourth largest barrier island, is located midway on the Georgia coastline and is separated from the mainland by 5 miles of marsh and tidal waterways. A total of 16,500 acres make up Sapelo

Island, of which, nearly 5,600 acres are tidal saltmarsh. The Sapelo Island National Estuarine Research Reserve occupies just over one-third of Sapelo and is comprised of 2,100 upland acres and 4,000 acres of tidal saltmarsh. The Reserve lies in the midst of an estuary where the currents of Doboy Sound and the Duplin River converge. The Reserve encompasses ecologies typical of the Carolinian biogeographic region which spans the south Atlantic coastline of the United States from North Carolina to Northern Florida. This region is characterized by vast expanses of tidal saltmarshes protected by a buffer of barrier islands…" (SINERR 2012). Two reaches of the AIWW border the reserve, but neither reach requires dredging and no disposal easements are located there. Two proposed new ocean disposal sites for the AIWW could be located about four miles offshore off Sapelo Sound and Altamaha Sound within 15 – 20 miles of the reserve.

Grays Reef National Marine Sanctuary. Gray's Reef National Marine Sanctuary is located about 17 miles off Sapelo Island, Georgia, and is one of the largest near-shore "live-bottom" reefs of the southeastern United States. It is currently the only protected natural reef area on the continental shelf off the Georgia coast. The reserve encompasses approximately 22 square miles (about 14,000 acres). "Live bottom" is a term used to refer to hard or rocky seafloor that typically supports high numbers of large invertebrates such as sponges, corals and sea squirts. These spineless creatures thrive in rocky areas, as many are able to attach themselves more firmly to the hard substrate, as compared to sandy or muddy "soft" bottom habitats. Within the Gray's Reef National Marine Sanctuary there are rocky ledges with sponge and coral live bottom communities, as well as sandy bottom areas that are more typical of the seafloor off the southeastern U.S. coast (NOAA 2012). Two proposed new ocean disposal sites for the AIWW could be located about four miles offshore off Sapelo Sound and Altamaha Sound within 15 – 20 miles of the sanctuary.

Fort Pulaski National Monument. Fort Pulaski National Monument is located in Chatham County, Georgia along the Savannah River only a few miles from its junction with the Atlantic Ocean. With the exception of approximately 250 acres on Cockspur Island and 200 acres on McQueens Island, the 5,400 acre park consists of tidal marshes and mud flats that are subject to daily inundation of a 6 to 10 foot tide. These two islands that make up the site were, before human intervention, primarily saltmarsh. The Monument is administered by the National Park Service (NPS 2012b). One reach of the AIWW, Elba – McQueens Cut, passes through the western end of the national monument property.

Skidaway Island State Park. Skidaway Island State Park is a 588-acre state park along Skidaway Narrows, part of the AIWW. The park is part of the Colonial Coast Birding Trail. Trails wind through maritime forest and past saltmarsh, leading to a boardwalk and observation tower. Visitors can watch for deer, fiddler crabs, raccoon, egrets and other wildlife. Inside the park's interpretive center, birders will find binoculars, reference books and a window where they can look for migrating species such as Painted Buntings. Children will especially enjoy seeing the towering, 20-foot Giant Ground Sloth replica and reptile room. A scenic campground is nestled under live oaks and Spanish moss, while groups can enjoy privacy in their own pioneer campgrounds. Open-air picnic shelters and an enclosed group shelter are popular spots for parties, reunions and other celebrations (GDNR 2013).

Jekyll Island State Park. Jekyll Island is one of only four Georgia barrier islands accessible by road. It encompasses 5,700 acres and measures 7 miles long by 1.5 miles wide and has 8 miles of beaches. Georgia law designates Jekyll Island as a State Park, meaning that the land and its flora and fauna belong to all citizens of Georgia. Jekyll Island belongs to a special category of State Parks, since it is not managed by the Georgia Department of Natural Resources and is therefore not subsidized by the State's taxpayers. Rather, the Jekyll Island - State Park Authority (JIA) is authorized as the Island's governing body and required to operate the Park as a financially self-sufficient entity. The Jekyll Island Conservation Plan recognizes the need for income-yielding, developed portions of the Island respecting the statutory limit of 35% of the Island's uplands as determined in the Jekyll Island Master Plan, and provides direction for less-restrictive protection of wildlife habitat in these zones, in addition to providing for strong protection of the undeveloped areas of the Island (JIA 2012). Jekyll Creek along the western side of the island is part of the AIWW and several disposal easements are located there.

Ossabaw Island Wildlife Management Area (WMA). "Ossabaw Island is the third largest of Georgia's Sea Islands and lies along the Atlantic Ocean about 20 miles south of Savannah. The island encompasses over 16,000 acres of tidal marshes and 9,000 acres of high ground. Ponds, salt water creeks, one river and many sloughs, inlets, and beaches make the high ground of Ossabaw a complex of small islands. Broad flat ridges and shallow depressions comprise the western part of Ossabaw (Pleistocene soils), while steep, parallel dune ridges mark the eastern part (Holocene soils)" (GDNR 2012a).

Richmond Hill Wildlife Management Area. Richmond Hill WMA is approximately 7,400 acres in several tracts, some of which border Kilkenny Creek, a tributary of Bear River on the AIWW (GDNR, as posted on Georgia Outdoors.com 2012).

Altamaha Wildlife Management Area. "The Altamaha Waterfowl Management Area at Altamaha WMA consists of 3,154 acres of managed waterfowl impoundments and some 27,000 acres of bottomland hardwoods and cypress-tupelo swamps" (GDNR 2012b).

St. Catherine's Island. St. Catherine's Island is an undeveloped semi-tropical barrier island 35 miles South of Savannah, Georgia. It includes 7,000 acres of high land, 7,000 acres of saltmarsh, and a wide variety of forest habitats. The island is ten miles long by two miles wide. St. Catherine's Island is bounded on the north by St. Catherine's Sound and on the south by Sapelo Sound; both of which are tidal estuaries with no significant input of fresh water or fluvial sediment from the mainland. St. Catherine's Island' Sea Turtle Conservation Program is engaged in nesting sea turtle conservation, research, and education. Other conservation activities on the island include the Wildlife Survival Center, an archaeology program of the American Museum of natural History, The St. Catherine's Island Sea Turtle Conservation Program, and many scientific, educational, and conservation projects. St. Catherine's is now administered by the St. Catherine's Island Foundation, Inc. Research activities are administered by the American Museum of Natural History through the Edward John Noble Foundation. The island is a National Historic Landmark (St. Catherine's Island Sea Turtle Conservation Program 2013).

Wildlife Habitats

There are four predominant habitat, or "ecological zones," adjacent to the AIWW within Georgia and southern South Carolina, primarily based on elevation from mean high water (MHW) line. These are the low marsh zone, the high marsh zone, the shrub zone, and an upland community, the oak-juniper-palm forest.

The low marsh zone is regularly flooded by high tides and is generally found below the MHW. This community is dominated nearly pure stands of smooth cordgrass (*Spartina alterniflora*). Smooth cordgrass marshes are considered to be the most productive type of the saltmarsh communities. This community occurs throughout the tidal lands along the AIWW. The upper margin of this community grades into the high marsh community. In areas with less tidal action or in areas with high evaporation rates (thus high salt concentrations) the smooth cordgrass is shorter and less productive and other plant species also occur. In salt pan areas short-form smooth cordgrass is found with glasswort (*Salicornia* sp.) dominant.

The high marsh zone, beginning at the marsh/land line is regularly flooded by spring tides and is infrequently flooded during abnormal high tides. The dominant vegetation in this zone consists of saltmeadow(*Spartina patens*) and saltgrass (*Distichlis spicata*). The high marsh zone often has several intermixed plant communities, including the salt panne association and stands of *Juncus roemarianus*), sea lavender (*Limonium nashii*) and salt bulrush (*Scirpus robustus*). In the high marsh zone areas which are only occasionally flooded, shrub zone type vegetation is frequently present and forms an ecotone or transitional community.

The shrub zone, which is located at elevations which are only occasionally flooded by high spring tides or abnormally high storm tides, forms the border between the high marsh zone and the terrestrial vegetation. This zone contains a variety of herbaceous and woody plant species with shrubs being dominant. The characteristic shrub vegetation present in this zone includes marsh elder (*Iva frutescens*), sea ox-eye (*Borrichia frutescens*), groundsel bush (*Baccharis halimifolia*), Florida privet (*Forestiera porulosa)*, wax myrtle (*Myrica cerifera*) and yaupon (*Ilex vomitoria*). Herbaceous vegetation occurring in this zone consists of black needle rush, saltmeadow cordgrass, saltgrass and sea lavender.

Primary production activity measurements for many areas along the coastal saltmarshes in Georgia range from an average of 3,108 grams per square meter for *Spartina alterniflora* (tall form) to 913 grams per square meter for black needlerush (*Juncus roemarianus*). Primary productivity ranges from 3,990 grams per square meter per year for *Spartina alterniflora* to 2,261 grams per square meter per year. Other freshwater marsh areas in Georgia vegetated by cattail (*Typha latifolia*) have net primary productivity of approximately 680 grams per square meter per year measured as a standing crop biomass. These values indicate that marsh areas, depending on the species of vegetation present, are some of the most productive areas in the world. This conclusion is based on data generated by Kibby (1980) and is compared to data from areas of intensive agriculture, jungle rain forests and continental shelf fisheries.

The invertebrate community of saltmarshes and estuarine areas is diverse. The most common zooplankton forms have been identified by Jacobs (1968): *Acartia tonsa*, *Pseudodioptomus caronaius*, and *Paracalanus parvus*, all of which are common among the zooplankton found in Doboy Sound and the waters near Sapelo Island. Windom et al.(1974), investigating the impacts of dredging on benthic organisms for USACE, identified over 70 species of benthic organisms found within the estuarine waters of the State of Georgia. The most extensively studied invertebrates are the macroinverbrates of commercial importance, namely oysters, blue crab, and shrimp species. The American oyster (*Crassostrea virginica*) harvested along the Atlantic Coast has diminished in the past due primarily to pollution and human development along coastal areas. The blue crab, harvested in coastal waters of the AIWW, consists of two similar species, *Callinectes sapidus* and *C. ornatus*. The majority of estuarine shrimp are found in close proximity to shallow wetland systems. White shrimp may use freshwater submerged vegetation to some degree. Brown shrimp primarily utilize estuarine submerged vegetation because of salinity inclinations.

There are isolated areas of palustrine (i.e., freshwater) wetlands within the project area, generally positioned on spoil islands. These serve many of the same vertebrate species as the saltwater/brackish marshes, but have distinguishing vegetative characteristics.

The wetlands through which the AIWW passes are feeding and nursery grounds for birds, mammals, and fishes. The water-soil-plant complex forms a nutrient processing area where important phases of the carbon, nitrogen, phosphorous, and sulfur cycles take place. Wetlands are sources of organic compounds in detrital food webs, and act as metering systems, controlling the output of nutrients in non-point source runoff to aquatic systems. Wetlands are buffers between storm driven water and adjacent high ground and help to reduce shoreline erosion.

Some marshland areas along the AIWW have been altered by maintenance dredging of the channel. The vegetative changes which have resulted are varied depending upon disposal techniques and the material dredged. In unconfined disposal areas where the elevation has not precluded tidal action, smooth cordgrass has revegetated the area. However, small upland islands locally known as hammocks have formed in disposal sites which have been used often enough to build up the elevation above the mean high water level. Vegetation on hammock areas is similar to high marshland shrub marsh zones previously discussed, depending on elevation and the sediments dredged. Along the edge of the hammocks, where flooding duration is about one hour each day, vegetation commonly found consists of glasswort, saltgrass and sea ox-eye. In areas with higher elevations, wax myrtles, marsh elder, and southern red cedars have become established. In some areas where the dredged material consists mostly of sterile sands with little organic material, the area is unable to support any vegetation. Recently diked disposal areas form hammocks similar to high and shrub marsh zones; however, some old diked disposal areas which do not undergo the shrub marsh phase are occasionally revegetated with broomsedge (*Andropogon* sp.), prickly pear cactus (*Opuntia* sp.) and other upland type vegetation. In most instances, diked disposal sites form a shrub zone and may later develop into an oak-juniper-palm forest community. This type of community is usually found in areas with an elevation five feet above MHW.

In areas above the scrub zone exists an upland community called oak-juniper-palm forest. These communities are best developed on peninsulas of high ground in the saltmarsh zone with an elevation of 5 feet (Hillestad et al. 1975). An oak-juniper-palm forest can also be found on dredged disposal sites. The dominant canopy vegetation found in these areas consists of live oak (*Quercus virginiana*), southern red cedar (*Juniperus silicicola*), and cabbage palm (*Sabal palmetto*) with a wide variety of understory vegetation. Commonly, shrubs and vines associated with this vegetation type consist of wax myrtle, Florida privet, and saw palmetto (*Serenoa repens*).

Fish and Shellfish Communities

Overview

The AIWW and adjacent wetlands within the project area provide breeding, nursery, feeding and foraging grounds for innumerable species of fish and invertebrates (i.e., "shellfish"). Fish and shellfish communities within the project area may use many of the habitats associated with the project area, including tidal creeks, oyster bars, and low marsh as well as the waters of the AIWW which connect to the Atlantic Ocean (and major rivers) where many adult shellfish and fish species spend parts of their life-cycles. Many of these species may be important for recreational, commercial, and or other economic reasons, while most comprise important links in a marine (and terrestrial) foot web. Some of these species require that their habitats are actively managed by the federal government in order to protect stocks.

Essential Fish Habitat and Managed Species

Background. The 1996 Congressional amendments to the Magnuson-Stevens Fishery Conservation and Management Act (MSFCMA) (PL 94-265) set forth requirements for the NMFS, regional fishery management councils (FMC), and other federal agencies to identify and protect important marine and anadromous fish habitat. These amendments established procedures for the identification of Essential Fish Habitat (EFH) and a requirement for interagency coordination to further the conservation of federally managed fisheries. EFH is defined in the act as "those waters and substrate necessary to fish for spawning, breeding, feeding, or growth to maturity." The definition for EFH may include habitat for an individual species or an assemblage of species, whichever is appropriate within each Fisheries Management Plan (FMP).

Project area EFHs. In the project area (i.e., inshore and offshore areas considered for disposal), EFH's include estuarine emergent marshes, intertidal flats, the estuarine water column, the marine water column, and oyster reefs/shell bars. It is anticipated that for the use of disposal tracts along the AIWW, only the first three types of EFH will be directly impacted; these are discussed below. The marine water column is likely to be impacted during ODMDS disposal activities, and oyster bars may be impacted during maintenance dredging, but neither are likely to be directly impacted when using the AIWW disposal tracts; effects to these habitats will be evaluated by NOAA Habitat Conservation upon receipt of the DEIS.

Estuarine emergent marshes. Estuarine emergent marshes would be classified as "low marsh" according the classification/zonation in the discussion of wetlands presented above. These usually heavily vegetated areas protect shorelines from erosion, produce detritus, filter overland runoff, and function as a vital nursery area for various fish and many other species. A coastal marsh is typically characterized by its vegetation. Depending on marsh salinity and other environmental variables, marsh vegetation may include the following: smooth cordgrass (*Spartina alterniflora*), black needlerush (*Juncus roemerianus*), saltmeadow grass (*Spartina patens)*, big cordgrass (*Spartina cynosuroides*), saltworts (*Salicornia* sp.), salt grass (*Distichlis spicata*), salt-marsh aster (*Aster tenuifolius*), sea lavender (*Limonium* sp.), bulrush (*Scirpus* sp.), sawgrass (*Cladium jamaicense*), and narrowleaf cattail (*Typha angustifolia*). Communities comprising these and other vegetation types provide critical functions, such as refugia and forage for various fish. However, most juvenile managed fish found in the riparian salt/brackish marsh nurseries are spawned offshore and transported into the estuary through tidal inlets. Many commercial and managed species such as shrimp and summer flounder (*Paralichthys dentatus*) inhabit the tidal saltmarsh edge, while adult spotted seatrout (*Cynoscion nebulosus*), flounder, and red drum (*Sciaenops ocellatus*) forage the grass line for shrimp and other prey. Nursery areas can include soft bottom areas surrounded by salt/brackish marsh as well. Hence, the estuarine marshes are essential habitat to many managed species and serve multiple functions to various fish life-stages (Street et al. 2005). This salt/brackish marsh EFH is found along the AIWW throughout the project length.

Intertidal flats. Intertidal flats are typically generally flat areas of substrates of various composition (sand to silt) that are exposed during low tides and submerged during high tides. Emergent vegetation is usually absent, or at least not dominant. Intertidal flats serve various functions for many species' life stages, as described in Table 1. Estuarine flats serve as a feeding ground, refuge, and nursery area for many mobile species, as well as the microalgal community that can function as a nutrient (nitrogen and phosphorus) stabilizer between the substrate and water column. The benthic community of an intertidal flat can include polychaetes, decapods, bivalves, and gastropods. This tidally influenced, constantly changing EFH provides feeding grounds for predators, refuge and feeding grounds for juvenile and forage fish species, as well as nursery grounds for estuarine-dependant benthic species (SAFMC 1998). Flats can provide a comparatively low energy area with tidal phases that allow species the use of shallow water habitat as well as relatively deeper water within small spatial areas. Species such as summer flounder, red drum, spotted seatrout, striped mullet (*Mugil cephalus*), gray snapper, blue crab (*Callinectes sapidus*), and shrimp use this EFH as a nursery. SAFMC (1998) listed flats use by post-larval and juvenile phases of fish and shellfish (e.g., Atlantic menhaden *Brevoortia tyrannus*, bay anchovy *Anchoa mitchilli*, inshore lizardfish *Synodus foetens*, Atlantic silverside *Menidia menidia*, black sea bass *Centropristis striata*, pinfish *Lagodon rhomboides*, summer flounder *Paralichthys dentatus*, brown shrimp *Farfantepenaeus aztecus* and hard clam *Mercenaria mercenaria*) as foraging and/or refuge (i.e., from predators that require high tide to gain access to estuarine feeding grounds) areas. In addition, these habitats are important for both migration routes and foraging for managed species such as red drum. Frequently, nursery areas can include unvegetated soft bottom areas surrounded by salt/brackish emergent marsh (Street et al. 2005).

Table 1 Managed species potentially within the AIWW portion of the project area

Common Name [1]	Scientific Name	Management Plan Agency [2]	Fishery Management Plan (FMP) [4]	Estuarine Life Stage in EFH [3]
Brown shrimp	*Farfantepenaeus aztecus*	SAFMC	Shrimp	P,J,A
White shrimp	*Litopenaeus setiferus*	SAFMC	Shrimp	P,J,S
Pink shrimp	*Farfantepenaeus duorarum*	SAFMC	Shrimp	P, J, S
(HAPC FOR SHRIMPS: Tidal inlets, state-designated nursery and overwintering habitats) [5]				
Gray snapper	*Lutjanus griseus*	SAFMC	Snapper Grouper	P,J,A
Lane snapper	*Lutjanus synagris*	SAFMC	Snapper Grouper	J
(HAPC FOR SNAPPERS: Oyster/shell habitat, state-designated nursery areas, coastal inlets) [5]				
Cobia	*Rachycentron canadum*	SAFMC	CMP	L,P,J,A
Spanish mackerel	*Scomberomorus maculatus*	SAFMC	CMP	J
Bluefish	*Pomatomus saltatrix*	MAFMC	Bluefish	J,A
Summer flounder	*Paralichthys dentatus*	MAFMC	Summer Flounder	L,J,A
Atlantic sharpnose shark	*Rhizoprionodon terraenovae*	NMFS	HMS	J
Blacknose shark	*Carcharhinus acronotus*	NMFS	HMS	J
Bonnethead shark	*Sphyrna tiburo*	NMFS	HMS	J
Bull shark	*Carcharhinus leucas*	NMFS	HMS	J
Dusky shark	*Carcharinus obscurus*	NMFS	HMS	J
Finetooth shark	*Carcharhinus isodon*	NMFS	HMS	J,A
Lemon shark	*Negaprion brevirostris*	NMFS	HMS	J,A
Sandbar shark	*Carcharhinus plumbeus*	NMFS	HMS	J
Sand tiger shark	*Odontaspis taurus*	NMFS	HMS	N
Scalloped hammerhead	*Sphyrna lewini*	NMFS	HMS	J
Spinner shark	*Charcharhinus brevipinna*	NMFS	HMS	J,A

[1]. These EFH species were based on species lists from SAFMC 2008.

[2]. Fishery Management Plan (FMP) Agencies: SAFMC=South Atlantic Management Council; MAFMC = Mid-Atlantic Fishery Management Council; NMFS = National Marine Fisheries Service.

[3]. Life stages include: E = Eggs, L = Larvae, N = Neonate, P = Post-Larvae, J = Juveniles, S = Sub-Adults, A = Adults

[4]. Fishery Management Plans: CMP = Coastal Migratory Pelagics; HMS = Highly Migratory Species.

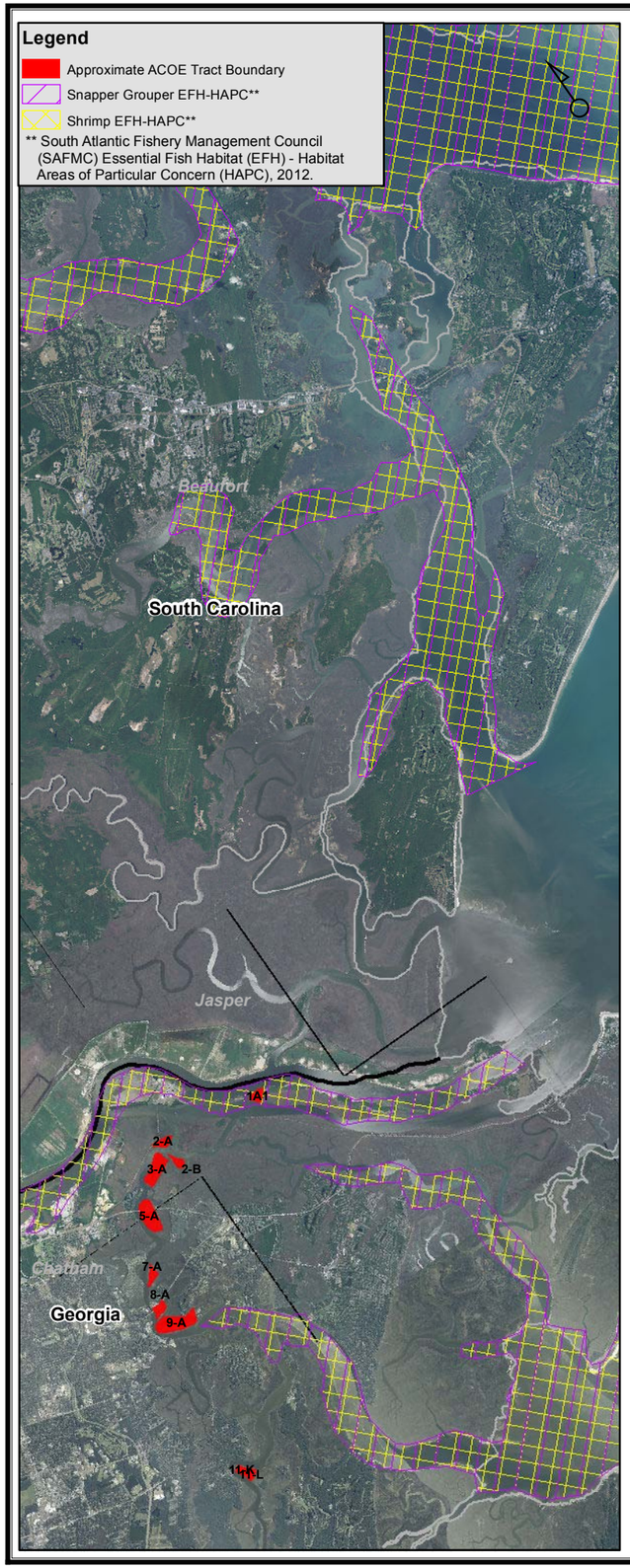
[5]. HAPC = Habitat Areas of Particular Concern; if not listed for certain fishery management plans, appropriate HAPC for respective species is not found in the project area or vicinity.

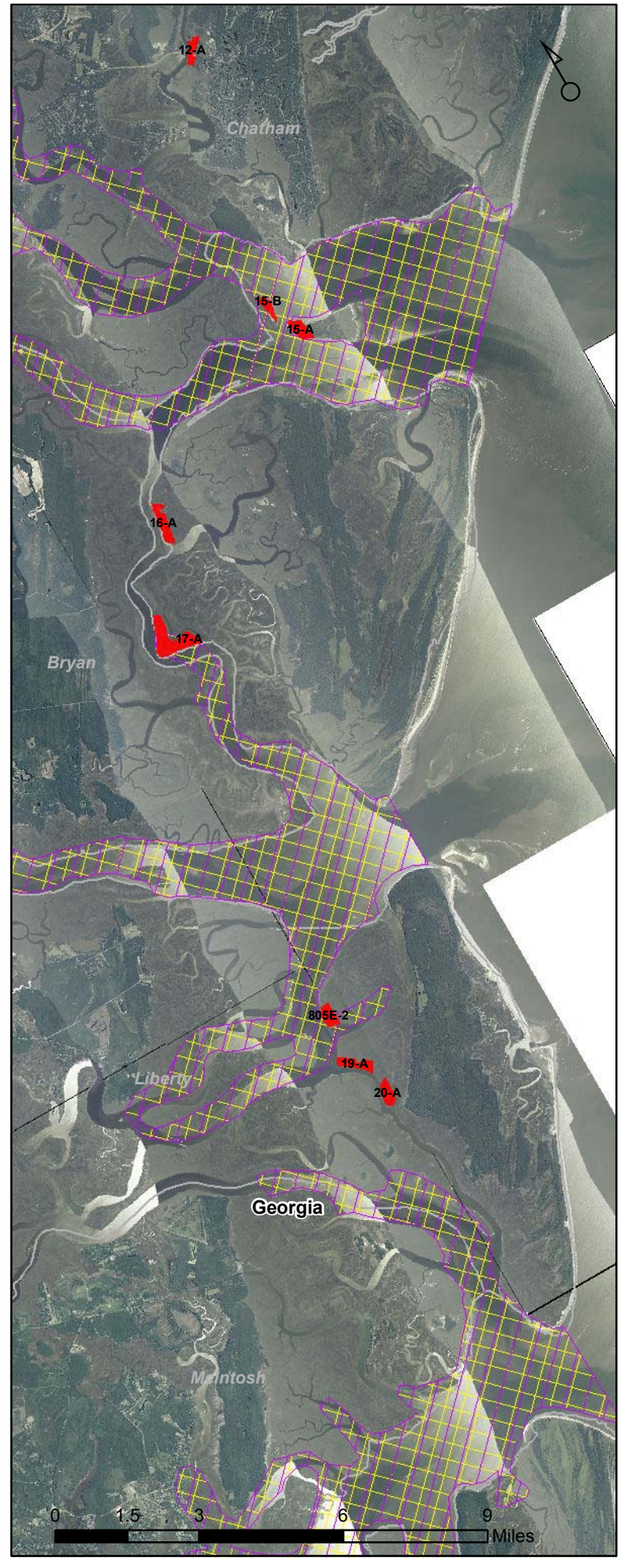
Estuarine water column. The estuarine water column is a three-dimensional habitat that transports plankton and nutrients, and comprises water of varying levels of oxygen and salinity that form the physical matrix on which both nekton and benthic organisms rely. Water column salinity is variable, ranging from less than 8 ppt to over 30 ppt, due to wind- and tide-driven sea water mixing with upland freshwater sources and land surface runoff. Tidal cycles and freshwater inflows are primary factors in estuarine circulation, i.e., delivery and removal of nutrients and decomposing material to estuarine communities. Strong wind events and freshwater tributaries can increase turbidity, reducing light penetration, and adversely effecting submerged vegetation and phytoplankton photosynthesis. Freshwater rivers and stream inflows provide this EFH organic matter, nutrients, and finer grained sediments, whereas, ocean-driven tides deliver coarser sediments and serve as a transport mechanism for

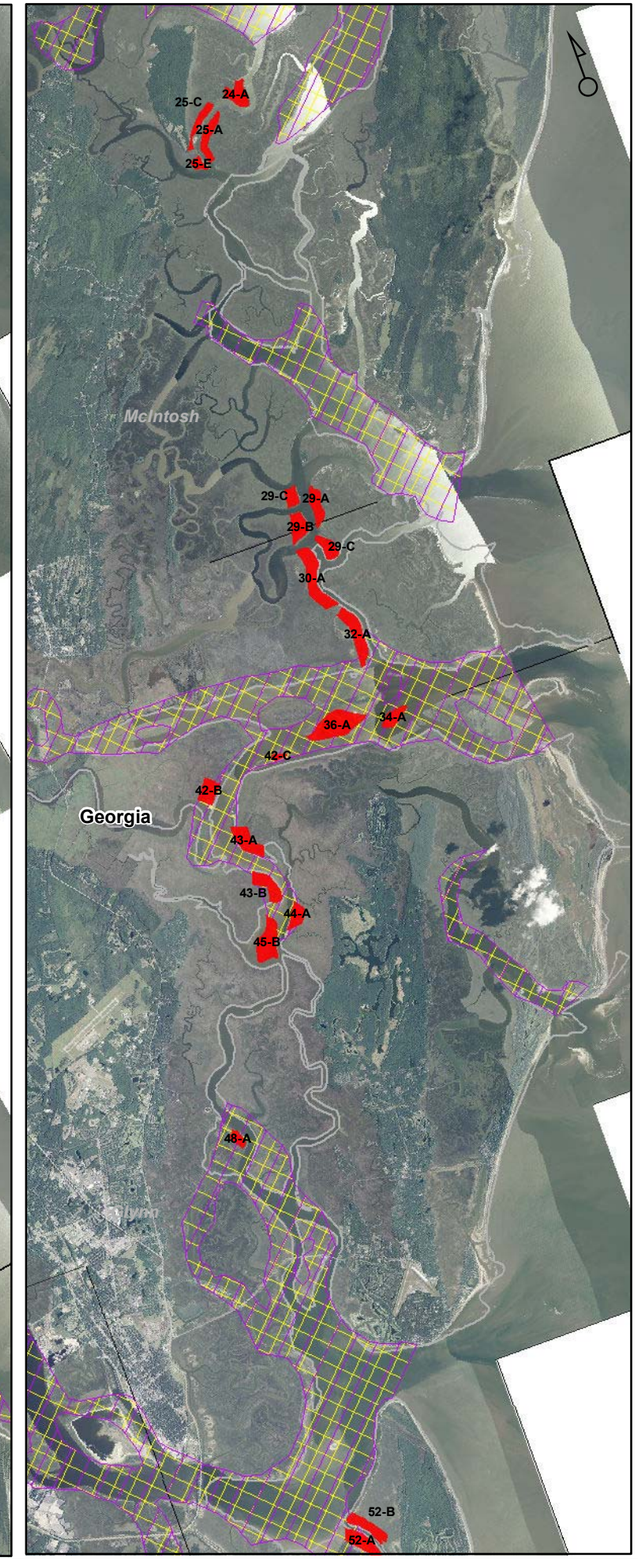
estuarine-dependent species. The ocean waters within this EFH act as a temperature stabilizer offsetting seasonal temperature extremes that would reduce productivity and diversity in the shallower upstream waters. Parameters such as salinity, temperature, dissolved organic matter, dissolved inorganic nitrogen, and oxygen are normally used to characterize estuarine waters. Other descriptors, such as adjacent structures (shoals, channels, and marshes), water depth, available fetch, and turbidity are used to further describe waters. The estuarine water column provides both migrating and residential species of varying life stages the opportunity to survive in a productive, active, unpredictable, and at times strenuous environment. As the transport medium for nutrients and organisms between the ocean and the upstream rivers and inland freshwater systems, the estuarine water column is as essential a habitat as any marsh, seagrass bed, or reef (SAFMC 1998).

Habitat Areas of Particular Concern. Habitat Areas of Particular Concern (HAPC) are EFHs that are considered atypical, particularly ecologically important, susceptible to anthropogenic degradation, or located in environmentally challenged or stressed areas. HAPCs may include areas used for migration, reproduction, and development. HAPCs can include intertidal and estuarine habitats. The Magnuson-Stevens Act does not provide any additional regulatory protection to HAPCs. However, if HAPCs are potentially adversely affected, additional inquiries and conservation guidance may result during the NMFS EFH consultation (NMFS 2008). The South Atlantic Fisheries Management Council (SAFMC) has designated coastal inlets (ubiquitous throughout the project area) and state-designated overwintering areas of Georgia and South Carolina as HAPCs for white, brown, and pink shrimp (see Figure 5). The Atlantic States Marine Fisheries Commission considers Georgia and South Carolina's coastal inlets HAPCs for red drum. Also, oyster/shell bottom and coastal inlets of Georgia and South Carolina are considered HAPCs for the species of the snapper-grouper complex (see Figure 5). Finally, HAPCs for the migratory pelagic species of king mackerel (*Scomberomorus cavalla*), Spanish mackerel (*S. maculatus*), and cobia (*Rachycentron canadum*) include any Atlantic coast estuary with high numbers of these species (SAFMC 1998, NMFS 2008). State-designated areas of Importance of Managed Species including Primary Nursery Areas (PNA) are also considered HAPCs.

Managed Species. Many managed species, i.e., species that use the above habitats, are likely to reside, at some part of their life-cycles, in the project area or in the vicinity. Table 1 lists these species of the snapper/ grouper complex and the shrimp EFH HAPC are contained within the portion of the project area where non-ODMDS spoil deposition is proposed to occur. Managed species occurring in/near existing/potential ODMDS sites will be evaluated by NOAA Habitat Conservation upon receipt of the DEIS and/or when permit applications for such sites are completed. The following text discusses habitat issues relevant to managed species in the project area.







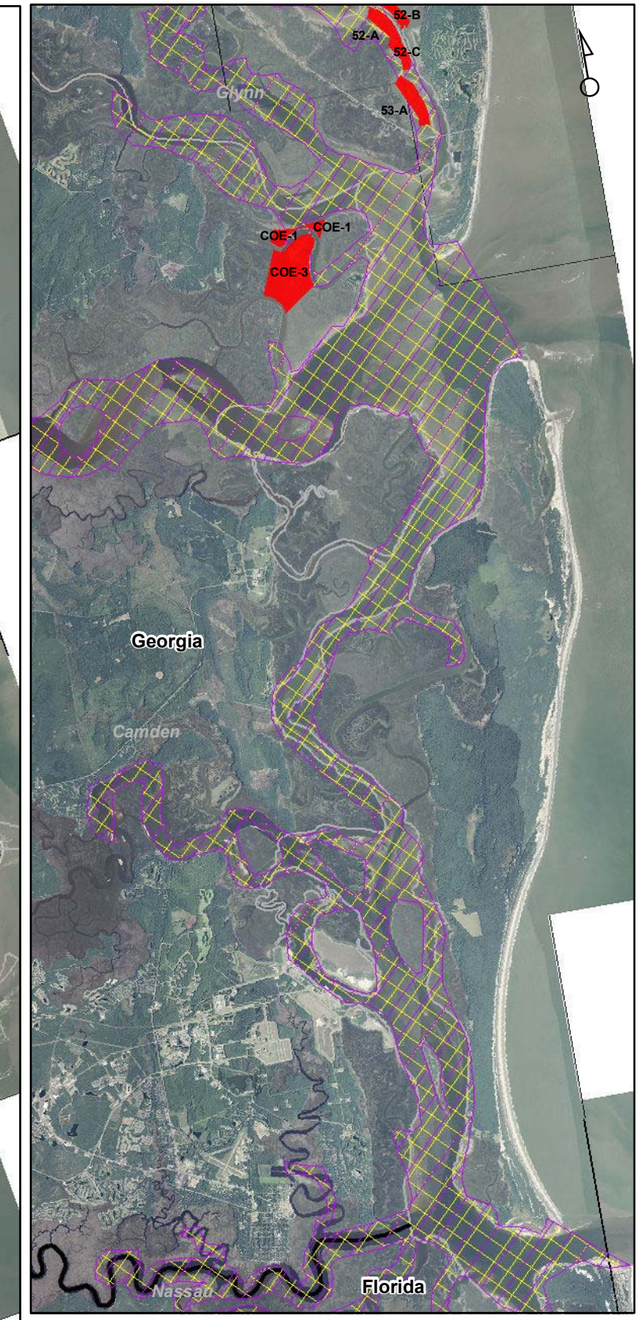


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	Figure 5

Shrimps. After shrimp eggs hatch offshore, larvae and post-larvae depend on ocean currents for transportation through inlets into estuarine nursery grounds. River mouths and inlet entrances are particularly important to estuarine shrimp recruitment. The majority of estuarine shrimp are found in close proximity to shallow wetland systems. Within the estuary, post-larval shrimp grow rapidly; however, the rate is salinity- and temperature-dependent (SAFMC 2004). These shrimp species utilize related habitats with minor differences in substrate and salinity partiality. Once reaching a sub-adult size of three to five inches, the shrimp migrate seaward. Some notable elements of habitat use for the three species of shrimps common in the project area are discussed below.

White shrimp. Shallow muddy bottoms in low to moderate salinities are the optimum nursery areas for benthic juvenile white shrimp (*Litopenaeus setiferus*). During this stage, the diet consists of zooplankton and phytoplankton. By June or July, the juveniles move to deeper creeks, rivers, and sounds. Juveniles prefer to inhabit shallow estuarine areas with a muddy, loose peat, and sandy mud substrate with moderate salinities.

Brown shrimp. Brown shrimp (*Farfantepenaeus aztecus*) larvae migrate from offshore to inshore areas as post-larvae (peak migration from February through April). Carried by currents and tides into estuaries, the larvae develop into post-larvae within 10 to 17 days. Once in the estuaries, post-larvae seek out the soft silty/muddy substrate common to vegetated and non-vegetated, shallow, estuarine environments. This environment yields an abundance of detritus, algae, and microorganisms that comprise their diet at this developmental stage. Post-larvae have been collected in salinities ranging from zero to 69 ppt with maximum growth reported between 18 degrees centigrade (°C) and 25°C, peaking at 32°C. Maximum growth, survival, and efficiency of food utilization have been reported at 26°C (Lassuy 1983). The density of post-larvae and juveniles is highest among emergent marsh and submerged aquatic vegetation (Howe et al. 1999, Howe and Wallace 2000), followed by tidal creeks, inner marsh, shallow non-vegetated water, and oyster reefs. The diet of juveniles consists primarily of detritus, algae, polychaetes, amphipods, nematodes, ostracods, chironomid larvae, and mysids (Lassuy 1983). Emigration of sub-adults from the shallow estuarine areas to deeper, open water takes place between May through August, with June and July reported as peak months.

Pink shrimp. During the larval stages, pink shrimp (*Farfantepenaeus duorarum*) development is dependent on food availability, water temperature and quality of habitat. Depending on environmental conditions, the larval period can last from 15-25 days. Post-larval movement from the spawning areas to estuaries is not well known, although some literature suggests that wind conditions and current movements assist in transport from the estuaries to offshore habitats. Migration offshore occurs during May/June off the Georgia coast (SAFMC 2009).

Complex of snapper-grouper species. This complex of ten families of fishes containing 73 species are managed by the SAFMC. There is variation in specific life history

patterns and habitat use among the snapper grouper complex species. For specific life stages of estuarine dependent and nearshore snapper grouper species, EFH includes areas inshore of the 100-foot-deep ocean contour, such as the salt and brackish marshes, tidal creeks, soft sediments found in the AIWW and adjacent wetlands. EFH-HAPC for species of the complex is shown in Figure 5. As is the case for many other coastal species, estuarine and marine water columns are connecting water bodies between inshore estuarine nursery areas and offshore waters used for maturation and spawning. The project area is designated as EFH for two species of snapper in the Lutjanidae family: lane and gray snapper. They range from shallow estuarine areas (e.g., vegetated sand bottom, mangroves, jetties, pilings, bays, channels, and mud bottom) to offshore areas (e.g., hard and live bottom, coral reefs, and rocky bottom) as deep as 1,300 feet (Allen 1985, Bortone and Williams 1986). Like most snappers, these species participate in group spawning, which indicates either an offshore migration or a tendency for larger, mature individuals to take residency in deeper, offshore waters. Both the eggs and larvae of these snappers are pelagic (Richards et al. 1994). After an unspecified period of time in the water column, the planktivorous larvae move inshore and become demersal juveniles. The diet of these newly settled juveniles consists of benthic crustaceans and fish. Juveniles inhabit a variety of shallow, estuarine areas including vegetated sand bottom, bays, mangroves, finger coral, and seagrass beds. As adults, most are common to deeper offshore areas such as live and hardbottoms, coral reefs, and rock rubble. However, adult gray and lane snapper also inhabit vegetated sand bottoms with gray snapper less frequently occurring in estuaries and mangroves (Bortone and Williams 1986). Data suggests that adults tend to remain in one area. The diet of adult snappers includes a variety of fish, shrimp, crabs, gastropods, cephalopods, worms, and plankton. All species are of commercial and/or recreational importance (Bortone and Williams 1986). Some other species of the complex may occasionally be found in the AIWW and nearby tidal creeks, oyster bars, and inlets. These include the crevalle jack (*Caranx hippos*), red snapper (*Lutjanus campechanus*), and the white grunt (*Haemulon plimeri*).

Coastal Migratory Pelagics. Spanish mackerel and cobia are coastal migratory pelagic species managed by the SAFMC. EFH for these species include the inlet and, in a more general sense, any high-salinity bays which may occur in the project vicinity. Many coastal pelagic prey species are estuarine-dependant in that they spend all or a portion of their lives in estuaries. Accordingly, the coastal pelagic species, by virtue of their food source, are to some degree also dependant upon estuaries and, therefore, can be expected to be detrimentally affected if the productive capabilities of estuaries are greatly degraded. The diet of scombrids consists primarily of fish and, to a lesser extent, penaeid shrimp and cephalopods. The fish that make up the bulk of their diet are small schooling clupeids [e.g., Atlantic menhaden, alewives (*Alosa pseudoharengus*), Atlantic thread herring (*Opisthonema oglinum*), anchovies], atherinids, and to a lesser extent jack mackerels (*Trachurus symmetricus*), snappers, grunts (H*aemulidae* sp.), and half beaks (*Hemiramphidae* sp.) (Collette and Nauen 1983). Cobia feed on small fish such as striped mullet, pinfish, Atlantic croakers (*Micropogonias undulatus*), and Atlantic herring (*Clupea harengus*); as well as on crustaceans, benthic invertebrates, and cephalopods.

Mid-Atlantic Species in South Atlantic Region. Bluefish and summer flounder are two species listed in the Mid-Atlantic Fisheries Management Plan that occur in the South Atlantic. Bluefish juveniles and adults are listed as using estuaries from North Carolina to Florida.

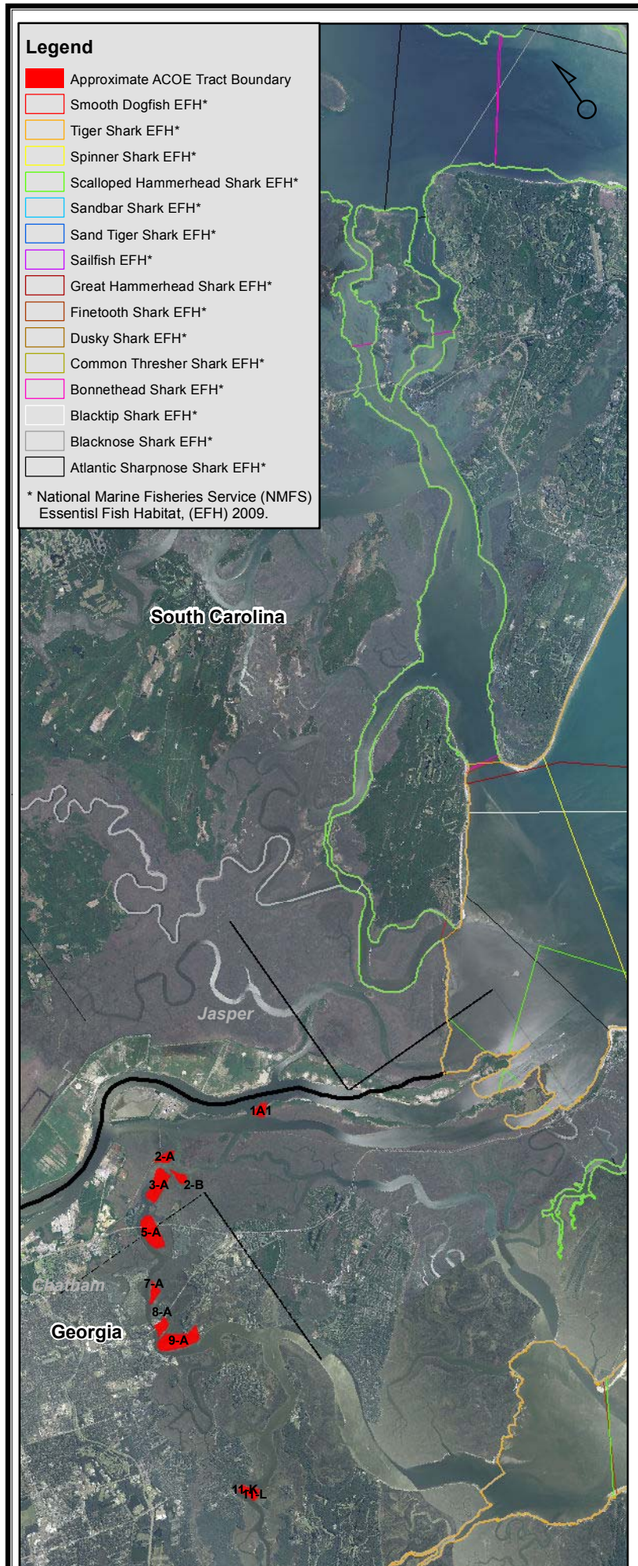
Summer flounder may be found where there is sandy or muddy bottom for burrowing with grassy cover nearby; typically in marshes and estuaries, but can also be found offshore. Juvenile bluefish prefer inshore areas such as rivers, streams and estuaries. Because they are highly predatory, they will follow their prey inshore and even into brackish water. Adults normally are offshore but they have also been found inland as far as brackish water as well.

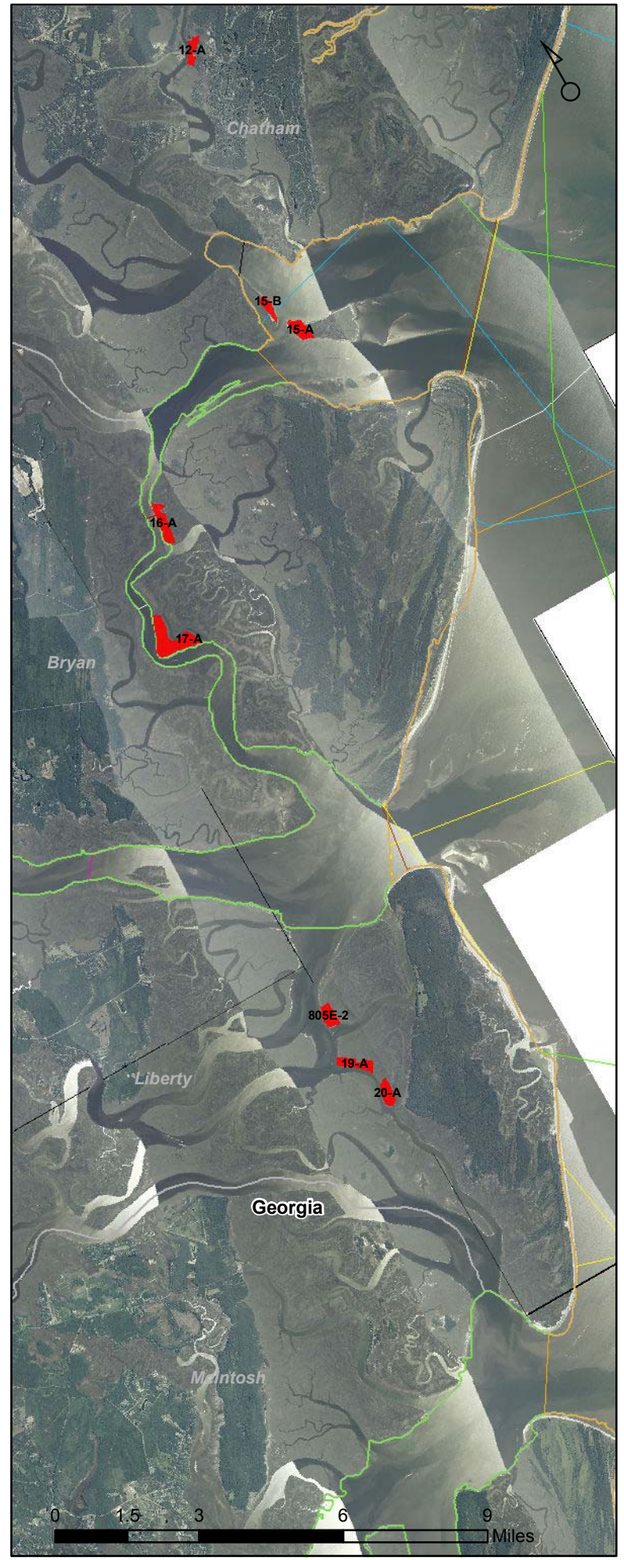
Highly Migratory Species. The sharks listed in Table 1 are included in the Highly Migratory Species (Federal) Fishery Management Plan, and are relatively common in the project area (see Figure 6). EFH for these shark species include the inlet and estuarine and shallow coastal waters all of which include the navigation channel.

Diadromous Fishes

Introduction. Diadromous (freshwater and saltwater life stages) fish that use the Georgia and South Carolina's coastal rivers include the American shad (*Alosa sapidissima*), hickory shad (*Alosa mediocris*), blueback herring (*Alosa aestivalis*), American eel (*Anguilla rostrata*), Atlantic sturgeon (*Acipenser oxyrhynchus*), and shortnose sturgeon (*Acipenser brevirostrum*). Because these species require multiple habitats and must have certain environmental parameters to complete migration and their life cycles, there are more potential disturbances that could adversely affect spawning and recruitment. (Sturgeons will be discussed below in the Protected Species section.) The following species accounts, focusing on habitat affiliations and spawning tendencies, has been transcribed from Green et al.(2009), which may be consulted for many additional biological and ecological details relating to these and other Atlantic coast diadromous species.

American shad. American shad spend most of their lives in marine waters. Adults migrate into coastal rivers and tributaries to spawn. Rivers, bays, and estuaries associated with spawning reaches are used as nursery areas (ASMFC 1999). Spawning of American shad begins in mid-January (Walburg and Nichols 1967; Leggett and Whitney 1972). Spawning runs typically last two to three months, but may vary depending on weather conditions (Limburg et al. 2003). There does not seem to be a minimum distance from brackish waters at which spawning occurs (Leim 1924, Massmann 1952), but upstream and mid-river segments appear to be favored (Massmann 1952, Bilkovic et al. 2002). It is not unusual for American shad to travel 25 to 100 miles upstream to spawn; some populations historically migrated over 300 miles upstream (Stevenson 1899; Walburg and Nichols 1967). Adults appear to be quite tolerant of turbid water conditions. In the Shuebenacadie River, Nova Scotia, suspended solid concentrations as high as 1000 mg/L did not deter migrating adults (Leim 1924). Furthermore, Auld and Schubel (1978) found that suspended solid concentrations of 1000 mg/L did not significantly affect hatching success of eggs. Juvenile American shad may be found predominantly in deeper, channel habitats of estuarine systems during fall and winter. Small crustaceans preyed upon by American shad are generally abundant near the bottom in these areas (McCord 2003).





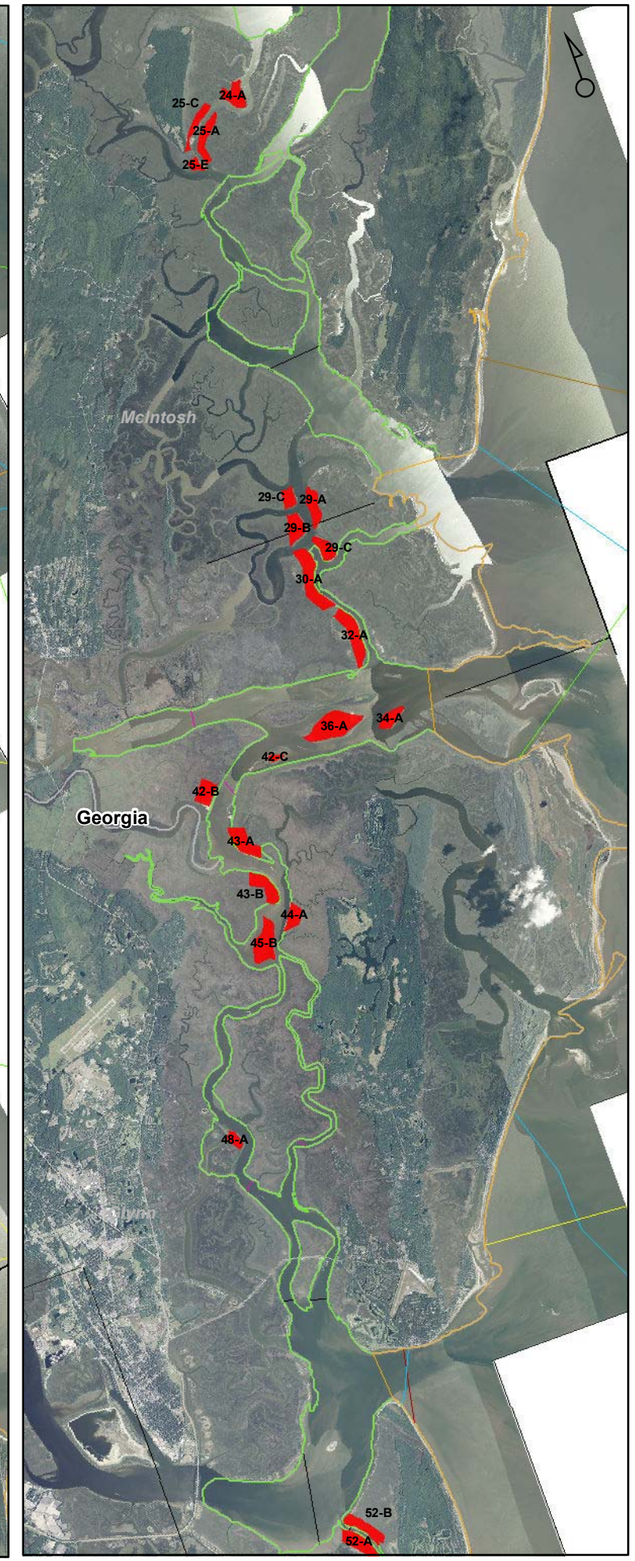


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	Figure 6

Hickory shad. Hickory shad spend most of their adult lives at sea, entering brackish and freshwater only to spawn (Colette and Klein-MacPhee 2002). Little is known about the life history and specific habitat requirements of this species. However, coastal migrations and habitat requirements are thought to be similar to that of other alosine species, particularly American shad (Klauda et al. 1991b). Adult hickory shad are highly sought after by sport fishermen when they ascend rivers and tributaries during their spawning run (Mansueti 1962, Pate 1972). Therefore, they are most likely to be sought between early March and mid-May as that corresponds with the spawning window (Bulak and Curtis 1979). Some environmental tolerances/preferences have been determined for various life stages of hickory shad. Adults have been found spawning in Maryland waters where the dissolved oxygen level was between 5.7 and 11.8 mg/L (B. M. Richardson, Maryland Department of Natural Resources, personal communication). Juveniles in Maryland waters were captured where dissolved oxygen ranged from 4.1 to 10.9 mg/L (B. M. Richardson, Maryland Department of Natural Resources, personal communication [as cited in Green et al]). Juveniles were found during the summer in estuarine waters of the Altamaha River, Georgia, when salinities reached 10 ppt, and during the winter, when salinities ranged from 10 to 20 ppt (Street 1970). As noted above, juveniles may forego the oligohaline portion of the estuary in favor of a more saline nursery environment (Pate 1972). Eggs were collected in the Roanoke River at dissolved oxygen levels ranging from 6.76 to 11.27 mg/L (Harris and Hightower 2007). In South Carolina, juvenile hickory shad are more predominant in shallow expanses of sounds and bays, compared to deeper, channel habitats occupied by juvenile American shad and blueback herring. The variation in distribution is likely the result of differences in food preferences. Small fishes preferred by hickory shad are likely more numerous in shallower habitats adjacent to marshlands (McCord 2003).

Blueback herring. Blueback herring are an anadromous, highly migratory, euryhaline, pelagic, schooling species that spend most of their lives at sea, returning to freshwater only to spawn (Colette and Klein-MacPhee 2002), ascending freshwater far upstream (Massman 1953; Davis and Cheek 1966; Perlmutter et al. 1967; Crecco 1982) to do so. Their distribution is a function of habitat suitability and hydrological conditions, such as swift flowing water (Loesch and Lund 1977). Blueback herring select a great variety of spawning habitat types (Street 1970; Frankensteen 1976; Christie 1978), including small tributaries upstream from the tidal zone (ASMFC 1999), seasonally flooded rice fields, small densely vegetated streams, cypress swamps, and oxbows, where the substrate is soft and detritus is present (Adams and Street 1969; Godwin and Adams 1969; Adams 1970; Street 1970; Curtis et al. 1982; Meador et al. 1984). Herring may arrive at spawning sites in February (Bulak and Christie 1981), but spawning begins in early March (Christie 1978; Meador 1982). Individuals generally spawn in freshwater above the head of tide; brackish and tidal areas are rarely used for spawning by this species (Nichols and Breder 1927; Hildebrand 1963; Fay et al. 1983; Murdy et al. 1997). Adults, eggs, larvae, and juveniles can tolerate a wide range of salinities, but seem to prefer a more narrow range, depending on life history stage. For example, while spawning may occur in salinities ranging from 0 to 6 ppt, it typically takes place in waters that are less than 1 ppt (Klauda et al. 1991a). Boger (2002) presented a modified salinity range for Virginia rivers, suggesting that a suitable salinity range for spawning adults is 0 to 5 ppt. Although spawning often occurs in freshwater, blueback herring

eggs and larvae can survive in salinities as high as 18 to 22 ppt (Johnston and Cheverie 1988). Larvae require a minimum of 5.0 mg/L of dissolved oxygen for survival (Jones et al. 1978), whereas adults require a minimum of 5.0 mg/L of dissolved oxygen (Jones et al. 1978). For example, adults caught in the Cooper and Santee Rivers, South Carolina, were always captured in areas that had a dissolved oxygen concentration of 6 mg/L or higher (Christie et al. 1981). Juvenile blueback herring have been collected in waters of the Cape Fear River, North Carolina, where dissolved oxygen concentrations ranged from 2.4 to 10.0 mg/L (Davis and Cheek 1966). In the laboratory, juveniles that were exposed to dissolved oxygen concentrations of 2.0 to 3.0 mg/L for 16 hours experienced a 33% mortality rate. Researchers determined that the juveniles were unable to detect and avoid waters with low dissolved oxygen (Dorfman and Westman 1970).

American eel. American eel are a catadromous species that reproduces in salt water, and after an oceanic larval stage, migrates to brackish or fresh water for growth to maturity. Upon reaching maturity, they migrate back to the ocean to spawn. In the ocean, young emerge from eggs as leptocephalus larvae, and later transform into the “glass eel” stage. Glass eels enter estuaries by drifting on flood tides and holding position near the bottom of ebb tides (McCleave and Wippelhauser 1987), and by actively swimming along shore in estuaries above tidal influence (Barbin and Krueger 1994). Glass eels move back up into the water column on flood tides and return to the bottom during ebb tides (Pacheco and Grant 1973; McCleave and Kleckner 1985; McCleave and Wippelhauser 1987). As the translucent glass eels develop pigment, many begin to migrate from estuaries into freshwater. These young pigmented individuals are termed “elvers.” Some elvers remain in coastal rivers and estuaries, while others may continue movements upstream in the winter and the spring (Facey and Van den Avyle 1987). Upstream migration may comprise up to three to five years of an individual’s yellow-phase (Haro and Krueger 1991). Some yellow-phase American eel continue migrating upstream until they reach maturity, while others remain in the lower portions of coastal estuaries and rivers (Morrison et al. 2003; Cairns et al. 2004; Lamson et al. 2006). Eel migrations upstream occur from March through October, and peak in May and July depending on location (Richkus and Whalen 1999). The yellow-phase is the primary growth stage where individuals spend most of their lives, is characterized by a lack of sexual maturity, and may last many years. Yellow eels gradually metamorphose into silver eels before migrating out to sea. During this maturation, American eel migrate downriver to marine waters. Silver eel migration begins at different times of year depending on location, but occurs primarily in the fall, although winter migrations have been documented (Facey and Helfman 1985; Euston et al. 1997, 1998). The age and size at which downstream migration begins varies geographically. Hansen and Eversole (1984) found that in the Cooper River, South Carolina, American eel older than 7 years old and greater than 65 cm in length were sparse, suggesting that adults migrate at a younger age and smaller size than in the northern part of their range. Rulifson et al. (2004) found that catch of American eel was affected by dissolved oxygen rates, and determined that dissolved oxygen was a strong predictor of the distribution of American eel in North Carolina. High catches of American eel were almost always in waters with dissolved oxygen levels above 4 mg/L (Rulifson et al. 2004).

Threats and vulnerabilities. Green et al. (2009) provided a detailed assessment of challenges for the continued success of Atlantic diadromous species, including those utilizing the project area. He noted that dams and fish passage were fairly universal issues that need to be considered when managing populations of these fishes. Effective passage designs for sturgeons have not yet been determined. In fact, poorly designed fish passage facilities may negatively impact sturgeon populations by increasing mortality. Among other threats to American shad, hickory shad, and blueback herring in the project area was water withdrawal.

Other Fishes

Common forage and gamefish. In addition to the managed and diadromous species discussed above, common finfish species in Georgia inshore waters (including the project area) include Atlantic menhaden (*Brevoortia tyrannus*), bay anchovy (*Anchoa mitchilli*), silver perch (*Bairdiella chrysoura*), striped mullet (*Mugil cephalus*), inshore lizardfish (*Synodus foetens*), pigfish (*Orthopristis chrysoptera*), gafftopsail catfish (*Bagre marinus*), and hardhead catfish (*Ariopsis felis*). Some of these species may not be prized as gamefish, but they are important ecologically for estuaries.

Important gamefish species include weakfish (*Cynoscion regalis*), spot (*Leiostomus xanthurus*), Atlantic croaker (*Micropogonias undulatus*), and red drum (*Sciaenops ocellatus*). Other sciaenids, such as red drum (*Sciaenops ocellatus*) and spotted sea trout (*Cynoscion nebulosus*) are likewise sought, and therefore require management. The relevant habitat and spawning tendencies of these, and other species, are further detailed below. The following data were transcribed from SCDNR (2011):

Spot (*Leiostomus xanthurus*)

- Adults inhabit estuaries, tidal creeks, and shallow coastal waters; generally over muddy or sand-mud bottoms; also over oyster reefs and along beaches.
- Juveniles utilize lower salinity tidal creeks; yearlings progress to deeper water of lower estuaries and inlets; most common over mud or detritus-laden bottoms and seagrass beds.
- Spawn October through March over outer continental shelf. Adults congregate near inlets and beaches during fall prior to offshore and southerly spawning migrations.
- Larval develop offshore, utilizing currents to reach nearshore waters where they metamorphose into bottom dwellers near estuarine inlets; enter estuaries December through April.

Atlantic Croaker (*Micropogonias undulatus*)

- Adults are common over mud and sandy bottom; also over oyster reefs and live bottoms. Tolerate a range of salinities, but prefer moderate salinity.
- Juveniles utilize low salinity upper reaches of estuaries, primarily associated with muddy bottoms or detritus-laden habitats; progress to higher salinity with age; overwinter in deeper channels and tidal rivers within estuaries.
- Spawning occurs over continental shelf during fall and winter.

- Larvae use tidal currents to reach nursery grounds in low salinity tidal creeks at the upper reaches of estuaries; inshore larval migration peaks late fall through spring.

Black Drum (*Pogonias cromis*)

- Adults are common over sandy and soft live bottoms in salt and brackish water including: estuaries, coastal rivers, shallow coastal bays, and along beaches. Spatial distribution closely tied to natural and artificial hard structures, including: reefs, rock piles, jetties, docks, pier pilings, and bridges.
- Juveniles are common over muddy bottoms in shallow tidal creeks and saltmarsh. Subadults progress to deeper creeks, river mouths, and bays and into nearshore coastal waters.
- Spawning occurs during spring and early summer in high salinity inlets, estuaries, bays, sounds, and coastal rivers. Adults may form schools for migration to spawning grounds.
- Larvae use tidal currents to enter estuaries where they settle in shallow tidal creeks. Older juveniles leave deeper inshore waters during fall, migrate offshore to overwinter, and return inshore in the spring.

Red Drum (*Sciaenops ocellatus*)

- Adults utilize nearshore and inshore bottom habitats, such as tidal creeks, oyster reefs, and beaches, typically over sandy or sandy-mud bottoms; may also congregate in nearshore groups.
- Juveniles inhabit estuaries near shallow tidal creeks and saltmarshes, commonly at marsh grass edges or in the vicinity of oyster reefs; reside in deeper river channels during winter. Subadults inhabit larger tidal creeks, rivers, and the front beaches of barrier islands.
- Spawn during late summer and fall. Spawning aggregations occur near estuary inlets and passes along barrier island beaches.
- Larval red drum use vertical migrations to ride high salinity tidal currents into tidal creeks and shallow saltmarsh nursery habitats

Spotted Seatrout (*Cynoscion nebulosus*)

- Adults are common near saltmarsh edges and over grass beds, in the vicinity of tidal creek mouths and channels, and over oyster reefs.
- Juveniles utilize shallow tidal creeks and saltmarsh as nursery habitats, often over submerged vegetation. Subadults inhabit larger tidal creeks and main portions of estuaries.
- Spawning aggregations occur at night, often in habitat associated with piers, pilings, bridges, points of land, and holes.
- Larvae utilize shallow tidal creeks as nurseries from June through November. Older juveniles progress to larger creeks and deeper reaches of estuaries in fall, often forming schools of similar sized fish.

Weakfish (*Cynoscion regalis*)

- Adults inhabit estuaries as well as bays, sounds, and nearshore coastal waters. Prefer sandy bottoms and at the edges of grass beds where their prey are concentrated.
- Juveniles can tolerate wide salinity ranges. Utilize estuaries as nursery grounds, especially over sandy or sand-grass bottoms in moderate salinity water. Move to deeper channels, rivers, bays and sounds with age.
- Spawning occurs in deeper reaches of estuaries and nearshore bays and sounds from March through October (peak April through June). Males form spawning aggregations and attract females by using muscle contractions to vibrate the swim bladder.
- Larvae become demersal (occupying the sea floor) shortly after hatching and utilize tidal currents to reach low salinity nursery habitats in upper reaches of estuaries. Juveniles leave estuaries and migrate to coastal waters during fall.

Southern Flounder (*Paralichthys lethostigma*)

- Adults inhabit estuaries, rivers, and shallow coastal water including front beach; most abundant in shallow, muddy bottom tidal creeks and at tidal creek mouths; also utilize flooded saltmarshes at high tides and occasionally near estuarine inlets; overwinter offshore.
- Juveniles reside in shallow, soft bottom tidal creeks at upper reaches of estuaries; may occasionally reach freshwater; may utilize submerged vegetation either as cover or for foraging purposes.
- Adults migrate to unknown locations offshore during late fall; spawning occurs in these areas throughout the winter; return to inshore habitats during spring.
- Larvae undergo a 30- to 60-day pelagic phase then use ocean currents to enter estuaries during late winter and early spring. Metamorphosis is partially completed prior to settling inshore; once inside the estuary larvae finish metamorphosis and settle to the bottom in the flat juvenile body form. Juveniles remain in estuaries through winter and first migrate offshore just prior to spawning.

Sciaenids (sea trouts) are some of the most commonly fished species in the estuaries through which the AIWW traverses. Given recreational fishing pressures, proper management of important areas just before and during spawning are crucial to maintain healthy stocks. The list below summarizes approximate spawning times for coastal Georgia and South Carolina.

Sciaenid Spawning Windows

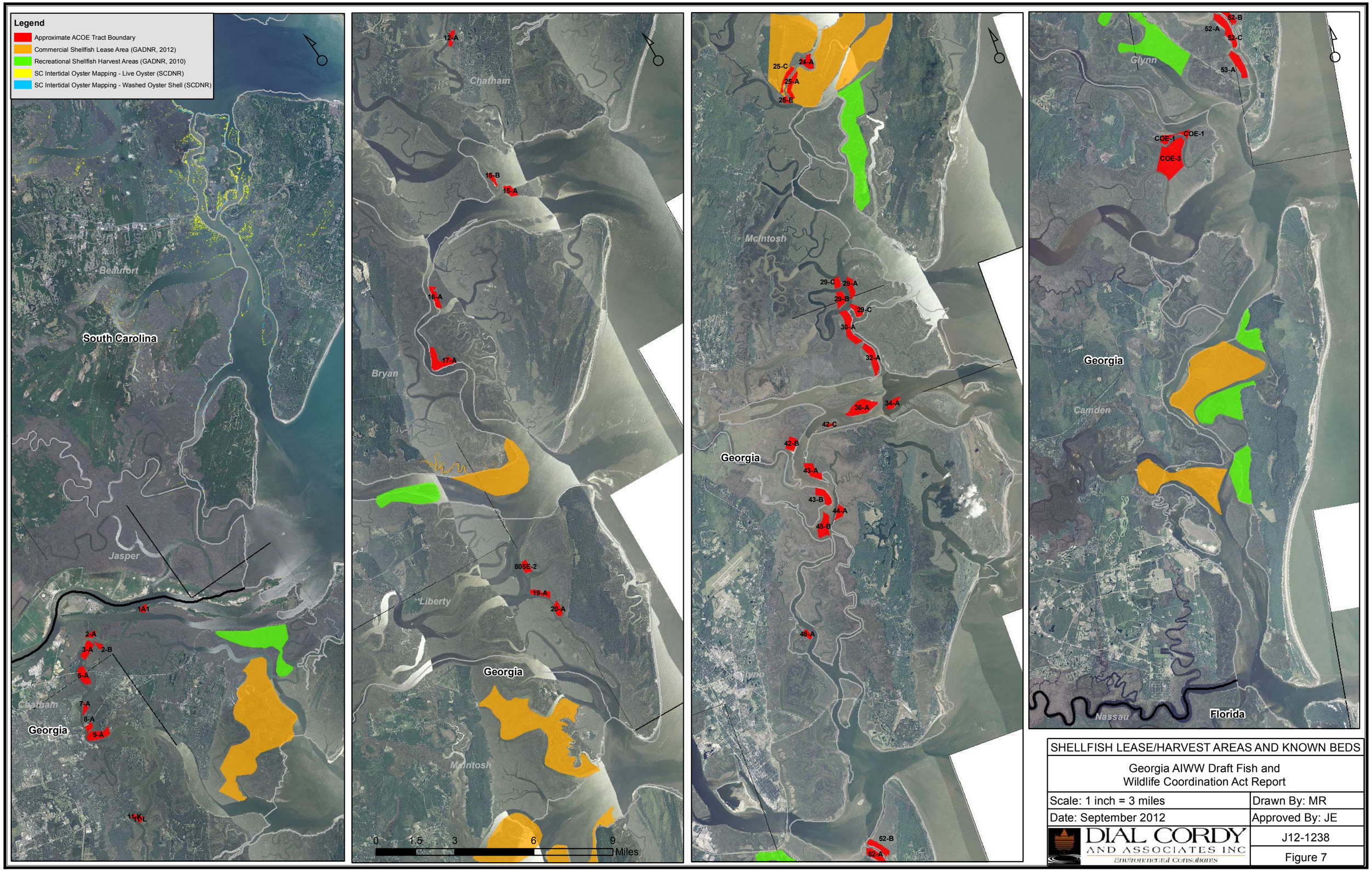
Red drum:	Early August through the end of September (inlets)
Black drum:	Late March through early May (inlets)
Spotted seatrout:	Late April through early September (inlets)
Weakfish:	Late March through October (coastal waters)
Silver perch:	Late March through early May (inlets/ smaller creeks)

Shellfish

Commercial shellfish harvest is managed for hard clams (*Mercenaria mercenaria*) and the Eastern oyster (*Crassostrea virginica*) (GDNR 2012c). Eastern oyster lives in estuaries, saltmarsh, mudflats, tidal bays and sounds; typically form intertidal reefs extending from just below mean low water to approximately three feet higher than mean low water. Once settled, they are sessile throughout life. They mature within months of setting and reproduce by the end of first year. They are protandrous hermaphrodites, beginning life as male and switching to female later in life. Oysters spawn intermittently from May through November when water reaches at least 68°F. For this species, fertilization is external, producing planktonic larvae. After approximately two to three weeks larvae metamorphose and “set” on hard substrates to become "spat"; oyster shells/reef preferred substrate. Peak recruitment occurs June through September. A number of commercial shellfish lease areas are located throughout the project area, within the AIWW and adjacent estuaries (Figure 7).

The blue crab (*Callinectes sapidus*) is common in Georgia/South Carolina estuaries. They occupy a range of estuarine habitats as well as coastal bays, sounds and nearshore waters; often in association with submerged vegetation or oyster reefs. Adult males utilize soft bottom tidal creeks and middle to upper reaches of estuaries, generally moving further upstream than females. Females utilize similar but higher salinity habitats until moving to estuary mouths to spawn; thereafter, females remain near inlets or in coastal ocean waters. Juveniles reside in shallow, soft bottom habitats in upper estuaries, tidal creeks, saltmarshes, and rivers. Mating occurs in low salinity upper estuary waters following terminal molting of females and occurs from February through November. These crabs spawn (April through August) multiple times over the next one to two years. Early larval development (zoeal stages) occurs in oceanic waters. Larvae use tidal currents to recruit to estuaries as megalopae (i.e. postlarvae) and move into upper estuaries as juveniles.

Other shellfish occurring within the project area include the Sunray (*Macrocallista nimbosa*) and the Cross-barred venus (*Chione elevate*) which are commonly found in sand or mud/sand bottoms near inlets or offshore just below the low tide mark. The Atlantic ribbed mussel (*Geukensia demissa*) is also common in the project area, found attached to cord grass root systems. The invasive Asian Green mussel (*Perna viridis*) is common and attaches to cord grass roots.



SHELLFISH LEASE/HARVEST AREAS AND KNOWN BEDS	
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	Figure 7

Protected Species

The Georgia/South Carolina AIWW study area supports a number of endangered and threatened species listed under the Endangered Species Act (ESA) of 1973 and the Marine Mammal Protection Act (MMPA) of 1972. Species protected under ESA and/or state authorities and are known to occur in the project area are listed in Table 2. Below is a cursory treatment of major groups of protected species; for most species below, separate ESA Section 7 consultation involving greater detail of life history, important habitat parameters, and conservation guidelines will be provided under separate cover.

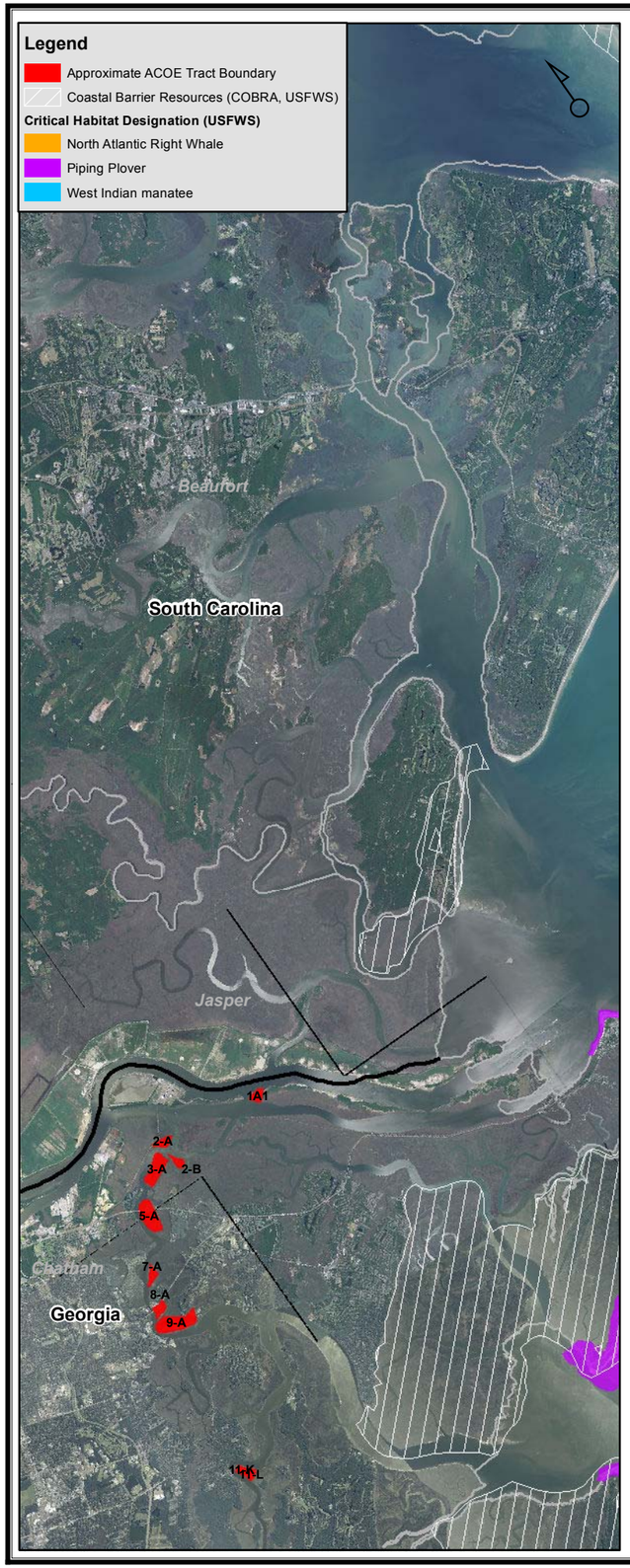
Whales. Whales listed in Table 2 are protected under both the ESA as well as the MMPA. Northern right whale critical habitat is shown in Figure 8. Right whales are migratory and summer in the Canadian Maritime Provinces. They migrate southward in the winter to coastal waters of Georgia and North Florida where their breeding and calving grounds are located. Additional data and will be provided during ESA Section 7consultation with NMFS.

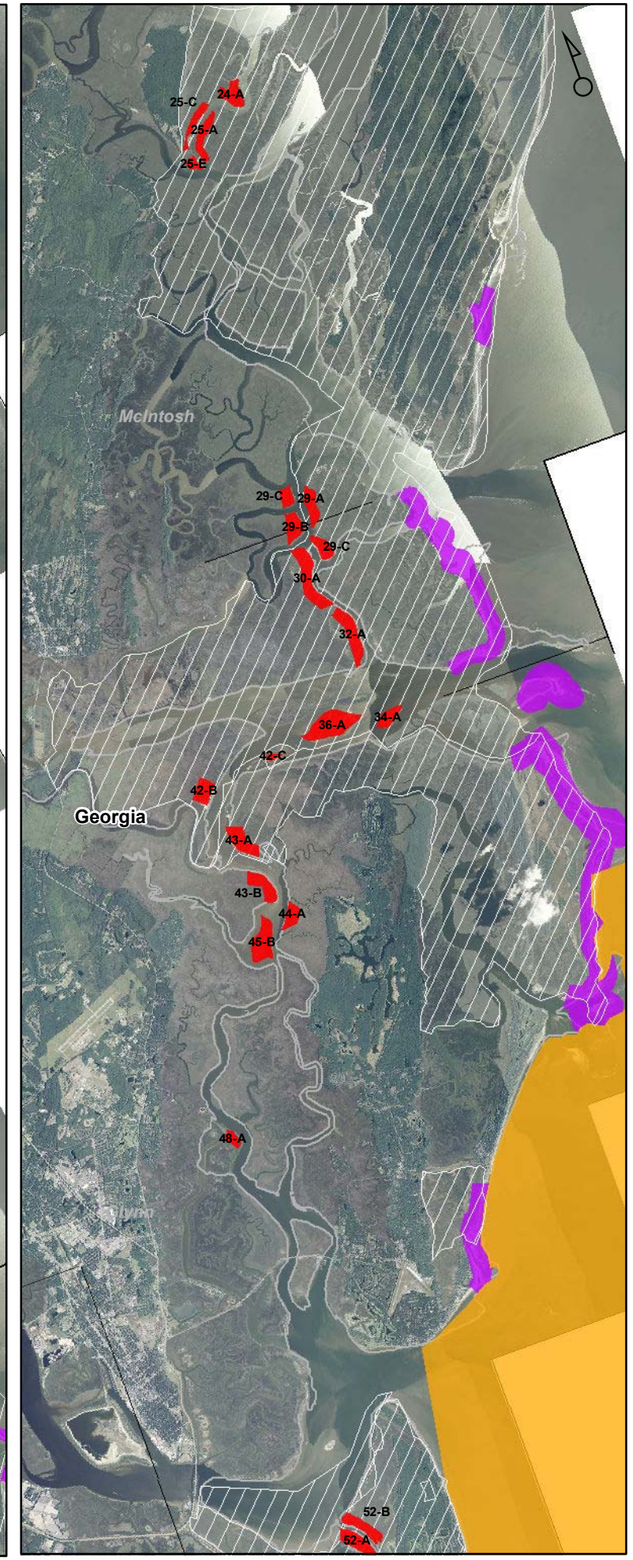
Dolphins. Dolphins are protected under the MMPA. The project area includes the Northern Georgia/Southern South Carolina Estuarine System (NGSSCES) stock and the Southern Georgia Estuarine System (SGES) stock of bottlenose dolphins (*Tursiops truncatus).* These are described in NMFS (2009a) and NMFS (2009b), respectively, as follows:

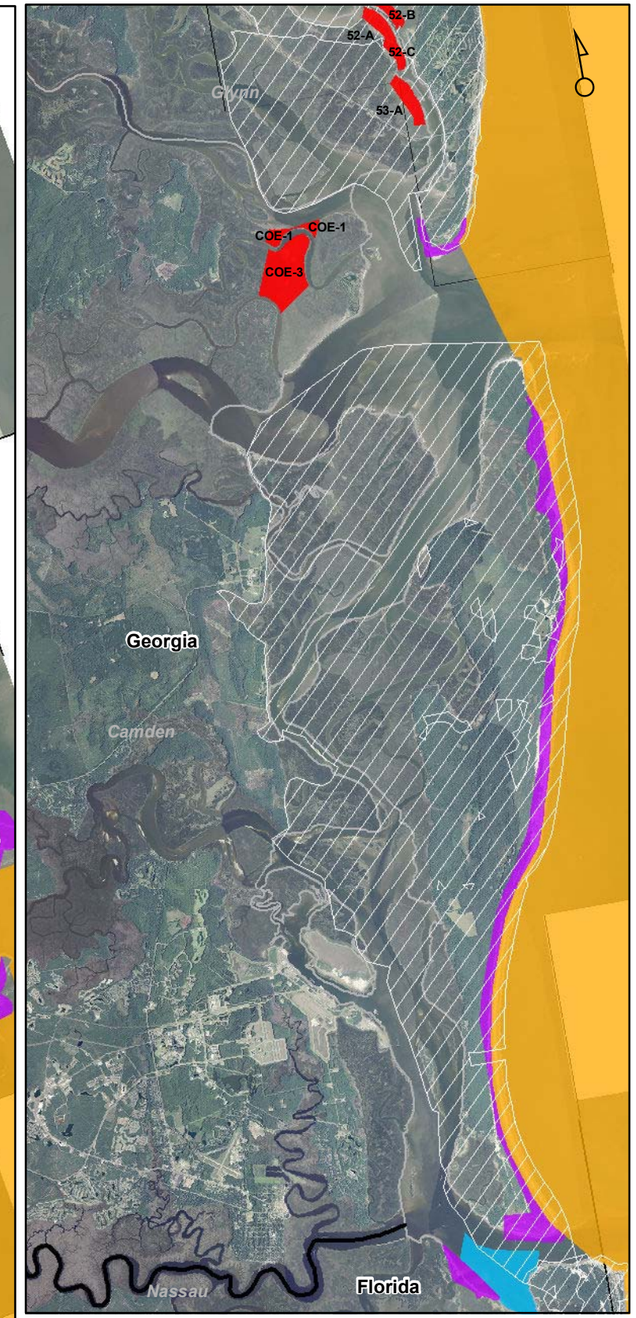
> "The Northern Georgia/Southern South Carolina Estuarine System (NGSSCES) stock is bounded in the north by the southern border of the Charleston Estuarine System stock at the southern extent of the North Edisto River and extends southwestward to the northern extent of Ossabaw Sound. It includes St. Helena, Port Royal, Calibogue and Wassaw Sounds as well as the estuarine waters of the rivers and creeks that lie within this area Photo-ID matches of estuarine animals from the NGSSCES region and the estuarine stocks to the north and south have not been made (Urian *et al.* 1999). The borders are based primarily on results of photo-ID studies conducted by Gubbins (2002a,b,c) in this region, and photo-ID and telemetry research carried out north of this region (Zolman 2002; Speakman *et al.* 2006), and are subject to change upon further study of dolphin residency patterns in estuarine waters of South Carolina and Georgia.
>
> "The Southern Georgia Estuarine System stock (SGES) is bounded in the south by the Georgia/Florida border at the Cumberland River and in the north by the Altamaha River inclusive and encompasses all estuarine waters in between, including but not limited to the Intracoastal Waterway, St. Andrew and Jekyll Sounds and their tributaries, St. Simon Sound and tributaries, and the Turtle/Brunswick River Estuary (TBRE) system. The southern boundary abuts the northern boundary of the Jacksonville stock, previously defined based on a photo-ID project (Caldwell 2001). The northern border is defined based on continuity ofF estuarine habitat, and a significantly high and unique contaminant burden found in dolphins from this area (Pulster and Maruya 2008). These boundaries are subject to change upon further study of dolphin residency patterns in estuarine waters of central and northern Georgia."

Table 2 Project Area Species Listed as Threatened or Endangered under ESA or State Authorities

Scientific Name	Common Name	ESA Designation	Georgia Protection	South Carolina Protection
Mammals				
Corynorhinus rafinesquii	Rafinesques Big-eared Bat			SE: Endangered
Eubalaena glacialis	Northern Atlantic Right Whale	LE:Endangered	SE:Endangered	
Geomys pinetis	Southeastern Pocket Gopher		ST:Threatened	
Megaptera novaeangliae	Humpback Whale	LE:Endangered	SE:Endangered	
Myotis grisescens	Gray Myotis	LE:Endangered	SE:Endangered	
Myotis sodalis	Indiana Myotis	LE:Endangered	SE:Endangered	
Neofiber alleni	Round-tailed Muskrat		ST:Threatened	
Trichechus manatus	Florida Manatee	LE: Endangered		SE: Endangered
Birds				
Calidris carnutus	Red Knot	C: Candidate		
Campephilus principalis	Ivory-billed Woodpecker	LE:Endangered	SE:Endangered	
Charadrius melodus	Piping Plover	LT:Threatened	ST:Threatened	
Charadrius wilsonia	Wilson's Plover		ST:Threatened	
Dendroica kirtlandii	Kirtland's Warbler	LE:Endangered	SE:Endangered	
Falco peregrinus anatum	American Peregrine Falcon		SE:Endangered	
Haliaeetus leucocephalus	Bald Eagle		ST:Threatened	ST: Threatened
Mycteria americana	Wood Stork	LE:Endangered	SE:Endangered	SE: Endangered
Picoides borealis	Red-cockaded Woodpecker	LE:Endangered	SE:Endangered	SE: Endangered
Sterna antillarum	Least Tern			ST: Threatened
Sterna nilotica	Gull-billed Tern		ST:Threatened	
Vermivora chrysoptera	Golden-winged Warbler		SE:Endangered	
Reptiles				
Caretta caretta	Loggerhead Sea Turtle	LT:Threatened	SE:Endangered	ST: Threatened
Chelonia mydas	Green Sea Turtle	LT:Threatened	ST:Threatened	
Clemmys guttata	Spotted Turtle			ST: Threatened
Dermochelys coriacea	Leatherback Sea Turtle	LE:Endangered	SE:Endangered	
Drymarchon couperi	Eastern Indigo Snake	LT:Threatened		
Eretmochelys imbricata	Hawksbill Sea Turtle	LE:Endangered	SE:Endangered	
E. imbricata imbricata	Atlantic Hawksbill Sea Turtle	LE:Endangered	SE:Endangered	
Glyptemys muhlenbergii	Bog Turtle	LT:Threatened	SE:Endangered	
Gopherus polyphemus	Gopher Tortoise	C: Candidate (SC)	ST:Threatened	SE: Endangered
Graptemys barbouri	Barbour's Map Turtle		ST:Threatened	
Heterodon simus	Southern Hognose Snake		ST:Threatened	
Lepidochelys kempii	Kemp's or Atlantic Ridley	LE:Endangered	SE:Endangered	
Macrochelys temminckii	Alligator Snapping Turtle		ST:Threatened	
Amphibians				
Ambystoma cingulatum	Frosted Flatwoods Salamander	LT:Threatened	ST:Threatened	SE: Endangered
Cryptobranchus alleganiensis alleganiensis	Eastern Hellbender		ST:Threatened	
Gyrinophilus palleucus	Tennessee Cave Salamander		ST:Threatened	
Haideotriton wallacei	Georgia Blind Salamander		ST:Threatened	
Notophthalmus perstriatus	Striped Newt		ST:Threatened	
Pseudobranchus striatus	Dwarf Siren			ST: Threatened
Fishes				
Acipenser brevirostrum	Shortnose Sturgeon	LE:Endangered	SE:Endangered	SE: Endangered
Acipenser oxyrinchus	Atlantic Sturgeon	LE:Endangered		
Vascular Plants				
Lindera melissifolia	Pondberry	LE: Endangered (SC)		
Schwalbea americana	Chaffseed	LE: Endangered (SC)		







CRITICAL HABITAT DESIGNATION AND COBRA (USFWS)	
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	Figure 8

Manatees. West Indian manatees are protected under ESA as well as the MMPA. They are occasionally observed in South Carolina and Georgia waters during the summer. However, the frequency of observation is typically low. Manatee biology, ecology, and conservation standards will be provided under separate cover during ESA Section 7 consultation.

Birds. The project area includes a number of protected lands, including wetland and upland habitat, making it an ideal location for foraging, nesting, and roosting habitat for wading and coastal shorebirds. Within the project area there is Piping Plover (*Charadrius melodus)* critical habitat (Figure 8) along the beaches, and inland estuaries of Georgia. The Wood Stork (*Mycteria americana*) nests, breeds, and forages in palustrine and estuarine wetlands of South Carolina and Georgia. These birds and others may specifically use designated spoil disposal sites.

Sea Turtles. Habitat use by loggerheads on the Georgia coast is poorly understood. Loggerheads are found throughout the marine and estuarine waters of Georgia during the warm months of spring, summer, and fall. They have been observed swimming or basking on the surface as far as the Gulf Stream, 104 km (62.4 mi) offshore, and are seen regularly as close as the creeks and tidal rivers of Georgia's extensive saltmarshes. Loggerheads are Georgia's primary nesting sea turtle, laying eggs on the beaches of every barrier island during the summer nesting season. The loggerheads that breed here have been identified genetically as part of a distinct breeding cohort that includes the turtles that nest in North Carolina, South Carolina, and North Florida south to Cape Canaveral. Nesting begins in early May and continues through mid-August in Georgia.

The South Carolina “juvenile sea turtle guild” comprises Kemp’s Ridley sea turtle, green turtles, and hawksbill sea turtles. Individuals of these species may forage in both inshore and nearshore areas, including habitats in and near the proposed project area. In South Carolina, nesting (occurring mid-May to mid-August) is most likely to be carried out by loggerhead sea turtles, as their largest nesting concentrations are found in Florida, Georgia, South Carolina, and North Carolina. However, 80% of their nesting occurs in six coastal Florida counties (USFWS 2012h). Green sea turtles may, though not frequently, nest in South Carolina, as they nest in small numbers in the U.S. Virgin Islands, Puerto Rico, Georgia, South Carolina, and North Carolina, but in larger numbers in Florida and Hawaii (USFWS 2012b). They nest from June through September.

Sturgeons. Two sturgeon species noted in Table 2 are listed as endangered under ESA (the Endangered Species Act). Sturgeon typically feed in the slow-moving waters of large rivers in their lower estuaries (on benthic organisms) and spawn upstream in fresh water, usually on coarse substrates in more swift waters. The Altamaha River, Georgia, spawning population of the South Atlantic Distinct Population Segment, which is believed to be the largest in the Southeast, is at approximately 6% of its historic level. The remaining riverine spawning populations in the South Atlantic distinct population segment are estimated to be at less than 1% of their historic number. NMFS (2012) noted that less than 300 adults are spawning in the Atlantic sturgeon Carolina Distinct Population Segment (DPS). Incidental

take of Atlantic sturgeon is possible during dredging projects. Details pertaining to its life history and habitat requirements of these two species will be more fully addressed during ESA Section 7 consultation.

Migratory Birds

Many protected (and unprotected) areas throughout the project area are important for migratory birds. These sites are preferred due to both the availability of grounds for nest creation as well as forage, i.e., small fish for supplying the chicks. Typical bird species using these sites include Black Skimmers, Brown Pelicans, Willet, Wilson's Plover, and various Tern species (Sandwich, Least, Royal, Common, Foresters, and Gull-billed.

Although the above-noted areas are known to provide necessary habitats for migratory bird species, many other species frequent the sanctuaries and other areas/habitats within and near the project area. Such birds roost and forage in surrounding coastal environments such as tidal flats, mud flats, and beaches during the winter months. Species likely to occur are listed in Table 3, along with their associated habitats. Many of the important bird-supporting sites noted above are not only used by bird species, but also by other vertebrate species that are associated with birds (in many cases preying on eggs, chicks, and fledglings).

Migratory bird species using sand/beach and mudflat habitats for nesting adjacent to navigational channels such as the AIWW may be particularly sensitive to human disturbance. During such times, disturbance could cause unsuccessful nesting and/or death to chicks. Terns, Pelicans, Willet, and Skimmers typically nest from April through July, while Wood Storks and Plovers nest from April through August.

Condition of Other Natural Resources

Sediments. Sediment and elutriate test analyses were performed at sampling locations along the AIWW during 1974. The major constituents considered in this study were mercury, lead, zinc, total Kjeldahl nitrogen, volatile solids and chemical oxygen demand. Bulk analysis of the 10 sediment samples indicated that only four of the sampling areas (Site 2 at Thunderbolt, Site 4 near Sapelo Island, Site 6 at Wolf Island and Site 8 at Jekyll Island) contained moderate concentration volatile solids, chemical oxygen demand, total Kjeldahl nitrogen, oil and grease. However, the disposal of dredged material in these areas would not be overboard disposal. In areas where overboard disposal methods would be used, the sediments contained low concentrations of pollutants. Bulk analyses in all instances indicated that the sediments were relatively free of heavy metals.

Air Quality. Air quality is especially important for various NWRs, which may be classified as a "Class I" area. This indicates that they are air quality-sensitive (and each comprise over 500 acres of protected lands). It is not anticipated the dredge disposal would change air quality, although dredge equipment operation may.

Table 3 Migratory Birds Likely to Occur in the Project Area (Not Exhaustive)

Common Name	Scientific Name	Sand/ Beach	Mud-flat	Pond	Salt Marsh	Open Water
American Avocet	*Recurvirostra americana*		X	X		
American Bittern	*Botaurus lentiginosus*				X	
American Coot	*Fulica americana*			X		
American Oystercatcher	*Haematopus palliatus*		X	X	X	
Bald Eagle	*Haliaeetus leucoephalus*			X		X
Belted Kingfisher	*Ceryle alcyon*			X		X
Black Rail	*Laterallus jamaicensis*				X	
Black Skimmer	*Rynchops niger*	X		X		X
Black-backed Gull	*Larus marinus*	X	X	X		X
Black-bellied Plover	*Pluvialis squatarola*	X	X			
Black-crowned Night Heron	*Nyticorax nycticorax*			X	X	
Black-necked Stilt	*Himantopus mexicanus*	X	X	X		
Brown Pelican	*Pelecanus occidentalis*				X	X
Clapper Rail	*Fallus longirostris*				X	
Common Moorhen	*Gallinula chloropus*			X		X
Common Tern	*Sterna hirundo*	X		X	X	X
Double-Crested Cormorant	*Phalacrocorax auritus*			X		X
Dunlin	*Calidris alpina*	X	X			
Foresters Tern	*Sterna forsteri*	X		X	X	X
Glossy Ibis	*Plegadis falcinellus*		X	X	X	
Great Blue Heron	*Ardea herodias*			X	X	
Great Egret	*Ardea alba*			X	X	
Greater Yellowlegs	*Tringa melamoleuca*		X	X	X	
Gull-billed Tern	*Sterna nilotica*	X		X		X
King Rail	*Rallus elegans*				X	
Laughing Gull	*Larus atricilla*	X	X	X		X
Least Tern	*Sterna antillarum*	X		X		X
Little Blue Heron	*Egretta caerulea*		X	X		
Long-billed Dowitcher	*Limnodromus scolopaceus*		X	X		
Osprey	*Pandion haliateus*			X		X
Piping Plover	*Charadrius melodus*	X	X			
Red Knot	*Calidris canutus*	X	X		X	
Ring-billed Gull	*Larus delawarensis*	X	X	X	X	X
Royal Tern	*Sterna maxima*	X		X		X
Ruddy Turnstone	*Arenaria interpres*	X	X			
Sanderling	*Calidris alba*	X	X			
Sandwich Tern	*Sterna sandvicensis*	X		X		X
Semipalmated Plover	*Charadrius semipalmatus*	X	X			
Snowy Egret	*Egretta thula*		X	X		
Sora	*Porzana carolina*				X	
Spotted Sandpiper	*Actitis macularia*	X	X			

(continued on next page)

Table 3 Migratory birds likely to occur in the project area (continued)

Common Name	Scientific Name	Sand/ Beach	Mud-flat	Pond	Salt Marsh	Open Water
Tricolored Heron	*Egretta tricolor*			X	X	
Virginia Rail	*Rallus limicola*				X	
Whimbrel	*Numenius phaeopus*	X	X		X	
White Ibis	*Eudocimus albus*		X	X		
Willet	*Catoptrophorus semipalmatus*	X	X			
Wilson's Plover	*Charadrius wilsonia*	X	X			
Wood Stork	*Mycteria americana*			X		X
Yellow Rail	*Coturnicops noveboracensis*				X	
Yellow-crowned Night Heron	*Nyctanassa violacea*			X		X

PROBLEMS, OPPORTUNITIES, AND PLANNING OBJECTIVES

Based on the fish and wildlife resources in the project area, the following fish and wildlife planning objectives have been formulated:

1. Preservation and restoration of tidal saltwater marshes along the AIWW.

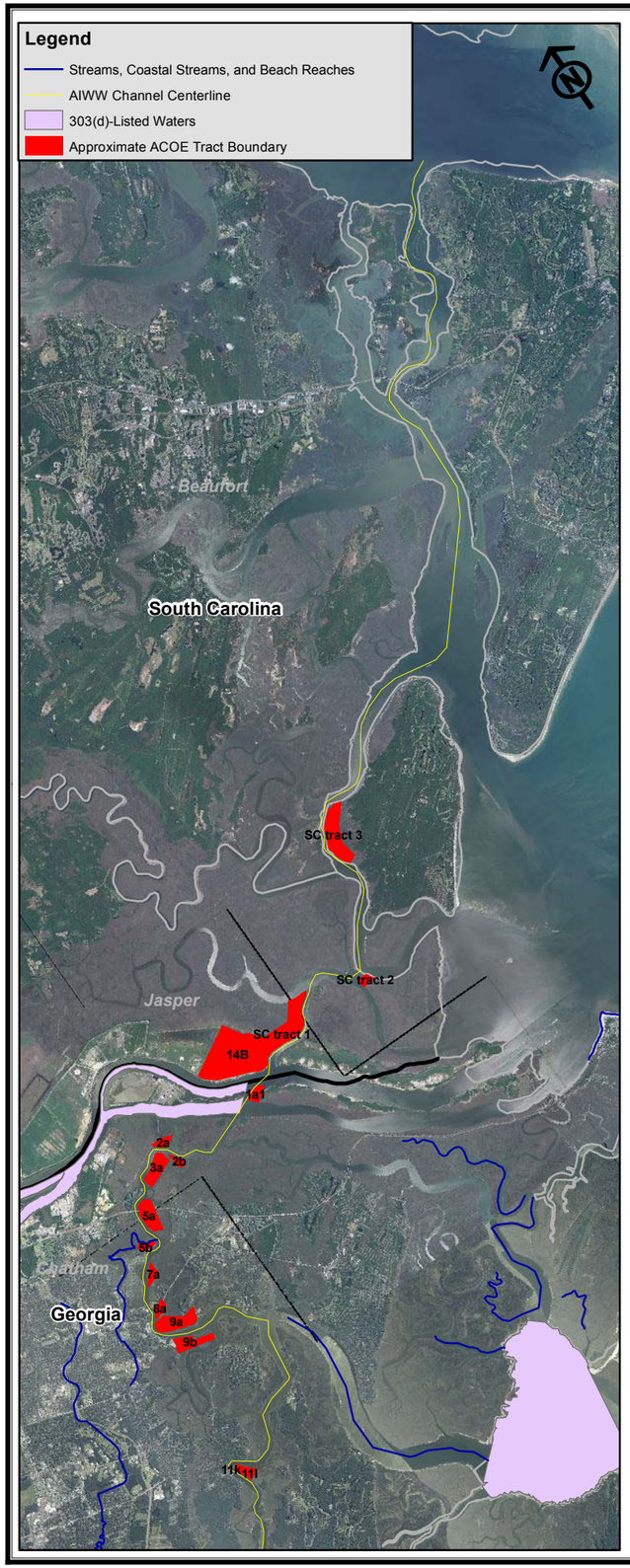
   Tidal saltwater marsh is a diverse wetland type that provides excellent fish and wildlife habitat. Therefore, the USFWS objective is to promote the avoidance and minimization of impacts (due to the deposition of fill material) to these habitats, and to facilitate the restoration of this habitat.

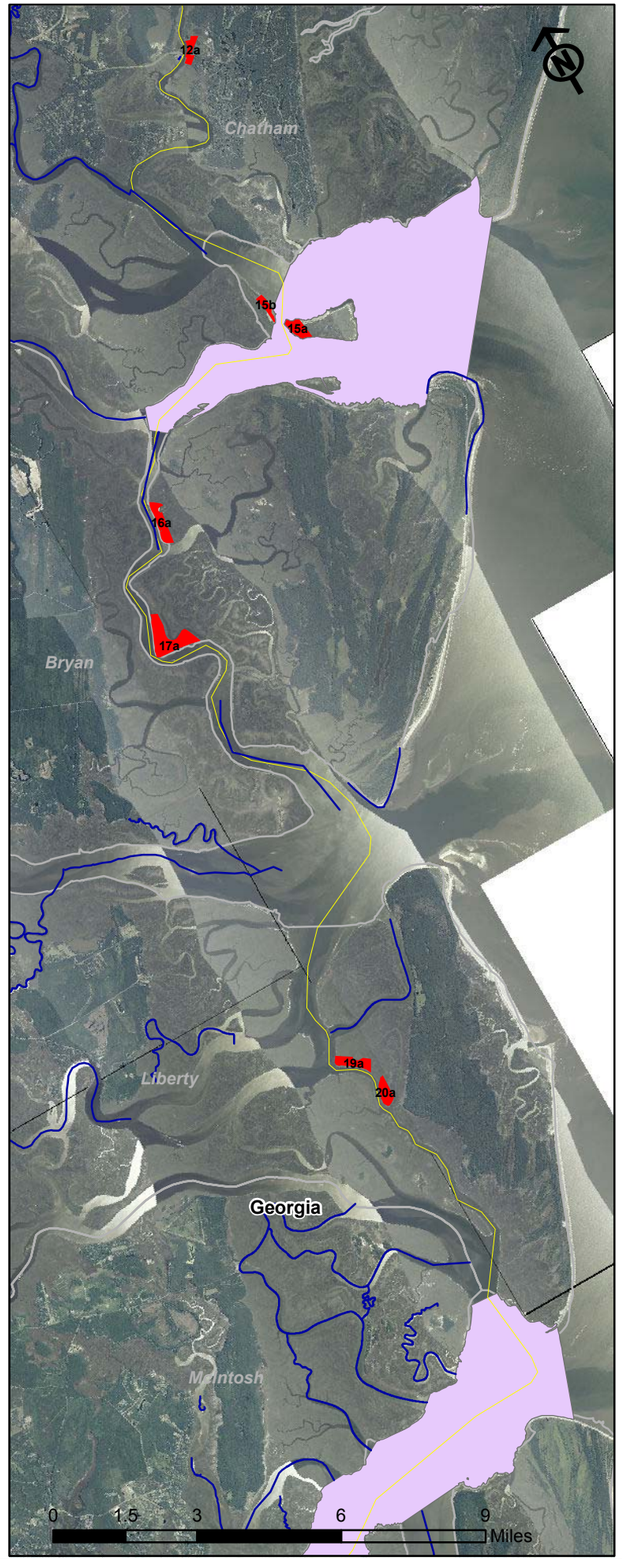
2. Restoration and maintenance of spawning and nursery habitat for managed species and other fish and shellfish species.

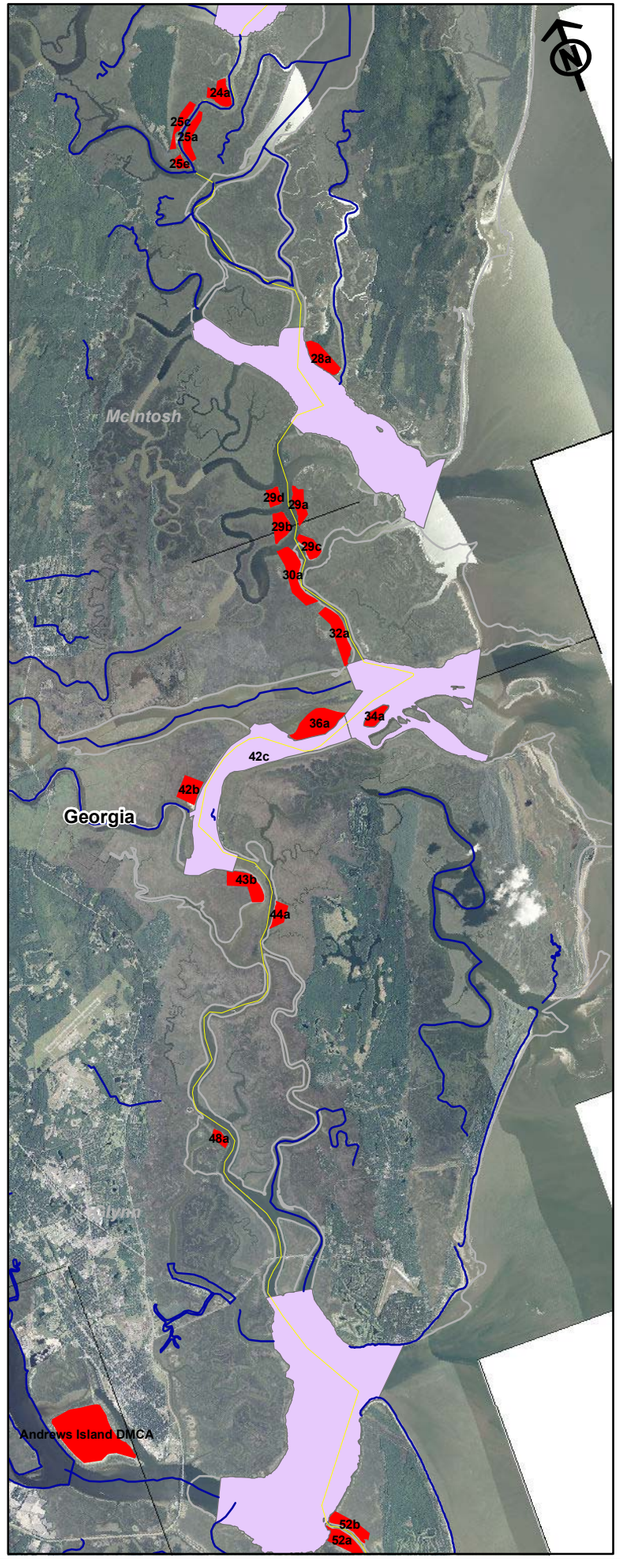
   Tidal creeks, intertidal marshes (including emergent marshes), and intertidal flats are important nursery and refuge areas for shrimp and various fish species. The USFWS objective is to promote the avoidance and minimization of impacts to these habitats, as they would adversely affect such species.

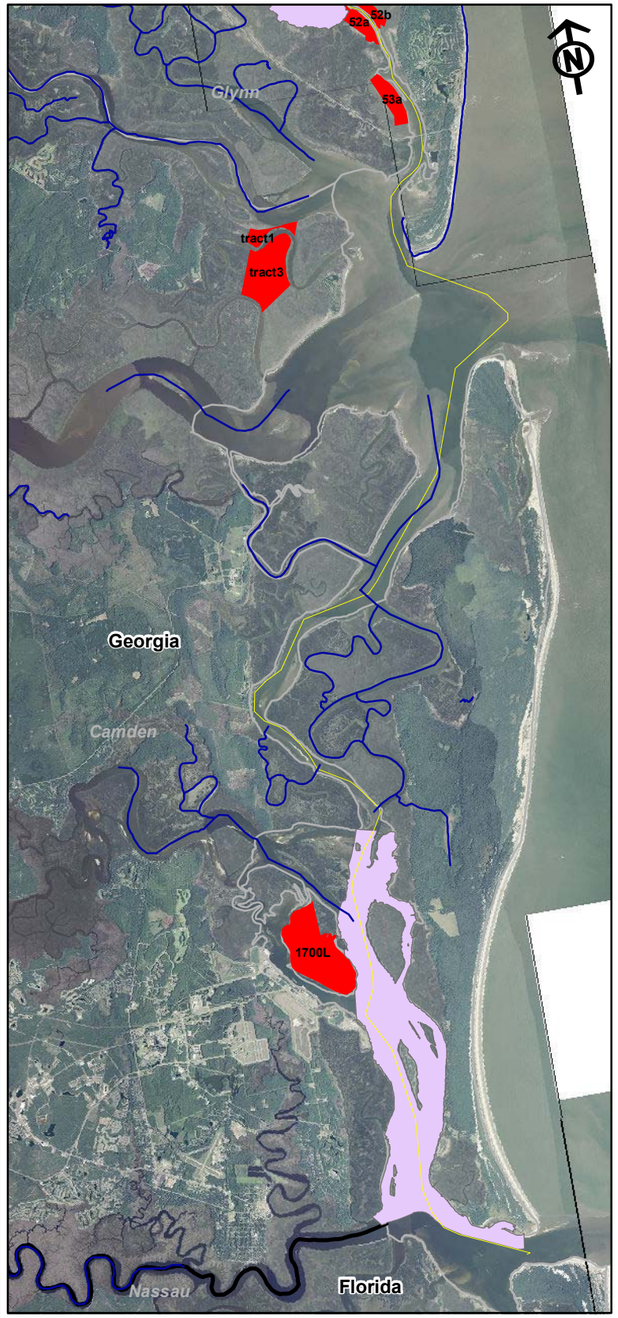
3. Protection of water quality.

   The maintenance of background/natural water quality (particularly turbidity and dissolved oxygen levels) is imperative for marine species dependent on the estuarine water column of tidal creeks and AIWW channels for spawning and foraging. Many parts of the project area comprise or are adjacent to 303(d)-listed streams (see Figure 9; based on GDNR data only, South Carolina data not shown). Particular consideration should be given to any additional impacts these areas may be subject to due to dredging operations and disposal. It appears that, based on the positions of CERCLIS (Comprehensive Environmental Response, Compensation and Liability Information System) sites in Figure 10, it is not likely that the proposed activity will disturb these contaminated areas that are under remediation. The USFWS objective is to ensure that water quality is not adversely affected due to dredging or dredge disposal activity along the AIWW.









Georgia AIWW Draft Fish and Wildlife Coordination Act Report

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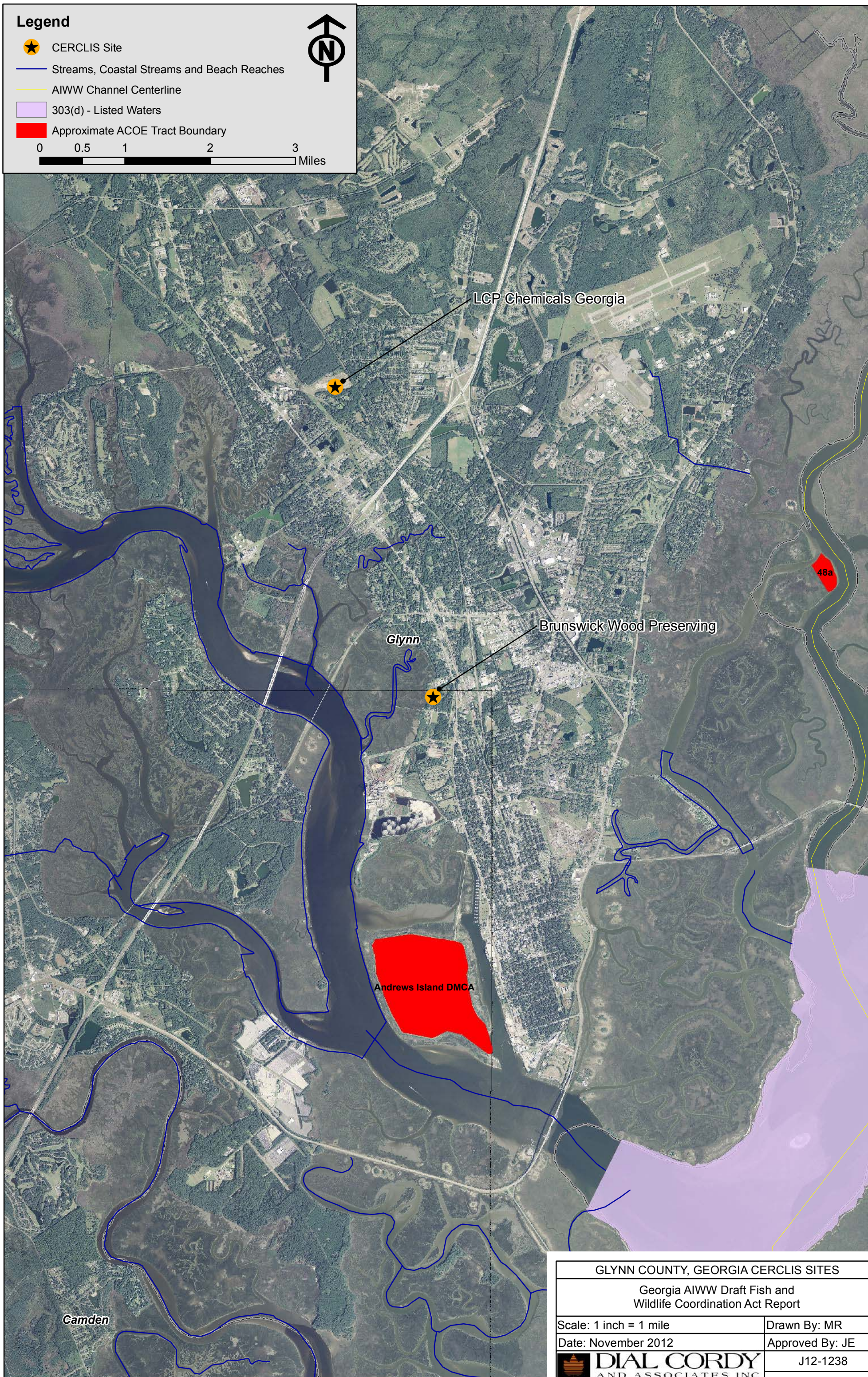
	Figure 9



GLYNN COUNTY, GEORGIA CERCLIS SITES	
Georgia AIWW Draft Fish and Wildlife Coordination Act Report	
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	Figure 10

4. Protection of migratory bird species and promotion of habitats for bird use.

Dredge disposal sites are important for migratory birds. The USFWS objective is to avoid or minimize any disturbance to nesting or foraging migratory birds, and to support the use and management of AIWW habitats for migratory bird use.

The USFWS also recognizes that species protected under ESA may occur in the project area. Any potential problems relating to the proposed project and these species will be communicated via ESA Section 7 consultation.

SELECTED PLAN

In the past, much of the maintenance material from the AIWW was placed in undiked disposal areas located adjacent to the waterway. Many of these disposal areas were located in tidal wetlands. Disposal of dredged material into these undiked disposal sites within the tidal wetlands is no longer a viable disposal alternative for maintenance dredging material from the AIWW. The proposed disposal plan (including the amount and characteristics of the dredged material to be removed from the various reaches of the AIWW within Savannah District during the 20-year life of the DMMP) have been described in USACE (2012a), which is incorporated here by reference due to the large amount of graphic data contained therein. In summary, the following three disposal alternatives were proposed in the DMMP for the portion of the AIWW within the Savannah District:

1. Use of existing diked disposal areas where available. This method of disposal is proposed for the following reaches of the AIWW within Savannah District (listed by reach, geographic area, and disposal area designation):

Reach SAV-1 Port Royal to Ramshorn Creek (DMCA 14-B)
Reach SAV-2 Ramshorn Creek (DMCA 14-B)
Reach SAV-3 New River (DMCA 14-B)
Reach SAV-4 Walls Cut (DMCA 14-B)
Reach SAV-5 Fields Cut (DMCA 14-B)
Reach SAV-6 Elba/McQueens Cut (DMCA 14-B)
Reach SAV-7 St. Augustine Creek (DMCA 14-B)
Reach SAV-8 Wilmington River (DMCA 14-B)
Reach SAV-9 Skidaway River (Diked area within Tract 9-A)
Reach SAV-10 Skidaway Narrows (Diked areas within Tract 9-A)
Reach SAV-11 Burnside River to Hells Gate (Diked area within Tract 9-A)
Reach SAV-30 Mackay River (Andrews Island DMCA)
Reach SAV-31 Frederica River (Andrews Island DMCA)
Reach SAV-32 St. Simons Sound (Andrews Island DMCA)
Reach SAV-35 Cumberland Riv to Cumberland Sound (Kings Bay Crab Isl Disposal Area)

2. Ocean disposal of dredged material. Much of the maintenance material that would be dredged from the AIWW in the future will be placed into USEPA-approved ODMDSs. Ocean disposal would involve use of two existing ODMDSs (Savannah Harbor and Brunswick Harbor) and the establishment of two new ODMDSs off Sapelo Sound and Altamaha Sound (Figure 11). Establishment of the two new ODMDSs and use of existing ODMDSs for the Savannah Harbor and Brunswick Harbor Projects for material from the AIWW would require site designation studies and USEPA approval per the requirements of Section 103 of the Marine Protection, Research and Sanctuaries Act. Ocean disposal of dredged material is proposed for the following reaches of the AIWW (listed by reach, geographic area, and disposal site):

Reach SAV-13 Hells Gate to Florida Passage (Savannah Harbor ODMDS)
Reach SAV-14 Florida Passage (ODMDS Sapelo Sound)
Reach SAV-15 Bear River (ODMDS Sapelo Sound)
Reach SAV-16 St. Catherines Sound to North Newport River (ODMDS Sapelo Sound)
Reach SAV-17 North Newport River (ODMDS Sapelo Sound)
Reach SAV-18 Johnson Creek (ODMDS Sapelo Sound)
Reach SAV-19 Sapelo Sound to Front River (ODMDS Sapelo Sound)
Reach SAV-20 Front River (ODMDS Sapelo Sound)
Reach SAV-21 Creighton Narrows (ODMDS Sapelo Sound)
Reach SAV-22 Old Teakettle Creek (ODMDS Sapelo Sound)
Reach SAV-23 Doboy Sound (ODMDS Altamaha Sound)
Reach SAV-24 North River (ODMDS Altamaha Sound)
Reach SAV-25 Rockdedundy River (ODMDS Altamaha Sound)
Reach SAV-26 South River (ODMDS Altamaha Sound)
Reach SAV-27 Little Mud River (ODMDS Altamaha Sound)
Reach SAV-28 Altamaha Sound (ODMDS Altamaha Sound)
Reach SAV-33 Jekyll Creek (ODMDS Brunswick Harbor)
Reach SAV-34 Jekyll Creek to Cumberland River (ODMDS Brunswick Harbor)

3. Open Water Disposal within the State of Georgia in conjunction with confined disposal. The Georgia Department of Natural Resources has indicated they would consider continued use of some of the existing open water disposal sites provided the material is at least 80% sand. Three reaches (Hells Gate, Altamaha Sound and Buttermilk Sound) were identified where at least some of the maintenance material would meet that criterion. However, some of the material in those reaches would not meet the 80% requirement. Consequently, the suitable material to be removed from three reaches would be placed in existing open water disposal sites. Material not meeting this criterion would be placed on existing dredged material deposits within the current disposal easements for that reach of the waterway. Some of the material would be used to fill geo-tubes (or some other similar technology) which in turn would serve as the containment dikes to keep the material confined to existing deposits within the disposal area.

Reach SAV-12 Hells Gate (Open water north and south of Raccoon Key, Tracts 15-A and -B)
Reach SAV-29 Buttermilk Sound (Open Water Sites 34 and 44, Tracts 42-B)

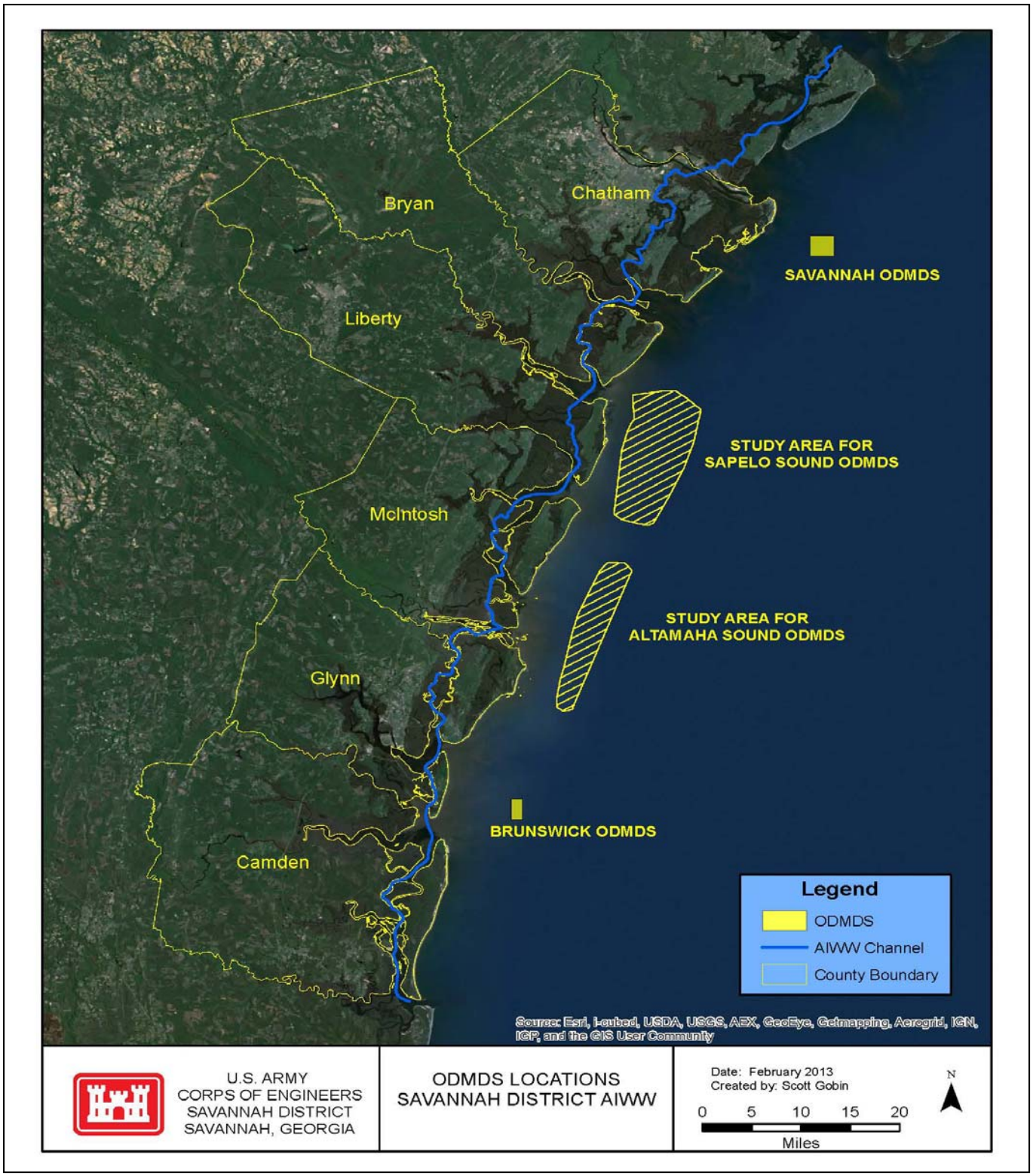

Figure 11 Locations of Savannah, Brunswick, and Potential New ODMDSs

PROJECT IMPACTS

Defining both the nature and extent of impacts is extremely important since this information can be used to develop a 20-year DMMP for the AIWW. According to USACE (2012a), the goal is to develop a DMMP that provides a plan that allows for maintenance of the waterway while avoiding or minimizing impacts to the aquatic environment. USACE (2012a) summarized past as well as anticipated future impacts in the following list:

1. The existing project (12-foot channel) was completed in the early 1940s. USACE was provided disposal easements which were predominately located in tidal marsh adjacent to the waterway.

2. Most of the dredged material resulting from both construction of the project and subsequent maintenance of the project was deposited into these easements in an unconfined manner, i.e., no dikes were constructed within these easements to confine the dredged material. More than likely, this was done to eliminate the costs associated with constructing large diked disposal areas along numerous reaches of the waterway. Also in view of the instability of the substrate in these marsh areas, it is highly questionable how feasible it would have been to construct diked areas in these wetlands. Diked dredged material containment areas constructed in these wetlands would have been subject to failure because of their exposure to extreme high tides and storm events.

3. Disposal of dredged material from construction of the project adversely impacted tidal marsh. Much of the material from construction of the 12-foot channel was sand which raised the elevation of the marshes to the extent that upland vegetation replaced the wetland species present in the marsh. This is evidenced by the presence of mature hammock-like upland islands in many of the disposal easements that only received dredged material from the initial channel construction in the 1940s.

4. Disposal of dredged material from maintenance dredging cycles has also adversely affected tidal marsh. As evidenced by information presented in the above discussion, areas of impacted marsh were observed in many of the disposal tracts during the field surveys for the 1983 report and the 2011 report.

5. Some of the disposal tracts have been totally impacted for many years since construction and early maintenance of the waterway. These tracts are located in heavy maintenance areas and include such sites as Tract 1-A-1 (Elba Cut-McQueens Cut), Tracts 2-A, 2-B, and 3-A (St. Augustine Creek-upper Wilmington River), and Tracts 52-A and 52-B (Jekyll Creek).

6. Maintenance of the AIWW continues to have impacts on tidal wetlands in disposal tracts that are used for those areas of the waterway requiring maintenance. Since completion of the 1983 impact study, additional marsh impacts have been observed in Tracts 5-A and 7-A (Wilmington River), 15-A and 15-B (Hells Gate), 16-A (Florida Passage), 24-A (Creighton Narrows), 29-B (North River Crossing), 32-A (Little Mud River), 36-A (Altamaha Sound) and 42-B and 42-A (Buttermilk Sound). Although some of the tracts have already been totally impacted by the deposition of AIWW maintenance material (see paragraph 5 above), continued use of these sites prevents any chance of marsh recovery.

7. For those tracts that have not been used or received very little use in the recent past, some evidence of marsh recovery has been observed. These tracts include 11-K and 11-L (Skidaway River), 12-A (Skidaway River), 17-A (Bear River), 19-A and 20-A (Johnson Creek), 25-A and 25-C (Creighton Narrows), 29-A and 29-C (North River Crossing), 30-A (Rockdedundy River), and 53-A (Jekyll Creek).

8. There are 12 disposal tracts along the AIWW that appear to have never been used including 10-C (Wilmington River), 14-A (Skidaway River), 14-B (Burnside River), 21-A (Johnson Creek), 27-A (Old Teakettle Creek), 28-A (Doboy Sound), 45-C (Buttermilk Sound), 48-B, 49-A, 49-B, 49-C (Mackay River), and 51-A (St. Simon Sound). These unused tracts total 721.7 acres.

9. Although use of undiked disposal in tidal wetlands has impacted marsh, these impacts would have been much worse had the disposal tracts been diked. If the disposal tracts provided to USACE in the 1940s had been diked, these dikes would have been more than likely constructed to encompass the entire easement. Subsequently, wetlands within the dikes would have been cut off from tidal flow and completely destroyed with little to no chance to recover from dredged material deposition.

10. Disposal of dredged material into wetland areas has created additional wildlife habitat. The 2011 study included use of the Estuarine Wetland Rapid Assessment Procedure which evaluated wildlife utilization of upland and wetland areas on the disposal tracts. Based on the results of this analysis, most of the tracts showed minimal to moderate wildlife utilization of the uplands or wetlands on the disposal tracts.

11. Although undiked disposal has impacted wetlands, much of the remaining wetlands on the disposal tracts have retained most of their wetland functions. The Estuarine Wetland Rapid Assessment Procedure was also used to determine the potential for recovery of any lost wetland function with or without enhancement activities. For most disposal tracts, this assessment was able to conclude: “Most of the wetland areas onsite show minor adverse impacts to aquatic functions and likely would recover without enhancement activities.”

USACE (2012a) stated the following regarding impacts due to the proposed DMMP: "Implementation of the AIWW DMMP will result in net benefits to estuarine emergent wetlands in the project area…In addition to estuarine emergent wetlands, Essential Fish Habitat (EFH) in the project area includes oyster reefs and shell banks, intertidal flats, aquatic beds and estuarine water column. Most of the maintenance material from the AIWW would be taken to a designated ODMDS or placed in a diked disposal area. Consequently there would be no adverse impacts to these EFH resources. A small amount of material will be placed into existing open water disposal sites at Hells Gate and in Buttermilk Sound. This material is clean sand, and it will be placed onto a water bottom with similar substrate."

USACE (2012a) stated that there would be some loss of altered tidal wetlands as a result of confined placement of dredged sediments into the impacted portions of five undiked marsh disposal tracts. Geo-tubes or some equivalent confining method would be used to prevent dredged materials from impacting intact saltmarsh within and adjacent to these tracts.

USACE has completed an evaluation of the impacts of implementing the AIWW DMMP on EFH. This EFH analysis will be coordinated with the National Marine Fisheries Service. USACE has indicated that the discharge of dredged material associated with maintenance of the AIWW will not result in the discharge of pollutants that would have significant adverse impacts on recreational, aesthetic and economic values.

According the USACE mitigation plan dated 22 January 2012 (USACE 2012b), "Most impacts that could be expected to occur from the proposed DMMP would result from the disposal of the dredged materials. Other impacts could also result, such as temporary increases in turbidity and suspended sediments and disturbance of fish and wildlife during dredging events." Table 4 summarizes the major impacts of the disposal alternatives evaluated in developing the DMMP for the AIWW, as stated in the mitigation plan.

While the table below primarily discusses impacts due to the placement of spoil in designated areas/sites, additional direct effects on EFH and managed species (according to the October 2012 Essential Fish Habitat Assessment prepared for use by USACE) due to the dredging operation itself is also a concern. Direct effects would include entrainment by dredging equipment and indirect effects would include potential behavior changes from dredging activities and foraging difficulty from temporarily increased turbidity levels. Species that have greater mobility or tendencies toward migratory behavior are likely to be less directly affected. However, demersal species and smaller individuals (including larval forms), may encounter localized population reductions.

Table 4 Summary of Non-Quantifiable Impacts by Disposal Site Option

Disposal Method	Water Quality	Tidal Wetlands	Freshwater Wetlands	Essential Fish Habitat	Threatened – Endangered Species
Existing upland DMCA[1]	Minimal	None	Minimal	None	Minimal
New upland DMCA[1]	Minimal	Minimal	Moderate	Minimal	Unknown
New saltmarsh DMCA[1]	Substantial[2]	Substantial[2]	None	Substantial[2]	Minimal
Confined disposal on saltmarsh tracts[1]	Minimal	Moderate	None	Minimal	Minimal
Open water disposal (sand)	Minimal	None	None	Minimal	Minimal
ODMDS	Minimal	None	None	None	Minimal
Unconfined saltmarsh disposal	Substantial[3]	Moderate	None	Moderate	Minimal

[1]Effluent must meet established water quality standards; [2]Due to loss of functioning saltmarsh; [3]Due to loss of functioning saltmarsh and non-compliance with water quality standards.

USACE-PROPOSED MITIGATION

According the mitigation plan (USACE 2012b), the required amount of wetland mitigation that would be due to the implementation of the preferred plan for the proposed DMMP would be 37.5 acres.

The mitigation plan also stated that "unavoidable adverse impacts to wetlands would be mitigated through two types of actions: (1) purchase of credits from approved freshwater wetland banks, and (2) use of in-lieu-fee mitigation. A third and separate action, releasing disposal easements on a number of tracts, would not directly mitigate for wetland impacts, but indirectly would encourage restoration of these tracts by a third party in the future." The text below is directly transcribed from the most recently drafted version of the mitigation plan:

Mitigation Alternative 1: Purchase of Credits from a Mitigation Bank

A mitigation bank is "a site, or suite of sites, where resources (e.g., wetlands, streams, riparian areas) are restored, established, enhanced, and/or preserved for the purpose of providing compensatory mitigation for impacts authorized by DA permits. In general, a mitigation bank sells compensatory mitigation credits to permittees whose obligation to provide compensatory mitigation is then transferred to the mitigation bank sponsor. The operation and use of a mitigation are governed by a mitigation banking instrument (33 CFR Part 332.2).

At present, there are no approved tidal wetland mitigation banks within the Savannah District that could provide credits for the AIWW.
Currently, one tidal wetland bank (Salt Creek) is approved but its use is restricted to Chatham County and/or municipal projects to be completed by Chatham County.

Mitigation Alternative 2: In-Lieu-Fee Program or an Equivalent

"An in-lieu-fee (ILF) program is a program involving the restoration, establishment, enhancement, and/or preservation of aquatic resources through funds paid to a governmental or non-profit natural resources management entity to satisfy compensatory mitigation requirements for DA permits. Similar to a mitigation bank, an in-lieu-fee program sells compensatory mitigation credits to permittees whose obligation to provide compensatory mitigation is then transferred to the in-lieu-fee sponsor. However, the rules governing the operation and use of in-lieu-fee programs are somewhat different from the rules governing operation and use of mitigation banks. The operation and use of an in-lieu-fee program are governed by an in-lieu-fee program instrument." (33 CFR Part 332.2).

At present, Savannah District does not have an approved in-lieu-fee program. Consequently, Savannah District proposes to provide funds to a third party (land trust or state agency) sufficient to purchase saltmarsh for preservation equivalent to the expected future impacts from implementing the preferred alternative DMMP option (37.5 acres). The amount of funding proposed for this purpose is $375,000 (37.5 acres at $10,000 per acre).

USFWS EVALUATION OF PLAN AND MITIGATION

This USFWS evaluation considers only the plan for deposition of spoil material, and not any impacts that could occur due to dredging, the placement of dredge pipelines, the use of existing, permitted ODMDSs, or the use of ODMDSs that will be permitted (and hence, reviewed via National Environmental Protection Act (NEPA) and ESA regulations) in the future. Although the use of existing spoil sites, particularly upland sites and confined areas, is preferred over unconfined cells, direct and indirect impacts to valuable fish and wildlife populations and habitats are likely to occur.

USFWS would like to be apprised whether any jurisdictional impacts to wetlands would occur. It may be possible for wetland impacts to occur regardless of whether disposal sites have previously been used. If wetlands have recovered since being impacted from prior dredging events, important, existing wetland functions could be lost. USFWS recommends the use of upland sites only, if possible to avoid impacting jurisdictional wetlands.

USFWS is concerned about the open water disposal options indicated to occur at Hells Gate, Altamaha Sound, and Buttermilk. Although it is stated that only spoil with at least 80% sand composition will be placed at these locations, spoils with up to 20% silts, clays, and fines is sufficient to cause damage to the estuarine water column and benthic habitat, and of course

marine species in those areas, as well as downstream areas. If these areas will be separately permitted, USFWS requests the opportunity to coordinate and review such actions.

Given that many additional acres of wetlands have been impacted than were intended over the past decades, due to dredge disposal placement, USACE must carefully quantify the size and scope of impacts, including indirect impacts to various species, and provide compensatory mitigation (see #6 above).

Potential mitigation opportunities may exist for those tracts that have shown evidence of recovery. Specific design alternative for the enhancement and/or restoration of these tracts should be prepared, and the potential values of restoration quantitatively evaluated for comparison among the various mitigation plans (see #7 above). Tracts that have not been used should be evaluated for determining whether they are valuable areas that should be preserved, or if not, could be enhanced for optimal use by wildlife (see #8 above). USACE could also evaluate if there are measures that increase wildlife use, particularly by migratory and protected birds, could be constructed at certain tracts (see #10 above). Likewise, the determination of specific enhancement designs for wetlands where undiked deposition occurred in the past is advisable (see #11 above).

USFWS disagrees with USACE's statement that the AIWW DMMP will result in "net benefits to estuarine emergent wetlands." It is possible that with Best Management Practices (BMPs) and a well executed mitigation program that demonstrates success in decades to come, the proposed use of disposal tracts as outlined in the DMMP may have overall *de minimus* effects, but the effects of the dredging operations themselves may overshadow the potential benefits of a well executed disposal plan with mitigation.

Finally, USFWS requests further coordination regarding which mitigation option will be used and how it will be implemented, as the large number of acres necessary to offset impacts will require considerable cost, careful planning, and certain implementation constraints, including detail to construction and widespread and thorough monitoring.

UNCERTAINTY AND RISK

There may be some uncertainty and risk in the use of the confined disposal sites, as well as the transport of material to the sites for disposal. Although the use of Best Management Plans prevents most unanticipated releases of dredged material into waterways and wetlands, this is always a possibility, even given the use of turbidity curtains, silt fences, and properly constructed berms at disposal sites. Accidental releases of sediments, including silt, may result in local increases in turbidity and subsequently both increased water temperatures and decreased dissolved oxygen levels. Sensitive life-history phases, such as eggs and larvae of fishes and invertebrates could be adversely affected.

MONITORING AND ADAPTIVE MANAGEMENT

Monitoring for effects on water quality and protected species should be part of the proposed project. Biological Opinions from the USFWS and NOAA will detail necessary monitoring for protected species. Monitoring for water quality associated with ODMDS areas must conform to permit conditions for those separately-authorized disposal sites. Monitoring for water quality at inland spoil sites is currently provided for DMCA 14-B (Savannah Harbor) only. However, standard water quality monitoring should be provided at the confined disposal sites at least twice daily during the deposition of materials and as materials are being dewatered. Monitoring positions should be downstream of any runoff from spoil sites. If no detectable flow is apparent, the monitoring stations should be downstream of the tidal current. A reference station should be established upstream from runoff or tidal currents for comparison to project-area samples. If water quality parameters are indicating that dissolved oxygen levels are too low, temperatures are too high, or turbidity too high compared to the background/control site, deposition rates should be attenuated or the operation should be halted until water quality parameters return to ambient levels. Failure to do so may result in unnecessary adverse affects to eggs and larvae of certain fish and invertebrate species, and difficulties for fishes attempting to spawn or forage in nearby areas.

SUMMARY AND CONCLUSIONS

Many important resources exist throughout the extensive project area that comprises the entire coast of Georgia and the southernmost two counties of South Carolina. These resources include upland islands, several classes of wetlands, tidal creeks, estuaries, sloughs, commercially and recreationally important fish communities, other ecologically important fish communities, managed migratory fishes, shellfish beds (including leased areas), protected species (including fish, marine mammals, birds, sea turtles, etc.) habitats, migratory bird habitats, and lands managed for the above species as well as for human recreation and enjoyment.

EFH for several fishery species (e.g., white shrimp, brown shrimp, and estuarine-dependent species of the snapper-grouper complex) occurs along the entire AIWW from Port Royal Sound to the Georgia-Florida border, and specifically includes estuarine emergent vegetation (e.g., *Spartina*), intertidal mudflats, unconsolidated bottom, tidal creeks, and oyster aggregations. These habitats are designated EFH because larvae and juvenile fish concentrate, feed extensively, and shelter in these habitats. As a consequence, growth rates are high and predation rates are low, which makes these habitats effective nursery areas. Specific effects to EFH and HAPC will be fully evaluated upon NOAA's receipt and review of the EFH assessment in the DEIS.

Given the breadth and depth of these resources, the maintenance of the balance of the coastal ecosystem is of critical importance for continued support of all resident (and transitory) species, but also for the economic stability of this region (and those upstream of it) that depends on these resources.

Specific information related to species protected under ESA (and critical habitats) will be provided under separate cover, while the recommendations below tend to focus on fish, wildlife, and habitats that may be overlooked during the consultation process. Water quality protection, marine mammals not protected under ESA, impacts to upland forests/hammocks, contaminated sediment control, conservation of gamefish and forage species, beneficial use of materials that enhances habitats and coastal protection, and protection of state and federal lands are of critical importance to federal resource agencies as well as the states of South Carolina and Georgia.

RECOMMENDATIONS AND USFWS POSITION

USACE has initiated ESA Section 7 consultation, which is currently ongoing. USFWS provides the following suggestions regarding protected species for USACE use, analysis, and implementation, as undertaking these measures will also afford benefits to species associated with them:

1. Consideration of effects to the federally protected West Indian manatee (*Trichechus manatus*) through collisions with dredging equipment and support vessels, particularly for construction activities during the summer months, and measures to avoid and minimize such effects.

2. Consideration of collisions, entrainment in dredging equipment, and other disturbances affecting the federally protected loggerhead (*Caretta caretta*), green (*Chelonia mydas*), leatherback (*Dermochelys coriacea*), and Kemp's ridley (*Lepidochelys kempii*) sea turtles.

3. Consideration of collisions, entrainment in dredging equipment, and other disturbances affecting the short- nosed sturgeon (*Acipenser brevirostrum*) and Atlantic sturgeon (*A. oxyrinchus*), and adoption of measures to avoid and minimize such effects.

4. Consideration of noise and other disturbances affecting the federally protected wood stork (*Mycteria americana*), particularly for activities occurring during the nesting season (March- August), and measures to avoid and minimize such effects.

5. Consideration of effects to the federally protected piping plover (*Charadrius melodus*) through dredging and disposal activities (noise and other disturbances, as well as habitat alteration) within or near potential wintering areas, and measures to avoid and minimize such effects.

USFWS recommends the following for implementation throughout the project area:

6. Sampling and testing before dredging to avoid contaminated materials, and when unavoidable, placing contaminated materials in disposal areas that are designed to minimize exposure to fish and wildlife (i.e., in confined facilities that are subsequently capped with clean sand).

7. Use of measures to avoid and minimize the suspension of contaminated sediments following any necessary deposition of dredged material on confined disposal sites.

8. Investigation of opportunities for reusing non-contaminated, dredged material to restore coastal habitats in coordination with local, state, and federal resource agencies.

9. Use of measures to protect the ecological integrity of public lands managed for natural resources values that are located along or near the AIWW, including Pinckney Island, Tybee, Wassaw, Harris Neck, Blackbeard Island, and Wolf Island National Wildlife Refuges.

Pursuant to coordination with the Habitat Conservation Division of NOAA, USFWS recommends that:…

10. USACE conducts field studies to assess the impacts from past disposal activities so that study results can inform selection of options for managing the dredged material from the AIWW. Parameters that may inform the study include vegetation density, benthic infaunal diversity and abundance, sediment composition, and marsh surface elevation. NMFS would be happy to work with USACE and other resource agencies on study plans that would meet these needs.

Pursuant to coordination with the states of Georgia and South Carolina, USFWS recommends the following:

11. USACE assures that the deposition of sediments in easement areas will not exceed the boundaries of the easements either directly or via subsequent overflow/repose of material.

12. USACE uses best available technology to confine any fine material to on-shore disposal sites. If geo-tubes are an option, confirm that fine materials will not flow through the tubes and back into the water, and that the tubes will stay in place.

13. USACE continues to pursue only confined sites for disposal, and that unconfined disposal options (except at permitted ODMDS areas and at seriously eroded beaches, using beach compatible sand for the latter) are to be permanently removed from future consideration, especially if fine materials are to be deposited.

14. USACE considers restoring formerly used unconfined saltmarsh disposal sites to their original pre-disposal condition as compensatory mitigation for unavoidable impacts to other wetland areas.

15. USACE should limit the time of year that dredging takes place. Juvenile shrimp, crabs and finfish use these areas near spoil islands most heavily in the late spring, summer and early fall, when the water's natural ability to absorb dissolved oxygen is reduced by high water temperatures. Limiting dredging events to the cooler months could reduce marine life mortality.

16. USACE should construct disposal area berms short and wide so that they do not sink into the soft substrates. Because the berms need to be short, the disposal sites may need to be widened to gain the capacity needed for a 20-year lifespan.

17. USACE should investigate the use/creation of upland confined disposal sites. Upland non-marsh disposal sites could be purchased and confined, but availability of upland is low and construction cost may be too high. It is unknown if the dried sediments would make a suitable load-bearing substrate for future development on the site. It may be possible to use an upland site to temporarily dewater the dredge spoil materials, which could take 1-2 years, and then truck the materials offsite to a waste disposal site or for alternative use - maybe as a concrete or other industrial additive.

COORDINATION WITH STATE AND FEDERAL WILDLIFE AGENCIES

Coordination with state and federal wildlife agencies was initiated during an interagency meeting on 20 September 2012 at the USFWS office in Townsend, Georgia. Agencies represented included USFWS, NMFS, Georgia DNR, and South Carolina DNR. Various fish and wildlife issues were identified by the various agencies and branches within various agencies, and some data sources were shared with the USFWS. Meeting notes were shared with these agencies, and additional coordination was requested. Participants were asked to review the preliminary Draft CAR and provide any additional recommendations to USACE for the proposed project.

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APPENDIX A

GEORGIA
Coastal Resources Division

August 21, 2007

MEMORANDUM

TO: The Honorable Jack Kingston
The Honorable Eric Johnson
Office of the Governor
U.S. Army Corps of Engineers
Georgia Department of Transportation
Georgia Marine Business Association

FROM: Coastal Resources Division, Georgia Department of Natural Resources

SUBJECT: AIWW Maintenance Dredging and Disposal

Thank you for the opportunity to attend today's dialogue regarding the dredging challenges associated with the Atlantic Intracoastal Waterway (AIWW) maintenance and disposal of dredge material. Following is background regarding this issue, specifically, the background behind the Department of Natural Resources' policy decision regarding unconfined disposal on certain sites.

Several thousand vessels traverse the Georgia portion of the AIWW each year with increasing difficulty, since many portions have not been maintained at the authorized depth of 12 feet for nearly a decade, leaving nine areas currently impassable at low tide. When maintenance dredging was performed in the past, the majority of spoil materials were disposed of on up to 7,000 acres of state-owned saltmarsh that had been set aside via easements obtained for that purpose in 1940.

While only about half of these 100-200 acre saltmarsh easement sites have ever been utilized, some remain problematic. There is an adverse impact associated with pumping dredge spoil material onto pristine saltmarsh that has not been confined or had any type of barrier erected to keep the material inside the easement area. Dredge spoils spread out, covering much larger areas of saltmarsh than intended, leading to hundreds of acres of additional habitat loss. Georgia recognized that allowing disposal in any additional saltmarsh areas was contrary to public interest in safeguarding this vital natural resource by adopting the Coastal Marshlands Protection Act of 1970. O.C.G.A. 12-5-288 (b) specifically states: "The amount of marshlands to be altered must be minimum in size. ***The following activities and structures are normally considered to be contrary to the public interest when located in coastal marshlands*** but the final decision as to whether any activity or structure is considered to be in the public interest shall be in the sound discretion of the committee: .... (3) ***Construction of dump sites and depositing of any waste materials or dredge spoil;***" [emphasis added]. For similar reasons South Carolina has prohibited not just new but all unconfined saltmarsh disposal.

In areas where the dredge spoils are composed of clays and very fine-grained, light-weight material, such as Creighton Narrows, Little Mud/South River and Jekyll Creek, most of the dredge materials rapidly run off the marsh disposal site back into the estuary where they remain suspended in the water column, killing marine life, degrading essential fish habitat, and necessitating more frequent dredging. Following repeated fish kills associated with dredging in these three areas in the early 1990's, the Corps of Engineers and the Georgia Department of Natural Resources partnered in water quality studies at the worst of these sites, Jekyll Creek, and concluded that alternative dredge spoil disposal methods and/or sites were essential to adequately protect natural resources and reduce the need for frequent dredging.

In 1998 the DNR Commissioner informed the Colonel of the Savannah District, Corps of Engineers that the continued practice of placing dredged materials from the AIWW onto unconfined saltmarsh disposal sites was not consistent with the Georgia Coastal Management Program and that the resulting impacts to Essential Fish Habitat were contrary to the federal Magnuson-Stevens Fishery Conservation and Management Act. The Commissioner requested the Colonel to commit to implement a policy over the next three years that would reduce or eliminate unconfined disposal of dredged materials, with priority given to developing alternative disposal techniques for sites with fine-grained materials.

While numerous meetings were held to discuss concepts during that three-year period and continue today, the specifics of which are included in the attached addendum, little progress has been made towards the Corps' development of an environmentally sound and efficient AIWW maintenance dredging and disposal policy. The Corps' has not performed any dredging in Georgia for over seven years (nine years in some places, such as Jekyll Creek). The initial concepts and recommendations that were developed nearly a decade ago, however, remain applicable today and the Georgia Department of Natural Resources remains committed to assisting the Corps' of Engineers with development and implementation of both short-term and long-term strategies that will not only protect our vital natural resources but also meet the needs of national security, interstate commerce, commercial fishing and recreational users of the Atlantic Intracoastal Waterway.

cc: Commissioner Noel Holcomb

Addendum

AIWW Maintenance Dredge Disposal Issues and Concepts
GADNR, Coastal Resources Division

Biological Issues:

- Fine-grained particles that run off from unconfined marsh disposal sites into adjacent waterways are suspended in the water column and clog finfish and shrimp gills, smother fish and crab eggs, and clog bivalve (oysters, clams) siphons, killing a wide variety of marine life
- Fine-grained particles suspended in the water column reduce the water's ability to incorporate dissolved oxygen and when the dissolved oxygen content of water is too low fish swimming through the area don't have enough oxygen to "breath" and can die or become weakened and susceptible to disease
- Sediments that accumulate over sandy or rocky waterbottoms make those areas inhospitable to animals that prefer a firm substrate, thereby reducing available essential fish habit
- Dredge spoil deposited on unconfined marsh areas spreads out past the boundaries of authorized easements, resulting in the unintended loss of hundreds of additional acres of saltmarsh

Problematic Dredging Areas:

- There are 3 reaches of the AIWW that contain fine-grained sediments:
    - Jekyll Creek is 14,750 ft. long and requires 500,000 cy of annual dredging
        - Materials are placed on Spoil Area #52A (easement area = 116 acres) or
        - Materials are placed on Spoil Area #52B (easement area = 95 acres)
    - Little Mud/South River is 13,900 ft. long and requires 413,000 cy of annual dredging
        - Materials are placed on Spoil Area #32A (easement area = 281 acres)
        - Materials are placed on Spoil Area #30A (easement area = 269 acres)
    - Creighton Narrows is 4,500 ft. long and requires 121,500 cy of annual dredging
        - Materials are placed on Spoil Area #25E (easement area = 43 acres)
- The other 6 areas that are currently impassable at low tide [Field's Cut, Hell's Gate, Florida Passage, Altamaha Sound, and Buttermilk Sound] do not contain fine-grained sediments that pose water quality concerns. Dredge spoil disposal on unconfined marsh sites could continue in the short-term if long-term solutions to unconfined disposal are being actively pursued.

Alternative Methods and Concepts:

- **Limit the time of year dredging takes place:** Juvenile shrimp, crabs and finfish use these areas most heavily in the late spring, summer and early fall, when the waters natural ability to absorb dissolved oxygen is reduced by high water temperatures. Limiting dredging events to the cooler months could reduce marine life mortality.
- **Confine the disposal sites with berms:** Berms need to be short and wide or they will sink into the soft marsh. Because the berms need to be short, the disposal sites would need to be expanded to gain the capacity needed for a 10-15 year lifespan before they were full. The current easement areas for the 3 problematic sites are about 800 acres and they would have to be expanded by another 350 acres. It will be difficult and expensive to obtain and move large amounts of berm material (sand & gravel), and the loss of vast amounts of public marshlands to dredge spoil may not be in the public interest, and thus contrary to the Marsh Act. This would have associated federal consistency issues.

- **Confine the disposal sites with geo-tubes**: It is speculated that the dredge material itself could be used to construct a small berm if it were pumped directly into long, fiber-mesh, geotextile tubes and placed along the circumference of the easement areas. It is unknown whether the dredge materials would be so fine-grained that they would flow directly through the tubes or if a flocculating agent could be added to the spoil to make is settle out and stay in the tubes. Because these tubes are circular and not wide-based, they may sink into the marsh, perhaps before they can be filled to capacity. If the berms are successful they could confine materials pumped into the interior of the easement areas. If they sink, geo-tube may be able to be placed one on top of another until they form a stable berm. The Department is very supportive of conducting a small-scale dredging project to investigate this technique.
- **Convert mud flats to saltmarsh:** Where there are shallow, non-productive mud flats adjacent to existing saltmarsh, it may be possible to create a dike or jetty with rocks and fill the area with dredge spoil material until it reaches the elevation of the adjacent marsh, then plant the area with saltmarsh grasses. The large rock needed for the dike/jetty may be expensive and difficult to transport into shallow waters and there will be a loss of Essential Fish Habitat. It may be possible to create new Essential Fish Habitat in another area that would compensate for the loss. The Department is supportive of investigating this method if an appropriate site can be identified.
- **Restore historic river flows:** In at least one area, the Jekyll Creek reach, historic river flows were reduced when the Georgia Department of Transportation constructed the Jekyll Island Causeway. Initial research has been done that indicates if two bridges were placed in the causeway to reconnect the Latham River with Jekyll Creek, natural historic water flows would be restored, thereby increasing the velocity of water traveling through that reach, and reducing the amount of sediments that settled out of the river and reducing the amount of material to be dredged. The Department is very supportive of continuing/reviving research into this restoration project. The Department also supports investigating if roads or stream diversions have impacted historic flows in other areas of the AIWW that shoal in rapidly, and identifying other potential restoration areas.
- **Use ocean disposal sites:** Materials would have to be tested for toxic materials before being pumped to the ocean. Materials can easily be pumped approximately 20,000', but it becomes less feasible for longer distances due to equipment costs. All of the problematic sites are more than 20,000' from the ocean. Placing fine-grained materials in the ocean may cause water quality issues and loss of marine life, thereby shifting the current problems. The creation of any new ocean disposal sites would have to be approved by the Environmental Protection Agency.
- **Agitation dredging:** Some waterways can be stirred up so that the bottom sediments are suspended in the water column and are swept out with the tide. There is not enough tidal flushing in any of these problematic areas for this method to work and it is generally not favored because of water quality concerns.
- **Use/create upland confined disposal sites:** Upland non-marsh disposal sites could be purchased and confined, but availability of upland is low and cost is high. It is unknown if the dried sediments would make a suitable load-bearing substrate for future development on the site. It may be possible to use an upland site to temporarily dewater the dredge spoil materials, which could take 1-2 years, and then truck the materials offsite to a waste disposal site or for alternative use – maybe as a concrete or other industrial additive.

GEORGIA
Coastal Resources Division

February 25, 2008

Mr. Bill Bailey
US Army Corps of Engineers
P.O. Box 889
Savannah, Georgia 31402-0889

RE: Atlantic Intracoastal Waterway Dredging Priorities for FY08, $1.3M

Dear Mr. Bailey:

In your February 6, 2008 e-mail you asked for our concurrence with your interpretation of our August 21, 2007 letter regarding AIWW Maintenance Dredging and Disposal and the Corps' proposed prioritization for the $1.3 million in funding obtained for the current fiscal year. Your proposed priority is Hell's Gate, Florida Passage, Buttermilk Sound, Altamaha Sound, and Field's Cut. An alternative, and more preferable, prioritization would be: Hell's Gate, Buttermilk Sound, Field's Cut, Florida Passage, Altamaha Sound, and Elba Cut.

All of these areas were listed in our August 21, 2007 letter as areas that currently use unconfined marsh disposal sites, but that did not contain fine-grained sediments that pose water quality concerns. Concerns remain in these areas, however, that dredge materials may spread past the boundaries of your authorized easements, resulting in the unintended loss of additional saltmarsh.

Coastal Resources Division has no objection to the proposed dredging in the portions of the AIWW stated above, and to the placement of the dredged materials in the unconfined disposal areas, so long as long-term solutions to unconfined disposal are pursued. In 1998, the Commissioner of the DNR informed the Savannah District that the continued practice of placing dredged materials from the AIWW onto unconfined saltmarsh disposal sites was not consistent with the Georgia Coastal Management Program and that the resulting impacts to Essential Fish Habitat were contrary to the Federal Magnuson-Stevens Fishery Conservation and Management Act. The Commissioner requested the District to commit to implement a policy over the next 3 years that would reduce or eliminate unconfined disposal of dredged materials, with priority given to developing alternative disposal techniques for sites with fine-grained materials. Based on the proposal before us today, there has been no progress by the Corps to identify, much less implement, alternative disposal practices.

Your February 6, 2008 e-mail states that a portion of the $1.3M for FY08 will be used to resume efforts on long-term sediment placement needs and solutions. Should other sources of monies become available, the increase could be used, in part, to help identify long-term solutions. One possible long-term solution, as outlined in our August 21, 2007 letter, is using geotextile tubes to confine existing disposal sites. We are still very supportive of investigating this technique and conducting a small-scale dredging project in Jekyll Creek, the worst of these sites for water quality degradation.

Georgia Department of Natural Resources • Coastal Resources Division
One Conservation Way • Brunswick, Georgia 31520
Tel: (912) 264-7218 • FAX: (912) 262-3147 • WEB: http://crd.dnr.state.ga.us

To that end, we have arranged for a representative from TenCate Geotube® to conduct a "Lunch and Learn" session on April 15th from 11:30 – 1:00. We would like to extend our invitation to you and other Corps' personnel to join us in learning more about this technology and potential application on AIWW dredge disposal sites. Please contact Kelie Moore for arrangements to attend the presentation.

The Department of Natural Resources has not received from the COE a determination that the AIWW maintenance project is consistent with Georgia's Coastal Management Program, as required by 15 CFR Part 930. This letter should not be construed to be a concurrence that the project is consistent with Georgia's Coastal Management Program. Further, it is highly recommended that the proposal to dredge and dispose be coordinated with Federal and State Trust Resource Agencies, such as the US Fish and Wildlife Service and DNR's Wildlife Resources Division.

Sincerely,

Susan Shipman

Susan Shipman

SS/km

DEPARTMENT OF THE ARMY
SAVANNAH DISTRICT, CORPS OF ENGINEERS
100 W. OGLETHORPE AVENUE
SAVANNAH, GEORGIA 31401-3640

REPLY TO
ATTENTION OF:

MAR 09 2012

Executive Office

Ms. Joyce Bear, Representative
Native American Graves Protection and Repatriation Act
Muscogee (Creek) Nation
Post Office Box 580
Okmulgee, Oklahoma 74447

Dear Ms. Bear:

The Savannah District, US Army Corps of Engineers (Corps) is proposing to implement a Dredged Material Management Plan (DMMP) for the portion of the Atlantic Intracoastal Waterway (AIWW) that extends between Port Royal Sound/Hilton Head Island (AIWW Mile 552) and the Cumberland Sound/Florida state line (AIWW Mile 713), approximately 161 miles in Georgia and South Carolina. In addition to the navigation channel the AIWW project includes 71 dredged material disposal tracts totaling approximately 14,251 acres located along that waterway.

The DMMP will outline a 20-year dredged material maintenance strategy based on dredging volume and frequency projections for the Savannah District portion of the AIWW. The plan will likely require creation of confined upland disposal facilities for the dredged material or possibly off-shore disposal areas.

The DMMP is still in development stages and the potential new confined disposal facility sites and off-shore disposal areas have not yet been identified. The activities that may be proposed in the plan may have an effect upon historic properties included in or eligible for inclusion in the National Register of Historic Places. To comply with Section 106 of the National Historic Preservation Act (NHPA) (16 U.S.C. 470h-2(f)) and 36 CFR Part 800, we will implement a Programmatic Agreement to develop a survey strategy to ensure that the historic property investigations are completed in all areas of this project prior to dredging or disposal of excavated sediments.

An Environmental Impact Statement is being prepared to analyze the environmental impacts from implementing the DMMP. That document will be coordinated separately with your tribe to comply with the National Environmental Policy Act.

In accordance with Section 106 of the NHPA and 36 CFR Part 800, we would like to solicit your interest in this project. Please review the enclosed information and submit your comments on our proposed undertaking.

If you have any questions, please direct them to Ms. Julie Morgan, Planning Division Archaeologist, at (706) 856-0378, or by email to julie.a.morgan@usace.army.mil.

Sincerely,

Jeffrey M. Hall
Colonel, US Army
Commanding

Enclosure

Project Information for Atlantic Intracoastal Waterway
Dredged Material Management Plan

Location

The Atlantic Intracoastal Waterway (AIWW) is a continuous sheltered waterway used by commercial and private shallow-draft vessels. The waterway extends from Norfolk, Virginia to Florida. The Savannah District's authorized maintenance project is the 161 mile stretch between Port Royal Sound, South Carolina and Cumberland Sound at the Georgia/Florida border. That portion of the AIWW maintained by Savannah District is located in Chatham, Bryan, Liberty, McIntosh, Glynn, and Camden Counties, Georgia and the portion of Beaufort County, South Carolina, located between Port Royal Sound and Savannah River (Figure 1). Twenty-four (24) miles of the navigation channel are located in South Carolina; the remaining 137 miles are situated in Georgia.

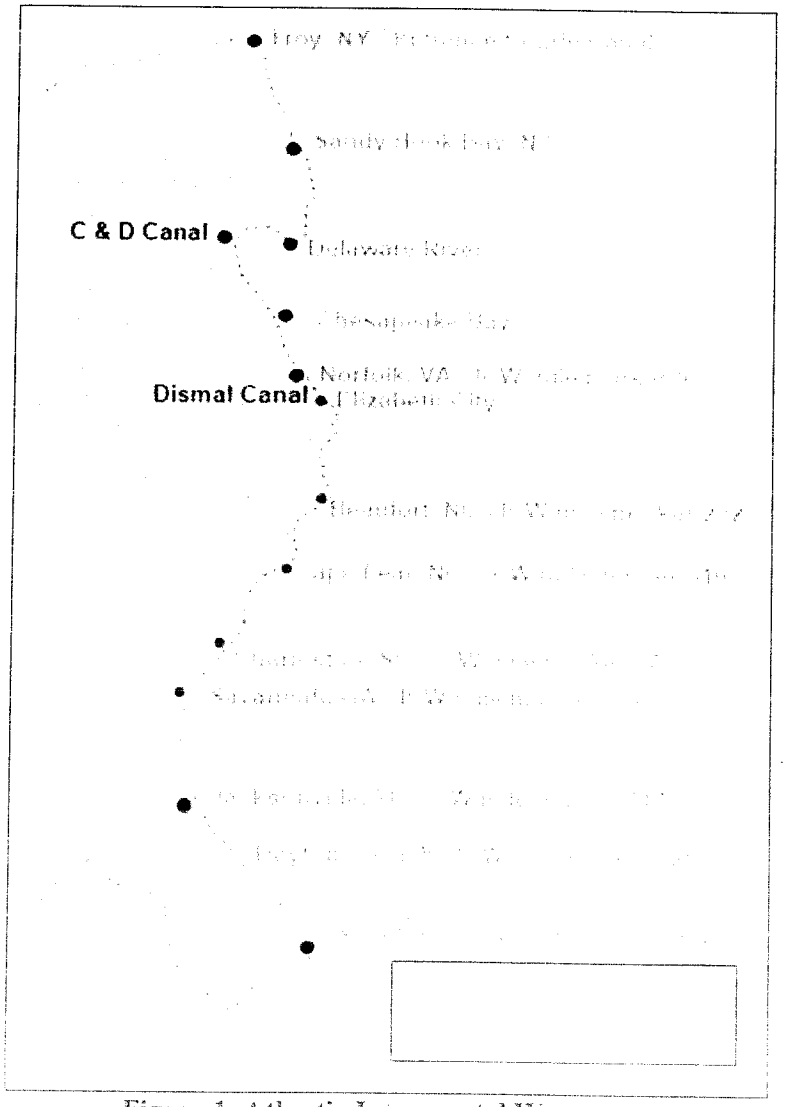

Figure 1. Atlantic Intracoastal Waterway

The AIWW is authorized to 12 feet deep with widths of 90 feet through land cuts and 150 feet in open water areas. In addition to the navigation channel, the AIWW project area consists of 71 tracts of varying acreage totaling approximately 14,251 acres along the waterway. Approximately 817 acres (3 tracts) are located in South Carolina. Nearly 13,434 acres (68 tracts) are in Georgia. The tracts are used to place the dredged material. This acreage total does not include one tract located along the southernmost Georgia reach near the U.S. Naval Submarine Base at Kings Bay, Georgia. The Navy is responsible for maintaining that reach of the waterway.

Description of Action (Undertaking)

The proposed Dredged Material Maintenance Plan (DMMP) will identify how much sediment will be removed to maintain the AIWW navigation channel and how that dredged sediment will be managed in an economically and environmentally sound manner. It is likely that the plan will include the development of upland confined disposal facilities (CDFs) for the containment of dredged sediments and materials. The precise locations of the proposed CDFs have yet to be determined, but they will be located on disposal tracts that are presently part of the AIWW project. Open-water placement of sandy dredged material and placement in Ocean Dredged Material Disposal Sites will also be addressed in the plan. The DMMP will cover dredging and disposal activities for a minimum of 20 years.

The undertaking, as defined in 36 CFR § 800.16(y), is the implementation of the DMMP.

Previous Surveys of the Savannah District portion of the AIWW

In 1979, Texas A&M University conducted reconnaissance level terrestrial and underwater surveys of selected portions of the AIWW. The purpose of the surveys was to locate archaeological (prehistoric and historic) sites and to develop a predictive model for site locations. The terrestrial survey covered the shoreline from Dolphin Head, which is located near Hilton Head, South Carolina extending south on the waterway to the southern tip of Cumberland Island at the Florida State Line. The shoreline and exposed banks were inspected from a boat for evidence of archaeological sites, and periodically the crew would conduct brief walk-overs of areas to determine if surface artifacts were present in association with the material in the river or creek bank. Seventeen archaeological sites were observed. Most of the sites consisted of scatters of shell which were occasionally mixed with prehistoric ceramics and/or historic materials. No excavations or further work was performed at any of the sites.

The underwater remote sensing survey located historic materials in various locations that may be associated with as many as four shipwrecks. More research was recommended to correlate the artifacts with known shipwrecks.

Savannah District has not conducted any additional cultural resources investigations of the AIWW since the Texas A&M University study. The National Register of Historic Places (NRHP) status of the sites is unknown.

A copy of the report will be sent to you by request.

Other Cultural Resources Investigations

A cursory review of the Georgia Site File indicates that there are numerous recorded archaeological sites in the vicinity of the AIWW, especially in Chatham County and on the larger barrier islands. More archival research will be necessary to determine if the resources are within the disposal tracts currently managed by Savannah District or tracts to be acquired.

Effects to Cultural Resources

At this time effects to cultural resources are unknown as survey data is incomplete, particularly remote sensing survey data of the reaches, and NRHP status is indeterminate for many recorded sites. Seventeen site locations were identified in the reconnaissance level survey of the AIWW that Savannah District funded, but no follow on investigations were conducted. As such, the integrity, the condition and the NRHP status of the sites recorded in 1979-1980 are unknown at this time.

Several sites have been recorded in the vicinity of the AIWW, but further archival research is required to determine if any of these sites will be impacted by the proposed actions in the DMMP.

Savannah District recognizes the activities that may be proposed in the DMMP may have an effect upon historic properties included in or eligible for inclusion in the National Register of Historic Places. Due to the large size of the project area it is recommended that a phased approach to survey work be developed. As such, Savannah District will implement a Programmatic Agreement (PA) as specified under 36 CFR § 800.14b(1) (ii). The PA will outline appropriate methodology for fieldwork and determine the treatment of significant cultural resources.

From:	CESAS-PD, SAS
To:	Seyle, Charles W SAS
Subject:	FW: intent to prepare draft EIS on AIWW-comment (UNCLASSIFIED)
Date:	Thursday, May 17, 2012 1:27:29 PM

Classification: UNCLASSIFIED
Caveats: NONE

-----Original Message-----
From: Wendy Larimer [mailto:wlarimer@lighthousecg.com]
Sent: Thursday, May 17, 2012 12:58 PM
To: CESAS-PD, SAS
Subject: intent to prepare draft EIS on AIWW-comment

May 17, 2012

Mr. Charles W. Seyle

US Army Corps of Engineers, Savannah District

ATTN: PD

Post Office Box 889

Savannah, GA 31402

RE: Intent To Prepare a Draft Environmental Impact Statement for a 20-Year Dredged Material Management Plan for the Atlantic Intracoastal

Waterway from Port Royal Sound, South Carolina, to the Georgia-Florida Stateline

Mr. Seyle:

As a representative of the Association of Marina Industries, I am writing to ask that the interests of the recreational boating community be a strong determining factor in the scoping process for maintenance dredging of the Atlantic Intracoastal Waterway from Port Royal Sound, SC southward to the GA/FL state line.

AMI is a non-profit membership organization dedicated exclusively to representing the marinas and the businesses that support them across the United States. In this capacity we are strongly aware of the

needs of recreational boaters who are the lifeline of marina businesses and we often work to ensure their needs are recognized.

The AIWW as a whole is a tremendous boating asset providing safe passage from New England to FL twice each year for those who move their boat to warmer waters in the winter. In addition, each small section of the ICWW is actively traversed by boaters heading out to deeper waters for fishing, or by those just looking for a place to spend the day floating or skiing.

For each of these boats there is a business landside that depends on them for their livelihood. Whether it's a bait & tackle shop, fuel dock, marina, or engine mechanic, each relies on the ICWW boaters to keep them profitable.

As the scoping process continues, please keep the needs of recreational boaters and the businesses that support them in the forefront of decision making and help ensure their safe passage is not impeded.

Sincerely,

Wendy Larimer

Legislative Coordinator

Association of Marina Industries

202/350-9623

www.marinaassociation.org

Classification: UNCLASSIFIED
Caveats: NONE

ATLANTIC INTRACOASTAL WATERWAY ASSOCIATION

May 18, 2012

Mr. Charles W. Seyle
US Army Corps of Engineers, Savannah District
ATTN: PD, Post Office Box 889
Savannah, GA 31402

Sent via email: CESAS-PD.SAS@usace.army.mil

Dear Mr. Seyle:

Greetings from the Atlantic Intracoastal Waterway Association. I am writing you today to discuss the Notice of Intent to conduct a new Draft Environmental Impact Statement (DEIS) for the maintenance dredging of the Atlantic Intracoastal Waterway (AIWW) from Port Royal Sound, South Carolina, southward to the Georgia-Florida state line. It is our understanding that The Corps' Savannah District intends to prepare the DEIS to analyze the impacts of the maintenance dredging of this portion of the AIWW for the next twenty years.

As the study is being prepared, we respectfully request to be added to any and all mailing lists and notices regarding the DEIS. Our association serves as a conduit to a number of users along the waterway and we would like to keep our members informed of any proposed actions so that they are able to provide comments at the appropriate time.

Thank you for your attention to our request and we look forward to learning more about the results of the study as it progresses. I can be reached via email at bpickel@seahavenconsulting.com.

Sincerely,

Brad Pickel
Executive Director

5A Market Street Beaufort, SC 29906 843-379-1151 www.atlintracoastal.org

From: CESAS-PD, SAS
To: Seyle, Charles W SAS
Subject: FW: Respoding comment to the Corps proposed DEIS (UNCLASSIFIED)
Date: Friday, May 18, 2012 3:35:04 PM

Classification: UNCLASSIFIED
Caveats: NONE

-----Original Message-----
From: Jeff Gregg [mailto:greggjeffrey@bellsouth.net]
Sent: Friday, May 18, 2012 9:26 AM
To: CESAS-PD, SAS
Subject: Respoding comment to the Corps proposed DEIS

Mr. Charles W. Seyle
US Army Corps of Engineers
Savannah District

Sir:
This communication references the proposed DEIS evaluating the impacts of maintenance dredging along the AICW in Georgia. While the focus of your concerns will be with the navigable channels of the ICW, the dredging of which we strongly support as a benefit to recreational boaters, as a small private marina, we would like to take this opportunity to voice our ongoing frustrations with present Corps and Georgia DNR policies regarding permitting and disposal of dredge spoil as it relates to our entity and others like us. The Frederica Yacht Club is comprised of two floating docks with 72 slips located just south of Golden Isles Morning Star Marina on Lanier Island. The owners of these slips have formed an association based on the typical land based condominium model which functions as their representative and common property manager.
We, as the association board, have been working for years to get permission to dredge the near shore area of our facility, which, at low tide, is so shallow that 12 of our slips are rendered useless for anything larger than a small outboard powered skiff. However Corps policy is so onerous that attempting compliance would make it cost prohibitive for our organization. Specifically, we would like to see the Corps grant access to its disposal sites (e.g. Andrews Island) so that we would not be forced to obtain coastal property for this purpose. Alternatively, permission to deposit the silt off shore would be acceptable. It seems to us that evaluating any dredging plan must take into account the needs of all users and to provide them with sensible and affordable means of maintaining the usefulness of their facilities.
Thank you for your attention.

Frederica Yacht Club Owners Association - 912-571-6035
greggjeffrey@bellsouth.net
Craig Rudow-President
Jeff Gregg-Vice President
Phyllis Holeman-Secretary
Joan Lewis-Treasurer
Ben Nelson-At Large

Classification: UNCLASSIFIED
Caveats: NONE

South Carolina Department of
Natural Resources

PO Box 12559
Charleston, SC 29422
843.953.9305 Office
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WendtP@dnr.sc.gov

Alvin A. Taylor
Director
Robert D. Perry
Director, Office of
Environmental Programs

May 21, 2012

Mr. Charles W. Seyle
U.S. Army Corps of Engineers
Savannah District
ATTN: PD, PO Box 889
Savannah, GA 31402

RE: Notice of Intent to Prepare a Draft Environmental Impact Statement for a 20-Year Dredged Material Management Plan for the Atlantic Intracoastal Waterway from Port Royal Sound, South Carolina, to the Georgia-Florida Stateline

Dear Mr. Seyle:

The South Carolina Department of Natural Resources (SCDNR) is submitting this letter in response to the Notice of Intent (NOI) to prepare a Draft Environmental Impact Statement (DEIS) for a 20-Year Dredged Material Management Plan (DMMP) for the Atlantic Intracoastal Waterway (AIWW) from Port Royal Sound, South Carolina, to the Georgia-Florida Stateline. The DEIS will evaluate the anticipated 20-year maintenance dredging needs for this portion of the AIWW, and alternative disposal options, including using existing upland confined disposal areas and Ocean Dredged Material Disposal Sites (ODMDS), establishing new ODMDS sites, constructing new upland confined disposal areas, constructing confining structures on existing marsh disposal areas, and using open-water disposal areas.

Briefly stated, SCDNR is concerned about the entire range of potential direct and indirect impacts the proposed DMMP might have on South Carolina's natural resources, including those in federal waters off the coast of South Carolina and northern Georgia. These include potential impacts to water quality, air quality, marine and estuarine resources, fish and wildlife habitat, threatened and endangered species, and other species of recreational, commercial, or ecological importance. As noted in the NOI, State natural resource agencies have requested that the Corps discontinue placement

of fine-grained dredged material on unconfined saltmarsh sites. The SCDNR concurs with that request. In addition, SCDNR requests that the Corps consider restoring formerly used unconfined saltmarsh disposal sites to their original pre-disposal condition as possible compensatory mitigation for unavoidable impacts to other wetland areas. It should be noted that SCDNR has generally opposed open-water disposal of dredged material, except in an approved ODMDS or for the purpose of nourishing seriously eroded beaches with beach-compatible sand; however, SCDNR would be willing to consider other beneficial uses of dredged material where appropriate.

The SCDNR looks forward to continuing our coordination with the Corps on this project, and working with the other Federal and State natural resource and regulatory agencies to ensure that all relevant environmental issues are adequately addressed in the DEIS.

Sincerely,

Priscilla H. Wendt

Priscilla H. Wendt
Office of Environmental Programs/ MRD

Cc: SCDHEC/ EQC
SCDHEC/ OCRM
NOAA/NMFS
USFWS
USEPA

National Marine Manufacturers Association

May 21, 2012

Mr. Charles W. Seyle
Planning Division, Savannah District
U.S. Army Corps of Engineers
P.O. Box 889
Savannah, GA 31402

Via E-Mail: CESAS-PD.SAS@usace.army.mil

Re: Notice of Intent to Prepare a Draft Environmental Impact Statement for a 20-Year Dredged Material Management Plan for the Atlantic Intracoastal Waterway from Port Royal Sound, South Carolina, to the Georgia-Florida Stateline – Docket No. COE-2012-0011.

Dear Mr. Seyle:

The National Marine Manufacturers Association (NMMA) appreciates the opportunity to comment on the U.S. Army Corps of Engineers plan to prepare a Draft Environmental Impact Statement (DEIS) to analyze the impact of maintenance dredging to a portion of the Atlantic Intracoastal Waterway (AIWW) including the disposal of dredged materials.[1] The waterways under consideration (the AIWW from Port Royal Sound, South Carolina, southward to the Georgia-Florida state line) include popular recreational boating areas.

NMMA encourages the Corps to move forward with dredging the proposed sites and to consider in its DEIS the importance of dredging to recreational boating. Adequate and consistent access to the AIWW is important for recreational boaters and the businesses that support them. Businesses that provide provisions, entertainment, and services to boaters from local and transient vessels are notably stronger when the AIWW can provide consistent and reliable passage at a sufficient depth to accommodate these vessels. Safety is improved when the AIWW is kept at a consistent depth of 12 feet to accommodate a full breadth of recreational vessels.

Recreational boating has an estimated annual economic impact of $72 billion. Eighty-three million Americans participated in boating in 2011. In 2011, 34.8 percent of adults went boating

[1] 77 Fed. Reg. 23,668 (Apr. 20, 2012) (additional information about the DEIS can be found at http://www.sas.usace.army.mil/op/navigationbranch.html).

Executive Committee
Chairman
Jason Pajonk-Taylor
Taylor Made Products

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EMD Representative
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AMD Representative
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S2 Yachts

President
Thomas J. Dammrich
NMMA

444 North Capitol Street, NW, Suite 645
Washington, D.C. 20001
202.737.9750 Fax 202.628.4716
nmma.org

and retail sales of boats, accessories and marine services were $32.3 billion. Importantly, an estimated 83 percent of boats sold in the U.S. in 2011 were made in the U.S.[2]

NMMA is the leading association representing the recreational boating industry in North America. NMMA member companies produce more than 80 percent of the boats, engines, trailers, accessories and gear used by boaters and anglers throughout the U.S. and Canada. The association is dedicated to industry growth through programs in public policy advocacy, market statistics and research, product quality assurance and promotion of the boating lifestyle. Please contact me at 202-737-9766 or csquires@nmma.org for additional information or if you have questions.

Sincerely

Cindy L Squires, Esq.
Chief Counsel for Public Affairs and Director of Regulatory Affairs

[2] The NMMA's 2011Recreational Boating Statistical Abstract.

From: CESAS-PD, SAS
To: Seyle, Charles W SAS
Subject: FW: proposed action and DEIS (UNCLASSIFIED)
Date: Tuesday, May 22, 2012 9:07:08 AM

Classification: UNCLASSIFIED
Caveats: NONE

-----Original Message-----
From: Ben Carswell [mailto:bcarswell@jekyllisland.com]
Sent: Monday, May 21, 2012 4:36 PM
To: CESAS-PD, SAS
Cc: C. Jones Hooks
Subject: proposed action and DEIS

Dear Mr. Seyle,

I am writing on behalf of the Jekyll Island Authority (JIA) to express our interest and concerns regarding the proposed maintenance dredging of the Atlantic Intracoastal Waterway (AIWW). The JIA is the Georgia government body that manages Jekyll Island, a public land holding, portions of which are leased by private businesses and residents. The JIA and the businesses that it supports, including Jekyll Harbor Marina and Jekyll Wharf, expect to benefit economically from the proposed dredging of the AIWW in Jekyll Creek. We are therefore in favor of such dredging if it can be done without negatively impacting the marshes and marsh hammocks adjacent to Jekyll Island, including those on both sides of Jekyll Creek, and with utmost care to avoid harmful interactions with wildlife.

Diked material disposal sites alongside Jekyll Creek are an unfavorable option from our perspective, regardless of whether or not these sites would be located on top of formerly disturbed areas because these locations are currently serving as valuable habitat for wildlife and plants. Furthermore, dikes that protrude substantially above the marsh surface would visually intrude upon the westward (sunset) view from the island, an outcome that I believe would be highly undesirable for the JIA, our visitors, residents, and businesses.

We would very much appreciate the opportunity to continue to be engaged in the EIS process for this proposed action. Please add my email and the following emails to your distribution list for this matter.

jhooks@jekyllisland.com
tnorton@jekyllisland.com
egarvey@jekyllisland.com

Kind Regards,

--

Ben Carswell, Conservation Manager
Office: (912) 635-9384 / Mobile: (912) 242-6222 /

Fax: (912) 717-6454 /
Email: bcarswell@jekyllisland.com

Jekyll Island Authority

100 James Road, Jekyll Island, GA 31527

<http://www.jekyllisland.com/email_sig.jpg>

http://www.jekyllisland.com <http://www.jekyllisland.com/>

Classification: UNCLASSIFIED
Caveats: NONE

From:	CESAS-PD, SAS
To:	Seyle, Charles W SAS
Subject:	FW: Beneficial use of dredged material (UNCLASSIFIED)
Date:	Tuesday, May 22, 2012 9:08:41 AM
Attachments:	Draft_Umbrella-Dover_Cr_Propsl_28DEC2011(with ExecSum).pdf

Classification: UNCLASSIFIED
Caveats: NONE

-----Original Message-----
From: Clay Montague [mailto:montaguec@earthlink.net]
Sent: Tuesday, May 22, 2012 8:21 AM
To: CESAS-PD, SAS
Cc: Fred Voigt; Ashish Mehta
Subject: Beneficial use of dredged material

To: Mr. Charles Seyle, Savannah District, USACE

Dear Mr. Seyle,

I just realized your deadline was yesterday for comments on use of dredged material from the Georgia Intracoastal Waterway. However, I would like to mention restoration of fish habitat by filling obsolete navigation cuts as a beneficial use of dredged material. A good example may be Noyes Cut in the Satilla River estuary, which I understand the Savannah District considered closing some years ago.

Attached is a university research proposal for which I have been seeking funding. The purpose is to evaluate the efficacy of closing Noyes Cut to restore fish habitat by re-establishing salinity gradients, flow directions, and redirecting sedimentation in affected nearby tidal creeks and small rivers. The study involves calibrating a well-regarded hydrological model and examining field conditions of sediment movement, salinity, and flow.

If closing obsolete navigation cuts has the beneficial effects on fish habitat that I think are likely in cases like Noyes Cut, it should be a very acceptable use of dredged material.

I wish you would have a brief look at this proposal or share it with others you may know. I think the Savannah District should at least know of our interest in this study, and the district would be a good cooperator.

I would also appreciate your advice on possible funding sources, and if you have technical comments, those would be welcome too.

Yours sincerely,

Clay Montague

--
Clay L Montague, PhD
Associate Professor Emeritus
Howard T. Odum Center for Wetlands
Department of Environmental Engineering Sciences
University of Florida, Gainesville

Mailing Address: 245 Deerwood Creek Estates, Waverly, GA 31565-2301
Telephone and Fax: (912) 265-5435

Classification: UNCLASSIFIED

Caveats: NONE

UNITED STATES DEPARTMENT OF COMMERCE
National Oceanic and Atmospheric Administration
NATIONAL MARINE FISHERIES SERVICE

Southeast Regional Office
263 13th Avenue South
St. Petersburg, Florida 33701-5505
(727) 824-5317; FAX (727) 824-5300
http://sero.nmfs.noaa.gov/

May 23, 2012 F/SER47:JD/pw

(Sent via Electronic Mail)

Colonel Jeffrey M. Hall, District Engineer
Savannah District Corps of Engineers
100 W. Oglethorpe Avenue
Savannah, Georgia 31402-0889

Attention: Charles Seyle

Dear Colonel Hall:

NOAA's National Marine Fisheries Service (NMFS) reviewed the Federal Register notice announcing the Savannah District's intent to prepare an Environmental Impact Statement (EIS) for a 20-year dredge material management plan for the Atlantic Intracoastal Waterway (AIWW) from Port Royal Sound, South Carolina, to the Georgia-Florida border (77 FR 23668; April 20, 2012). The EIS would examine the impacts of maintenance dredging, including disposal of dredged material, to portions of the AIWW and update the EIS prepared for the project in 1976. As the nation's federal trustee for the conservation and management of marine, estuarine, and anadromous fishery resources, the following comments and recommendations are provided pursuant to authorities of the Fish and Wildlife Coordination Act and the Magnuson-Stevens Fishery Conservation and Management Act (Magnuson-Stevens Act).

Most of this section of the AIWW has an authorized depth of -12 feet mean lower low water and width of 90 to 150 feet. Twenty of the 36 defined reaches from Port Royal Sound to the Georgia-Florida border require periodic dredging and five require dredging every one to five years. In the past, silty dredged material was pumped onto salt marsh and sandy dredged material was placed in open-water disposal areas. The alternatives the Savannah District intends to examine in the EIS would include disposal into existing dredged material containment areas (DMCAs) or newly constructed DMCAs; unconfined disposal into salt marshes; and disposal into existing ocean dredged material disposal sites (ODMDS or newly established ODMDS. The EIS will also consider mitigation measures to avoid or reduce environmental impacts. A draft of the EIS is planned for release in summer 2012.

Essential Fish Habitat in the Project Area
Essential fish habitat (EFH) for several fishery species (e.g., white shrimp, brown shrimp, and estuarine-dependent species of the snapper-grouper complex) occurs along the entire AIWW from Port Royal Sound to the Georgia-Florida border, and specifically includes estuarine emergent vegetation (e.g., *Spartina*), intertidal mudflats, unconsolidated bottom, tidal creeks, and oyster aggregations These habitats are designated EFH because larvae and juvenile fish concentrate, feed extensively, and shelter in these habitats. As a consequence, growth rates are high and predation rates are low, which makes these

habitats effective nursery areas. SAFMC provides detailed information on these species-habitat associations in *Fishery Ecosystem Plan of the South Atlantic Region* (which is available at *www.safmc.net*).

Recommendations
NMFS recommends the Savannah District conduct field studies to assess the impacts from past disposal activities so that study results can inform selection of options for managing the dredged material from the AIWW. In particular, NMFS would recommend the District analyze the direct, indirect, and cumulative impacts of disposing dredged material in salt marsh and open waters. Parameters that may inform the study include vegetation density, benthic infaunal diversity and abundance, sediment composition, and marsh surface elevation. NMFS would be happy to work with the Savannah District and other resource agencies on study plans that would meet these needs.

Designation of a new ODMDS would be a joint effort by the Savannah District and U.S. Environmental Protection Agency, and that effort would normally be done through a separate environmental review process. NMFS will refrain from commenting on a new ODMDS designation until that separate coordination is initiated.

Finally, in accordance with section 7 of the Endangered Species Act of 1973, as amended, it is the responsibility of the lead federal agency to review and identify any proposed activity that may affect endangered or threatened species and their habitat. Determinations involving species under NMFS jurisdiction should be reported to our Protected Resources Division at the letterhead address.

We appreciate the opportunity to provide these comments. Please direct related correspondence to the attention of Ms. Jaclyn Daly at our Charleston Area Office. She may be reached at (843)762-8610 or by e-mail at Jaclyn.Daly@noaa.gov.

Sincerely,

Pace Willer

/ for

Virginia M. Fay
Assistant Regional Administrator
Habitat Conservation Division

cc:

COE, CESAS-PD.SAS@usace.army.mil
GADNR CRD, Karl.Burgess@gadnr.org
GADNR EPD, Dale.caldwell@dnr.state.ga.us
SAFMC, Roger.Pugliese@safmc.net
EPA, Lord.Bob@epa.gov
FWS, Karen_Mcgee@fws.gov
F/SER4, David.Dale@noaa.gov
F/SER47, Jaclyn.Daly@noaa.gov

September 12, 2012

Mr. William Bailey
Chief, Planning Division
Corps of Engineers, Savannah District
100 W. Oglethorpe Ave.
Savannah, GA 31401-3640

Re: Atlantic Intracoastal Waterway Dredged Material Management Plan
Beaufort County, South Carolina
SHPO Project No. 12-RD0274

Dear Mr. Bailey:

Thank you for your letter of August 28, which we received on August 29, regarding the above-referenced project. We also received a draft programmatic agreement as supporting documentation for this undertaking. The State Historic Preservation Office is providing comments to the Corps of Engineers pursuant to Section 106 of the National Historic Preservation Act and its implementing regulations, 36 CFR 800. Consultation with the SHPO is not a substitution for consultation with Tribal Historic Preservation Offices, other Native American tribes, local governments, or the public.

The Savannah District is responsible for the maintenance of a small portion of the Atlantic Intracoastal Waterway (AIWW) in Beaufort County, South Carolina. We understand that the Savannah District is proposing a long-term management plan for the dredging of the AIWW. Since the majority of the AIWW has not undergone any sort of historic property identification, the Savannah District is proposing a programmatic agreement to assist in its Section 106 responsibilities for this project. Our office concurs with the proposed development of an agreement to address any potential adverse effects that may occur during dredging activities. We have attached our technical comments on the draft agreement to this letter.

We look forward to continuing consultation with your office on this project. If you have any questions, please contact me at (803) 896-6183 or dobrasko@scdah.state.sc.us.

Sincerely,

Rebekah Dobrasko

Rebekah Dobrasko
Supervisor of Compliance, Tax Incentives, and Survey
State Historic Preservation Office

Atlantic Intracoastal Waterway Dredged Material Management Plan
Programmatic Agreement (PA)
Technical Comments

Our office has a Memorandum of Understanding with the South Carolina Institute of Archaeology and Anthropology (SCIAA) governing the management of underwater archaeological resources. We rely on the expertise of their underwater archaeologists for projects such as this one. We recommend that the Corps of Engineers consult with SCIAA on this project as well and invite them to sign the PA as an interested party or a concurring party, whichever is appropriate.

The agreement is proposed for a length of ten years, although the supporting documentation states that the Dredged Material Management Plan (DMMP) will be in force for about twenty years. Should the PA mirror the length of the DMMP?

How will unanticipated discoveries of cultural materials during dredging activities be handled? Should that be a part of this PA?

We recommend a definitions page, or at least the definition of certain words within the text: "reaches" (2nd Whereas clause), MLLW (5th Whereas clause)

The programmatic agreement should have maps showing the location of the overall project, the locations of the 71 disposal tracts, and the location of identified cultural resources or the extent of the remote sensing surveys.

The signatory for our office is Elizabeth M. Johnson, Deputy State Historic Preservation Officer.

DEPARTMENT OF THE ARMY
SAVANNAH DISTRICT, CORPS OF ENGINEERS
100 W. OGLETHORPE AVENUE
SAVANNAH, GEORGIA 31401-3640

REPLY TO
ATTENTION OF:

Planning Division

SEP 26 2012

Mr. David Bernhart
Assistant Regional Administrator
Protected Resources Division
NOAA Fisheries
Southeast Regional Office
263 13th Avenue South
St. Petersburg, Florida 33701

Dear Mr. Bernhart:

Enclosed with this letter is a Draft Biological Assessment for Threatened and Endangered Species (BATES) to initiate Section 7 Endangered Species Act consultation for the effects of implementing a 20-year Dredged Materials Management Plan (DMMP) for the Savannah District portion of the Atlantic Intracoastal Waterway (AIWW) between Port Royal Sound, South Carolina and Cumberland Sound, Georgia. The Savannah District's AIWW segment is 161 miles long and is divided into 36 reaches of varying lengths.

The proposed DMMP would result in placement of dredged materials in a) existing diked disposal areas (material from 15 reaches), b) ocean disposal areas (material from 17 reaches), and c) open water inshore disposal for coarse sediments with confined disposal of fine sediments (three reaches).

The Savannah District has determined that implementing the DMMP may affect, but is not likely to adversely affect, the following listed species: North Atlantic right, humpback, and sperm whales; leatherback, loggerhead, Kemp's ridley, hawksbill, and green sea turtles; Shortnose and Atlantic sturgeons. The District further determined that the action may affect, but is not likely to adversely affect, critical habitat for North Atlantic right whale (Southeastern United States Critical Habitat Area).

We request your concurrence with our determination that the action may affect, but is not likely to adversely affect the ten species identified above, and that no critical habitat for any species would be adversely affected by the action.

Point of contact for this action is Mr. Charles W. Seyle, Jr., of our Planning Division. He may be reached at (912) 652-6017 or by e-mail at charles.w.seyle@usace.army.mil.

Sincerely,

William G. Bailey

William G. Bailey
Chief, Planning Division

Enclosure

DEPARTMENT OF THE ARMY
SAVANNAH DISTRICT, CORPS OF ENGINEERS
100 W. OGLETHORPE AVENUE
SAVANNAH, GEORGIA 31401-3640

REPLY TO
ATTENTION OF:

Planning Division

SEP 26 2012

Mr. Strant Colwell
Field Supervisor
U.S. Fish and Wildlife Service
Georgia Ecological Services
Coastal Georgia Sub-office
4890 Wildlife Drive NE
Townsend, Georgia 31331

Dear Mr. Colwell:

Enclosed with this letter is a Draft Biological Assessment for Threatened and Endangered Species (BATES) to initiate Section 7 Endangered Species Act consultation for the effects of implementing a 20-year Dredged Materials Management Plan (DMMP) for the Savannah District portion of the Atlantic Intracoastal Waterway (AIWW) between Port Royal Sound, South Carolina and Cumberland Sound, Georgia. The Savannah District's AIWW segment is 161 miles long and is divided into 36 reaches of varying lengths.

The proposed DMMP would result in placement of dredged materials in a) existing diked disposal areas (material from 15 reaches), b) ocean disposal areas (material from 17 reaches), and c) open water inshore disposal for coarse sediments with confined disposal of fine sediments (three reaches).

The Savannah District has determined that implementing the DMMP would have No Effect on the Red-cockaded woodpecker, American chaffseed, Pondberry, Canby's dropwort, Kirtland's warbler, Bachman's warbler, Eastern indigo snake, Altamaha spinymussel, and Flatwoods salamander.

The Savannah District has determined that implementing the DMMP may affect, but is not likely to adversely affect, the following listed species: Wood stork; Piping plover; West Indian manatee; leatherback, loggerhead, Kemp's ridley, hawksbill, and green sea turtles. The District further determined that the action may affect, but is not likely to adversely affect, critical habitat for Piping plover (Georgia Units 1-16; South Carolina Units 12-15).

We request your concurrence with our determination that the action would have no effect on nine listed species not occurring in the project area and may affect, but is not likely to adversely affect eight species identified above, and that no critical habitat for any species would be adversely affected by the action.

Point of contact for this action is Mr. Charles W. Seyle, Jr., of our Planning Division. He may be reached at (912) 652-6017 or by e-mail at charles.w.seyle@usace.army.mil.

Sincerely,

William G. Bailey

William G. Bailey
Chief, Planning Division

Enclosure

Milford Wayne Donaldson
Chairman

John M. Fowler
Executive Director

Preserving America's Heritage

November 16, 2012

Lieutenant General Thomas P. Bostick
Commanding General
U.S. Army Corps of Engineers
441 G. Street, NW
Washington, DC 20314-1000

REF: Development of a Dredge Material Management Plan for portions of the Atlantic Intracoastal Waterway in Georgia and South Carolina

Dear General Bostick:

The Savannah District of the Corps of Engineers has invited the Advisory Council on Historic Preservation (ACHP) to participate in the development of a Programmatic Agreement to help ensure that historic properties are fully considered as the Savannah District implements its dredge material maintenance strategy for portions of the Intracoastal Waterway. Pursuant to the Criteria for Council Involvement in Reviewing Individual Section 106 Cases (Appendix A to our regulations, 36 CFR Part 800) we believe the criteria are met for our participation in this undertaking. Dredging, and activities associated with it (including dike construction and selection and use of disposal sites) have the potential to adversely affect important historic properties. Accordingly, the ACHP will participate in consultation with the Savannah District on this undertaking.

By copy of this letter we are also notifying Mr. William G. Bailey, Chief of the Savannah District's Planning Division, of our decision to participate in consultation.

Our participation will be handled by Dr. Tom McCulloch, who can be reached at 202-606-8554 or at tmcculloch@.achp.gov. We look forward to working with the Corps on this important project.

Sincerely,

John M. Fowler
Executive Director

DEPARTMENT OF THE ARMY
SAVANNAH DISTRICT, CORPS OF ENGINEERS
100 W. OGLETHORPE AVENUE
SAVANNAH, GEORGIA 31401-3640

REPLY TO
ATTENTION OF:

Planning Division

DEC 10 2012

David Crass, Ph.D.
Director, Historic Preservation Division
Department of Natural Resources
254 Washington Street, SW
Ground Level
Atlanta, Georgia 30334

Dear Dr. Crass:

The Savannah District, US Army Corps of Engineers (Corps) is proposing to develop a Dredged Material Management Plan (DMMP) for the portion of the Atlantic Intracoastal Waterway (AIWW) that extends between Port Royal Sound/Hilton Head Island (AIWW Mile 552) and the Cumberland Sound/Florida state line (AIWW Mile 713), approximately 161 miles in Georgia and South Carolina. One hundred thirty-seven (137) miles of the waterway are located in Georgia. In addition to the channel, there are nearly 13,434 acres (68 tracts) of sediment disposal tracts.

The DMMP will outline a 20-yr dredged material maintenance strategy based on dredging projections and dredging frequencies for the Savannah District portion of the AIWW. In addition to a dredging schedule for the navigation channel, this plan will likely require the creation of confined disposal facilities for the dredged material.

Few cultural resources investigations have been conducted of the Savannah District portion of the AIWW. Texas A&M University conducted reconnaissance level terrestrial and underwater investigations of selected portions of the navigation channel and the sediment disposal tracts in 1979-1980 (Garrison and Tribble 1981). Several new and previously recorded archaeological sites were identified at that time. No follow up or other investigations have been conducted of the AIWW project since. A copy of the report is included for your reference.

The Savannah District recognizes the activities that may be proposed in the dredged material management plan may have an effect upon historic properties included in or eligible for inclusion in the National Register of Historic Places. The district also recognizes that the large size of the project area necessitates a phased approach for identification of resources. Therefore, to comply with the Section 106 of the National Historic Preservation Act, the district would like to consult with your agency to develop a Programmatic Agreement (PA) pursuant to 36CFR800.14(b). The PA would outline a plan for the survey, determination of significance and mitigation of resources that may be affected by the proposed undertaking. A draft copy of the PA with supporting documentation is enclosed.

In accordance with Section 106 of the National Historic Preservation Act and 36CFR800, we ask that you review and comment on the draft Programmatic Agreement. If you have any questions, contact Ms. Julie Morgan, 706-856-0376, or email, julie.a.morgan@usace.army.mil. This document is also being coordinated with the Georgia State Historic Preservation Office and federally recognized tribes. This document is also being coordinated with the South Carolina Department of Archives and History and the Advisory Council on Historic Preservation. To date no tribes have expressed interest in this project.

Sincerely,

William G. Bailey

William G. Bailey
Chief, Planning Division

Enclosure

DEPARTMENT OF THE ARMY
SAVANNAH DISTRICT, CORPS OF ENGINEERS
100 W. OGLETHORPE AVENUE
SAVANNAH, GEORGIA 31401-3640

REPLY TO ATTENTION OF:

DEC 11 2012

Planning Division

Mr. Don Klima, Director
Office of Federal Agency Programs
Advisory Council on Historic Preservation
1100 Pennsylvania Avenue, NW, Suite 809
Washington, DC 20004

RE: Development of a Dredged Material Management Plan for portions of the Atlantic Intracoastal Waterway in Georgia and South Carolina

Dear Mr. Klima:

Please reference correspondence from your office dated November 16, 2012, stating the Council's intent to participate in the subject project. In accordance with the comments received the Georgia and South Carolina State Historic Preservation Offices, Savannah District has prepared a draft copy of the Programmatic Agreement for your review and comment.

We request that you review the revised draft PA document and provide comments to this office within 30 calendar days of receipt of this letter. Please notify us of the appropriate signature block for this document. If you have any questions regarding this matter, please contact Ms. Julie Morgan, archaeologist, at email, julie.a.morgan@usace.army.mil, or phone, 706-856-0378. A copy of the programmatic agreement is also being sent to the Georgia Historic Preservation Division and the South Carolina Department of Archives and History for review and comment. No tribes have expressed interest in this project.

Sincerely,

William G. Bailey

William G. Bailey
Chief, Planning Division

Enclosure

GEORGIA
DEPARTMENT OF NATURAL RESOURCES
HISTORIC PRESERVATION DIVISION

MARK WILLIAMS
COMMISSIONER

DR. DAVID CRASS
DIVISION DIRECTOR

January 9, 2013

William G. Bailey
Chief, Planning Division
Savannah District, Corps of Engineers
100 W. Oglethorpe Avenue
Savannah, Georgia 31401
Attn: Julie Morgan

RE: Dredged Material Management Plan: Atlantic Intracoastal Waterway between Port Royal Sound and Cumberland Sound, 161 miles
Chatham, Bryan, Liberty, McIntosh, Glynn, and Camden Counties, Georgia
HP-121015-001

Dear Mr. Bailey:

The Historic Preservation Division (HPD) has reviewed the draft Programmatic Agreement (PA) for the above referenced undertaking. Our comments are offered to assist the US Army Corps of Engineers (USACE) in complying with the provisions of Section 110 and Section 106 of the National Historic Preservation Act of 1966 (NHPA), as amended.

As previously stated, HPD agrees that the draft PA for the dredging of the Atlantic Intercoastal Waterway is adequate to address effects to historic properties that may be located in the project's area of potential effects.

We look forward to receiving the PA for signature when available. Please refer to project number **HP-121015-001** in any future correspondence concerning this project. If we may be of further assistance, please do not hesitate to contact Elizabeth Shirk, Environmental Review Coordinator, at (404) 651-6624.

Sincerely,

Karen Anderson-Cordova
Program Manager
Environmental Review & Preservation Planning

KAC/ECS

254 WASHINGTON STREET, SW | GROUND LEVEL | ATLANTA, GEORGIA 30334
404.656.2840 | FAX 404.657.1368 | WWW.GEORGIASHPO.ORG