
ENVIRONMENTAL IMPACT STATEMENT
APPENDIX T: US Fish and Wildlife
Service Savannah National Wildlife
Refuge Compatibility Determination
SAVANNAH HARBOR EXPANSION PROJECT
Chatham County, Georgia and Jasper County, South Carolina

January 2012



**US Army Corps
of Engineers**
*Savannah District
South Atlantic Division*

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Editor's Note: This Compatibility Determination is still a draft. It will not be finalized until after the Savannah Harbor Expansion Project Record of Decision has been signed by the cooperating Federal Agencies.

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Compatibility Determination

Use: Hydrological modifications and wetland restoration on the Savannah National Wildlife Refuge as mitigation for the Savannah Harbor Deepening Project.

Refuge Name: Savannah National Wildlife Refuge

Counties: Chatham County, Georgia, and Jasper County, South Carolina.

Establishing and Acquisition Authorities:

On April 6, 1927, Executive Order No. 4626 established the Savannah River Bird Refuge and set aside 2,352 acres as a preserve and breeding ground for native birds. On November 12, 1931, Executive Order No. 5748 added 207 acres to the refuge and renamed the area the Savannah River Wildlife Refuge. An additional 6,527 acres were assigned to the refuge on June 17, 1936, by Executive Order No. 7391. On July 30, 1940, Presidential Proclamation 2416 renamed the refuge the Savannah National Wildlife Refuge. These three Executive Orders established the 9,086 acre core of the present refuge; subsequent acquisition using Duck Stamp funds and other special funding added 3,557 acres. An additional 459 acres were added when the fee title to Hog Marsh Island and adjacent lands to the north were acquired through an exchange of spoilage rights with Chatham County, Georgia. In 1964, Savannah Electric and Power Company deeded 34 acres to the refuge in exchange for a power line right-of-way. In 1978, the 12,472-acre Argent Swamp tract was purchased from Union Camp Corporation using Land and Water Conservation Funds. Bear Island (687 acres) was purchased in fee title, from a private individual, on October 19, 1993. In order to straighten the east boundary, two tracts totaling 54 acres were purchased from Union Camp Corporation, on August 27, 1996. The Barrows tract (535 acres), which lies adjacent to our southeast boundary, was purchased in fee title during 1998. Another tract of land was purchased on the mid-western portion of the refuge; the Solomon tract was purchased in 1999 and is 887 acres. Finally, in 2001, 397 acres was added to the refuge to provide migratory bird habitat. Total refuge acreage is currently 29,175.

Refuge Purposes:

Savannah National Wildlife Refuge was established “as a refuge and breeding ground for birds and wild animals subject to future use in navigation if necessary and to valid existing rights if any” (Executive Order 5748, April 6, 1927); for lands acquired under the Migratory Bird Conservation Act “for use as an inviolate sanctuary, or for any other management purpose, for migratory birds” (16 U.S.C. § 715d); for lands acquired under the Refuge Recreation Act for “(1) incidental fish and wildlife-oriented recreational development, (2) the

protection of natural resources, (3) the conservation of endangered species or threatened species” (16 U.S.C. § 460k); for “the conservation of the wetlands of the Nation in order to maintain the public benefits they provide and to help fulfill international obligations contained in various migratory bird treaties and conventions” (16 U.S.C. § 3901(b), 100 Stat. 3583, Emergency Wetlands Resources Act of 1968); “for the development, advancement, management, conservation, and protection of fish and wildlife resources” (16 U.S.C. § 742f(a)(4)); and, “for the benefit of the United States Fish and Wildlife Service, in performing its activities and services. Such acceptance may be subject to the terms of any restrictive or affirmative covenant, or condition of servitude” (16 U.S.C. § 742f(b)(1), Fish and Wildlife Act of 1956).

National Wildlife Refuge System Mission:

The mission of the System is to administer a national network of lands and waters for the conservation, management, and where appropriate, restoration of the fish, wildlife, and plant resources and their habitats within the United States for the benefit of present and future generations of Americans.

Description of Use:

The 1999 Water Resource Development Act (WRDA) included conditional authorization of the Savannah Harbor project, which would deepen the Savannah harbor by up to six feet (from 42’ up to 48’). Department of Interior, Department of Commerce and Environmental Protection Agency concurrence is required before project implementation. This is a complex project that has the potential to directly and indirectly affect the Savannah National Wildlife Refuge (NWR).

Savannah National Wildlife Refuge lies adjacent to, and upstream of, the Savannah Harbor project. Savannah NWR consists of 29,175 acres of palustrine forested wetlands, palustrine and estuarine emergent wetlands, palustrine scrub-shrub wetlands, riverine wetlands, diked waterfowl impoundments (managed wetlands) and uplands. About 6,000 acres are actively managed wetlands which provide excellent habitat for wintering waterfowl, shorebirds, wading birds, and wood ducks. The refuge encompasses much of the high value fish and wildlife habitat that has been or is likely to be impacted by harbor development.

Deepening the Savannah Harbor (without any mitigation measures) could mean the loss of about 1,212 acres of freshwater wetlands according to the Corps of Engineers. The majority of these wetlands are within the Savannah NWR. These freshwater wetlands would convert to brackish marsh because deepening would allow more saltwater to flow upriver on high tide.

Tidal freshwater marsh is one of the most diverse wetland types and provides excellent fish and wildlife habitat. Cumulative impacts of previous deepening projects have converted most of the tidal freshwater marsh to less diverse brackish marsh. Maintenance of normal tidal and salinity patterns is a major objective of coastal refuges and management areas to meet their wildlife objectives (Weller 1994). Therefore, the Service goal is to avoid loss of tidal freshwater marsh due to salinity increase.

The Corps proposes mitigating these impacts by utilizing engineering solutions, also known as flow modifications. The engineering solutions that would have direct impact on the Refuge include: 1) installation of two diversion structures at McCoys Cut (one on either side of the river); 2) closing the western arm of McCoys Cut; 3) closing Rifle Cut; and 4) deepening the upper portions of the Middle and Back Rivers. (Figure 1).

On-site observations indicate that much of the river flow entering the upstream arm of McCoys Cut flows into the downstream arm and returns to the Front River. It is likely that flow through the downstream arm would reduce the effectiveness of the potential McCoys Cut diversion structure. Therefore it is critical that this portion of McCoy's Cut be closed to insure the maximum amount of fresh water down the Back River.

The diversion at McCoys Cut would consist of two structures, one on each side of the river. A rock diversion structure would extend about 465 feet from the Georgia side of the river and a sheetpile diversion wall would extend roughly 150 feet from the South Carolina shoreline. Working together, they would divert flow through McCoys Cut into the Back and Middle Rivers. The rock diversion structure would extend at a downstream angle from the inside of a bend in the Savannah River to move the deepest part of the channel toward the SC side of the River. It would have a crest elevation of 0 MLLW (Mean Lower Low Water; the average of the lower low water height of each tidal day observed over the National Tidal Datum Epoch), so it would be submerged during most of the tide cycle. The structure would extend nearly half the width of the River, where the river is roughly 10 feet deep MLLW. The sheetpile diversion wall would redirect some of the flow down McCoys Cut while also limiting erosion of the outside of the bend from the additional flow. The sheetpile wall would have a top elevation of + 11 feet MLLW and be exposed except during high river flows. Rock may be placed along the sheetpile wall. Most of the construction would take place from barges to minimize impacts to adjacent lands. Additional design work would be performed prior to construction, so the design parameters described above may be altered slightly to improve the structures' performance.

The Western (downstream) arm at McCoys Cut would be closed by constructing a plug at one end. The end closest to McCoys Cut has been targeted for closure. The plug would be constructed of fill and rock and would extend to 10 feet above mean high water. The Corps design calls for a 185-foot long plug using 3,100 cubic yards of rock. After the rock plug is placed, sediment excavated from McCoys Cut would be deposited mechanically to widen the plug to a top width of 30-feet when measured at the adjacent ground elevation. A clamshell is

expected to be used to reach across the rock plug to deposit the sediments. Construction would take place from barges to minimize impacts to adjacent lands.

The closure plan for Rifle Cut is to construct a rock plug on the Middle River end of the Cut. The plug would be constructed from 3,300 cubic yards of rock to an elevation of 10 feet mean low water or about two feet above mean high water. Barges or removable mats would be utilized to place material in the cut to minimize impacts to adjacent marshes. Based on the current plans, the width of that closure would be about 50 feet. In addition to refuge impacts, there will be some unavoidable disturbance to brackish and saltwater wetlands (estuarine emergent wetlands) off refuge. Brackish tidal marshes occur along free flowing coastal rivers, and are influenced daily by the incoming tides. Although they are flooded by the tides, they receive enough freshwater from the river to dilute the salt water. Brackish marshes are characterized by salt tolerant plant species, typically emergent grasses, sedges, rushes and forbs, making them structurally diverse. Brackish marsh represents the middle of gradient, ranging from coastal salt marsh, to brackish tidal marsh, to freshwater tidal marsh. Typically, brackish marsh is comprised of high marsh, low marsh, and mud flats, all of which provide habitat for a diversity of plant and animal species. Brackish marsh is of high value to estuarine larval marine organisms such as shrimp, crabs, and fish.

Estimates by the Corps are that 15.68 acres of saltwater/brackish wetlands will be lost due to the need to expand (excavate) the Kings Island Turning Basin and the removal of the old tide gate. The Corps proposes to mitigate for the loss of these off-refuge wetlands through restoring a previously disturbed site on the refuge. This restoration effort would restore to its original state, approximately 45 acres of degraded habitat at the south end of Onslow Island. Restoration would include grading down the site (an old spoil deposition area), removal of the woody vegetation, and revegetation of the site with native wetland plant species (Figure 2).

Anticipated Impacts of the Use:

Stream Flow Diversion

Negative impacts of the flow diversion work are predicted to be limited, based on the Corps hydraulic analysis. In each case (McCoys Cut Diversion Structures, closing the western arm of McCoys Cut, Rifle Cut Closure, and deepening of the upper portions of Middle and Back Rivers) construction work will be accomplished from barges, and when necessary, removable mats. Where the McCoys Cut diversion structures tie into the refuge shoreline, we anticipate short-term disturbance to wildlife as a result of increased human activity and noise during construction operations. This disturbance is expected to be minimal and relatively short lived, especially since most of the work will be completed from barges. About 30 feet of shoreline that will be permanently impacted by the addition of rip-rap at the point where the diversion structures meet the shore. These impacts should be small and off-set through site restoration.

Sediments obtained while deepening the upper portions of Middle and Back Rivers would be deposited off the Refuge.

Positive impacts from the increased freshwater flow down the Back River are expected. The Diversion structure at the mouth of McCoys Cut, the closure of the western arm of McCoys Cut, and the deepening of the upper portions of Middle and Back Rivers will insure an adequate supply of fresh water down the Back River. It is anticipated that closing just one end of McCoys Cut would result in a small dead-end creek extending from the Savannah River. This creek would fill over time, but is expected to provide valuable fish habitat until the depths become too shallow, at which point it would be used by waterbirds and wildlife.

The closure of Rifle Cut will prevent saltwater from entering the Back River from Middle River. This will protect the refuge from additional saltwater intrusion and insure adequate fresh water to the refuge. Additionally, it is expected that filling the cut at one end will result in the remainder of the cut functioning as a small dead-end creek, with its opening on Back River. This creek would accumulate sediment over time and become marsh, but would provide shallow fish and wildlife habitat until that occurs.

Wetland Restoration

The restoration of 45 acres of an existing degraded, spoil area, back to a functioning brackish marsh will provide a positive impact for the refuge. This wetland restoration will convert an area that was used for the deposition of dredge material for many years back to its previous natural condition (Figure 2). Current conditions at the site include invasive/exotic plant species, deposited dredge material, and severely disrupted hydrology. While there will be short term disturbance from the construction/restoration activity (noise, surface disturbance, human activity), it is expected that the restoration site will become a functional estuarine habitat and greatly benefit a diversity of plant and animal species.

Cultural Resource Survey

Prior to construction, the Corps will survey the proposed impact areas to identify any cultural or historic resources that could be impacted. The Corps will document any sites that it finds and determine their eligibility for listing on the National Register of Historic Properties. If adverse impacts are expected that cannot be avoided, the Corps will coordinate with the Fish and Wildlife Service staff and the appropriate State Historic Preservation Officer (SHPO) to identify suitable mitigation. The Corps would then implement any mitigation that the SHPO agrees would be appropriate. Since some of these areas have not previously been surveyed for cultural or historic resources, these surveys will provide the Fish and Wildlife Service with additional information about resources located within the Refuge.

Public Review and Comment:

The period of public review and comment began November 10, 2010 and ran through January 11, 2011.

The following methods were used to solicit public review and comment:

- A Press Release for the Savannah Harbor Expansion Plan was issued to local newspapers in Chatham, Effingham and McIntosh counties, Georgia and in Jasper and Beaufort counties, South Carolina; additionally the documents were posted for public review on <http://sav-harbor.com>. These documents included the draft compatibility determination.
- Paid Advertisements will be purchased in the *Savannah Morning News* ; and,
- The Compatibility Determination was included in the draft Environmental Impact Statement which was distributed to all State, Federal, and Non-governmental agencies with an interest in the Savannah Harbor Expansion Project.

Why was this level of public review and comment selected?

Due to the complexity and potential impacts of the Savannah Harbor Expansion Project it was determined that this Compatibility Determination would go through the same public review as the draft project Environmental Impact Statement. The Corps issued the draft Environmental Impact Statement and General Reevaluation Report for public and agency review on November 10, 2010 through January 11, 2011. No comments were received on the draft Compatibility Determination.

Determination:

Use is compatible with the following stipulations.

Stipulations Necessary to Ensure Compatibility:

1. As detailed construction plans are developed, the Corps will provide the plans to the Service and meet with the Service to address measures to minimize impacts. All construction and restoration in areas of Savannah NWR will be closely monitored by the Corps and coordinated with Service staff, and will occur prior to or concurrent with harbor deepening
2. The extent of the project on refuge lands will be clearly delineated prior to initiation of construction activities.
3. Work area will be kept clean at all times and the Service will be notified immediately in the event of any type of chemical (fuel) spill.
4. Firearms are not permitted on the refuge.
5. All work related to closure of McCoys Cut, the diversion structure, and closure of Rifle Cut will be conducted from the water. Mats may be used in some circumstances after close coordination with the Service. All necessary materials will be stored on barges and placed only in the project area.
6. Monitoring and contingency plans will be in place for a minimum of seven years after the completion of the restoration project to insure successful restoration of the site. In the event restoration is deemed unsuccessful, the Corps will replant the site to insure success and compliance.
7. The Corps will be responsible for maintaining the structures for the life of the navigation project.

NEPA Compliance for Refuge Use Decision: *Place an X in appropriate space.*

Categorical Exclusion without Environmental Action Statement

Categorical Exclusion and Environmental Action Statement

Environmental Assessment and Finding of No Significant Impact

Environmental Impact Statement and Record of Decision

Justification:

The deepening of the Savannah Harbor up to 48' will negatively impact the Savannah National Wildlife Refuge. However, with the hydrological modifications and the wetland restoration proposed as part of the overall project plan, actual impacts to the Refuge can be reduced. The closure of McCoy's Cut, Rifle Cut, the installation of the diversion structure on the Front River, and the deepening in areas of the Back and Middle River will positively impact the refuge by supplying more fresh water down the Back and Middle Rivers, thus preventing salinity from moving further up river. It is anticipated that closing one end of McCoys Cut would result in a small dead-end creek extending from the Savannah River. This creek would fill over time, but is expected to provide valuable fish habitat until the depths become too shallow, at which point it would be used by waterbirds and wildlife. The closure of Rifle Cut will prevent saltwater from entering the Back River from Middle River. This will protect the refuge from additional saltwater intrusion and insure adequate fresh water to the refuge. Additionally, it is expected that filling the cut at one end will result in the remainder of the cut functioning as a small dead-end creek, with its opening on Back River. This creek would accumulate sediment over time and become marsh, but would provide shallow fish and wildlife habitat until that occurs.

Restoration of an old confined disposal area back to natural salt marsh will also be beneficial to the Refuge. The existing area has not been used in years and contains invasive plant and animal species that will be eliminated during the restoration. While there will be short term disturbance from the construction/restoration activity (noise, surface disturbance, human activity) the restoration site will become a functional estuarine habitat and greatly benefit a diversity of plant and animal species.

Signature: Refuge Manager: _____
(Signature and Date)

Review: Regional Compatibility Coordinator: _____
(Signature and Date)

Review: Refuge Supervisor: _____
(Signature and Date)

Concurrence: Regional Chief: _____
(Signature and Date)

Mandatory 10- or 15-Year Re-Evaluation Date: _____

References

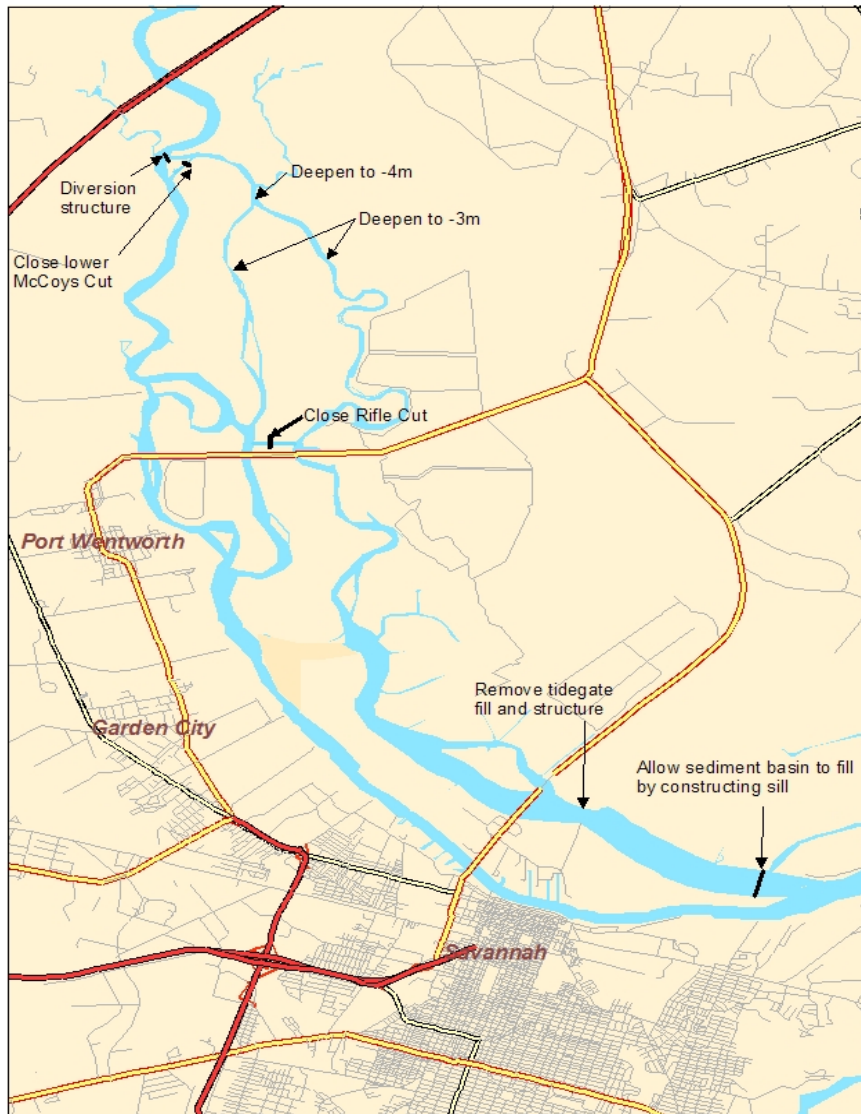


Figure 1. Proposed hydrological modifications for on the Front, Middle and Back Rivers.



Figure 2. Proposed salt marsh mitigation site, Onslow Island, Savannah National Wildlife Refuge.