



**US Army Corps
of Engineers®**

Charleston District

PORT ROYAL HARBOR DISPOSITION STUDY

Beaufort County, South Carolina

INTEGRATED REPORT/ENVIRONMENTAL ASSESSMENT

SEPTEMBER 2025

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1 Purpose and Need

The U.S. Army Corps of Engineers, Charleston District (USACE) is undertaking the Port Royal Harbor Disposition Study to determine whether a federal interest continues to exist for commercial navigation within the Port Royal Harbor federal navigation channel, Port Royal, South Carolina. If no federal interest exists, USACE may recommend deauthorization of the navigation channel and any associated Government-owned real property and improvements. USACE conducted this study following *Engineering Regulation (ER) 1105-2-100, Planning, Planning Guidance Notebook, April 22, 2000*, and incorporated the six-step process originated in the 1983 *Economic and Environmental Principles and Guidelines for Water and Related Land Resources Implementation Studies*. This report implements the 03 March 2023 memo from the USACE Director of Civil Works *Process for Recommending Deauthorization of Federal Navigation Channels Without Structure* and satisfies the requirements of the National Environmental Policy Act (NEPA).

2 Project Description

2.1 Project Location and Representation

Port Royal Harbor (**Figure 2-1** main map, shown in red) is in Beaufort County, South Carolina. The project is within the Hilton Head Island-Bluffton, SC Metropolitan area, which also includes the Town of Port Royal and City of Beaufort, as well as several smaller communities.

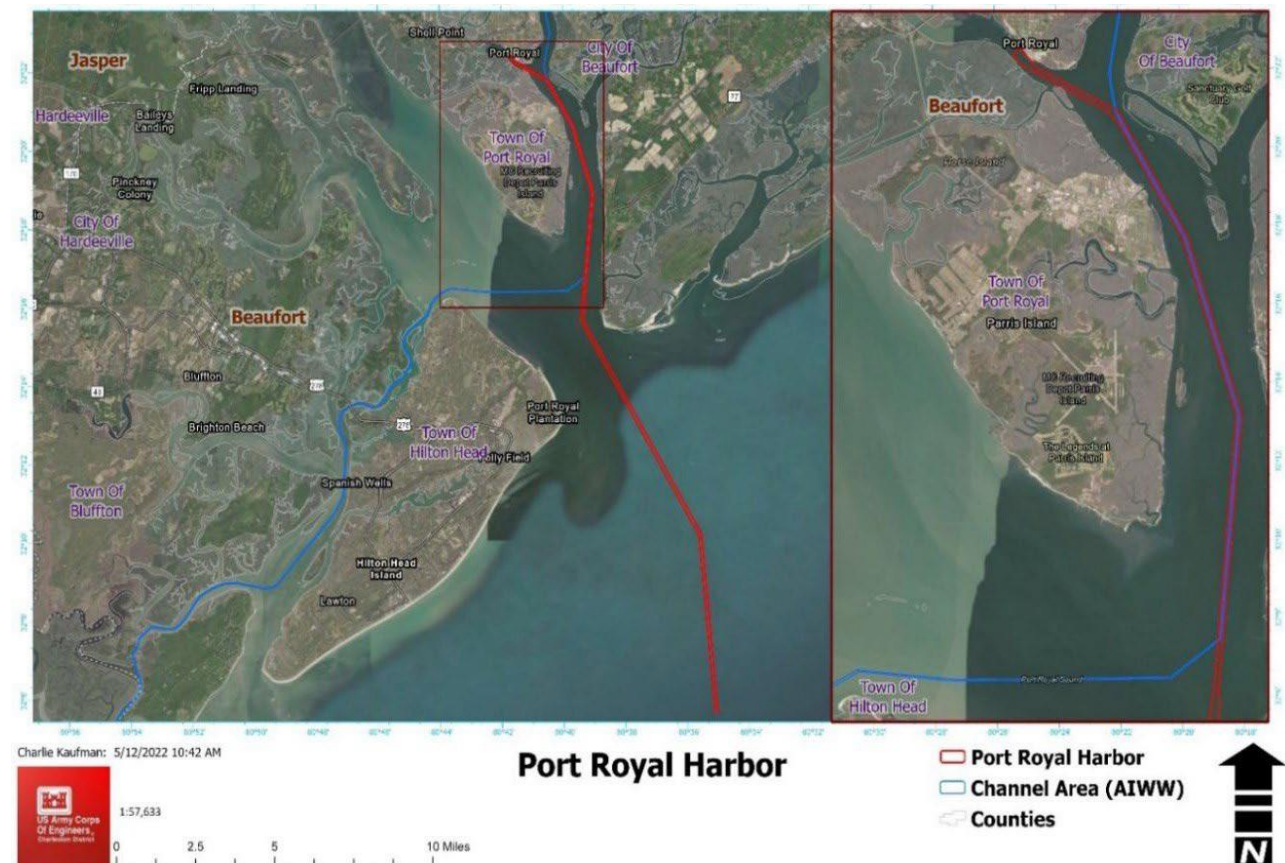


Figure 2-1: Project Location

About 5.8 miles of the Port Royal Harbor federal channel, between the entrance channel and the approach to the former Port, coincides with the Atlantic Intracoastal Waterway (AIWW) federal channel. The **Figure 2-1** inset shows the AIWW in blue, and the coinciding channels in purple. Deauthorization and disposal of the Port Royal Harbor project would not change the authority or maintenance of the AIWW. USACE maintains the AIWW at a 12-foot depth.

The project is within the 1st Congressional District, served by Representative Nancy Mace. Senator Lindsey Graham and Senator Tim Scott also represent citizens in the project area.

2.2 Original Project Purpose and Authorization

The original study authority for the navigation channel was Section 6 of the River and Harbor Act of 1945 (PL 14), and the Port Royal Harbor project was authorized in the River and Harbor Act of 1954 (PL 780).

The original project authorization referenced the “Channel Port Royal Sound to Beaufort, South Carolina: House Document Numbered 49, Eighty-first Congress.” The House Document Numbered 49 included the equivalent of a Chief’s Report, which was justified based on commercial navigation. Specifically, with a 1.2:1.0 benefit to cost ratio (BCR) based on an estimate of 517,000 tons per year of break bulk commodities including cement, clay, slurry, feldspar, and aggregate.

The channel design that Congress originally authorized, which was the same as the Chief’s recommendation, included: (1) a channel ranging from 500ft wide and 27ft deep at the ocean to 300ft wide and 24ft deep in Beaufort River and Battery Creek; and (2) a 600ft wide by 27ft deep turning basin. Locals were to supply all Lands, Easements, Right-of-Way, Relocation, and Disposal Areas (LERRDs) and terminal facilities, open to all on equal terms.

This authorization resulted in construction of a project providing for a 27-foot-deep channel at mean low water and 500ft wide across the ocean bar and into Port Royal Sound for approximately 13.2 miles and then 24ft deep and 300ft wide in Beaufort River and Battery Creek, extending an additional 7.5 miles, to include a turning basin 27ft deep and 600ft wide opposite the wharf of the former South Carolina Ports Authority (SCPA) facility.

2.3 Disposition Study Authorization

Authorized under Section 216 of the Flood Control Act of 1970, a disposition study gives the U.S. Army Corps of Engineers the authority to evaluate a project which is no longer serving its authorized purpose.

2.4 Government-owned Improvements or Real Property

This project does not have Government-owned improvements or ownership in fee of associated real property; there are two unused upland placement easements that the Government would release. There is no known hazardous, toxic and radioactive waste (HTRW) as defined by the Comprehensive Environmental Response, Compensation and Liability Act (CERCLA) within the project area. See the real estate appendix for more information on real estate.

3 Project History

3.1 Commercial Navigation

The federal channel is no longer used for its authorized purpose, i.e., the movement of commodities. SCPA sold the port in November 2017. The USACE Waterborne Commerce Statistics Center (WCSC), shows there has been no commercial use of the federal channel for movement of commodities since the port was sold (**Table 3-1**). However, there has been other commerce in the form of commercial fishing (shrimping) as discussed in **Section 5.3**.

Table 3-1: Years 2018, 2019, and 2020: no commerce since the SCPA sold the port.

Calendar Year	Tons, All Commodities
2018	Zero
2019	Zero
2020	Zero

Although not sold until 2017, the SCPA closed the port thirteen years earlier, in 2004 (**Figure 3-1**, gray arrows). According to data available from the USACE WCSC, the last commerce reported was 925 tons in 2017 which was the end of a contractual obligation that allowed the SCPA to finally sell the property. That is less than 2/10 of one percent (0.18%), of the 517,000 tons/year for which Congress originally authorized the project (**Figure 3-1**, green line). Moreover, even prior to the port's sale, several years between 2000 and 2017 also included no commerce.

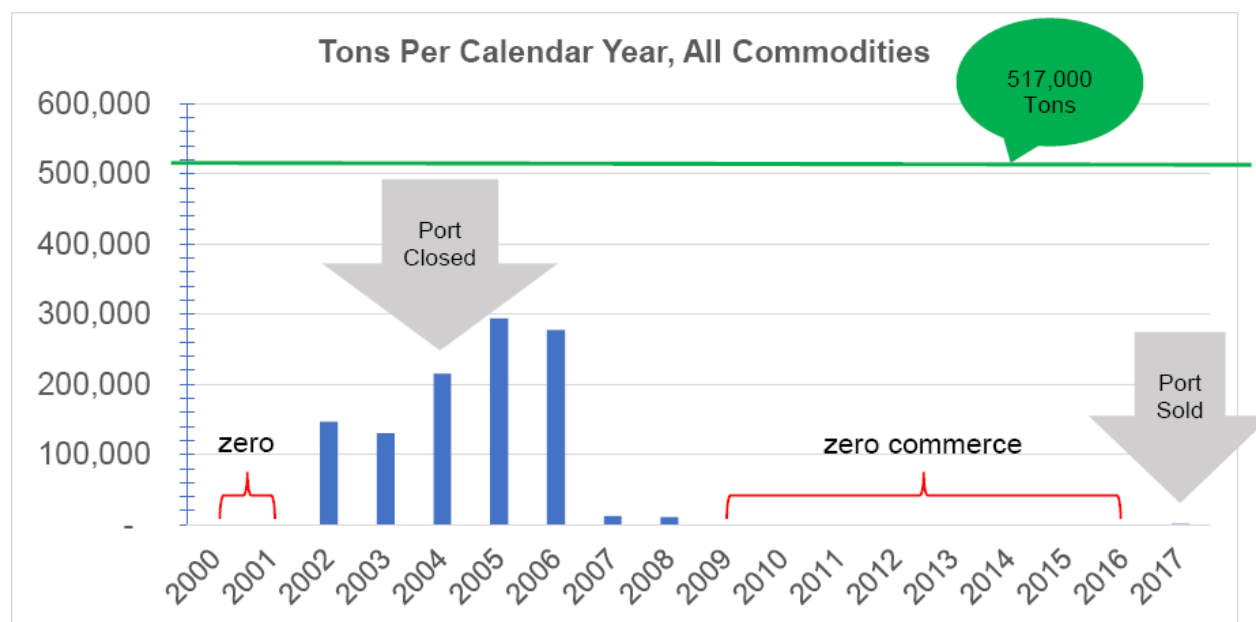


Figure 3-1: Years 2000 through 2017, there was no commerce most years.

In summary, SCPA closed and sold the port due to the decline in commercial use and for more than a decade there has been no commercial use of the federal channel for the movement of commodities.

3.2 Quantifiable National Economic Development Benefits

As shown in **Section 3.1 Commercial Navigation**, since SCPA sold the port there have been no quantifiable national economic development benefits associated with the authorized purpose of commercial navigation. This federal navigation channel does not consist of any government- owned real property or improvements and, in addition to not supporting commercial traffic, also does not support substantial recreational traffic as described further in **Section 5.6**.

3.3 Nearby Existing Infrastructure and Facilities

The SCPA closed the port in 2004 and sold the property to Safe Harbor Marinas, LLC (Safe Harbor) in November 2017.

3.4 Dredging

Construction of the 24-foot inner channel and turning basin was completed in 1956 and the 27- foot entrance channel in 1959. The authorized depths range from 27ft at the entrance and turning basin to 24ft in the Beaufort River and Battery Creek.

USACE has not dredged the federal navigation channel since 2004 due to lack of prioritization in Federal funding for channels that do not carry commerce.

As of August 2022, the entrance channel depth ranges from 12.2 – 13.5ft; the various reaches range from 20.9 – 24.4ft; and the Harbor/Turning Basin ranges from 14.3 – 26.1ft deep. The tidal amplitude (difference between high and low tide) ranges from 6 feet during neap tides to over 10 feet during Spring tides.

4 Existing Natural and Cultural Resources

Section 4 Existing Natural and Cultural Resources gives a general description of the resources in the project area. **Section 6.4 Environmental Effects** identifies impacts to these resources from the proposed action alternative, including direct, indirect, and cumulative impacts.

4.1 Climate

According to the Köppen climate classification, eastern South Carolina is classified as a humid subtropical climate. In the study region, the summers can be hot and muggy, and the winters can be cold, cloudy, and short. The area typically experiences its coldest month in January with an average high temperature of 58 degrees Fahrenheit (°F). The warmest month typically occurs in July with an average high temperature of 91 °F. The average annual rainfall is approximately 45.4 inches with the highest monthly rainfall total of 7.4 inches occurring during August.

4.2 Geology/Topography

Port Royal lies within the Sea Islands/Coastal Marsh region of the Southern Coastal Plain in South Carolina. Elevations in this region are the lowest in South Carolina and the environment is influenced by waves, wind, and rivers. The town of Port Royal is on the southern tip of Port Royal Island. The Town is mostly sited over barrier island deposits of the Pleistocene consisting of phosphatic quartz sand with a small fraction of fine-grained heavy minerals, shell hash, and coarse-grained micas.

Scattered throughout this area are small pockets of freshwater marsh and swamp deposits of the Holocene made up of silty clay and peat, and small areas of (Holocene) bulk earthen material moved by humans (Doar 2003). Salt marsh deposits from the Holocene are found along the southeastern border of the island. These deposits are made up of silty black clays with scattered lenses of quartz sand. Port Royal is bordered by the Beaufort River to the east, and Battery Creek to the west (Doar 2001). The Beaufort River from Battery Creek to Port Royal Sound is also the AIWW.

4.3 Bathymetry

Hydrographic surveys were conducted on the federal channel in August 2022. The results of this survey show that Battery Creek, Beaufort River, and Port Royal Sound have minimum depths of 20ft and maximum depths of greater than 27ft. The entrance channel survey depicts areas of shoaling that reduce depths to as little as 12ft; however, most of the entrance channel has a depth of at least 27ft. The authorized entrance channel depth is 27ft.

4.4 Soils

The two primary soil associations in the project area include the Kiawah-Wando-Seabrook association and tidal marsh association. The Kiawah-Wando-Seabrook association includes nearly level, somewhat poorly to well drained soils with loamy fine sand surface soils and subsoils. Kiawah soils which make up 30 percent of the association, are found on ridges of intermediate elevations and include somewhat poorly drained sandy soils. Wando soils, which make up 25 percent of the association and occupy the highest elevations, are somewhat excessively drained sandy soils. Seabrook soils make up 20 percent of this association and are moderately well drained soils. Tidal marsh soils consist primarily of marine sediments which are predominantly mineral soils with varying amounts of organic matter. Marsh soils are usually covered twice daily with tidal water.

4.5 Water Quality

Port Royal Harbor is found within the protective waters of the Port Royal Sound estuarine system, specifically on Battery Creek, a tributary to the Beaufort River. The other major tributaries to Port Royal Sound are the Broad River, the Chechessee River, and the Colleton River.

The South Carolina Department of Environmental Services (SCDES), formerly the South Carolina Department of Health and Environmental Control (SCDHEC), is the agency in South Carolina responsible for enforcing water quality standards. SCDES conducts surface water quality assessments and publishes a list of impaired waters every two years. According to the 2018 South Carolina 303(d) List of Impaired Waters & Total Maximum Daily Loads (303(d) List) approved in December 2020, Battery Creek just north of the study area is currently listed as impaired due to elevated levels of fecal coliform and Port Royal Sound is currently listed as impaired for elevated levels of copper. In addition, the Atlantic Ocean at the mouth of Port Royal Sound is under an estuarine/marine fish consumption advisory due to elevated levels of mercury.

In 2004 the Beaufort River was listed on the 303(d) List as impaired due to low dissolved oxygen (DO) levels. In 2006, SCDES approved a Total Maximum Daily Load (TMDL) to address low dissolved oxygen (DO) in Battery Creek and Beaufort River. There are no approved or proposed TMDLs to address the current impairments in Battery Creek and Port Royal Sound.

4.6 Air Quality

The Clean Air Act (CAA) (PL 88-206) and its later amendments (CAAA) set up the National Ambient Air Quality Standards (NAAQS) for six principal air pollutants, also known as “criteria air pollutants.” The pollutants include carbon monoxide (CO), Lead (Pb), nitrogen dioxide (NO₂), particulate matter (PM_{2.5} and PM₁₀), ozone (O₃) and sulfur dioxide (SO₂). If the concentration of one or more criteria pollutants in a geographic area is found to exceed the regulated threshold level for one or more of the NAAQS, the area may be classified as a non-attainment area. Areas with concentrations of criteria pollutants that are below the levels set up by the NAAQS are considered either in attainment or unclassifiable areas. All pollutants are currently classified as “attainment” for Beaufort County (USEPA 2022).

4.7 Noise

Noise in the study area results from a variety of natural and man-made sources. Sound sources in natural areas may include insects, animals, birds, wind, water, and precipitation. The Marine Corps Air Station Beaufort; the Marine Corps Recruit Depot Parris Island; and the Hilton Head Airport would be the primary sources of man-made sound related to air traffic. U.S. Highway 21 is the main highway giving access to Port Royal and a source of transportation noise that parallels Battery Creek. There are residential and commercial areas along the federal channel in Port Royal, Parris Island, and Hilton Head. Noise sources from these areas include traffic, construction, human, and animal sounds. Man-made sound sources on the waterway include dredging vessels, commercial watercraft, and recreational boating.

4.8 Tides

Tidal fluctuations in Port Royal Sound range from 6 feet to over 10 feet, the highest tides on the east coast south of Maine. This is because of the concave curvature of the coastline from North Carolina to Florida and the location of Port Royal Sound at the vertex of the curve. As the earth rotates, water being pushed up against the coastline is concentrated at Port Royal Sound. At Hilton Head in Port Royal Sound the mean tide range is 6 to 9 feet. At Beaufort, the tidal range is 7.4 feet to 8.7 feet, and at Port Royal 7.2 feet to 8.5 feet.

4.9 Terrestrial and Aquatic Habitats

Habitats found within the project area include intertidal marsh, beach and dune communities, and open waters. The greatest expanses of intertidal marsh occur along the eastern and northern boundaries of Parris Island, along Station Creek downstream of the confluence of the Beaufort River and Port Royal Sound, and along the banks of most of the tributaries to Port Royal Sound. The beach and dune community is found north of the entrance to Port Royal Sound and on the east and south edges of Bay Point Island. Open waters are those tributaries supplementing the general southeastern drainage pattern of the sound and include all marine and estuarine waters together with all underlying bottoms below the intertidal zone.

4.10 Vegetation

Marsh vegetation varies with elevation and salinity but is generally dominated by emergent, narrow-leaved rushes, sedges, and grasses. Low marsh is the lowest topographically and occurs from mean sea level to about mean high water. Low marsh is regularly flooded by lunar tides with smooth cordgrass vegetation throughout most of the project area. High marshes are situated at elevations

above the normal high tide level but within the area flooded by spring tides. In the project area, this community occurs as a fringe community on the margins of the low marsh. The principal plant found in the high marsh is black needlerush. Other high marsh species include sea ox-eye, glasswort, sea blite, salt meadow cordgrass, marsh elder, dog fennel, salt marsh aster, salt marsh fimbriatilis, dropseed, salt grass, silverlin, broomsedge, wax myrtle, and live oak seedlings.

On the southern end of Bay Point Island, adjacent to the mouth of Port Royal Sound, dune vegetation includes typical foredune species such as sea oats, sandspurs, seaside spurges, croton, and bitter panicum; and salt tolerant coastal weeds such as Russian thistle, seabeach orach, sea blite, sedge, pennywort, marsh elder, and sea rocket. Plants in the open water community are restricted to phytoplankton and marine seaweeds which grow attached to various objects or may drift ashore with the tide. During winter storms, seaweeds in the littoral drift can become entangled in the low marshes along with wrack material consisting primarily of smooth cordgrass.

4.11 Birds

Bird species in Port Royal harbor include brown pelican, black skimmer, royal tern, red breasted merganser, herring gull, laughing gull, ringbill gull, osprey, and double crested cormorant. Shore birds, waterfowl, gulls, herons, and egrets inhabit the adjacent marsh communities and plovers, dowitchers, and sandpipers forage around shorelines and on open flats. Other species that may be found in the study area include blackbirds, grackles, sparrows, owls, hawks, and warblers.

Migratory bird species are protected under the Migratory Birds Treaty Act of 1918 (MBTA). MBTA prohibits the killing, capturing, trading, selling, or transport of protected migratory bird species without prior authorization of the US Fish and Wildlife Service (USFWS). The Act applies only to migratory bird species that are native to the United States or U.S. territories. There are nineteen bird species in the study area that are protected under the MBTA.

4.12 Terrestrial Mammals

Mammals that inhabit the marshes typically include raccoon, mink, otter, rice rat, opossum, and marsh rabbit. Deer, hogs, wild turkey, squirrels, woodrat, and the cotton mouse may be found in the oak-pine forests and the cotton rat lives in palmetto and open grass areas. Other mammals that frequent these areas include the bobcat and fox.

4.13 Fish

The Beaufort River and Port Royal Sound support a large variety of saltwater fish species. Species include black drum, red drum, redfish, cobia, Southern flounder, Spanish mackerel, tarpon, speckled sea trout, sheepshead, crevalle jacks, lady fish, and tripletail. Other species seen in the area include the lemon shark and several species of rays including the manta ray.

4.14 Marine Mammals

Marine mammals are protected under the Marine Mammal Protection Act of 1972, as amended (MMPA). The Act prohibits the unauthorized hunting, harassment, capture or killing of marine mammals as well as the import or export of the species, including their parts and products.

Federal entities responsible for implementing the MMPA include NOAA Fisheries, USFWS, and the Marine Mammal Commission. The marine mammals most likely to be found in Battery Creek,

Beaufort River, and Port Royal Sound include the Atlantic bottlenose dolphin and the West Indian manatee.

4.15 Invertebrates

The benthic environment includes several communities correlated with substratum type. Multicellular green, red, and brown algae, and unicellular algae are the primary producers within the photic zone of the benthic environment. The benthic fauna is divided into epifauna and infauna. Epifauna live on the substratum and infauna live within the substratum. Infaunal communities are dominated by a diverse assemblage of burrowing and tube dwelling crustaceans, polychaete worms, and burrowing bivalve mollusks. Most of these invertebrates are inactive, but a few are capable of a high degree of lateral mobility. The infauna is mainly made up of filter and detritus feeding invertebrates.

4.16 Threatened and Endangered Species

The Endangered Species Act (ESA) of 1973 (16 USC 1531-1543) regulates activities affecting plants and animals that are Federally classified as threatened or endangered, as well as the designated critical habitat of such species. The waters of the federal channel, including Battery Creek, Beaufort River, Port Royal Sound, and the entrance channel (Atlantic Ocean), encompass the ranges of several federally threatened or endangered species under the authority of USFWS and the National Marine Fisheries Service (NMFS) including the West Indian Manatee and sea turtle species.

4.17 Wetlands

Wetland areas adjacent to the federal channel are mapped as estuarine intertidal emergent, regularly flooded (noted as E2EM1M in the National Wetland Inventory). Wetlands in the study area are primarily situated along the eastern edge of Port Royal, along the northern and eastern sides of Parris Island, and between Fort Fremont and Bay Point Island.

4.18 Cultural Resources

Archeological and historical resources were originally addressed in the Environmental Statement for Maintenance Dredging in Port Royal. A search of South Carolina's ArchSite and the Office of Coast Survey's Wrecks and Obstructions Database revealed the presence of several known historic properties and submerged cultural resources within the Area of Potential Effect (APE), which is defined as a quarter-mile radius of the federal navigation channel. One archaeological site, Port Royal Site (38BU338/38BU482) is potentially eligible and is located within the APE. While several wrecks/obstructions are indicated within the APE, only the SS William Lawrence Shipwreck Site is NRHP-listed and documented as a National Register Point. Fort Frederick Heritage Preserve is nearby but outside the APE, so no impacts are anticipated. Various terrestrial and submerged cultural resources surveys have been performed within the federal navigation channel and along the shoreline of the Port Royal Harbor, so no additional surveys were performed or recommended.

4.19 Essential Fish Habitat

Essential Fish Habitat (EFH) is defined by the Magnuson-Stevens Fishery Conservation and Management Act as those waters and substrates necessary to fish for spawning, breeding, feeding, or growth to maturity. Beaufort River, Battery Creek, Port Royal Sound, and the entrance channel are named as EFH managed by the South Atlantic Fisheries Management Council (SAFMC), the

Mid-Atlantic Fisheries Management Council (MAFMC), and National Marine Fisheries Service (NMFS). Additionally, the Port Royal Sound and the Beaufort River are named as habitat areas of particular concern (HAPC) for penaeid shrimp and snapper grouper complex. EFH includes estuarine and marine water column, soft bottoms, intertidal flats, estuarine emergent wetlands, and tidal creek. Federally managed species that may be found in the study area include penaeid shrimp, snapper grouper species, mackerel, bluefish, flounder, and nine shark species.

5 Planning Considerations

Section 5 Planning Considerations presents the considerations made during plan formulation, including addressing existing and future conditions, identifying problems, opportunities, objectives, and any constraints found that may affect decision making. The following sections include conditions that may influence the recommended plan, with summaries of the planning objectives at the end.

5.1 National Security

Leader to leader communication between the USACE Charleston District and the three military organizations in the area found that Port Royal does not have any national security needs or purposes.

The Marine Corps Air Station Beaufort was engaged on 22 September 2022. USACE learned that the Marine Corps Air Station would not consider going offshore through the entrance channel for Port Royal Harbor channel for mission-related activities. They use the AIWW.

The Naval Hospital Beaufort was engaged on 5 October 2022. The Naval Hospital Beaufort does not use the Port Royal Harbor or the AIWW for their mission-related activities.

The Marine Corps Recruit Depot Parris Island was engaged on 17 November 2022. The Marine Corps Recruit Depot does not have any mission-related activities that require offshore access via the entrance channel for Port Royal Harbor. The Marine Corps Recruit Depot may use the AIWW for training exercises or emergency access.

5.2 Safety Concerns

The Port Royal navigation channel has no safety concerns, as confirmed by annual federal channel surveys that have never revealed life or safety issues. Additionally, vessels using the Atlantic Intracoastal Waterway (AIWW) have not raised safety concerns regarding the depth of the entrance channel. The current minimum depth of the Port Royal Entrance Channel is 12 feet mean lower low water, matching the AIWW's authorized depth. Any vessel that would transit on the AIWW, would be able to access it currently through the Port Royal inlet. Should the Port Royal entrance channel become restricted, then safe access to/from the AIWW during inclement weather could be achieved through the Savannah Harbor Entrance Channel, which is only 10 miles away (**Figure 5-1**). Using this channel as a safe entry point allows for transit on a consistently funded, well-maintained route.

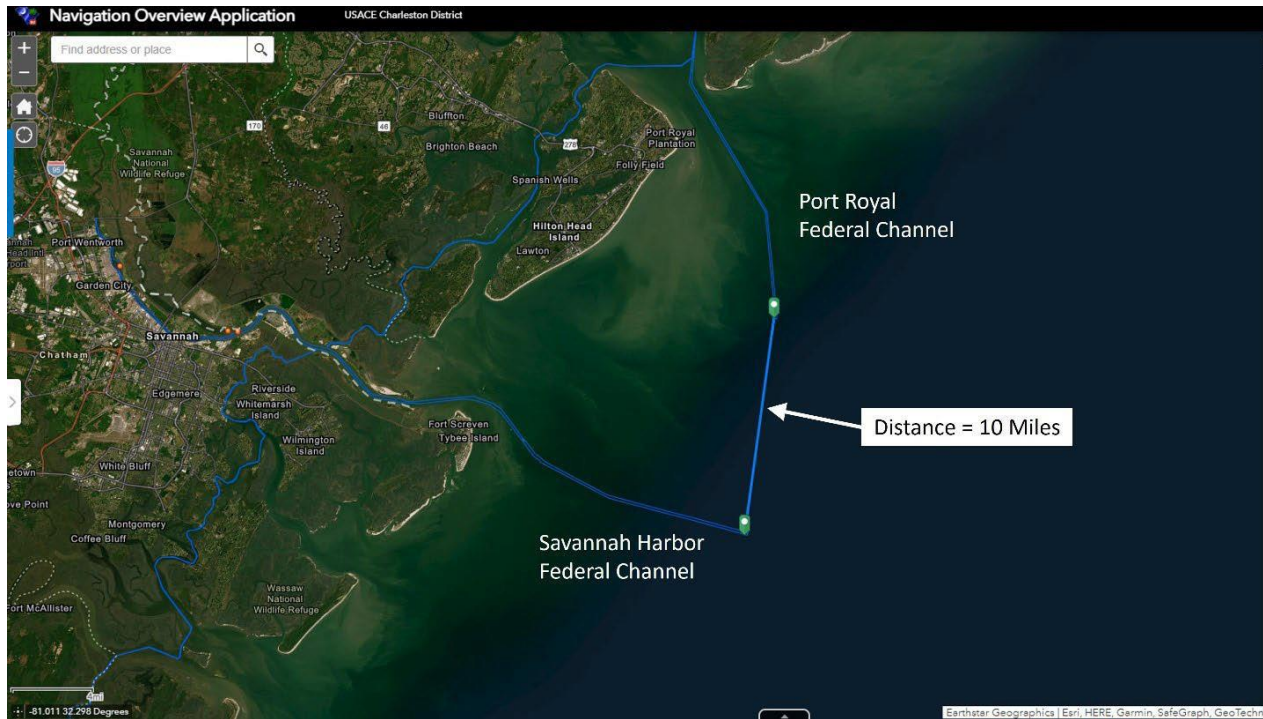


Figure 5-1: Distance from Port Royal Entrance Channel to Savannah Harbor Entrance Channel

5.3 Existing Economic Activity

Port Royal has a fleet of approximately nine (9) shrimping vessels. Consideration has been given to the shrimpers' continued ability to work in the area even with the deauthorization of the federal channel. Stakeholders reported that shrimpers have been successfully fishing in the recent past. Older wooden shrimp boats have depth requirements of 8-10ft, and newer steel hulled shrimping vessels require a 14ft depth. Current channel depths (see **Section 3.4**) in the reaches and turning basin are sufficient for both types of shrimping vessels. Stakeholders reported that shrimping vessels do not rely on the entrance channel since they do not go into the open ocean. Maintenance dredging has not occurred since 2004, and it is expected that the channel bathymetry has reached a state of equilibrium (see **Section 6.4**), so no economic impact is predicted to shrimping.

Maintenance of this channel has not occurred for nearly 20 years so economic activity at/within the vicinity of the site is not reliant upon the continued maintenance of the federal channel.

5.4 Nearby National Parks

The Reconstruction Era National Historical Park is in Beaufort, South Carolina and not near the channel which is in Port Royal. The park is not reliant on the continued maintenance of the federal channel.

5.5 Existing Recreational Use of the Channel

Sands Beach Park features a boardwalk, viewing tower, and boat ramp. Stakeholders report Sands Beach Park was created from dredged material when the port was built in the 1950s. The channel

has not been dredged since 2004, and the park is not reliant on the continued maintenance of the federal channel.

5.6 Recreational Traffic

The channel is not used substantially by motorized recreational vessel traffic. Substantial is defined as “an amount of traffic that, without continued maintenance of the federal channel, a local community dependent on that traffic would suffer catastrophic economic impacts.” Maintenance of this federal channel has not occurred since 2004 so, by definition, recreational vessel traffic is not substantial in this channel.

5.7 Proposed Development Activity

Safe Harbor bought the former port facility in November 2017 and has planned a marina/waterfront development. The most recent permit application for the proposed development would occupy the federal channel and prevent maintenance of it at its authorized dimensions.

Safe Harbor’s vision is to serve recreational boaters and the commercial fishing fleet in the Port Royal, SC area. This includes accommodating mega-yachts, small cruise ships, large sailing vessels and, and recreational boating slips. Further, they propose providing service berths for recreational and other vehicles such as Harbor Pilot vessels. There are also plans for a hotel as part of Safe Harbor Marina. Investors expect spending by visitors on dining, retail and transportation could boost the local job market and affect the regional economy. **Figure 5-2** shows the version of the plan that USACE and SCDES Office of Ocean and Coastal Resource Management permitted in 2009 with a modification in 2021 that was permitted.

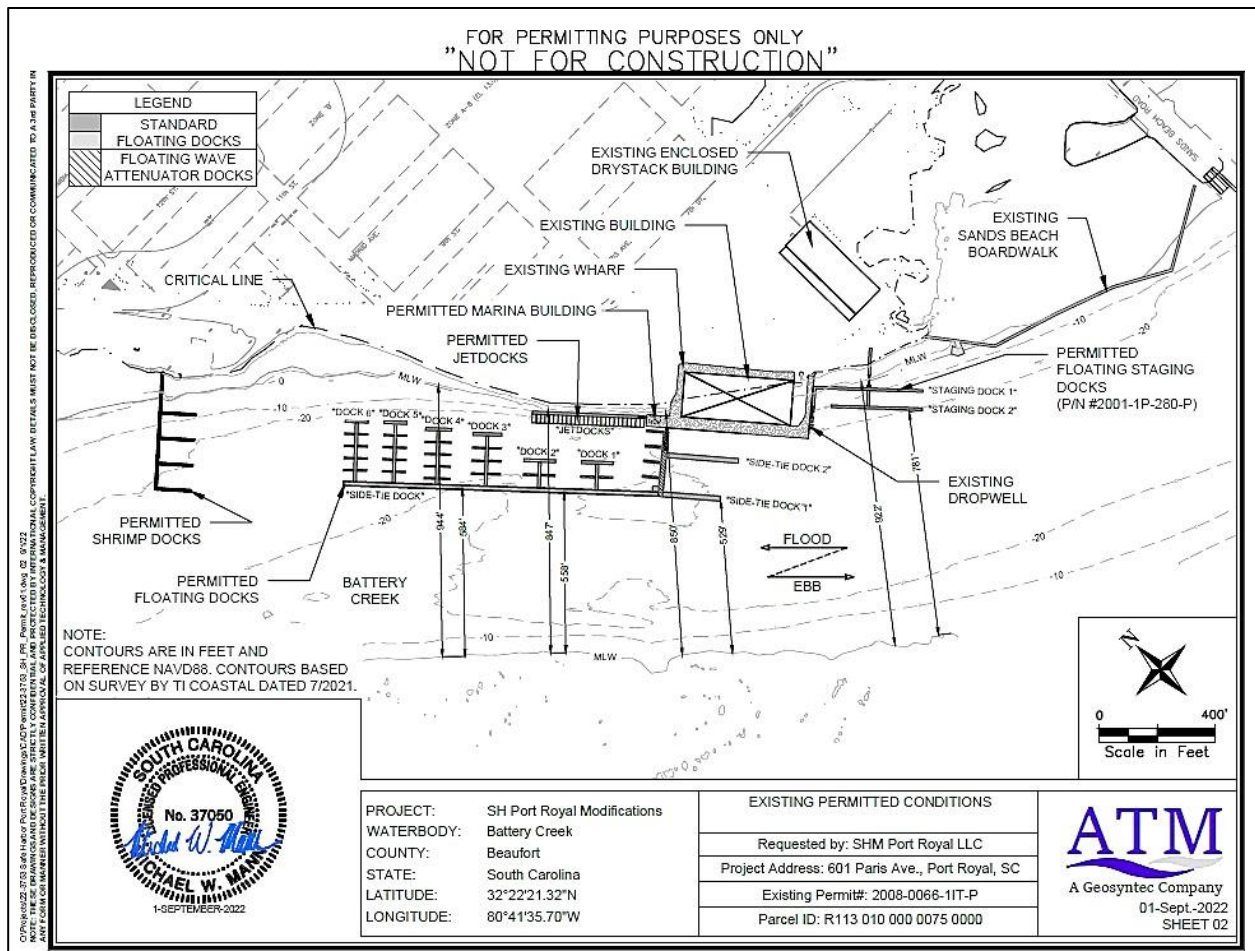


Figure 5-2: Safe Harbor Marina Permit Modifications

In October 2022, Safe Harbor requested additional modification of the permit to develop a full-service marina. The revised plan (**Figure 5-3**) includes a total of 151 wet slips, 3,284 linear feet of side tie dockage, 40 floating Jet Docks, and marine utilities including shore power, potable water, fuel, and marine pump out. A floating harbormaster's office would be found on the floating docks next to the outside tie dockage and fuel dispensers. Two new 80' X 5' concrete fixed piers would be added to accommodate a new marine travel lift. Additionally, a commercial shrimp boat dock is included. When fully in operation, Safe Harbor estimates the larger vessels would require a 20ft draft in all tides.

Figure 5-3 shows the permit modification request for planned development. As shown, the proposed layout is within the Port Royal project limits, up to the Federal Channel centerline. Since this development would negatively affect the Charleston District's ability to maintain the channel, the applicant was advised to further modify the plan, as the 2022 plan would not be permissible.

The State of South Carolina has contributed \$500k, or approximately 50% of costs, to develop an on-site shrimp facility that would allow shrimpers a local option for processing their catch. The shrimp processing plant would be associated with the commercial fishing/shrimping docks that are part of the proposed Safe Harbor Marina.



Figure 5-3: Safe Harbor Marina occupies the federal channel, is incompatible.

The Town of Port Royal has plans for waterfront development that feature deep water access to waterfront homes and condominiums, as well as development of shops, bars, and restaurants. These plans are connected to the proposed Safe Harbor Marina.

5.8 Local Uses or Needs of the Channel and Channel Use

Channel maintenance dredging has not occurred since 2004 so there are no local uses or needs reliant upon the authorized depth of the Federal Channel. The Project Delivery Team (PDT) used the USACE Channel Portfolio Tool (<https://cpt.usace.army.mil/>) to plot vessel traffic by draft for the Port Royal Channel for the period 2009 to 2017. **Figure 5-4** shows that from 2009-2017, vessel traffic did not exceed five feet in depth. No traffic is recorded between 2018- 2020, and so those years are not represented in the graph (**Figure 5-4**).

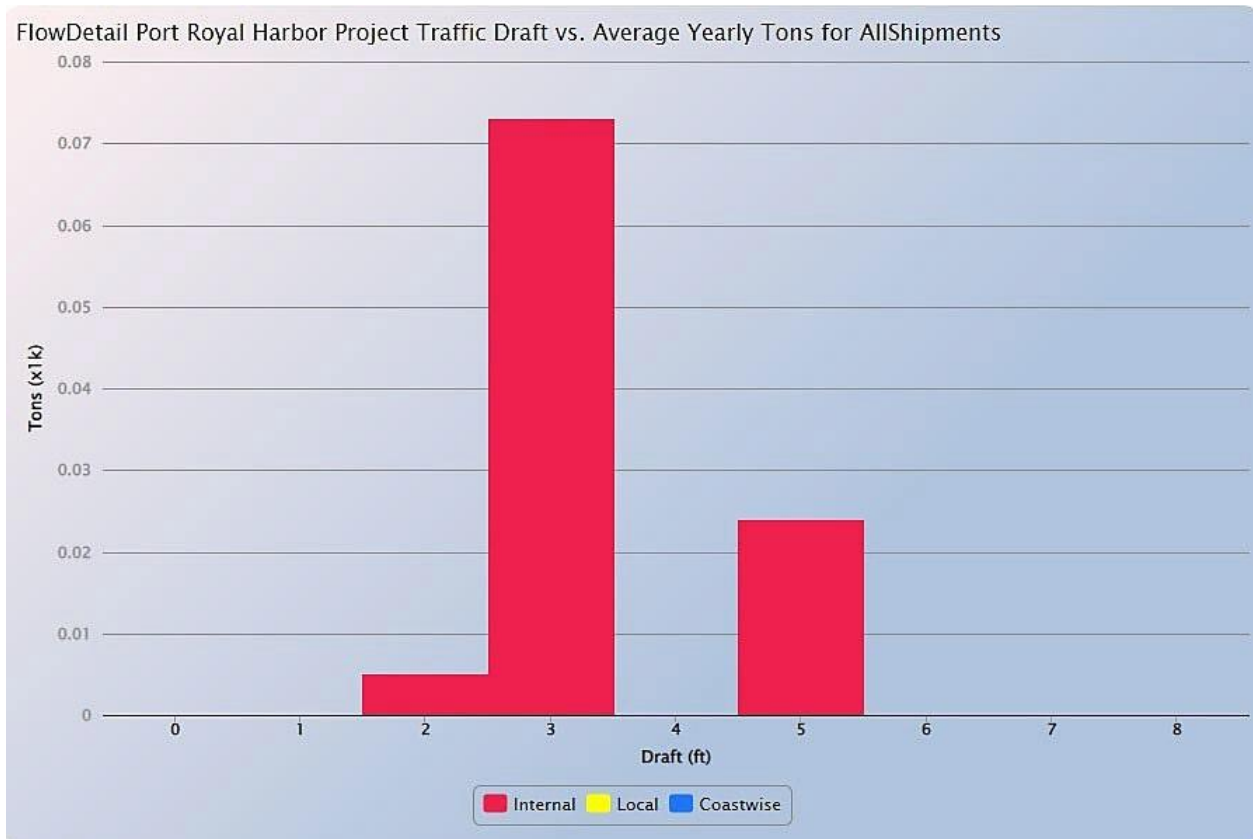


Figure 5-4: From 2009-2017, vessel traffic did not exceed five (5) feet in depth.

5.9 Future Uses or Needs of the Channel

In addition to the development plans described above, the U.S. Coast Guard (USCG) conducted a Waterways Analysis and Management Systems (WAMS) Study in 2023 to assess the integrity of federally maintained waterways in Port Royal and St. Helena Sounds. A questionnaire was issued to gather mariner input on vessel use and Aids to Navigation (ATON).

The WAMS Study reaffirmed the area's navigational, environmental, and military criticality for an aids to navigation system and included user recommendations to improve aid visibility, relocate several buoys, renumber the system, and optimize light characteristics. These proposed changes are not contingent on federal channel designation. Beyond the USCG study, no other future uses for the channel were found during this study.

5.10 Parties Interested in Maintaining or Acquiring the Channel

No parties have stated an interest in maintaining or acquiring the channel.

5.11 Public/Stakeholder/Political Concerns

Stakeholders commented that one of the best features of Port Royal is that it offers naturally deep waters with no overhead restrictions such as bridges or power lines.

Safe Harbor and its investors are concerned about how deauthorization may affect part of their plans for future development. Specifically, future development plans include serving small cruise ships and mega-yachts which would rely on depths greater than the channel currently has in many locations. For example, stakeholders report that small cruise ships have requested piloting into the Port Royal Harbor, and they further report that the Charleston Harbor Pilots will only pilot these ships during daylight hours at high tide due to the current channel depths.

Stakeholders report that this results in the cruise ships not visiting Port Royal Harbor because they typically enter/exit a port overnight.

Some stakeholders are also concerned the USCG could remove navigation aids should the channel be deauthorized. However, stakeholders also communicated that one of the cruise lines is already looking into placing their own navigation aids due to the existing ones being insufficient. Note that private navigation aids can be placed and maintained by any individual or organization other than USCG and are typical of local marinas and privately maintained channels.

5.12 Planning Objectives

This section defines the study problems, opportunities, objectives and constraints in accordance with USACE and federal planning guidance.

Problems are undesirable, negative conditions that the study will assess, while opportunities are the desirable future outcomes which address the water resource problems and improve conditions in the study area. An objective is a statement of the intended purposes of the planning process; it is a statement of what an alternative plan should try to achieve over the life of the project. Based on the assessment of the existing and predicted future project area conditions, the PDT has developed the following statements:

Problem: Port Royal Harbor carries no waterborne commerce.

Opportunity: There is an opportunity to allow local development for purposes other than waterborne commerce.

Objective 1: To determine if a federal interest continues to exist for commercial navigation.

Objective 2: To determine if there is a military use of the harbor reliant on the federal channel. The PDT identified no constraints.

6 Alternatives Description

Section 6 Alternatives Description describes and compares the alternatives considered:

- Alternative 1: Project Retained/No Action
- Alternative 2: Project Deauthorized/Action

This is a qualitative analysis with no quantitative data collection and spotlights the factors that are different between Alternative 1 and Alternative 2. The PDT applied the selection criteria of completeness, effectiveness, efficiency, and acceptability, and made a comparison of the alternatives. If this project is serving its authorized purpose, USACE will recommend retention of the project. If it is not serving its authorized purpose, USACE will recommend deauthorization.

6.1 Alternative 1: Project Retained/No Action

The no action alternative allows the project to continue as an inactive federal water resources project that is unlikely to be maintained through dredging operations. In this scenario the project is still under consideration by the Administration for maintenance dredging, but likely does not get funded; however, USACE would continue the annual conditions surveys, resulting in temporary and minor adverse effects associated with noise and air quality. Costs associated with retaining the project are presented in **Table 6-1**.

Table 6-1: Project Retention Costs

Item	Cost	Last Completed	Next Scheduled
Survey	\$32k (EST)	2022	2023
Easements administration	\$1k (EST)	2022	2023
Dredging	\$20M (ROM) + NEPA	2004	Not expected

Proposed development along the Port Royal waterfront is limited with the project being retained and maintained as a federal channel. Private developers have planned a waterfront development that is located within the federal channel and would prevent maintenance dredging at its authorized dimensions. Retaining the project means that private developers would need to redesign the marina/waterfront development to receive Section 408 permission from USACE to construct in addition to receiving permits under section 404 of the Clean Water Act.

Investors could continue to pursue the proposed marina development but, due to the unlikelihood of the Administration budgeting dredging, may consider changing their plans and not serve cruise ships or mega-yachts; alternately investors could continue to pursue the proposed development (though with modifications required by USACE) and invest in dredging.

This federal navigation channel has not been maintained through dredging operations for nearly two decades, and there are no environmental benefits expected from maintaining the channel.

Application of screening criteria to Alternative 1:

- **Completeness** – Alternative 1 is incomplete. It is unlikely the Administration will budget dredging the channel. Without dredging, the project is unable to serve the authorized purpose of commercial navigation.
- **Effectiveness** – Alternative 1 is ineffective. By retaining the project, Alternative 1 perpetuates the problem of maintaining a channel where there is no commercial navigation and simultaneously prohibits the opportunity of allowing private developers to pursue their planned waterfront development. Alternative 1 does not achieve a study objective.
- **Efficiency** – Alternative 1 is not cost-effective, therefore inefficient. It requires USACE to use resources every year on a project that no longer serves the authorized purpose of commercial navigation. It neither alleviates problems, nor achieves opportunities.
- **Acceptability** – Alternative 1 is unacceptable. Congress authorized the Port Royal Harbor project for commercial navigation, and it is no longer serving that purpose. The SCPA sold the port in 2017, and there has been no commercial navigation since then.

Alternative 1 does not meet any of the four basic screening criteria, and therefore does not merit further consideration.

6.2 Alternative 2: Project Deauthorized/Action

The action alternative allows deauthorization and the project would no longer be considered by the Administration for maintenance dredging budgeting. The temporary and minor adverse effects from the annual conditions surveys would no longer occur. Costs associated with deauthorizing the project are presented in **Table 6-2**.

Table 6-2: Project Deauthorization Costs

Item	Cost	Timeframe
Dispose Easements	1K-10K	6-months to 1-year after declared excess

Deauthorizing the project would allow private developers to complete their planned marina/waterfront development.

While Stakeholders report they are unlikely to pursue dredging themselves, with knowledge there will be no federal funding for dredging, they may consider investing in dredging to pursue plans to serve mega-yachts and small cruise ships. In this scenario, stakeholders must still pursue Clean Water Act Section 404 permits but would not require a Section 408 permission.

This federal navigation channel has not been maintained through dredging operations for nearly two decades; deauthorizing the project is expected to result in no changes or impacts to the environment other than the ceasing of the annual conditions surveys.

Screening Alternative 2 shows the following:

- **Completeness** – Alternative 2 is complete. It accounts for all necessary investments and actions to realize the plan and USACE is likely to successfully implement the plan.
- **Effectiveness** – Alternative 2 is effective. By deauthorizing the project, Alternative 2 alleviates the problem of maintaining a channel where there is no commercial navigation and simultaneously achieves the opportunity of allowing private developers to pursue their planned waterfront development. Alternative 2 is effective at achieving the study objective.
- **Efficiency** – Alternative 2 is the most cost-effective, therefore efficient, means of alleviating the problems and achieving the opportunities. It requires USACE to expend resources once to release easements associated with a project that no longer serves its intended purpose.
- **Acceptability** – Alternative 2 is acceptable. Congress authorized the Port Royal Harbor project for commercial navigation, and it is no longer serving that purpose. The SCPA sold the port in 2017, there has been no commercial navigation since then.

Alternative 2 meets all four of the basic screening criteria. Evaluating Alternative 2 shows that it meets the objectives.

6.3 Comparing Alternatives

Per ER 1105-2-100, Principles and Guidelines (P&G), ASA(CW) memorandum 3 April 2020, ASA(CW) Policy Directive 5 January 2021, all four accounts (NED, EQ, RED, and OSE) have undergone evaluation and comparison, with the results presented in the table below. The two alternatives have identical physical attributes. No quantifiable National Economic Development (NED) benefits have been found. The Regional Economic Development (RED) account shows no alterations in the distribution of regional economic activity resulting from either alternative plan.

Regional effects were assessed using nationally consistent projections of income, employment, output, and population. The Environmental Quality (EQ) account delineates effects on significant natural and cultural resources. The Other Social Effects (OSE) account records plan effects relevant to the planning process but not reflected in the other three accounts. The identification of the Recommended Plan was based on the evaluation and comparison of potential positive and negative outcomes, summarized in **Table 6-3** below, which presents each factor that might be affected by Alternative 1 (No Action) and Alternative 2 (Deauthorization).

Table 6-3: Summary of Accounts and Comparison of Alternatives

Item	Alternative 1 – Project Retained / No Action	Alternative 2- Project Deauthorized / Action
National Economic Development		
Average Annual Benefits - Transportation Cost Saving	\$0	\$0
Recreation	Direct recreation provides an unknown estimated amount per year.	Direct recreation provides an unknown estimated amount per year.
Economic Cost for BCR	N/A	N/A
Annual O&M	Estimated \$33,000 for O&M.	No O&M costs.
Harbor Dredging Cost-2021 estimates	Potential USACE costs associated with harbor dredging - \$20M+NEPA.	Potential USACE costs associated with harbor dredging if undertaken are saved.
B-C Ratio	N/A	N/A
Effects on Commercial Navigation	None. The only commercial navigation is shrimping, which does not rely on harbor dredging.	None. The only commercial navigation is shrimping, which does not rely on harbor dredging.
Effects on Large Boat Navigation	If the Federal channel is retained but dredging continues to not be funded, cruise ships or other stakeholders may have to invest in the channel or increase the cost of their operations.	If there is no Federal channel, cruise ships or other stakeholders may have to invest in the channel or increase their cost of operations.
Effects on Small Boat Navigation	Small boats sail unimpeded.	Small boats sail unimpeded.
Regional Economic Development		
Impact on Sales Volume	Status quo maintained. No effect to sales volume.	Status quo maintained. No effect to sales volume.
Impact on Income	No effect to existing income.	No effect to existing income.
Impact on Employment	No effect to existing employment.	No effect to existing employment.
Tax Changes	No effect as compared to current conditions.	No effect as compared to current conditions.
Environmental Quality	Future maintenance dredging is not expected due to lack of funding; however, channel condition surveys would continue. During channel condition surveys, temporary and negligible effects to air quality and noise would be expected. Should future dredging be undertaken, there is the potential for temporary effects such as turbidity that could impact	Under the recommended plan, deauthorization of the Port Royal Harbor navigation project would occur resulting in the termination of all maintenance activities. There would be no negative effect to threatened and endangered species, essential fish habitat, or historic properties from implementation of the recommended plan.

Item	Alternative 1 – Project Retained / No Action	Alternative 2- Project Deauthorized / Action
	essential fish habitat or water-based species.	Further, there is a potential benefit to essential fish habitat or water-based species due to the temporary effects of dredging being removed.
Other Social Effects		
Community Cohesion	The community will continue as in the past. For example, the retention of the federal channel would not affect day to day recreation and cultural/social festivals, such as the Port Royal annual shrimp festival.	The community will continue as in the past. For example, the disposition of the federal channel would not affect day to day recreation and cultural/social festivals, such as the Port Royal annual shrimp festival.
Life Safety Risk	Retaining the project does not affect life safety risks. Even though it has not been dredged since 2004, the current minimum depth of the Port Royal Entrance Channel is 12 feet mean lower low water, matching the AIWW's authorized depth. Any vessel that would transit on the AIWW, would be able to access the Port Royal Harbor through the Port Royal inlet.	Deauthorizing the project does not affect life safety risks. In addition to the Port Royal inlet, safe access to/from the AIWW during inclement weather can also be achieved through the Savannah Harbor Entrance Channel, which is only 10 miles away. Using this channel as a safe entry point allows for transit on a consistently funded, well-maintained route.

Summary of Comparison: Analysis of the alternatives indicates that the channel no longer meets the objectives of the original authorization. Further, there are no meaningful benefits beyond NED to be gained by retaining the channel. However, Alternative 2, deauthorization, saves the Government money on a project that no longer serves its intended purpose of commercial navigation for the movement of commodities. It also has the potential, if not to increase environmental quality within the channel, at least to reduce the potential for impacts from dredging. This federal navigation channel has not been maintained for nearly two decades, does not contain structures, and, in addition to not supporting commercial traffic for the movement of commodities, also does not support substantial recreational traffic. The federal interest has ceased, and deauthorization would not result in significant impacts on the human environment.

Waterborne commerce in the form of the movement of commodities has not occurred since the SCPA sold the port in 2017. Therefore, there are no quantifiable National Economic Development (NED) benefits, and there are no quantifiable benefits associated with Regional Economic Development (RED). No Other Social Effects (OSE) were identified. Deauthorization reduces the potential for impacts to Environmental Quality (EQ) in the channel.

6.4 Environmental Effects

Under the Action Alternative, disposition of the Federal navigation project would result in cessation of all maintenance activities. No further actions associated with the Federal project would occur and there would be no effect on environmental or cultural resources. Under the No Action Alternative, no future maintenance dredging activities are anticipated; however, channel survey activities would continue, resulting in temporary and minor adverse effects associated with noise and air quality.

Effects to specific resource categories resulting from the No Action and Action Alternatives are presented below in **Table 6-4**.

Table 6-4: Comparison of the No Action and Action Alternatives

Environmental Resource	No Action Alternative	Action Alternative
Climate	No effect	No effect
Geology/Topography	No effect	No effect
Bathymetry	No effect	No effect
Soils	No effect	No effect
Water Quality	No effect	No effect
Air Quality	Temporary and minor effects from operation of survey vessel	No effect
Noise	Temporary and minor effects from operation of survey vessel	No effect
Tides	No effect	No effect
Terrestrial and Aquatic Habitats	No effect	No effect
Vegetation	No effect	No effect
Birds	No effect	No effect
Terrestrial Mammals	No effect	No effect
Fish	No effect	No effect
Marine Mammals	No effect	No effect
Invertebrates	No effect	No effect
Threatened and Endangered Species	No effect	No effect
Wetlands	No effect	No effect
Cultural Resources	No effect	No effect
Essential Fish Habitat	No effect	No effect

6.5 District Quality Control

District Quality Control (DQC) was completed in April 2023.

7 Environmental Compliance

7.1 Executive Order 13045 Protection of Children

Executive Order 13045 requires each federal agency to identify and assess environmental health and safety risks that may disproportionately affect children and ensures that policies, programs, activities, and standards address disproportionate risk to children that results from environmental health or safety risks.

There are no protection of children concerns associated with disposition of the federal project.

7.2 Executive Order 11988 Floodplain Management

Executive Order 11988 states that each Federal agency shall take action to reduce the risk of flood loss, minimize the impacts of floods on human safety, and restore and preserve the natural values of floodplains while carrying out its responsibilities for (1) acquiring, managing, and disposing of Federal lands; (2) providing Federal investments in construction and improvements; and (3) conducting activities affecting land use, including water resources planning and regulating activities. To comply with this order, each Federal agency has a responsibility to evaluate the potential effects of any actions it may take in the floodplain, to ensure its planning programs consider flood hazards and floodplain management, and to implement the policies and requirements of the order.

Disposition of the Federal navigation project does not conflict with applicable state or local standards concerning floodplain protection and would not result in impacts to the 100-year floodplain.

7.3 Clean Water Act

The Clean Water Act of 1972 (33 U.S.C. § 1251 et seq.) is the primary legislative vehicle for Federal pollution control programs and the basic structure for regulating discharges of pollutants into waters of the U.S. The CWA was established to “restore and maintain the chemical, physical, and biological integrity of the nation’s waters.” The CWA sets goals to eliminate discharges of pollutants into navigable waters, protect fish and wildlife, and prohibit the discharge of toxic pollutants in quantities that could adversely affect the environment.

Disposition of the Federal navigation project would not result in the discharge of dredge or fill material into waters of the United States and would not violate any applicable state water quality standards. Therefore, disposition would not require a Section 404(b)(1) evaluation or Section 401 Water Quality Certification.

7.4 Coastal Zone Management Act

The Coastal Zone Management Act of 1972 requires that activities undertaken by a Federal agency that affect land, water use, or natural resources of the coastal zone, be carried out in a manner which is consistent to the maximum extent practicable with the enforceable policies of approved state management programs. The South Carolina Coastal Management Program was authorized in 1977 under SC’s Coastal Tidelands and Wetlands Act (CTWA). South Carolina DHEC’s Office of Ocean and Coastal Resource Management (OCRM) is responsible for implementation of the state’s program. Disposition of the federal project would have no effect on coastal resources managed by OCRM. NEPA scoping was conducted with Federal and state agencies in March 2022. No comments were received from OCRM.

7.5 National Historic Preservation Act

Section 106 of the National Historic Preservation Act (54 U.S.C. § 306108) and its implementing regulations, 36 Code of Federal Regulations (C.F.R.) Part 800, provides a regulatory framework for the identification, documentation, and evaluation of historic and cultural resources that may be affected by Federal undertakings. Under the act, Federal agencies must consider the effects of their undertakings on historic properties, including resources that are listed or are eligible for listing in the National Register of Historic Places.

On 22 March 2022, correspondence soliciting comments for the proposed disposition of the Federal project was sent to the SC State Historic Preservation Office (SHPO) and Indian Tribes (Appendix II). The Catawba Indian Nation responded that they have no concerns with regards to traditional cultural properties, sacred sites, or Native American archaeological sites within the boundaries of the project area (Appendix II). No other comments were received. Disposition of the federal project would have no potential to cause effects to historic properties in accordance with 36 CFR 800.3(a)(1).

Consultation was reinitiated in a letter dated 1 March 2024 to provide additional information to the SC SHPO, South Carolina Institute for Archeology and Anthropology (SCIAA), and 13 Tribes, including Absentee-Shawnee Tribe of Oklahoma, Alabama-Quassarte Tribal Town, Catawba Indian Nation, Chickasaw Nation, Eastern Band of Cherokee Indians, Eastern Shawnee Tribe of Oklahoma, Kialegee Tribal Town, Muscogee (Creek) Nation, Poarch Band of Creek Indians, Seminole Tribe of Florida, Shawnee Tribe, Thlopthlocco Tribal Town, and Tuscarora Nation. SC SHPO responded in a letter dated 3 April 2024 to provide concurrence with the no effect determination (SHPO Project Number 22-EJ0058). SCIAA responded in an email dated 3 April 2024 that they have no concerns. Two tribal responses were received. The Eastern Shawnee Tribe responded in an email dated 26 March 2024 that they have no concerns with the project as proposed. The Catawba Indian Nation responded in a letter dated 9 April 2024 that they have no concerns for the project as proposed. All parties requested to be informed of any inadvertent discoveries.

7.6 Endangered Species Act

The Endangered Species Act (ESA) of 1973 (16 U.S.C. §§ 1531–1544), amended in 1988, establishes a national program for the conservation of threatened and endangered species of fish, wildlife, and plants and the habitat upon which they depend. Section 7(a)(2) of the ESA requires that Federal agencies consult with the National Marine Fisheries Service (NMFS) and U.S. Fish and Wildlife Service (USFWS), as appropriate, to ensure that their actions are not likely to jeopardize the continued existence of endangered or threatened species or to adversely modify or destroy their designated critical habitats.

NEPA scoping was conducted with Federal and state agencies in March 2022. By e-mail dated 24 March 2022, USFWS advised they had no comments regarding the proposed disposition of the Federal navigation project (Appendix II). USACE has determined that disposition of the federal project would have no effect on any threatened or endangered species or their critical habitat.

7.7 Magnuson-Stevens Fishery Conservation and Management Act

Section 305(b)(2) of the Magnuson-Stevens Fishery Conservation and Management Act (MSA) requires federal agencies to consult with the National Oceanic and Atmospheric Administration/National Marine Fisheries Service (NMFS) for any action they authorize, fund or undertake that may adversely affect Essential Fish Habitat (EFH). No adverse effects to EFH would occur from disposition of the federal project. NEPA scoping was conducted with Federal and state agencies in March 2022. No comments regarding the project were received from NMFS.

8 Recommended Plan

The recommendation contained herein reflects the information available at this time and current U.S. Army Corps of Engineers policies governing disposition of federal projects. Given the conclusions above, including the considerations documented in **Section 5**, and after considering the expected impacts, USACE recommends that the Port Royal Harbor Project be deauthorized. There is no real property associated with this project, but USACE recommends disposal of the associated easements to occur with an estimated cost of less than \$10,000. Deauthorization is in the best interest of the Government because this federal channel no longer meets the Congressionally authorized purpose for commercial vessel traffic and is without any national security needs or purposes. If Congress concurs, USACE expects to save federal dollars and staff oversight time.

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9 References

- Doar, W.R., III, 2001, Geologic Map of the Beaufort Quadrangle, Beaufort County, South Carolina, South Carolina Geological Survey, Geologic Quadrangle Map GQM-22, 1:24,000.
- Doar, W.R., III, 2003, Geologic Map of the Parris Island Quadrangle, Beaufort County, South Carolina, South Carolina Geological Survey, Open File Report OFR-139, 1:24,000.
- Extence, C.A., Chadd, R.P., England, J., Dunbar, M.J., Wood, P.J., and Taylor, E.D. 2013. The assessment of fine sediment accumulation in rivers using macro-invertebrate community response. *River Research and Applications* 29(1), 17-55.
- Institute for Water Resources (IWR). *Waterborne Commerce of the United States (WCUS) Ports and Waterways Web Tool*. <http://www.iwr.usace.army.mil/About/Technical-Centers/WCSC-Waterborne-Commerce-Statistics-Center>. Accessed 11 January 2023.
- National Marine Fisheries Service, Habitat Conservation Division. *Habitat Areas of Particular Concern within Essential Fish Habitat in the South Atlantic*. 2020. <https://www.fisheries.noaa.gov/southeast/habitat-conservation/habitat-areasparticular-concern- within-essential-fish-habitat>. Accessed 4 November 2022.
- National Marine Fisheries Service. 2022. *Essential Fish Habitat Mapper*. <https://www.habitat.noaa.gov/protection/efh/efhmapper/index.html> Accessed 8 November 2022.
- Natural Resource Conservation Service, United States Department of Agriculture. *Web Soil Survey*. <https://websoilsurvey.sc.egov.usda.gov> Accessed 3 November 2022.
- NOAA Fisheries Southeast Regional Office. *South Carolina Threatened and Endangered Species and Critical Habitats under NOAA Fisheries Jurisdiction*. 5 February 2020. <https://www.fisheries.noaa.gov/southeast/consultations/south-carolina>. Accessed 4 November 2022.
- South Carolina Department of Health and Environmental Control. *South Carolina List of Impaired Waters and TMDLs*. 2020. <https://scdhec.gov/bow/south-carolina-303d-list-impaired-waters-tmdls#11> Accessed: 4 November 2022.
- South Carolina Department of Health and Environmental Control. *South Carolina Watershed Atlas*. <https://gis.dhec.sc.gov/watersheds>. Accessed 9 November 2022.
- The Low Country Institute. *Port Royal Sound*. <https://www.lowcountryinstitute.org/prs> Accessed: 21 November 2022.
- United States Army Corps of Engineers. 1976. Maintenance Dredging of Port Royal Harbor. Beaufort County, South Carolina: Final Environmental Statement, 1976.

United States Army Corps of Engineers. 2003. Final Environmental Assessment And Finding Of No Significant Impact For The One-Time Use And 103 Designation Of The Offshore Ocean Dredged Material Disposal Site And Site Management Plan, Port Royal Federal Navigation Project, Port Royal, South Carolina. November 2003.