DRAFT

ENVIRONMENTAL ASSESSMENT (EA)

FOR

CHARLESTON HARBOR
GENERAL REEVALUATION REPORT
DANIEL ISLAND REACH TURNING BASIN

CHARLESTON, SOUTH CAROLINA
May, 2011

US Army Corps of Engineers ®
Charleston District

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1.0 INTRODUCTION

1.1 Project Purpose and Authority

Resolutions adopted by the Senate on March 27, 1990 and by the House of Representatives on August 1, 1990 authorized the U.S. Army Corps of Engineers (USACE) to study Charleston Harbor and determine if any modifications should be made to the existing Charleston Harbor Project, with particular emphasis on deepening and/or widening the Federal Navigation Channel. The 45-foot Deepening and Widening of Charleston Harbor, Charleston, South Carolina was authorized under Section 27 of the Water Resources Development Act of 1996 (WRDA 1996). A Post Authorization Change report (PAC) has been prepared under the authority of WRDA 1996 P.L. 104-303, Section 101 at 75 percent Federal and 25 percent Non-Federal expense.

The National Environmental Policy Act (NEPA) of 1969, as amended, requires consideration of the environmental impacts of federal actions. The purpose of this Environmental Assessment (EA) is to ensure the environmental consequences of the proposed action and alternatives are considered and that environmental and project information are available to the public. This EA has been prepared pursuant to NEPA in accordance with the Council on Environmental Quality (CEQ) regulations as contained in 40 CFR Parts 1500 to 1508, which directs federal implementation of the provisions of NEPA. Additionally, this document has been reported and documented in accordance with USACE Engineering Regulation (ER) 200-2-2 (Procedures for Implementing NEPA).

The purpose of this Environmental Assessment is to re-evaluate the authorized, but unconstructed, Daniel Island Reach Turning Basin, originally authorized in 1996 as part of the Charleston Harbor Deepening and Widening Project. A turning basin is an open area within a waterway that is maintained to a certain depth in order to allow large vessels to turn around. Construction of the Daniel Island Turning Basin was dependent upon completion of the proposed South Carolina State Ports Authority (SCSPA) 6-berth Daniel Island Terminal. Since that time the project sponsor, SCSPA, has re-evaluated their options for new port terminal development. As a result of this re-evaluation the newly proposed port terminal has been relocated directly across the river from the former Charleston Naval Base. Because of the new location of the Port Terminal (currently under construction), USACE needed to relocate the previously authorized turning basin. The SCSPA has obtained permits that authorize them to construct an access area in order for the ships to navigate to the berthing area. As the access area is in the same general vicinity as the relocated Daniel Island Reach Turning Basin and within the footprint of the 1996 originally authorized turning basin, the Federal government proposes to assume maintenance of the turning basin after the terminal facility is constructed. While an EA was submitted for the approved 1996 Final Feasibility Report, it is important to reevaluate the environmental impacts of the currently proposed Federal Action of maintenance dredging of the turning basin. Thus, this EA provides the environmental analysis of maintaining a portion of the SCSPA access area as a turning basin. It will incorporate findings from the 1996 Deepening and Widening EA as well as the USACE/SCSPA Environmental Impact Statement (EIS) (2006), which addressed the impacts of the Marine Container Terminal construction, including dredging of the access area/turning basin.

1.2 Project Location and Description

The Charleston Harbor Federal Navigation Channel is located in Charleston Harbor, South Carolina which lies approximately 15 miles south of the midpoint along the South Carolina coastline (Figure 1). It is approximately 140 statute miles southwest of the entrance to the Cape Fear River, North Carolina and 75 statute miles northeast of the Savannah River. Charleston Harbor is a tidal estuary fed by the Ashley, Cooper, and Wando Rivers. The entrance to the harbor is protected by two granite and rubble mound jetties, 2900 feet apart, which extend from Sullivan’s Island to the north and Morris Island to the south.

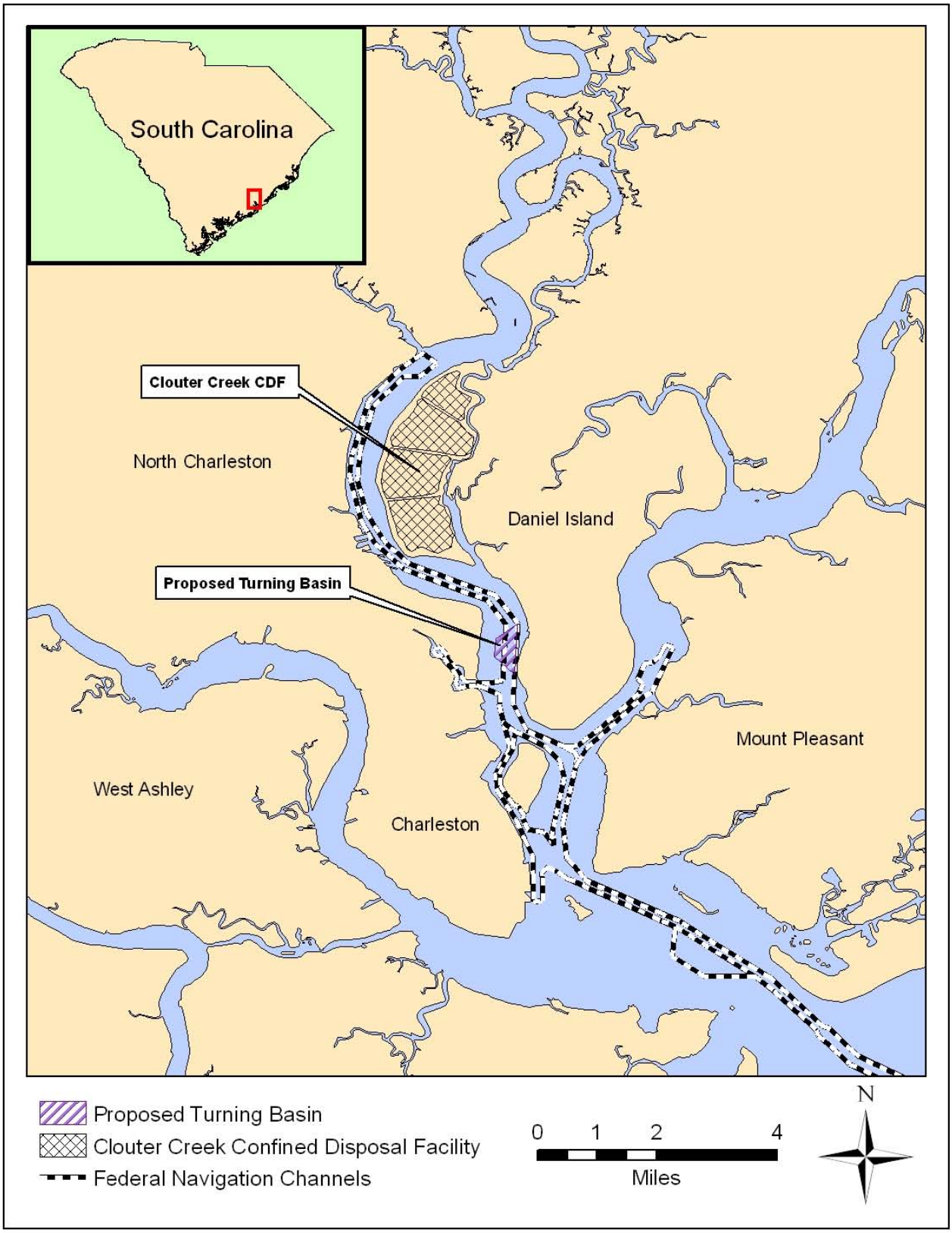

Figure 1. Location of Charleston Harbor Federal Navigation Channel

Its location along the South Atlantic Seaboard permits ready access to European and South American ports.

In 1996, USACE prepared a Final Feasibility Report and Environmental Assessment for the Charleston Harbor Deepening and Widening Project. The project authorization from WRDA 1996 included: dimensions for the new entrance channel; interior channels and turning basins; realignment of select reaches; construction and removal of contraction and training dikes; and the construction of a 1,400 by 1,400 foot turning basin near the former Navy Base. All of the 1996 authorized changes have been completed with the exception of the turning basin, which was not constructed since it was contingent upon the construction of a six-berth terminal on Daniel Island.

The SCSPA has replaced the plan to construct the Daniel Island terminal with a 3-berth terminal across the river at the former Navy Base site on the neck of the Charleston peninsula. The new location of the terminal impacts the previously authorized turning basin (Figure 2). Due to the construction of the Charleston Naval Complex terminal, USACE is reevaluating the originally authorized, but unconstructed, turning basin from the 1996 Deepening and Widening project.

The selected and authorized site is between the federal contraction dikes in the same location as the previously authorized Daniel Island Reach Turning Basin. The SCSPA has already received permits to construct the terminal, dredge, and maintain the access area to the terminal. No new material would be dredged by the USACE for this project. The currently proposed federal action is solely to maintain a portion of the authorized access area as a turning basin. The designated turning basin will be partly within the authorized navigation channel and partly within the authorized access area for the Port Terminal (Figure 2). Furthermore, the location of the proposed turning basin is within the footprint of the 1996 authorized turning basin (Figure 3). This smaller footprint will result in fewer impacts during maintenance dredging activities. The location of the access channel, proposed turning basin, and dredged operation and maintenance area are shown in Figure 4. The Corps is already authorized to maintain the navigation channel, so the reevaluation is for the portion of the authorized access area that would partially serve as a turning basin. The environmental effects related to the “new work” dredging of the access area are described in the Final Environmental Impact Statement for the Proposed Marine Container Terminal at the Charleston Naval Complex (link in References).

The SCSPA will perform the dredging required for initial construction of an access area to the terminal that will also function as a turning basin. This dredging will be performed as part of the dredging for the access area to the proposed new port terminal. Under this scenario, USACE will only perform the periodic maintenance dredging of the turning basin. Therefore, this EA only represents the environmental impacts that would result from USACE’s periodic maintenance dredging, and is primarily an update of the 1996 authorized project with new information from the USACE EIS of the Proposed Marine Container Terminal at the Charleston Naval Complex (USACE 2006).

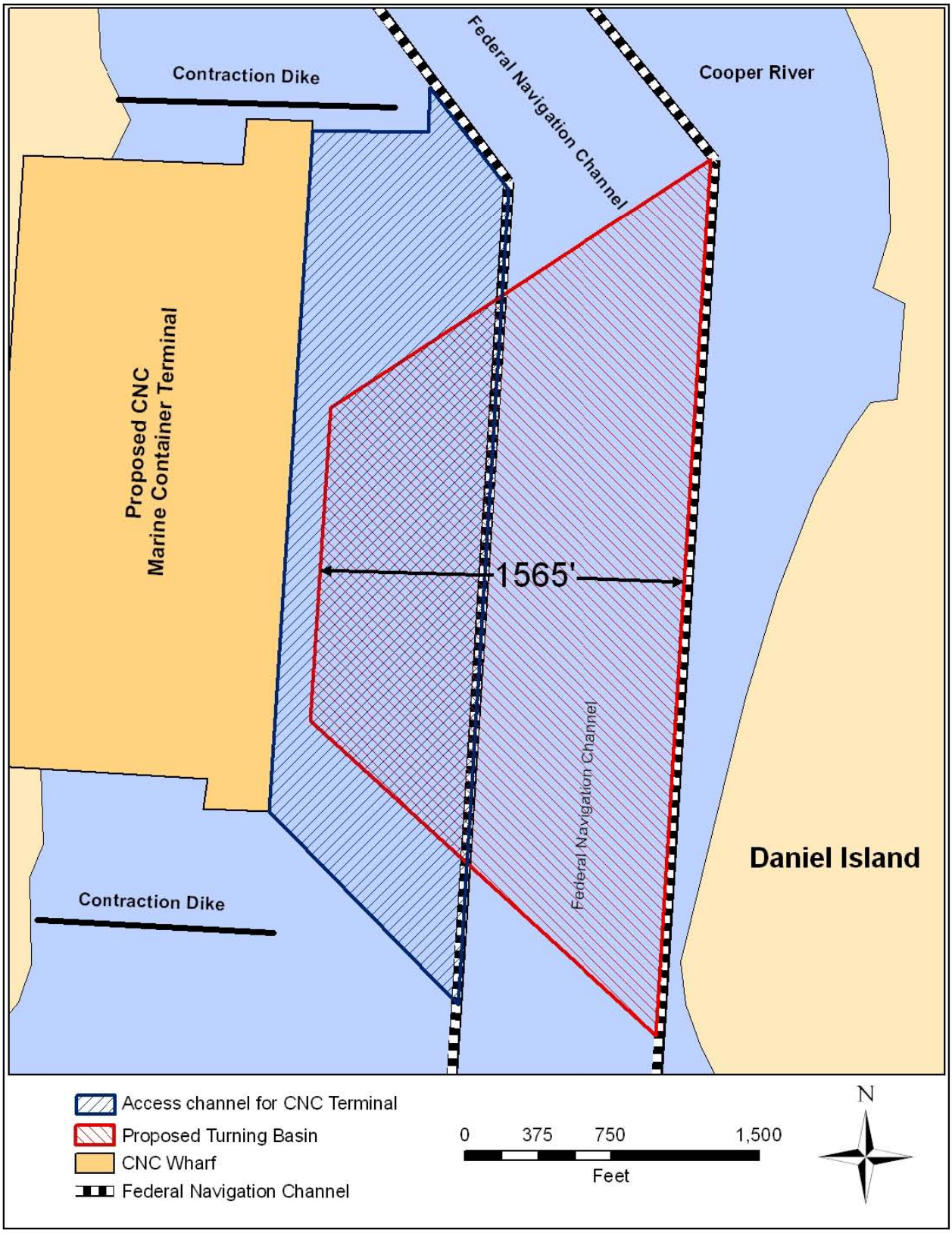

Figure 2. Location of the CNC Marine Container Terminal access area and the proposed turning basin

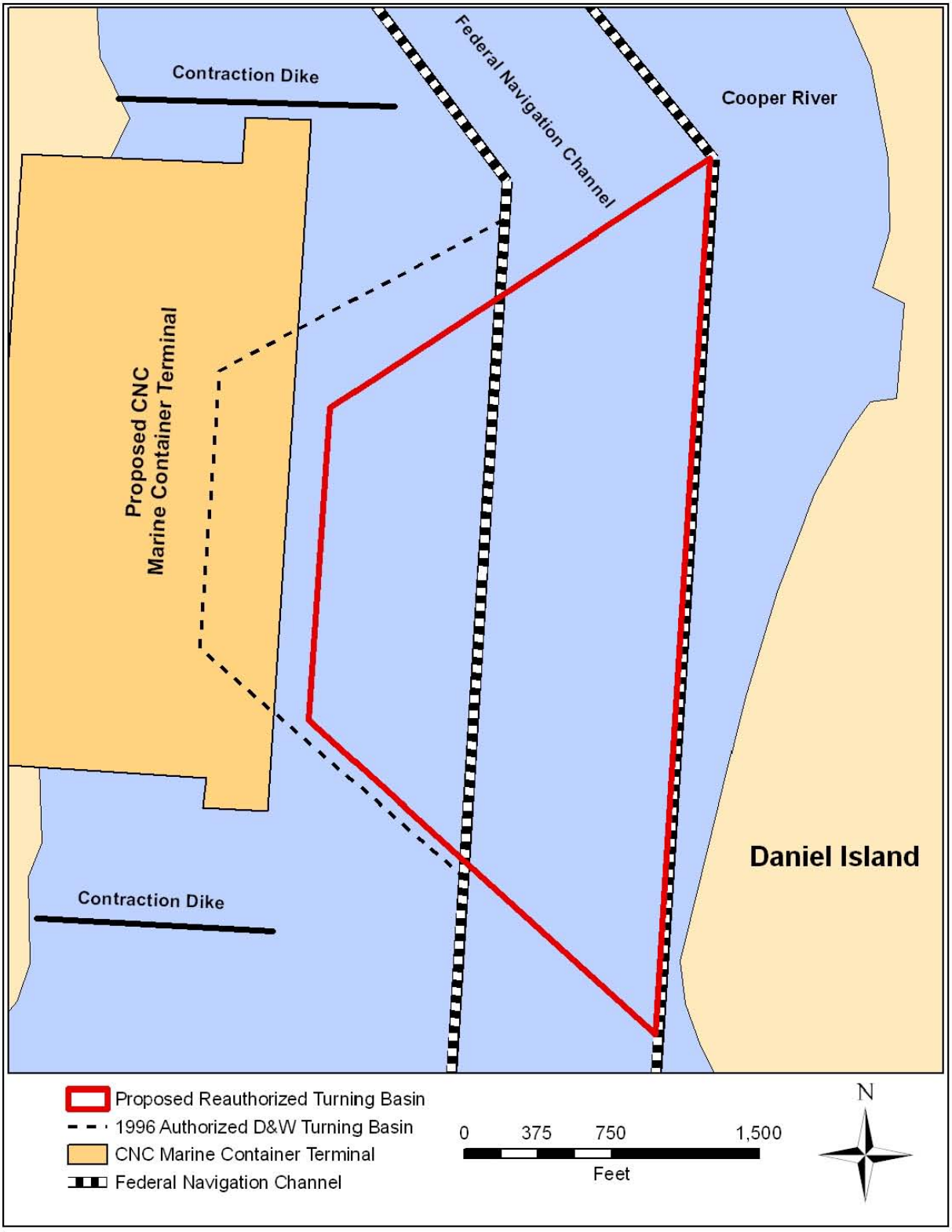

Figure 3. Location of the proposed turning basin within the footprint of the original 1996 authorized turning basin

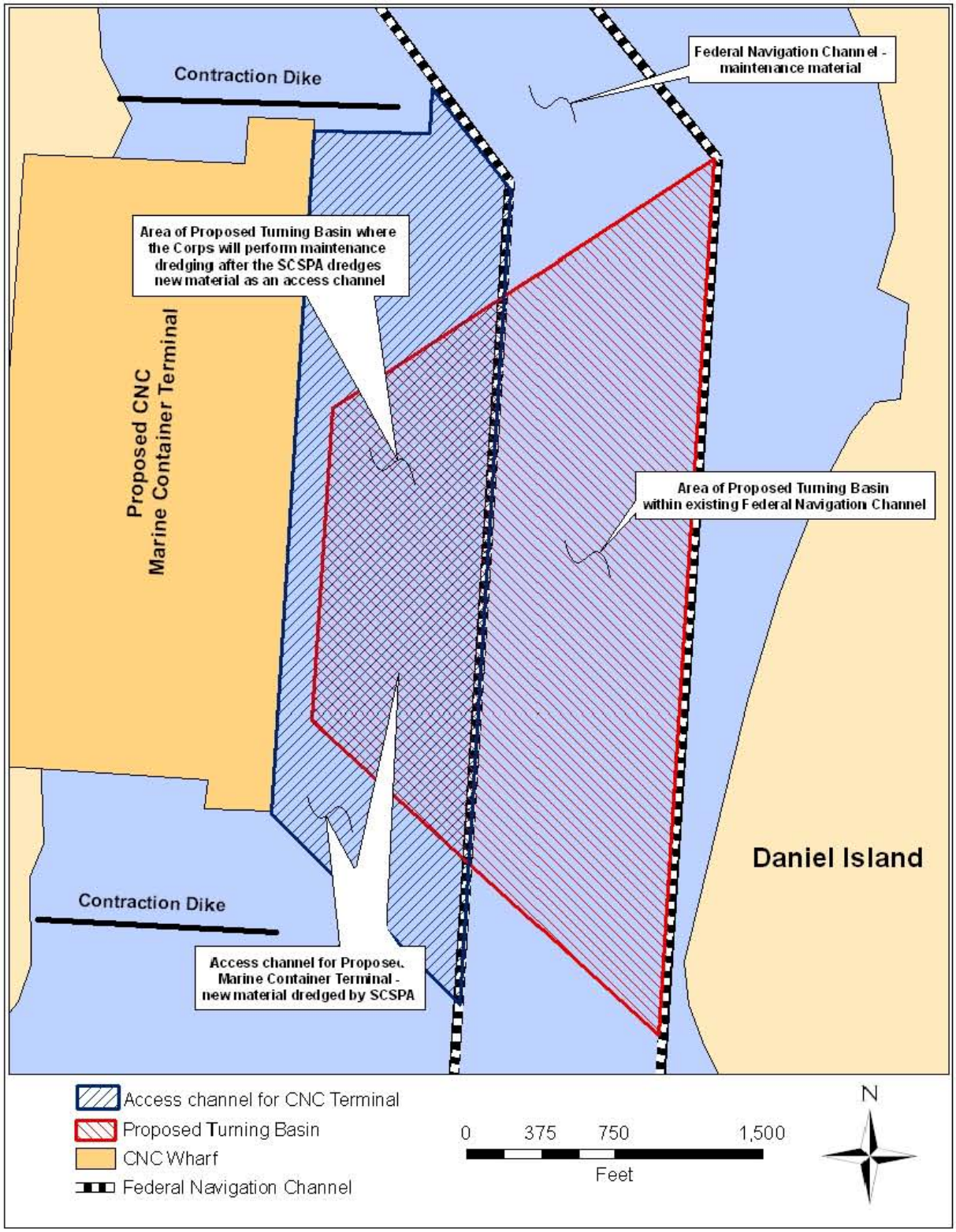

Figure 4: Location of Access Channel, Proposed Turning Basin, and Dredged Operation and Maintenance Area

2.0 ALTERNATIVES ANALYSIS

The 1996 Deepening and Widening Study identified a new turning basin to be constructed opposite the SCSPA future Daniel Island Terminal. This authorized turning basin is located along the west side of the channel in the Daniel Island Reach. It was designed to facilitate the safe operation for turning a 950 ft container ship. The turning basin was sized at 1400 ft by 1400 ft. The turning basin was never constructed because the SCSPA never constructed the terminal on Daniel Island. Over the years, container ships have gotten progressively larger. The EIS for the Proposed Marine Container Terminal at the Charleston Naval Complex includes designs for a ship that is 1043 ft in length (the Regina Maersk). The new turning basin was designed to accommodate a ship of this size. In order to do so, the turning basin had to be designed to be 1565 ft by 1565 ft. Hence, the proposed turning basin is larger than the 1996 authorized turning basin (Figures 4 and 5).

Based on input from the non-federal sponsor (the SCSPA), maintaining the turning basin in front of the new terminal best satisfies the needs of the port and the traffic utilizing the terminal facilities. The guidelines for sizing the turning basin were determined from the USACE Engineering Manual (EM) 1110-2-1613 “Hydraulic Design of Deep-Draft Navigation Projects.” Determination of turning basin alternatives was from local input and real-time ship simulation models by Marine Safety, and consists of the following:

1. Turning Basin Alternative 1 (Figure 4)
2. Turning Basin Alternative 2 (Figure 5)
3. No Action: The “no action alternative” is considered to be the use of the Ordnance Site Turning Basin, located approximately 6.5 miles up the Cooper River, although the SCSPA has approval to use their access area and federal navigation channel to turn ships calling on the Port.

The economic analysis for this project determined that travel to the Ordnance Reach is not cost justified due to a number of factors, including the increased travel distance and time involved in this alternative. Also, because the role of USACE with respect to navigation is to “provide safe, reliable, and efficient waterborne transportation systems for movement of commerce, national security needs, and recreation”, it is within the scope of Federal interest to maintain part of the access area as a turning basin for future use of the proposed port (ER 1105-2-100).

The predicted shoaling rates for alternative sites 1 and 2 are 94,000 cy/year and 112,000 cy/year, respectively. Since both Alternatives 1 and 2 provide the same benefits and the sedimentation rate is higher with Alternative 2, resulting in greater maintenance costs, Alternative 2 was eliminated from further evaluation. Note that both of these alternatives utilize the federal navigation channel as a vast majority of their area.

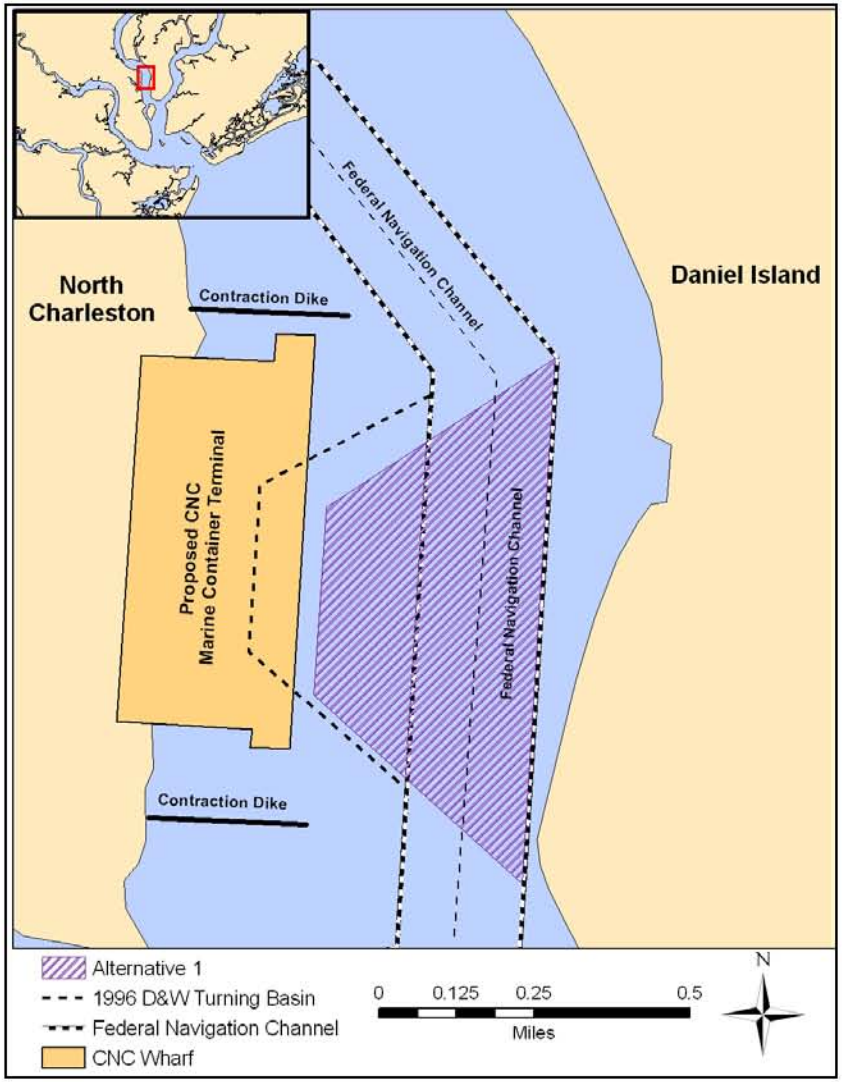

Figure 5. Turning Basin Alternative 1

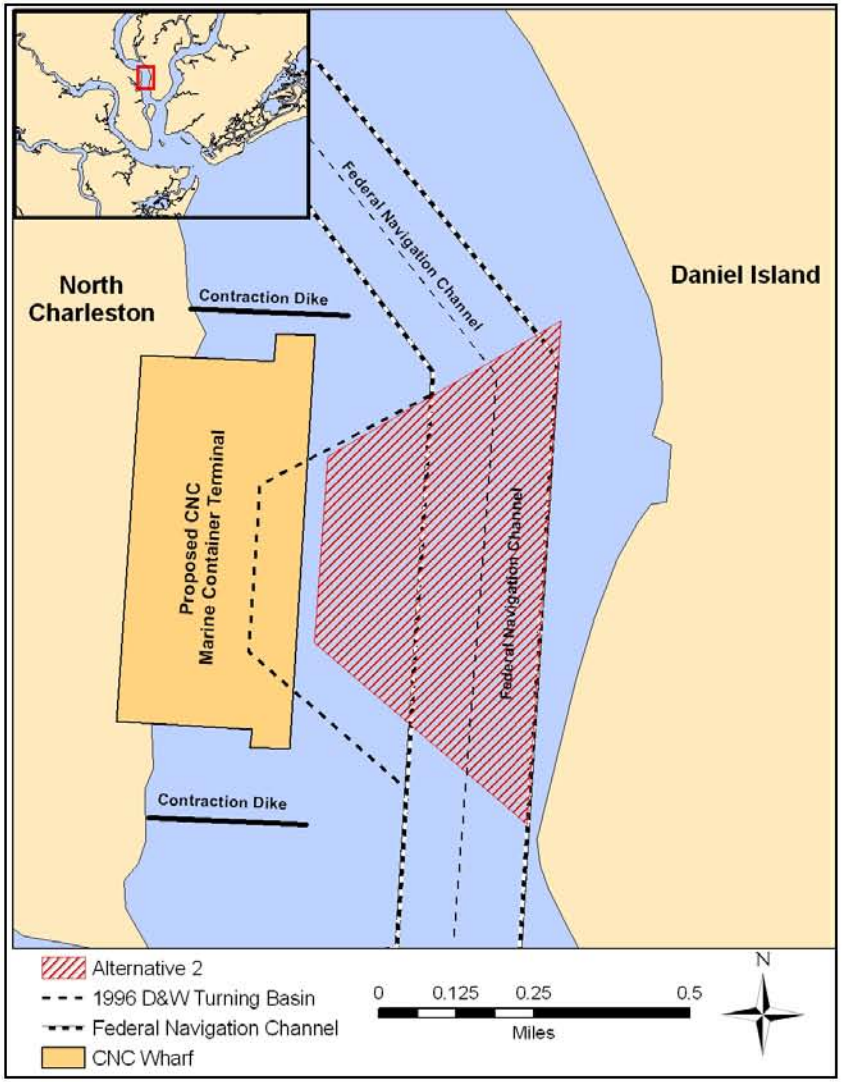

Figure 6. Turning Basin Alternative 2

3.0 AFFECTED ENVIRONMENT

3.1 General Description of the Area

The harbor covers an area of approximately 14 square miles and is formed by the confluence of the Ashley, Cooper, and Wando Rivers. The City of Charleston is located to the west of the harbor, James Island and Morris Island to the south, Mt. Pleasant and Sullivan's Island to the north and the Atlantic Ocean to the east. The majority of upland areas around Charleston Harbor are composed primarily of residential, commercial, and industrial development. Docking and maintenance facilities of the harbor are concentrated along the west shore of the Cooper River from the Battery to the mouth of Goose Creek.

The Cooper River has its origin at the confluence of its east and west branches (locally termed "The Tee") from which it flows 32 miles southward to its outlet in Charleston Harbor. The East and West Branches of the Cooper River extend some 20 miles inland in a northward direction to their origins as small ill-defined channels in a low-lying area of Berkeley County known as Ferguson Swamp.

The Ashley River originates in the coastal plain and flows into the eastern part of Charleston Harbor. The Wando River originates in the coastal plain and flows into the eastern part of Charleston Harbor. Portions of the lower Wando River are bordered by marsh which changes to woodland in the upper reaches of the river. Development along the Wando River has increased over the years with the completion of the interstate highway system. At present, residences and subdivisions are present along stretches of the river, as are a shipyard and the State Port Authority's Wando River Terminal.

The main areas within the harbor that will be impacted by this project include the navigability of the Daniel Island Reach portion of the federal navigation channel within the Cooper River, as well as the SCSPA access area immediately west of the channel. Also, the maintenance dredged material will be disposed of at the Clouter Island Confined Disposal Facility (CDF).

3.2 Climate

The climate in coastal South Carolina is subtropical. The average annual rainfall at the National Weather Service (NWS) Charleston station is 50.33 inches and is fairly well distributed throughout the year. However, local thunderstorms during the summer months cause monthly average rainfall to be slightly higher in the summer. The coldest month is January, with an average high temperature of 59.1^{o}F and an average low temperature of 39.2 ^{o}F. The warmest month is July, with the average high temperature being 89.7 ^{o}F, and an average minimum temperature of 73.1 ^{o}F.

3.3 Air Quality

The U.S. Environmental Protection Agency (EPA) Region 4 and the South Carolina Department of Health and Environmental Control, Bureau of Air Quality, regulate air quality in South Carolina. The Clean Air Act (42 U.S.C. 7401–7671q), as amended, gives EPA the responsibility for establishing the primary and secondary National Ambient Air Quality Standards (NAAQS) (40 CFR Part 50) that set acceptable concentration levels for six criteria pollutants: fine particulate matter (PM10), very fine particulate matter (PM2.5), sulfur dioxide, carbon monoxide, nitrous oxides (NOx), ozone (O3), and lead. Short-term standards (1-, 8-, and 24-hour periods) have been established for pollutants that contribute to acute health effects, while long-term standards (annual averages) have been established for pollutants that contribute to chronic health effects. On the basis of the severity of the pollution problem, areas that do not attain the standards are categorized as marginal, moderate, serious, severe, or extreme. Each state has the authority to adopt standards stricter than those established under the federal program; however, South Carolina accepts the federal standards (USEPA 2009).

Air quality in South Carolina is measured and regulated by the SC Department of Health and Environmental Control – Bureau of Air Quality. At the present time (2/9/2011), the Berkeley, Charleston, and Dorchester County region is in attainment of all National Ambient Air Quality Standards (http://www.epa.gov/air/oaqps/greenbk/ancl3.html).

3.4 Water Quality

State regulations 61-68 and 61-69 have been developed to protect the water quality of the state (SCDHEC 2004). Water quality in Charleston Harbor and in the saline portion of the Cooper River is classified as SB by the South Carolina Department of Health and Environmental Control (SCDHEC 2006). A rating of SB applies to tidal saltwater suitable for primary and secondary contact recreation, crabbing, and fishing, except for the harvesting of clams, mussels, or oysters for market purposes or consumption. These waters are also suitable for the survival and propagation of a balanced indigenous aquatic community of marine fauna and flora. Waters rated as SB should not have dissolved oxygen concentrations less than 4 mg/L and fecal coliform concentrations should not exceed a geometric mean of 200 colonies/100 mL based on five consecutive samples taken within a 30 day period; nor shall greater than 10% of the total samples examined during any 30 day period exceed 400 cfu /100mL. Turbidity is not to exceed 25 NTUs provided that existing uses are maintained. Additionally, garbage, cinders, ashes, oils, sludge, or other refuse is not allowed (SCDHEC 2008).

The progressive increase in the depth of the Federal navigation channel in the Cooper River over the past century has decreased the river bottom dissolved oxygen (DO) concentrations. Additionally, the freshwater flow into the Cooper River from Lake Moultrie affects vertical mixing and DO in the Lower Cooper River. The diversion of freshwater into the Cooper River beginning in the 1940s caused the river to shift from vertically well mixed to a more stratified condition, which decreased DO concentrations along the bottom of the river and increased sedimentation and maintenance requirements in the harbor. Following rediversion of flows and reduction of the freshwater flow into the Cooper River beginning in 1985, this stratification and sedimentation was greatly reduced. SCDHEC monitoring data in the Lower Cooper River (Station MD-045 at Daniel Island Bend) show a noteworthy decreasing trend in DO concentration prior to rediversion, but no substantial trend in DO concentration when only post-rediversion data (1986-1998) were considered (USACE 2006).

The Charleston Harbor system is not considered to be impaired under criteria of Section 303(d) of the Clean Water Act except for three areas: (1) an area 0.5 miles southeast from the mouth of Shem Creek, (2) at the Ft. Johnson pier near the South Carolina Department of Natural Resources marine science lab, and (3) the Cooper River 1 mile downstream from Noisette Creek in the Navy Yard Reach. The impairments are for copper, ammonia, and fecal coliform bacteria, respectively (SCDEHC 2010). Also, a 2002 SCDHEC Total Maximum Daily Load indicates that much of the system does not meet the applicable water quality standard for dissolved oxygen for significant periods of time and, therefore, is considered water quality limited for the purposes of wasteload allocation (WLA) development (SCDHEC 2002).

Salinity concentration in the river affects the estuarine habitat in many ways. Along with tidal inundation, salinity generally determines the marsh vegetation species; it directly affects the fish, crustacean and clam populations; and it influences the DO concentrations. Salinity in the river is also of concern from a water usage perspective. Bushy Park is a freshwater reservoir located in the upper reaches of the Cooper River and used by local industry for water supply. Salinity intrusion to the estuary can cause periodic increases in chloride concentration above acceptable limits at the reservoir. These events typically occur during periods of drought, very high tides, sustained wind conditions or storm events. To counter salinity intrusion events, there are several monitoring stations in the harbor and the freshwater discharge from

Lake Moultrie can be managed by increasing flow during these events to lower salinity concentrations in the Cooper River (USACE 2006).

3.5 Hazardous and Toxic Waste

The proposed project is primarily located in the existing navigation channel where dredging occurs on a twelve to eighteen month rotation. Because of the frequent dredging activity it was not expected that any hazardous or toxic waste would be encountered. However, bulk sediment chemistry was conducted on the sediments proposed for the deepening project. The analysis indicated that hazardous and toxic material is not present in the sediments (USACE 2006).

3.6 Sediment Analysis

Recent sediment testing includes:

1) 1996 Charleston Harbor Deepening and Widening Feasibility Study,
2) 2004 Charleston Harbor Navigation Project, and
3) 2006 USACE EIS for the Proposed Container Terminal at the Charleston Naval Complex.

1) In order to complete the 1996 Charleston Harbor Deepening and Widening Feasibility Study, sediment testing was performed in order to obtain Section 401 (of the Clean Water Act) Water Quality Certification and Section 103 (of the Marine Protection Research and Sanctuaries Act) approval for ocean disposal of dredged material. Seventeen samples were collected throughout the Cooper and Wando Rivers, as well as Charleston Harbor. Sediment testing for physical, chemical, and biological parameters was conducted on maintenance and deepening material (including new work areas). Analytical results indicated that the vast majority of sampling sites required no further testing. Relatively low levels of contaminants of concern were detected in Charleston Harbor sediments. However, polynuclear aromatic hydrocarbon (PAH) concentrations were notably higher at two sites, one in Shipyard River and one in the Cooper River near the originally proposed Daniel Island Terminal site. All analytical data was submitted to the Environmental Protection Agency (EPA) for review to determine if additional testing was needed for ocean disposal. Correspondence from the EPA dated May 18, 1995 required no additional testing at any site, with the exception of PAH's in fish tissue at the two sites mentioned above. Bioaccumulation studies were completed, and analytical results were received in October 1995 and submitted to EPA for review. A review of the information contained in the 1995 report showed that the sediments in the harbor were essentially clean and approved for ocean disposal with the exception of one site which was located within Shipyard Creek, which is a small creek north of Lower Town Creek and south of the originally authorized turning basin. This judgment was based on chemical and biological analyses using the bivalve, *M. nasuta* and the polychaete, *N. virens.* Correspondence from EPA dated November 14, 1995 approved material from all site for ocean disposal, except for the Shipyard Creek site. Dredged material from Shipyard Creek is disposed of in a CDF.

2) Additional sediment testing for the proposed turning basin was performed in 2004, and was done as part of a larger navigation project to determine the suitability of dredge material for ocean disposal in accordance with Section 103 of the Marine Protection, Research, and Sanctuaries Act of 1972 (GEC 2004). Four samples were taken within the confines of the proposed turning basin, and were composited into two samples (DI-1 and DI-2) for analysis. Additional samples were collected from Lower Town Creek and reference sites offshore. Samples were analyzed for physical, chemical, and biological parameters. Sediments collected in 2004 from Lower Town Creek and the DITB have higher levels of silt and clay than the samples collected from the rest of the harbor in the 1995 effort. However, there does not appear to be a substantive change in the chemical composition of the candidate material. Based on a comparison with previous testing results, there were no major changes since the last testing, no major spills, and no changes in the industrial development in the Port's watershed, regulatory efforts or analytical/contaminate detection/QA-QC considerations.

3) In 2006, Applied Technology and Management, performed sediment testing in order to help evaluate the reasonable project alternatives for the container terminal facility at the Charleston Naval Complex. Core samples were collected to represent "new work" and grab samples were collected to represent "maintenance" dredging sediment quality. Based on an evaluation of sediment quality, the dredged materials contain small amounts of the following Contaminants of Potential Concern (CoPC): nutrients, metals, phenols, phthalate esters, polycyclic aromatic hydrocarbons, polychlorinated byphenols, butyltins, dioxins and furans, pesticides, non-metals and other pollutants (Table 1). State and Federal agency representatives concurred that the proposed dredging and disposal of dredged material would not result in adverse impacts to the environment (USACE 2006).

While statistical analyses were not performed, review of the available data indicates that no new significant contamination has occurred since the 1995 effort. This conclusion is based on a comparison of sediment and elutriate data from the 1995 report with the results from the 2004 and 2006 sampling events.

Table 1. Percentages of sediment samples exceeding sediment screening values from the 2006 sediment sampling (USACE 2006)

Analyte Group	Sediment Reference	CNC Sediment Core Samples (geometric mean)	CNC Sediment Grab Samples (geometric mean)
Metals			
Samples less than EPA Region 4 screening values or ER-L (%)	46.6	53.3	53.3
Samples exceeding EPA Region 4 screening values or ER-L but less than ER-M (%)	40.0	46.6	40.0
Samples exceeding ER-M (%)	13.3	0.0	6.6
Organotins (Tri-n-butyltin only)			
Samples less than EPA Region 4 screening values or ER-L (%)	100.0	100.0	100.0
Samples exceeding EPA Region 4 screening values or ER-L but less than ER-M (%)	0.0	0.0	0.0
Samples exceeding ER-M (%)	0.0	0.0	0.0
Polynuclear Aromatic Hydrocarbons (C1-C4 compounds not included)			
Samples less than EPA Region 4 screening values or ER-L (%)	100.0	94.5	94.5
Samples exceeding EPA Region 4 screening values or ER-L but less than ER-M (%)	0.0	5.5	5.5
Samples exceeding ER-M (%)	0.0	0.0	0.0
Pesticides			
Samples less than EPA Region 4 screening values or ER-L (%)	48.4	77.4	51.6
Samples exceeding EPA Region 4 screening values or ER-L but less than ER-M (%)	38.7	19.4	35.5
Samples exceeding ER-M (%)	12.9	3.2	12.9
Dioxins/Furans			
Samples less than EPA Region 4 screening values or ER-L (%)	47.0	64.7	64.7
Samples exceeding EPA Region 4 screening values or ER-L but less than ER-M (%)	52.9	35.3	35.3
Samples exceeding ER-M (%)	0.0	0.0	0.0
Polychlorinated Biphenyls (Total PCBs Only)			
Samples less than EPA Region 4 screening values or ER-L (%)	100.0	0.0	0.0
Samples exceeding EPA Region 4 screening values or ER-L but less than ER-M (%)	0.0	100.0	100.0
Samples exceeding ER-M (%)	0.0	0.0	0.0

3.7 Fish and Wildlife

Charleston Harbor supports significant fish and wildlife resources including many marine and estuarine species. The estuary supports large populations of penaeid shrimp and blue crabs which are economically important species. Demersal fish species include Atlantic croaker, bay anchovy, Atlantic menhaden, spotted hake, weakfish, spot, blackcheek tonguefish, white catfish, and silver perch. Other fish of commercial or recreational value are commonly found in Charleston Harbor, including flounder, red drum, spotted seatrout, bluefish, spot, and black drum. Six anadromous fish species, Atlantic sturgeon, shortnose sturgeon, American shad, blueback herring, hickory shad, and striped bass, and one catadromous species, American eel, use Charleston Harbor and its tributaries as migration routes and spawning areas.

The Clouter Island CDF is an active dredged material disposal area and the berm surrounding the confined disposal area provides the main upland vegetated habitat. Vegetation ranges from herbaceous plants (e.g., rattlebox and verbena) to shrubs (e.g., wax myrtle, pampas grass, scrub palm, etc.) to large trees (e.g., live oak, magnolia, Bradford pears, etc.). These forests transition to tidal scrub shrub, red cedar, groundsel tree, and salt marsh elder. The vegetated areas provide suitable habitat to a variety of wildlife (USACE 2006). A survey from October 2004 to April 2005 identified many species living in the CDF, including: Eastern Cottontail Rabbit, Whitetail Deer, American Kestrel, Fox, and Gray squirrel, etc (USACE 2006).

3.8 Threatened and Endangered Species

Both the US Fish and Wildlife Service (USFWS) and the National Marine Fisheries Service (NMFS) have responsibilities under the Endangered Species Act of 1973 to protect certain species. Table 2 contains a list of threatened and endangered species by the NMFS for South Carolina waters. Tables 3 and 4 contain a list of threatened and endangered species that have been listed by the USFWS as occurring or possibly occurring in Berkeley and Charleston Counties (from list dated July 2008). These lists are similar to the lists included in the original correspondence with the USFWS and NMFS in 1996, except for one species, the flatwoods salamander (listed in 1999). The flatwoods salamander is a terrestrial species primarily found in longleaf pine forests. The species spends most of its life underground. The federal project would be within estuarine open water and within a CDF; neither of these habitats are suitable for the flatwoods salamander.

Table 2: NMFS Threatened and Endangered Species in South Carolina			
Common Name	**Scientific Name**	**Status**	**Date Listed**
Marine Mammals			
blue whale	*Balaenoptera musculus*	E	12/2/1970
finback whale	*Balaenoptera physalus*	E	12/2/1970
humpback whale	*Megaptera movaeangliae*	E	12/2/1970
North Atlantic right whale	*Eubalaena glacialis*	E	12/2/1970
sei whale	*Balaenoptera borealis*	E	12/2/1970
sperm whale	*Physeter macrocephalus*	E	12/2/1970
Turtles			
Kemp's ridley sea turtle	*Lepidochelys kempii*	E	12/2/1970
leatherback sea turtle	*Dermochelys coriacea*	E	6/2/1970
loggerhead sea turtle	*Caretta caretta*	T	7/28/1978
green sea turtle	*Chelonia mydas*	T	7/28/1978
hawksbill sea turtle	*Eretmochelys imbricata*	E	6/2/1970
Fish			
Shortnose sturgeon	*Acipenser brevirostrum*	E	3/11/1967
E - Federally endangered		*T - Federally threatened*	

Table 3: USF&WS Threatened and Endangered Species in Berkeley County

Common Name	Scientific Name	Status	Occurrence
West Indian manatee	*Trichechus manatus*	E	Possible
Bald eagle	*Haliaeetus leucocephalus*	BGEPA	Known
Wood stork	*Mycteria americana*	E	Known
Red-cockaded woodpecker	*Picoides borealis*	E	Known
Loggerhead sea turtle	*Caretta caretta*	T	Known
Flatwoods salamander	*Ambystoma cingulatum*	T	Known
Shortnose sturgeon	*Acipenser brevirostrum**	E	Known
Pondberry	*Lindera melissifolia*	E	Known
Canby's dropwort	*Oxypolis canbyi*	E	Known
Chaff-seed	*Schwalbea americana*	E	Known
Southern Dusky Salamander	*Desmognathus auriculatus*	SC	Possible
Gopher frog	*Rana capito*	SC	Known
Incised groovebur	*Agrimonia incisa*	SC	Known
Wagner's spleenwort	*Asplenium heteroresiliens*	SC	Known
Chapman's sedge	*Carex chapmanii*	SC	Known
Ciliate-leaf tickseed	*Coreopsis integrifolia*	SC	Known
Angiosperm (no common name)	*Elytraria caroliniensis*	SC	Known
Pondspice	*Litsea aestivalis*	SC	Known
Boykin's lobelia	*Lobelia boykinii*	SC	Known
Pineland plantain	*Plantago sparsiflora*	SC	Known
False coco	*Pteroglossaspis ecristata*	SC	Known
Awned meadowbeauty	*Rhexia aristosa*	SC	Known
Brown beaked-rush	*Rhynchospora pleiantha*	SC	Known
Sun-facing coneflower	*Rudbeckia heliopsidis*	SC	Known
Biltmore green briar	*Smilax biltmoreana*	SC	Known
Reclined meadow-rue	*Thalictrum subrotundum*	SC	Known
Least trillium	*Trillium pusillum var. pusillum*	SC	Known
Bachman's sparrow	*Aimophila aestivalis*	SC	Known
Henslow's sparrow	*Ammodramus henslowii*	SC	Known
Black-throated green warbler	*Dendroica virens*	SC	Known
Swallow-tailed kite	*Elanoides forficatus forficatus*	SC	Known
American kestrel	*Falco sparverius*	SC	Possible
Loggerhead shrike	*Lanius ludovicianus*	SC	Possible
Painted bunting	*Passerina ciris ciris*	SC	Known
Rafinesque's big-eared bat	*Corynorhinus rafinesquii*	SC	Known
Southeastern myotis	*Myotis austroriparius*	SC	Known
Southern hognose snake	*Heterodon simus*	SC	Known

E - Federally endangered *T - Federally threatened*

BGEPA - Bald and Golden Eagle Protection Act

SC - State Species of Concern. These species are rare or limited in distribution but are not currently legally protected under the Endangered Species Act.

Table 4: USF&WS Threatened and Endangered Species in Charleston County

Common Name	Scientific Name	Status	Occurrence
West Indian manatee	*Trichechus manatus*	E	Known
Bald eagle	*Haliaeetus leucocephalus*	BGEPA	Known
Bachman's warbler	*Vermivora bachmanii*	E	Known
Wood stork	*Mycteria Americana*	E	Known
Red-cockaded woodpecker	*Picoides borealis*	E	Known
Piping Plover	*Charadrius melodus*	T, CH	Known
Kemp's ridley sea turtle	*Lepidochelys kempii**	E	Known
Leatherback sea turtle	*Dermochelys coriacea**	E	Known
Loggerhead sea turtle	*Caretta caretta*	T	Known
Green sea turtle	*Chelonia mydas**	T	Known
Flatwoods salamander	*Ambystoma cingulatum*	T	Known
Shortnose sturgeon	*Acipenser brevirostrum**	E	Known
Sea-beach amaranth	*Amaranthus pumilus*	T	Known
Canby's dropwort	*Oxypolis canbyi*	E	Known
Pondberry	*Lindera melissifolia*	E	Possible
Chaff-seed	*Schwalbea americana*	E	Known
Southern Dusky Salamander	*Desmognathus auriculatus*	SC	Known
Gopher frog	*Rana capito*	SC	Known
Kirtland's Warbler	*Dendroica kirtlandii*	E	Known
Incised groovebur	*Agrimonia incisa*	SC	Known
Venus' fly-trap	*Dionaea muscipula*	SC	Known
Angiosperm (no common name)	*Elytraria caroliniensis*	SC	Known
Godfrey's privet	*Forestiera godfreyi*	SC	Known
Creeping St. John's wort	*Hypericum adpressum*	SC	Known
Pondspice	*Litsea aestivalis*	SC	Known
Boykin's lobelia	*Lobelia boykinii*	SC	Known
Sweet pinesap	*Monotropsis odorata*	SC	Known
Savannah or Piedmont cowbane	*Oxypolis ternata*	SC	Known
Pineland plantain	*Plantago sparsiflora*	SC	Known
False coco	*Pteroglossaspis ecristata*	SC	Known
Awned meadowbeauty	*Rhexia aristosa*	SC	Known
Bachman's sparrow	*Aimophila aestivalis*	SC	Known
Henslow's sparrow	*Ammodramus henslowii*	SC	Possible
Red knot	*Calidris canutus*	SC	Known
Black-throated green warbler	*Dendroica virens*	SC	Known
Swallow-tailed kite	*Elanoides forficatus forficatus*	SC	Known
American kestrel	*Falco sparverius*	SC	Known
American oystercatcher	*Haematopus palliatus*	SC	Known
Loggerhead shrike	*Lanius ludovicianus*	SC	Possible
Black rail	*Laterallus jamaicensis*	SC	Known
Swainson's warbler	*Limnothlypis swainsonii*	SC	Known
Painted bunting	*Passerina ciris ciris*	SC	Known
Gull-billed tern	*Sterna nilotica*	SC	Known
Rafinesque's big-eared bat	*Corynorhinus rafinesquii*	SC	Known
Southeastern myotis	*Myotis austroriparius*	SC	Known
Bull's Island white-tail deer	*Odocoileus virginianus taurinsulae*	SC	Known
Southern hognose snake	*Heterodon simus*	SC	Known
Island glass lizard	*Ophisaurus compressus*	SC	Known

E - Federally endangered *T - Federally threatened*

BGEPA - Bald and Golden Eagle Protection Act

SC - State Species of Concern. These species are rare or limited in distribution but are not currently legally protected under the Endangered Species Act.

3.9 Essential Fish Habitat

EFH is defined in the Magnuson-Stevens Fishery Conservation and Management Act as "those waters and substrate necessary to fish for spawning, breeding, feeding, or growth to maturity (16 U.S.C. 1802(10)." 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). EFH coordination was done for the SCSPA EIS and those findings are considered applicable to the current PAC for the turning basin maintenance.

All of Charleston Harbor's tidally influenced reaches and adjacent wetlands are considered EFH. Some of these areas include estuarine emergent wetlands, high salinity bay, estuaries, and seagrass habitat, oyster reefs/shell banks, intertidal flats, palustrine emergent and forested wetlands, aquatic beds, and estuarine water column (USACE 2006). Table 5 lists the recognized EFHs which occur in the project area. Other habitats exist in the harbor but those listed are the only ones in or adjacent to the project area.

Table 6 lists the species for which the South Atlantic Fishery Management Council (SAFMC) manages or has developed FMPs that may occur in the project area. The following paragraphs discuss these species' potential to occur in EFH within the project area. These descriptions are adapted from USACE (2006).

Shrimp In the southeastern United States, the shrimp industry is based on the white shrimp (*Litopenaeus setiferus*), brown shrimp (*Farfantepenaeus aztecus*), pink shrimp (*Farfantepenaeus duorarum*), and the deeper water rock shrimp (*Sicyonia brevirostri*). The royal red shrimp (*Pleoticus robustus*) also occurs in deeper water and sustains a limited harvest. For the above species, coastal inlets have been classified as Habitat Area(s) of Particular Concern (HAPC). Within the project area, this includes the estuarine and marine water columns within the inlet which includes the navigation channel. These areas are the connecting waterbodies between inshore estuarine nursery areas, offshore marine habitats used for spawning and growth to maturity. Essential Fish Habitat for rock shrimp and royal red shrimp occurs in deeper offshore waters. None of these offshore areas occur within the study area (USACE 2006).

Table 5 - Essential Fish Habitat List and Study Area Occurance

Habitat Type	Habitat Name	Project Area
Estuarine	Estuarine Emergent Wetland (tidal marsh)	Yes
Estuarine	Estuarine Scrub/shurb mangroves	No
Estuarine	Sea grass	No
Estuarine	Oyster reefs and shell banks	Yes
Estuarine	Intertidal flats	Yes
Estuarine	Palustrine emergent and forested wetland	No
Estuarine	Aquatic beds	No
Estuarine	Estuarine Water Column	Yes
Estuarine	Unconsolidated Bottom	Yes
Marine	Live/Hard bottoms	No
Marine	Coral and coral reefs	No
Marine	Artificial/manmade reefs	No
Marine	Sargassum	No
Marine	Marine water column	No

Snapper Grouper Complex Ten families of fish containing 73 species are managed by the South Atlantic Fishery Management Council (SAFMC). There is variation in specific life history patterns and habitat use among the snapper grouper species complex. Snapper grouper species utilize both benthic and pelagic habitats during their life cycle. They live in the water column and feed on zooplankton during their planktonic larval stage, while juveniles and adults are demersal and usually associate with hard structures with high relief. EFH for these species in SC includes estuarine emergent wetlands, estuarine scrub/shrub wetlands, and shellfish beds. Coastal inlets, including those waters of the Cooper River are considered Habitat Area of Particular Concern (HAPC). These areas are critical for spawning activity as well as feeding and daily movements.

Coastal Migratory Pelagics King and 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 dependent upon estuaries and, therefore, can be expected to be detrimentally affected if the productive capabilities of estuaries are greatly degraded.

Mid-Atlantic Species Which Occur in South Atlantic 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 and are common in Charleston Harbor including the vicinity of the navigation channel.

Federally Implemented Fishery Management Plan The sharks listed in Table 4 are included in the Highly Migratory Species Fishery Management Plan, and are relatively common in the Charleston Harbor. EFH for these shark species include the inlet and estuarine and shallow coastal waters all of which include the navigation channel. Diadromous (freshwater and saltwater life stages) fish that use the Cooper River include the American shad (*Alosa sapidissima*), hickory shad (*Alosa mediocris*), blueback herring (*Alosa aestivalis*), Atlantic sturgeon (*Acipenser oxyrhynchus*) and American eel (*Anguilla rostrata*); however, federally implemented fishery management plans and/or EFH designations do not exist for these species.

Table 6 - Fishery Management Plans (FMPS) and Managed Species for the South Atlantic that may Occur in the Project Area

Common Name	Species
Shrimp	
brown shrimp	*Farfantepenaeus aztecus*
pink shrimp	*Farfantepenaeus aduorarum*
rock shrimp	*Sicyonia brevirostris*
royal red shrimp	*Pleoticus robustus*
white shrimp	*Litopenaeus setiferus*
Snapper Grouper Complex	
Jack crevalle	*Caranx hippos*
gag grouper	*Mycteroperca microlepis*
black sea bass	*Centropristis striata*
mutton snapper	*Lutjanus analis*
red snapper	*Lutjanus campechanus*
lane snapper	*Lutjanus synagris*
gray snapper	*Lutjanus griseus*
yellowtail snapper	*Ocyurus chrysurus*
spadefish	*Chaetodipterus faber*
white grunt	*Haemulon plumieri*
sheepshead	*Archosargus probatocephalus*
hogfish	*Lachnolaimus maximus*
Coastal Migratory Pelagics	
king mackerel	*Scomberomorus cavalla*
Spanish Mackerel	*Scomberomorus maculatus*
cobia	*Rachycentron canadum*
Mid-Atlantic FMP species which occur in South Atlantic	
bluefish	*Pomatomus saltatrix*
summer flounder	*Paralichthys dentatus*
Federally Implemented FMP	
lemon shark	*Negaprion brevirostris*
bull shark	*Carcharhinus leucas*
blacknose shark	*Carcharhinus acronotus*
finetooth shark	*Aprionodon isodon*
dusky shark	*Carcharhinus obscurus*
bonnethead shark	*Sphyrna tiburo*
Atlantic sharpnose shark	*Rhizoprionodron terraenovae*

3.10 Land Use

Clouter Island would be the only impacted land area from this maintenance dredging project. The island has been managed as a Confined Disposal Facility for dredged material since approximately the late 1940's / early 1950's, and is primarily used for the disposal of maintenance material from the federal navigation channel. No other land use would be impacted since this project would occur within the federal channel and the SCSPA access area.

3.11 Wetlands

Coastal South Carolina supports extensive marshgrass dominated wetlands and complex tidal creek systems due to a relatively high tidal amplitude and low coastal topography. Wetlands in the immediate area of the proposed maintenance dredging include tidal estuarine wetlands, consisting predominantly of smooth cordgrass (*Spartina alterniflora)* and black rush (*Juncus roemarianus)*. High marsh areas contain sea oxeye (*Borrichia frutescens*), salt grass (*Districhlis spicata*) and salt meadow hay (*Spartina patens*),

and scrub shrub wetlands dominated by wax myrtle (*Myrica cerifera*), salt marsh elder (*Iva frutescens*), and groundsel tree (*Baccharis halimifolia*). Marsh communities have been well documented as supporting a diverse assemblage of estuarine fauna, and serving as critical nursery habitat for many juvenile species. The dense plant growth in the marsh provides excellent cover for many species of birds, aquatic and semi-aquatic mammals, reptiles and amphibians. Additionally, they are highly productive primary producers, and help attenuate overland nutrient loading to receiving waters.

3.12 Aesthetics and Noise

Aesthetics is a personal and subjective evaluation of a visual scene, and is difficult to quantify. The North Charleston area is almost completely urbanized, with land uses consisting predominantly of residential, industrial, and institutional areas. Clouter Island is undeveloped and is actively managed as a confined disposal area.

Noise can be defined as unwanted or intrusive sound. Noise impacts on the human environment range from intensity levels that interfere with communication and daily activities to those that can cause adverse health effects. Noise levels naturally decrease as the receptor moves further away from the source. Charleston Harbor has the typical noise characteristics of a busy harbor. Sources include recreational and commercial vessel traffic, dredging vessels and dock side facilities. Noise sources for vessels include cranes, whistles, and various motors for propulsion. Dockside noise sources include cranes, trucks, cars, and loading and unloading equipment. Most potential receptors will be located on land, well removed from the sources of noise typical of dredging operations.

3.13 Environmental Justice

Executive Order 12898 requires Federal agencies to develop a strategy for its programs, policies, and activities to avoid disproportionately high and adverse impacts on minority and low income populations with respect to human health and the environment. USACE is committed to the principles of environmental justice.

3.14 Cultural Resources

Following coordination with the State Historic Preservation Office (SHPO), a magnetometric survey of the navigation channel and new work areas was conducted in the summer of 1994. The survey resulted in the identification of 32 magnetic and/or acoustic anomalies. Of the 32 targets located by remote sensing, 26 could be identified as modern debris on the basis of data generated during the magnetic and acoustic survey. Of the remaining six targets, only two were located near the navigation channel where they might be subject to impacts from this project. A diving reconnaissance was conducted on these two sites in April 1995. Both targets were identified as modern debris. The draft archeological report for this project was submitted to the SHPO on June 1, 1995 with a request for comments. Final copies of the archeological report were received by this office in August 1995. Correspondence from the SHPO office dated September 7, 1995 provided concurrence with the district determinations that no cultural or historic resource would be impacted by this project (USACE 1996).

The USACE EIS (2006) for the Proposed Marine Container Terminal at the Charleston Naval Complex completed a study of historic and archeological resources in order to comply with Section 106 of the National Historic Preservation Act of 1966. Conclusions from this study are discussed in section 4.14 of this report.

4.0 POTENTIAL IMPACTS OF THE PROPOSED ACTION

USACE prepared an EIS (USACE 2006) to aid in evaluating an application for a Department of Army Permit submitted by the SCSPA regarding the construction and operation of the newly proposed Charleston Naval Complex Marine Container Terminal. Impacts associated with all aspects of the

Terminal construction and operations were addressed in the EIS, and include impacts from the construction of the access area to the new terminal. USACE proposes to take over the maintenance dredging of a portion of the access area to maintain it as a turning basin in order to fulfill its' mission of providing a safe, reliable, and efficient waterborne navigation/transportation system to the Nation. Turning basins are a valuable feature of any harbor or waterway. Since the proposed position of the turning basin results in a smaller additional footprint than the originally authorized turning basin from 1996, the impacts will be fewer than those noted in the 1996 EA (USACE 1996). In addition, since the proposed turning basin is smaller than the port terminal access area, the impacts of performing periodic maintenance dredging will be less than the impacts discussed in the 2006 EIS. The impacts of maintenance dredging of the turning basin are provided in the following sections. These impacts are summarized findings from the 1996 EA and 2006 EIS, which are incorporated (where applicable) by reference into this EA. If any changes in law, fact, or assessment have occurred, they are addressed in this EA.

4.1 Physical

Future sedimentation and maintenance dredging rates will be similar to present conditions; however, changes to the federal navigation channel may affect dredging rates. It is expected that maintenance dredging of the turning basin would occur every 18 months with a shoaling rate of approximately 94,000 cy/year of material. This material would be disposed of in the Clouter Creek CDF, and would represent an increased demand on the CDF. The demand would be

The USACE EIS determined that there would be changes in river flows and currents caused by the changes to the river morphology resultant of construction dredging (USACE 2006). Results of numerical models showed that the construction of the turning basin would cause a localized reduction in current velocities near the terminal site; however currents upstream and downstream would not see any major changes. These changes have already been authorized, and the proposed maintenance dredging would not cause any changes in currents and river velocity, since it will only be removing material in the turning basin to maintain the authorized depth.

General impacts to the physical setting of the project area are addressed in Section 5.2.1 and 5.2.2 of the USACE EIS (2006). Physical impacts more specific to dredging concerns are addressed in Section 5.2.15.3 of the USACE EIS (2006). Additionally, general impacts would be no different than those discussed in the 1996 EA.

4.2 Climate

The proposed project will have a negligible impact on the climate of the Tri-County region as a result of greenhouse gas emissions. The particulate emissions during maintenance dredging operations would represent a very small fraction of the regional air emissions, especially considering the combined impact of permitted and mobile sources.

Adverse impacts to regional climate are addressed in Section 5.2.2.1 of the USACE EIS (2006).

4.3 Air Quality

There will be a temporary and minor change in air quality as a result of exhaust from the dredge and any associated equipment, vessels, and vehicles associated with the project. Short-term increases from diesel fuel combustion emissions include nitrogen oxides (NO_x), sulfur dioxide (SO_2), carbon monoxide (CO), volatile organic carbons (VOCs), and particulate matter (PM). These emissions would be no more than the current future without project because the SCSPA would be dredging the area anyway to maintain it as an access area. Further, the coastal counties of South Carolina are in attainment for standard pollutants

at this time. The dredge is a mobile source and is not regulated by the state of South Carolina. Air quality will return to normal following the completion of each maintenance dredging project.

Adverse impacts to air quality were addressed in the 1996 EA, as well as in Sections 5.2.11 and 5.2.2.1 of the USACE EIS (2006). Impacts would likely be temporary and minor as a result of dredge and associated vehicle/vessel activity.

4.4 Water Quality

Impacts to water quality from the initial dredging of the access area by the SCSPA have been addressed in the EIS for the Proposed Marine Container Terminal at the Charleston Naval Complex (USACE 2006).

Maintenance dredging would result in temporary impacts to water quality both at the dredge site and at the dredge material disposal site's outfall pipes. For example, maintenance dredging would temporarily increase suspended sediment concentrations. As a result of this disturbance, maintenance dredging could also temporarily decrease dissolved oxygen concentrations by increasing biochemical oxygen demand within and downstream from the work area. Another potential impact could be from the release of contaminants and nutrients from the sediment. As discussed in Section 3.6, sediment was not found to be significantly contaminated. Proper maintenance dredging practices can limit water quality impacts that can result from pipeline dredging (Gilbert 1996 - USFWS Coordination Act Report in USACE 1996). Maintenance dredging is not expected to result in any long term changes to the water column since it will not be impacting the bathymetry beyond the authorized depths.

Dredging operations will also result in the discharge of effluent from the CDF. This effluent has the potential to contain high concentrations of suspended sediments. By allowing for a longer residence time, it is possible to minimize the amount of sediment discharged from the disposal area. Monitoring is performed during operations to minimize discharge of sediment. Water quality standards must be maintained during construction activities in accordance with state water quality certification requirements.

The adverse water quality effects of the maintenance dredging would likely be short term since the maintenance dredging would only occur on a periodic short-term basis. Short-term departures from the state standards will not automatically result in adverse effects to the biological community (Van Dolah et al. 2006). Additionally, the concentration increase in various water quality parameters would likely be less (spatially and concentration) than during some storms events (USACE 2006). These impacts would be no more than the current future without project because the SCSPA would be dredging the area anyway to maintain it as an access area.

A Section 401 Water Quality Certification was issued for upland disposal of dredged material associated with the original 1996 Deepening and Widening Feasibility Study by the South Carolina Department of Health and Environmental Control (SCDHEC) on May 2, 1995. This certification is still considered valid today, as there was no expiration date associated with it, the dredging methods have not changed, and the project footprint is within the originally approved area. Further, the SCDHEC, Office of Ocean and Coastal Resource Management provided a certification that the feasibility study was consistent with the Coastal Zone Management Program by letter on March 10, 1995. An amended Coastal Zone Consistency was received on February 1, 1996 for the feasibility studies project components, including the proposed Daniel Island Reach Turning Basin. The Charleston District still considers this Coastal Zone Consistency Determination valid as well.

Correspondence from the South Carolina Department of Natural Resources dated February 6, 1995 reported that the top of the Cooper Formation lies between the approximate elevations of -10 and -60 feet mean sea level with thickness varying from 200 to 260 feet. As a result, they concluded that no adverse

impacts to the existing aquifers would be expected as a result of dredging of the turning basin. This finding is still considered valid today.

4.5 Hazardous and Toxic Waste

Adverse impacts from hazardous and toxic waste are discussed in Section 5.2.14 of the USACE EIS (2006). Similar to other areas of the harbor and within the Federal Navigation Channel it is unlikely that any new material would be considered hazardous and toxic waste.

The proposed project consists of maintenance dredging and is primarily located within the existing navigation channel where dredging occurs on a 12-18 month rotation. Because of the frequent dredging activity, it is not expected that any toxic or hazardous waste would be encountered. As with any dredging operation there is the possibility of introducing hazardous or toxic materials to the environment. This chance is minimized during operations by the implementation of Environmental Protection Plans and other safety measures.

4.6 Sediment and Benthic Impact

Based on the evaluation of sediment quality, the dredged materials contain small amounts of the following contaminants of potential concern: nutrients, metals, phenols, phthalate esters, PAHs, PCBs, butylins, dioxins and furans, pesticides, and other pollutants. Impacts from dredging of aquatic sediments are addressed in Section 5.2.16 of the USACE EIS (2006), and the dredging and disposal of these sediments would not adversely impact aquatic and terrestrial wildlife by exposure to these contaminants (USACE 2006). This conclusion was supported by State and Federal agency representatives. Typically, maintenance dredging involves the removal of newly deposited material which is often times cleaner than legacy sediments because of more stringent environmental regulations and permitting.

One of the most significant short-term impacts of hydraulic dredging is the destruction of benthic invertebrates in the path of the dredge cutterhead. Adverse impacts to benthic invertebrates are addressed in Section 5.2.17 of the USACE EIS (2006). Due to the smaller footprint than the project proposed in 1996, the impacts would likely be less than those discussed in the 1996 EA.

During maintenance, all the benthic resources will be removed from the channels to be dredged, but due the rapid shoaling of similar material to what was removed, benthic organisms will begin recolonizing the disturbed areas in a short time. The greatest concentrations of benthic invertebrates in the Charleston Harbor estuary occur in and around salt marshes in lieu of the deeper channelized areas. Benthic organisms within the salt marsh will not be impacted by periodic dredging. The main benthic impacts will occur within the turning basin, where periodic maintenance on a 12 to 18 month rotation will result in the temporary removal of benthic infauna and epifauna. It should be noted that the proposed turning basin will be maintained from an area that will have been already deepened, and will be maintained anyway when the port is constructed. Impacts would be temporary as some studies indicate that benthic organisms will recolonize the dredge site quickly (Allen and Hardy 1980). However, due to frequent disturbance for over 100 years, the navigation channel populations will probably not achieve the diversity and numerical abundance of an undisturbed area with similar substrate, depth, and water quality conditions. The benthic organisms likely to occur in the dredging area are short-lived species that are adapted to recurrent disturbance and capable of rapid recolonization. However, since the dredging will be occurring in previously dredged areas the post-project conditions would be similar to the pre-project conditions. These impacts would be no more than the current future without project because the SCSPA would be dredging the area anyway to maintain it as an access area.

4.7 Fish and Wildlife

Dredge cutterhead action poses a threat of physical injury or mortality to species in its path. However, the mobility of the majority of fish species enables them to avoid this potential danger. Early life stages of fish species (e.g. embryonic and larval stages) would be more vulnerable to mortality from dredging activity due to their limited mobility. Actual mortality of these early life forms in significant numbers is unlikely unless they occur in great densities (USACE 1978 and Gilbert USFWS Coordination Act Report in USACE 2006). Impacts specific to the maintenance dredging are addressed in the 1996 EA and in the associated Fish and Wildlife Coordination Act Report. These impacts would be no more than the current future without project because the SCSPA would be dredging the area anyway to maintain it as an access area.

4.8 Threatened and Endangered Species

The 1996 EA concluded that there are potential impacts to threatened/endangered sea turtles related to hopper dredging. However, the current proposed project for maintaining the turning basin would employ the use of a cutterhead dredge, which has rarely been implicated in takings of sea turtles or sturgeons. This is primarily because they advance at such a slow pace and are noisy, giving mobile sea turtles and sturgeon ample opportunity to relocate (NMFS ESA Consultation App R in USACE 2006 and NMFS 1997). In addition, measures to provide manatee protection if construction occurs during summer months (May 15 – Oct 15) will be incorporated in the plans and specifications. Correspondence from the National Marine Fisheries Service (NMFS) and the US Fish and Wildlife Service (USFWS) dated March 6, 1995 and January 30, 1995, respectively, provided documentation that the District had concluded its consultation responsibilities under Section 7 of the Endangered Species Act. Since the project is in the same location as the 1996 authorized turning basin, and the footprint is actually smaller than the original turning basin, this coordination is still considered valid for the current study. These impacts would be no more than the current future without project because the SCSPA would be dredging the area anyway to maintain it as an access area.

All of the species that may be impacted by the proposed action are under the jurisdiction of the National Marine Fisheries Service (NMFS) except for the West Indian manatee. Since the proposed action involves maintenance dredging only, the NMFS species fall under the NMFS 1997 southeast regional biological opinion (NMFS 1997). A new biological assessment (BA) has been prepared by the Corps of Engineers (USACE 2008) to update the 1997 BO. National Marine Fisheries Service is anticipated to release their new BO in 2011. When this document is finalized, harbor maintenance will be conducted accordingly, but until then the 1997 BO remains in effect and dredging will be conducted in accordance with it.

4.8.1 NMFS Species

Whales: Blue, finback, humpback, and right whales. None of these whales occur in the upper harbor so dredging will not impact them.

Seaturtles: Green, hawksbill, Kemp's ridley, leatherback and loggerhead sea turtles. No beach disposal is planned as part of the proposed action; therefore, there will be no impact to nesting seaturtles. A bucket and barge dredge and hydraulic pipeline dredge are not known to frequently take seaturtles and a hopper dredge is not proposed in the turning basin; therefore, dredging operations are not likely to impact seaturtles. Under the 1995 and 1997 biological opinions (NMFS 1995 & 1997), NMFS determined that cutterhead pipeline dredging may affect but is not likely to adversely affect sea turtles. In contrast to hopper dredges, pipeline dredges are relatively stationary and therefore act on only small areas at any given time. The cutterhead works most efficiently buried within thick sediment deposits and is not frequently exposed to open water when dredging.

Shortnose Sturgeon: Shortnose sturgeon occur within most major river systems along the Atlantic Coast of North America including the Santee/Cooper River complex and shortnose sturgeon have been documented in the systems since the late 1800's (NMFS 1998 and USACE 2008). Based on the history of incidental take data collected, both hydraulic cutterhead and mechanical dredge techniques have been documented to infrequently impact shortnose sturgeon species through entrainment of the cutterhead or capture in the clamshell bucket. The proposed action is not likely to adversely impact shortnose sturgeon.

4.8.2 Fish and Wildlife Service Species

West Indian Manatee: The manatee is an occasional visitor to Charleston Harbor during warmer months. Due to low occurrence in the harbor, dredging impacts are not anticipated. However, precautions to protect manatee have been added to the dredging specifications. In summary these precautions are as follows: *It is the responsibility of the Contractor to take necessary precautions to avoid any contact with manatees. If manatees are sighted within 100 yards of the dredging area, all appropriate precautions shall be implemented to ensure protection of the manatee. The Contractor shall stop, alter course, or maneuver as necessary to avoid operating moving equipment any closer than 50 feet of the manatee. Operation of equipment closer than 50 feet to a manatee shall necessitate immediate shutdown of that equipment.*

With these restrictions in place, dredging may affect but is not likely to adversely affect the West Indian manatee.

4.9 Essential Fish Habitat (EFH)

An EFH assessment was submitted to the National Marine Fisheries Service for this project and the findings of this assessment can be found in Appendix A. The major EFH to be impacted by this project is within the estuarine water column. Overall water quality impacts of the proposed action are expected to be short-term and minor. During maintenance there will be an increase in turbidity in the immediate area of dredging operations. Localized turbidity and decreases in DO near the project site may cause the temporary displacement of fish species from the dredging area. Adults of most species are mobile and should be able to avoid harm; however, some slow moving animals may be injured. Living estuarine resources dependent upon good water quality are not expected to experience significant adverse impacts due to water quality changes. Given the size of the study area and the scope of the proposed project, the fishery resource of Charleston Harbor would not be significantly impacted by the proposed project. In their review of the EFH assessment, NMFS stated that they have "no objection to the Charleston District assuming the maintenance dredging of the Daniel Island Reach turning basin once it is constructed by the SCSPA" (Letter dated February 2, 2010).

4.10 Land Use

There would be no land use changes associated with the maintenance dredging of a turning basin in the Daniel Island Reach of the Cooper River.

4.11 Wetlands

All dredging will be conducted in the existing navigation channel and within the previously authorized turning basin (USACE 1996) and currently permitted access area (USACE 2006). Therefore there will be no wetland impacts as a result of this project.

A 404 (b) (1) evaluation was issued for the original 1996 Deepening and Widening Project and these findings are still considered valid since this project is smaller than, and within, the same footprint as the originally authorized turning basin.

4.12 Aesthetics and Noise

Aesthetics is a personal and subjective evaluation of a visual scenes that can be difficult to quantify, and is therefore limited to discussing the probable changes in the viewshed if the maintenance is performed. The temporary increase in dredging equipment would create a minor, but temporary, impact on the view for viewers both land-side and shore-side considering the large port proposed to be constructed there. This temporary change would be observed by anyone navigating the project area by commercial or recreational vessels during project operations. However, these impacts are temporary and will not affect the preservation of this coastal setting. Aesthetic parameters would return to normal following the construction period.

Light impacts of dredging operations and maintenance would also be minimal. The location of the dredge in the river and the localized lighting would not impact surrounding areas. Also, because Clouter Island (the proposed disposal site) is undeveloped and used as a disposal area, there are no potential receptors at the disposal site (USACE 2006).

There would be an increase in the ambient noise level during the maintenance dredging of the project. However, the noise level would pose minimal impact to residential communities surrounding the project because of their relatively far location from the project. These impacts would be no more than the current future without project because the SCSPA would be dredging the area anyway to maintain it as an access area.

4.13 Environmental Justice

Due to the location of the dredging site and the disposal area in the Cooper River and Clouter Island, respectively, and there relative distance from residential areas, there will be no impacts to any neighborhood communities.

4.14 Cultural Resources

A cultural resource investigation was completed in 1995. No cultural or historical resources were identified in the study area. The USACE EIS for the proposed container terminal also indicated that the proposed project, including the access area, would have no impact on cultural or historical resources (USACE 2006). Additionally, maintenance dredging would not affect any archaeological resources within the area of concern because no underwater archaeological resources were identified in the Federal Navigation Channel (USACE 2006). They concluded that the construction of the terminal and dredging of the river would have no effect on historic or cultural resources within the area of potential effect (USACE 2006). Typically, maintenance dredging operations have no impact on historical resources since those projects are only removing recently deposited material.

4.15. Dredged Material Disposal

One impact of maintaining the Daniel Island Turning Basin will be the increased demand on the capacity in the existing disposal area at Clouter Island. This impact is not expected to significantly affect the long-term use of the CDF. In fact, since the federal government would not be responsible for the initial dredging of the access area, all that material would be left out of the Clouter Island CDF. The 1996 study authorized the addition of that new work material, as well as maintenance material, to the CDF. The current proposal would result in less material going to the Clouter CDF than originally proposed in 1996. The current project would not significantly impact the approved Charleston Harbor Dredged Material Management Plan, Preliminary Assessment (USACE 2009).

4.16. Cumulative Impacts

The primary cumulative impact associated with maintenance dredging would be the additional material placed in the Clouter Island CDF, and the resultant loss of capacity. Since dredging of the turning basin

can likely be incorporated into the maintenance dredging of the Federal Navigation channel this project would not cause substantially longer durations of equipment operation in the river. Another cumulative impact would be from the subsequent raising of the perimeter dikes to meet the disposal needs of the CDF. Re-handling of dried dredged material could impact air quality in the area immediately surrounding the CDF. However, the dust should settle out before it reaches any residential or commercial areas.

5.0 UNAVOIDABLE ENVIRONMENTAL IMPACTS

This assessment has examined the potential impacts of the proposed project on the habitat and listed species of plants and animals that are, or have been, present in the project area. Both primary and secondary impacts to habitat have been considered. The majority of adverse environmental impacts resultant of a temporary increase in noise and air pollution would occur during the maintenance dredging operations. Based on this analysis, the following determinations have been made:

- There would be a temporary increase in noise and air pollution during the maintenance dredging operations.
- There would be a temporary increase in turbidity which would have a temporary impact on water quality at the dredging site.
- There would be a temporary disruption of fish and wildlife species at the dredge and disposal site.
- There would be a temporary disruption of the benthic community in the navigation channel with each maintenance event.

Table 7 - Relationship of the Proposed Action to Federal Laws and Policies

(Items identified as being in "Full Compliance" assumes their compliance status upon completion of the NEPA process)

Public Laws

Title of Public Law	US Code	Compliance Status
Abandoned Shipwreck Act of 1987	43 USC 2101	Full Compliance
American Indian Religious Freedom Act	42 USC 1996	Not Applicable
Agriculture and Food Act (Famland Protection Act) of 1981	7 USC 4201 et seq.	Not Applicable
American Folklife Preservation Act of 1976, as ammended	20 USC 2101	Not Applicable
Anadromous Fish Conservation Act of 1965, As Ammended	16 USC 757 a et seq.	Full Compliance
Antiquities Act of 1906, As Ammended	16 USC 431	Full Compliance
Archeological Resources Protection Act of 1979, As Amended	16 USC 469	Full Compliance
Bald Eagle Act of 1972	16 USC 470	Not Applicable
Buy American Act	16 USC 668	Full Compliance
Civil Rights Act of 1964 (Public Law 88-352)	41 USC 102	Full Compliance
Clean Air Act of 1972, As Amended	42 USC 7401 et seq.	Full Compliance
Clean Water Act of 1971, As Amended	33 USC 1251 et seq.	Full Compliance
Coastal Barrier Resources Act of 1982	16 USC 3501-3510	Full Compliance
Coastal Zone Management Act of 1972, As Ameded	16 USC 1451 et seq.	Full Compliance

Table 7 - Con't		
Comprehensive Environmental Responses, Compensation and Liability Act of 1980	42 USC 9601	Not Applicable
Conservation of Forest Lands Act of 1960	16 USC580 mn	Not Applicable
Contract Work Hours	40 USC 327	Full Compliance
Convict Labor	18 USC 4082	Full Compliance
Copeland Anti-Kickback	40 USC 276c	Full Compliance
Davis Bacon Act	40 USC 276	Full Compliance
Deepwater Port Act of 1974, As Amended	33 USC 1501	Full Compliance
Emergency Flood Control Funds Act of 1955, As Amended	33 USC 701m	Not Applicable
Emergency Wetlands Resources Act	16 USC 3901-3932	Full Compliance
Endangered Species Act of 1973	16 USC 1531	Full Compliance
Estuary Program Act of 1968	16 USC 1221 et seq.	Full Compliance
Equal Opportunity	42 USC 2000d	Full Compliance
Farmland Protection Policy Act	7 USC 4201 et seq.	Not Applicable
Federal Environmental Pesticide Act of 1972	7 USC 136 et seq.	Full Compliance
Federal Water Project Recreation Act of 1965, As Amended	16 USC 4601	Full Compliance
Fish and Wildlife Coordination Act of 1958, As Amended	16 USC 661	Full Compliance
Flood Control Act of 1944, As Amended, Section 4	16 USC 460b	Full Compliance
Flood Security Act of 1985 (Swampbuster)	16 USC 3811 et seq.	Not Applicable
Hazardous Substance Response Revenue Act of 1980, As Amended	26 USC 4611	Not Applicable
Historic and Archeological Data Preservation	16 USC 469	Full Compliance
Historic Sites Act of 1935	16 USC 461	Full Compliance
Jones Act	46 USC 292	Full Compliance
Land and Water Conservation Fund Act of 1965	46 USC 4601	Not Applicable
Magnuson Fishery Conservation and Management Act	16 USC 1801	Full Compliance
Marine Mammal Protection Act of 1972, As Amended	16 USC 1361	Full Compliance
Marine Protection, Research and Sanctuaries Act of 1972	33 USC 1401	Full Compliance
Migratory Bird Conservation Act of 1928, As Amended	16 USC 715	Full Compliance
Migratory Bird Treaty Act of 1918, As Amended	16 USC 703	Full Compliance
National Environmental Policy Act of 1969, As Amended	42 USC 4321 et seq.	Full Compliance
National Historic Preservation Act of 1966, As Amended	16 USC 470	Full Compliance
National Historic Preservation Act Amendments of 1980	16 USC 469a	Full Compliance
Native American Religious Freedom Act of 1978	42 USC 1996	Not Applicable
Native American Graves Protection and Repatriation Act	25 USC 3001	Full Compliance
National Trails System Act	16 USC 1241	Not Applicable
Noise Control Act of 1972, As Amended	42 USC 4901 et seq.	Full Compliance
Rehabilitation Act (1973)	29 USC 794	Full Compliance
Reservoir Salvage Act of 1960, As Amended	16 USC 469	Not Applicable
Resource Conservation and Recovery Act of 1976	42 USC 6901-6987	Not Applicable
River and Harbor Act of 1888, Sect 11	33 USC 608	Not Applicable
River and Harbor Act of 1889, Sections 9, 10, 13	33 USC 401-413	Full Compliance
River and Harbor and Flood Control Act of 1962, Section 207	16 USC 460	Not Applicable
River and Harbor and Flood Control Act of 1970, Sections 122, 209, and 216	33 USC 426 et seq.	Full Compliance
Safe Drinking Water Act of 1974, As Ammended	42 USC 300f	Full Compliance

Table 7 - Con't		
Shipping Act	46 USC 883	Full Compliance
Submerged Lands Act of 1953	43 USC 1301 et seq.	Full Compliance
Superfund Amendments and Reauthorization Act of 1986	42 USC 9601	Not Applicable
Surace Mining Control and Reclamation Act of 1977	30 USC 1201-1328	Not Applicable
Toxic Substances Control Act of 1976	15 USC 2601	Not Applicable
Uniform Relocation and Assistance and Real Property Acquisition Policies Act of 1970, As Ammended	43 USC 4601 et seq.	Full Compliance
Utilization of Small Business	15 USC 631, 644	Full Compliance
Vietnam Veterans	38 USC 2012	Not Applicable
Executive Orders		
Title of Executive Order	**Exec. Order Number**	**Compliance Status**
Protection and Enhancement of Environmental Quality	11514/11991	Full Compliance
Protection and Enhancement of the Cultural Environment	11593	Full Compliance
Floodplain Management	11988	Full Compliance
Protection of Wetlands	11990	Full Compliance
Federal Compliance with Pollution Control Standards	12088	Full Compliance
Environmental Effects Abroad of Major Federal Actions	12114	Not Applicable
Offshore Oil Spill Pollution	12123	Full Compliance
Procurement Requirements and Policies for Federal Agencies for Ozone-Depleting Substances	12843	Full Compliance
Federal Compliance with Right-To-Know Laws and Pollution Prevention	12856	Full Compliance
Federal Actions to Address Environmental Justice and Minority and Low-Income Populations	12898	Full Compliance
Implementation of the North American Free Trade Agreement	12889	Full Compliance
Energy Efficiency and Water Conservation at Federal Facilities	12902	Full Compliance
Federal Acquisition and Community Right-To-Know	12969	Full Compliance
Protection of Children from Environmental Health Risks and Safety Risks	13045	Full Compliance
Coral Reef Protection	13089	Full Compliance
Greening the Government Through Waste Prevention, Recycling and Federal Acquisition	13101	Full Compliance
Invasive Species	13112	Full Compliance
Greening the Government Through Leadership in Environmental Management	13148	Full Compliance
Marine Protected Areas	13158	Full Compliance
Consultation and Coordination with Indian Tribal Governments	13175	Not Applicable
Responsibilities of Federal Agencies to Protect Migratory Birds	13186	Full Compliance
Executive Order Facilitation of Cooperative Conservation	13352	Full Compliance

6.0 COORDINATION WITH OTHERS

The project is designed to be fully compliant with all environmental requirements including NEPA, the Endangered Species Act, Sections 404 and 401 of the Clean Water Act, Coastal Zone Management Act, National Historic Preservation Act, etc. Copies of the Draft Environmental Assessment and Finding of No Significant Impact were sent to approximately 40 agencies/organizations/tribes/individuals for

coordination and consultation. The following is coordination from the 1996 study that is still considered valid today, due to the fact that the project is still authorized and because of its' smaller footprint:

- South Carolina Department of Health and Environmental Control – Section 401 (of the Federal Clean Water Act) certification, received on May 2, 1995
- South Carolina Department of Health and Environmental Control – Office of Ocean and Coastal Resource Management – Coastal Zone consistency determination received on February 1, 1996
- United States Fish and Wildlife Service – Coordination Act Report received on January 29, 1996
- National Oceanic and Atmospheric Administration – National Marine Fisheries Service – Coordination under Section 7 of the Endangered Species Act of 1973

7.0 CONCLUSIONS

The authorized turning basin is being modified as a result of the relocation of the SCSPA's new terminal. The proposed periodic maintenance dredging of the Daniel Island Reach Turning Basin will be necessary if the construction of the Marine Container Terminal at the Charleston Naval Complex is completed. If it is constructed, an access area for the berthing of the ships will need to be constructed. Utilizing this access area and the federal navigation channel as the turning basin for container ships will eliminate the need to dredge a greater area of the river. The no-action alternative is using the Ordnance Reach turning basin located 6.25 miles up the Cooper River. The economic analysis for this project determined that this option is not cost justified due to a number of factors, including the increased travel distance and time involved in this alternative. Additionally, the footprint of the proposed project is smaller than the originally authorized turning basin from the 1996 Charleston Harbor Deepening and Widening Project.

The environmental impacts from the periodic maintenance dredging of the proposed turning basin will only be temporary in nature, and conditions should return to normal post dredging operations. Impacts primarily involve the removal of sediments with a dredge and the associated disposal activity. As discussed, benthic invertebrate communities, because of their limited mobility, would likely be temporarily adversely affected by the periodic dredging. While the communities will likely recover over time, long term recovery is unlikely due to the cyclical and periodic necessity of dredging operations. This is not expected to have a significant impact on the ecological integrity of the harbor as a whole. Also, water quality impacts, such as increased turbidity and decreased dissolved oxygen, and the temporary displacement of nekton in the area of the cutterhead, will be minor and temporary in nature.

Were USACE not to maintain the turning basin, the area would still continue to be dredged by the SCSPA as an access area to the terminal. The SCSPA proposes that all material dredged from the Cooper River will be placed in the Daniel Island CDF, which is located on the southern end of Daniel Island between the Wando and Cooper Rivers. The Daniel Island CDF consists of three diked cells with a combined area of 651 acres. Therefore, the only difference would be disposing of maintenance dredged material to a different CDF. Designating the turning basin will add value to the Nation due to its use in fulfilling the Corps' mission to "provide safe, reliable, and efficient waterborne transportation systems for movement of commerce, national security needs, and recreation".

Environmental risks from the dredging operations (i.e., spills, leaks, equipment malfunction, etc.) will be minimized by the implementation of Environmental Protection Plans, which would be approved for each dredging project. The proposed action does not constitute a major Federal action significantly affecting the quality of the human environment; therefore, the preparation of an Environmental Impact Statement (EIS) is not required.

8.0 REFERENCES

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Appendix A

Essential Fish Habitat Assessment

Charleston Harbor

Proposed Daniel Island Reach Turning Basin

Essential Fish Habitat Assessment

Charleston Harbor
Proposed Daniel Island Reach Turning Basin

January 5, 2009

Proposed Project:

The US Army Corps of Engineers, Charleston District, proposes to assume the maintenance dredging of a proposed turning basin in the Daniel Island Reach of the Federal Navigation Channel. The turning basin would be constructed by the South Carolina State Ports Authority to the authorized depth of the navigation channel (-45 feet plus 2 feet of advance maintenance and 2 feet of allowable overdredge). If constructed, the maintenance dredging of the turning basin would occur during maintenance dredging of the navigation channel and material would be disposed of at the Clouter Creek Confined Disposal Facility (CDF). The predicted shoaling rate within the proposed turning basin is 94,000 cy/y, and dredging would likely occur on an 18 month cycle along with dredging of the Federal Navigation Channel.

Project Background:

The Charleston Harbor Federal Navigation Channel is located in Charleston Harbor, South Carolina which lies approximately 15 miles south of the midpoint along the South Carolina coastline (Figure 1). It is approximately 140 statute miles southwest of the entrance to the Cape Fear River, North Carolina and 75 statute miles northeast of the Savannah River. Charleston Harbor is a tidal estuary fed by the Ashley, Cooper, and Wando Rivers. The entrance to the harbor is protected by two granite and rubble mound jetties, 2900 feet apart, which extend from Sullivan's Island to the north and Morris Island to the south. Its location along the South Atlantic Seaboard permits ready access to European and South American ports.

In 1996, the US Army Corps of Engineers prepared a Final Feasibility Report and Environmental Assessment for the Charleston Harbor Deepening and Widening Project. The 1996 authorization included: dimensions for the new entrance channel; interior channels and turning basins; realignment of select reaches; construction and removal of contraction and training dikes; and the construction of a 1,400 by 1,400 foot turning basin at the former Navy Base. All of the 1996 authorized changes have been completed with the exception of the turning basin at the former Navy Base, which was not constructed since it was contingent upon the construction of a six-berth terminal on Daniel Island.

The South Carolina State Port Authority (SCSPA) has replaced the plan to construct the Daniel Island terminal with a 3-berth terminal across the river at the former Navy Base site on the neck of the Charleston peninsula. The new location of the terminal impacts the previously authorized turning basin. Due to the newly proposed Charleston Naval Complex terminal, the USACE is reevaluating the originally authorized, but unconstructed, turning basin from the 1996 Deepening and Widening project.

The selected and authorized site is between the federal contraction dikes in the same location as the previously authorized Daniel Island Reach Turning Basin. The SCSPA has already received permits to construct the terminal, dredge, and maintain the access area to the terminal. No new

material would be dredged by the USACE for this project. The currently proposed federal action is solely to maintain a portion of the authorized access area as a turning basin. The turning basin will be partly within the authorized navigation channel and partly within the authorized access area (Figure 2). Furthermore, the location of the proposed turning basin is within the footprint of the 1996 authorized turning basin (Figure 2). This smaller footprint will result in fewer impacts during maintenance dredging activities when compared to the turning basin authorized in 1996. Presently, the Corps' is authorized to maintain the navigation channel, so the reauthorization is for the portion of the authorized access area that would partially serve as a turning basin.

Presently, it is expected that the SCSPA will perform the dredging required for initial construction of the turning basin. This dredging will be performed as part of the dredging for the access area to the proposed new port terminal. Under this scenario, the Corps will only perform the periodic maintenance dredging of the turning basin. Therefore, this EFH assessment is only for those impacts that would result from USACE's periodic maintenance dredging.

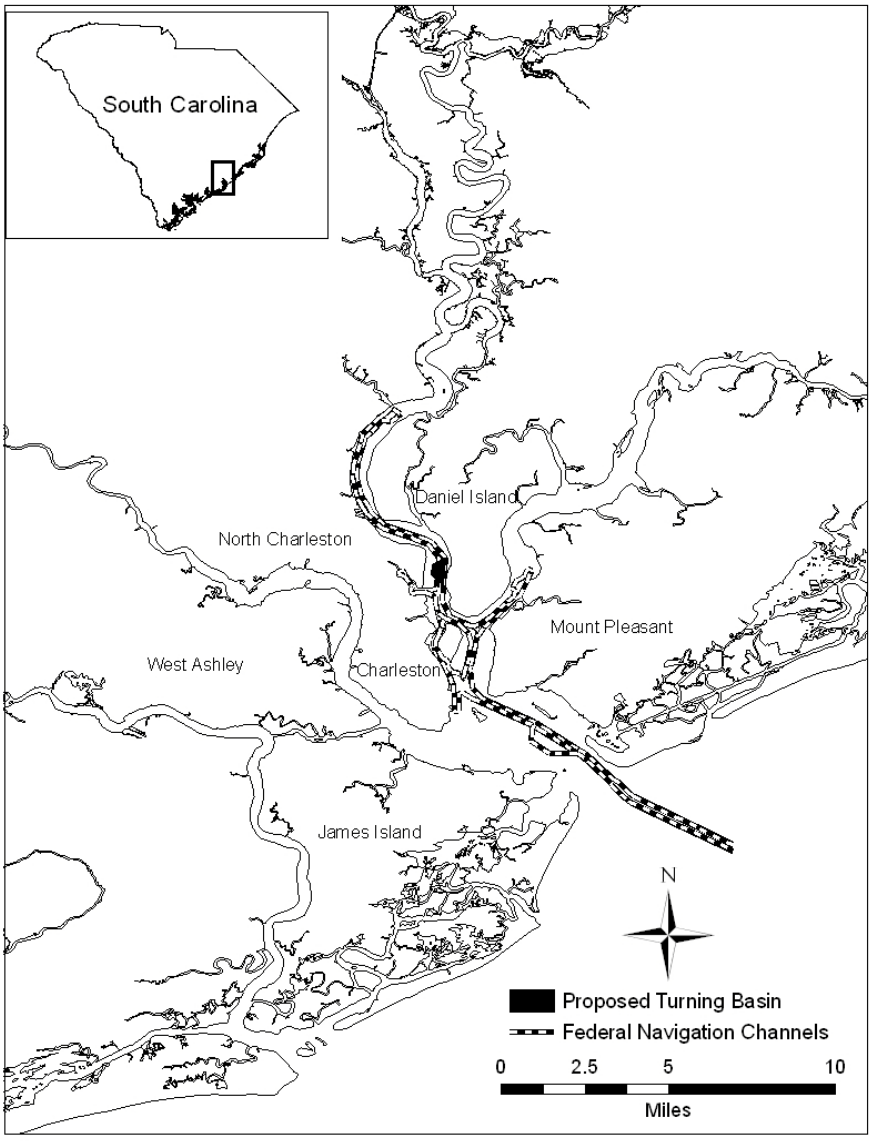

Figure 1. Location Charleston Harbor Federal Navigation Channel

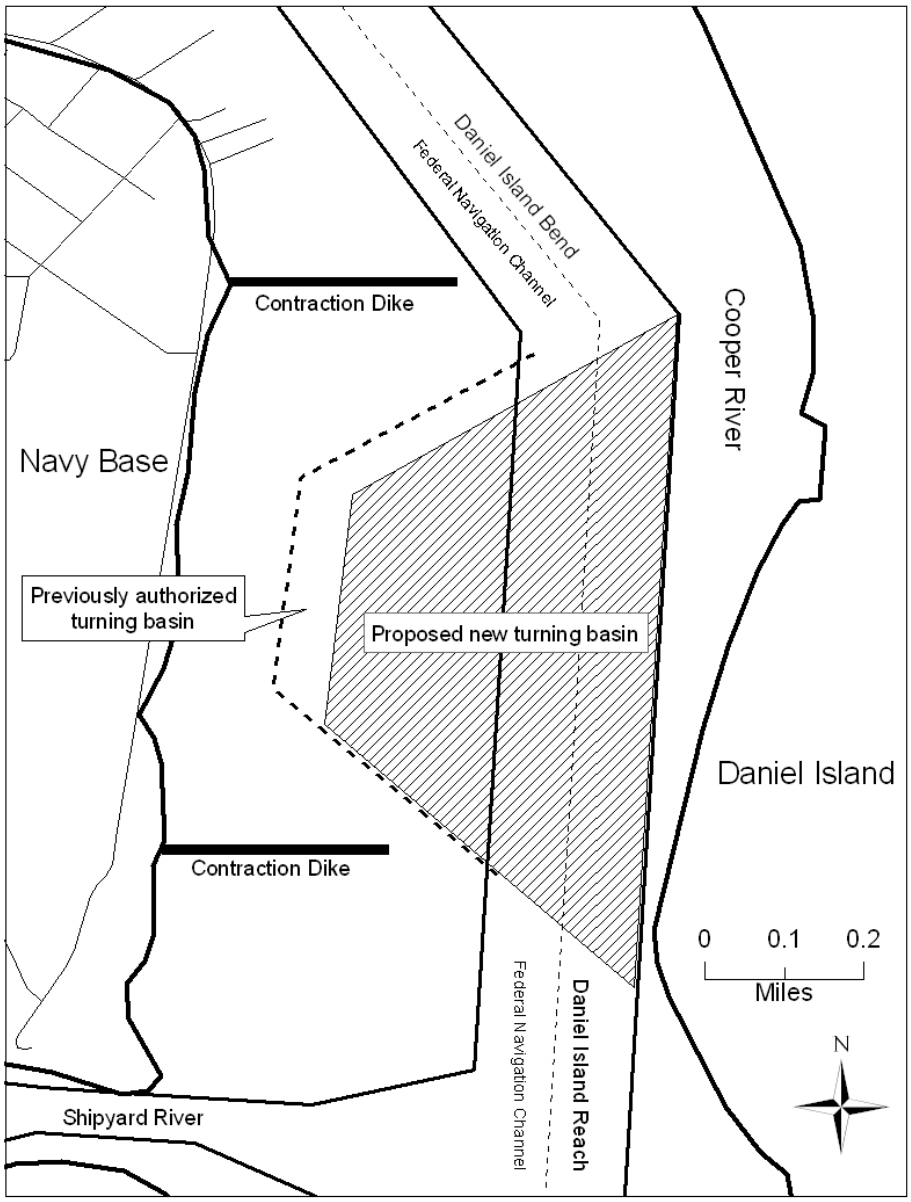

Figure 2. Location of the proposed turning basin within the footprint of the original 1996 authorized turning basin (not to scale)

Essential Fisheries Habitat, Managed Species, and Habitat Areas of Particular Concern

The 1996 Congressional amendments to the Magnuson-Stevens Fishery Conservation and Management Act (MSFCMA) (PL 94-265) set forth new requirements for the National Marine Fisheries Service (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 Magnuson-Stevens Fishery Conservation and Management Act as "those waters and substrate necessary to fish for spawning, breeding, feeding, or growth to maturity (16 U.S.C. 1802(10)." 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). EFH coordination was done for the SCSPA EIS and those findings are considered applicable to the current PAC for the turning basin maintenance.

Charleston Harbor supports significant fish and wildlife resources including many marine and estuarine species. The estuary supports large populations of penaeid shrimp and blue crabs which are economically important species. Demersal fish species include Atlantic croaker, bay anchovy, Atlantic menhaden, spotted hake, weakfish, spot, blackcheek tonguefish, white catfish, and silver perch. Other fish of commercial or recreational value are commonly found in Charleston Harbor, including flounder, red drum, spotted seatrout, bluefish, spot, and black drum. Six anadromous fish species, Atlantic sturgeon, shortnose sturgeon, American shad, blueback herring, hickory shad, and striped bass, and one catadromous species, American eel, use Charleston Harbor and its tributaries as migration routes and spawning areas.

All of Charleston Harbor's tidally influenced reaches and adjacent wetlands are considered EFH. Some of these areas include estuarine emergent wetlands, oyster reefs/shell banks, intertidal flats, aquatic beds, and estuarine water column. Table 1 identifies Fishery Management Plans and managed species that may occur within the project area.

Shrimp In the southeastern United States, the shrimp industry is based on the white shrimp (*Litopenaeus setiferus*), brown shrimp (*Farfantepenaeus aztecus*), pink shrimp (*Farfantepenaeus duorarum*), and the deeper water rock shrimp (*Sicyonia brevirostri*). The royal red shrimp (*Pleoticus robustus*) also occurs in deeper water and sustains a limited harvest. For the above species, coastal inlets have been classified as HAPC. Within the project area, this includes the estuarine and marine water columns within the inlet which includes the navigation channel. These areas are the connecting waterbodies between inshore estuarine nursery areas, offshore marine habitats used for spawning and growth to maturity. Essential Fish Habitat for rock shrimp and royal red shrimp occurs in deeper offshore waters. None of these offshore areas occur within the study area.

Snapper Grouper Complex Ten families of fish containing 73 species are managed by the South Atlantic Fishery Management Council (SAFMC). There is variation in specific life history patterns and habitat use among the snapper grouper species complex. Snapper grouper species utilize both benthic and pelagic habitats during their life cycle. They live in the water column and feed on zooplankton during their planktonic larval stage, while juveniles and adults are demersal and usually associate with hard structures with high relief. EFH for these species in SC includes estuarine emergent wetlands, estuarine scrub/shrub wetlands, and shellfish beds. Coastal inlets, including those waters of the Cooper River are considered Habitat Area of Particular Concern (HAPC). These areas are critical for spawning activity as well as feeding and daily movements.

Coastal Migratory Pelagics King and 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.

Mid-Atlantic Species Which Occur in South Atlantic 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 and are common in Charleston Harbor including the vicinity of the navigation channel.

Federally Implemented Fishery Management Plan The sharks listed in Table x are included in the Highly Migratory Species Fishery Management Plan, and are relatively common in the Charleston Harbor. EFH for these shark species include the inlet and estuarine and shallow coastal waters all of which include the navigation channel. Diadromous (freshwater and saltwater life stages) fish that use the Cooper River include the American shad (*Alosa sapidissima*), hickory shad (*Alosa mediocris*), blueback herring (*Alosa aestivalis*), Atlantic sturgeon (*Acipenser oxyrhynchus*) and American eel (*Anguilla rostrata*); however, federally implemented fishery management plans and/or EFH designations do not exist for these species.

Table 1 - Fishery Management Plans (FMPS) and Managed Species for the South Atlantic that may Occur in the Project Area

Common Name	Species
Shrimp	
brown shrimp	*Farfantepenaeus aztecus*
pink shrimp	*Farfantepenaeus aduorarum*
rock shrimp	*Sicyonia brevirostris*
royal red shrimp	*Pleoticus robustus*
white shrimp	*Litopenaeus setiferus*
Snapper Grouper Complex	
Jack crevalle	*Caranx hippos*
gag grouper	*Mycteroperca microlepis*
black sea bass	*Centropristis striata*
mutton snapper	*Lutjanus analis*
red snapper	*Lutjanus campechanus*
lane snapper	*Lutjanus synagris*
gray snapper	*Lutjanus griseus*
yellowtail snapper	*Ocyurus chrysurus*
spadefish	*Chaetodipterus faber*
white grunt	*Haemulon plumieri*
sheepshead	*Archosargus probatocephalus*
hogfish	*Lachnolaimus maximus*
Coastal Migratory Pelagics	
king mackerel	*Scomberomorus cavalla*
Spanish Mackerel	*Scomberomorus maculatus*
cobia	*Rachycentron canadum*
Mid-Atlantic FMP species which occur in South Atlantic	
bluefish	*Pomatomus saltatrix*
summer flounder	*Paralichthys dentatus*
Federally Implemented FMP	
lemon shark	*Negaprion brevirostris*
bull shark	*Carcharhinus leucas*
blacknose shark	*Carcharhinus acronotus*
finetooth shark	*Aprionodon isodon*
dusky shark	*Carcharhinus obscurus*
bonnethead shark	*Sphyrna tiburo*
Atlantic sharpnose shark	*Rhizoprionodron terraenovae*

Impact Summary for EFH:

No changes to EFH will occur do to the proposed maintenance dredging activities of this project. EFH impacts resultant of the construction of the turning basin are addressed with the USACE EIS on the Proposed Marine Container Terminal at the Charleston Naval Complex in 2006. As a result of the proposed project, minimal impacts are expected since the turning basin will have already been constructed by the SCSPA, and maintenance dredging will only involve the removal of maintenance material. There will however be short term disturbances to EFH due to the dredging of the area. The primary impact of dredging is to larval fish as they pass through the rivers in route to their estuarine nursery areas. The larval fish are not very mobile and those along the bottom of the navigation channel can be affected by dredging. A pipeline dredge removes sediment in a watery slurry, and larvae can be entrained within this slurry. However, due to the minimal increase in maintenance dredging area, these impacts will likely be insignificant to the fisheries health of Charleston Harbor. Additional impacts to fisheries could occur from the additional amount of time that effluent will be discharging from the disposal site. CDF effluent can cause increased turbidity in the receiving waterbodies. The additional effluent as a result of the proposed project would be minimal since dredging will occur simultaneously with dredging of the Navigation Channel. In summary, impacts to EFH from the additional maintenance dredging of the proposed new Turning Basin should not differ substantially from the impacts projected from the maintenance dredging described in the feasibility report and EA from 1996, and the fishery impact on the Charleston Harbor would not be significantly altered by the proposed project.

UNITED STATES DEPARTMENT OF COMMERCE
National Oceanic and Atmospheric Administration
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February 2, 2010 F/SER4:KD/pw

(sent via electronic mail)

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Charleston, SC 29403

Attention: Mark J. Messersmith

Dear Mr. Shirey:

NOAA's National Marine Fisheries Service (NMFS) reviewed the Essential Fish Habitat (EFH) Assessment, dated January 5, 2010, for the Daniel Island reach turning basin, Charleston Harbor, Charleston County. The US Army Corps of Engineers proposes to assume the maintenance dredging of the turning basin once it is constructed by the South Carolina State Ports Authority (permit 2003-1T-016). Maintenance dredging of the turning basin would occur during maintenance of the federal navigation channel, and the dredged material would be placed in the Clouter Creek Confined Disposal Facility. The predicted shoaling rate within the proposed turning basin is 94,000 cubic yards per year. The Charleston District's initial determination is that this project would not have a substantial adverse impact on EFH or federally managed fishery species. 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).

Effects of the Proposed Action on Essential Fish Habitat
The US Army Corps of Engineers proposes to assume the maintenance dredging of Daniel Island reach turning basin once it is constructed by the South Carolina State Ports Authority. Impacts to EFH from construction of the turning basin were examined by NMFS during our evaluation of the permit application for the expansion of the Port of Charleston to the Charleston Naval Complex (letters dated December 16, 2005; February 16, 2006; March 10, 2006, October 12, 2006; February 2, 2007; and April 25, 2007). In summary, impacts to shallow-water habitat that served as EFH for penaeid shrimp and snapper-grouper species concerned NMFS, and the final permit includes a compensatory mitigation plan that should offset those impacts. The EFH Assessment for the maintenance of the Daniel Island reach turning basin does not propose additional impacts to EFH. NMFS would, however, note that limiting dredging to winter months has the potential to further reduce impacts to fishery species.

EFH Consultation Duration
In 1996, the Charleston District completed a Final Feasibility Report and Environmental Assessment for the Charleston Harbor Deepening and Widening Project. This Environmental Assessment was prepared before the Magnuson-Stevens Act was amended to include its EFH provisions; hence the assessment does

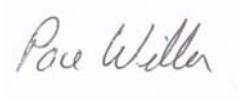
not include an EFH Assessment. Two federal actions since 1996 have triggered EFH Assessments of small portions of the federal channel: the Environmental Assessment titled *Charleston Harbor Additional Advanced Maintenance Dredging, Charleston Harbor, South Carolina* (dated July 2009) and the present EFH Assessment for the maintenance dredging of Daniel Island reach turning basin.

An EFH Assessment is needed for the operation and maintenance of the Charleston federal navigation channel. Considering this need, the reduced scope of the current EFH Assessment, the likelihood within the next several years of the Charleston District investigating the feasibility of deepening the federal navigation channel, the variability of conditions within the harbor, and the value to synchronizing the various EFH assessments for Charleston federal navigation channel, NMFS views the outcome of the current EFH consultation to be valid no more than 10 years from the date of our letter for the Environmental Assessment titled *Charleston Harbor Additional Advanced Maintenance Dredging, Charleston Harbor, South Carolina;* i.e., September 1, 2009. If during that period NMFS or the Charleston District become aware of additional information that leads either agency to conclude adverse impacts to EFH may occur from continued operation or maintenance of the channel, re-initiation of the EFH consultation may be necessary.

Conclusion
NMFS has no objection to the Charleston District assuming the maintenance dredging of the Daniel Island reach turning basin once it is constructed by the South Carolina State Ports Authority. We would like to work with the District to update the 1996 Environmental Assessment for the maintenance of the federal channels within Charleston Harbor to include a comprehensive EFH Assessment.

Thank you for the opportunity to provide these comments. Related questions or comments should be directed to the attention of Pace Wilber at our Charleston field office, 219 Ft Johnson Rd, Charleston SC 29412. He may be reached by telephone at 843-953-7200 or by e-mail at Pace.Wilber@noaa.gov.

Sincerely,



/ for

Miles M. Croom
Assistant Regional Administrator
Habitat Conservation Division

cc:

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