



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

Southeast Regional Office
263 13th Avenue South
St. Petersburg, FL 33701-5505
(727) 824-5305; FAX (727) 824-5308
<http://sero.nmfs.noaa.gov>

JAN 25 2011

F/SER

Colonel Jeffrey M. Hall
District Commander
U.S. Army Engineer District, Savannah
ATTN: PD
Post Office Box 889
Savannah, Georgia 31402-0889

Dear Colonel Hall:

The National Oceanic and Atmospheric Administration's (NOAA) National Marine Fisheries Service (NMFS), Southeast Region has received the *Draft Tier II Environmental Impact Statement for the Savannah Harbor Expansion Project, Chatham County, Georgia and Jasper County, South Carolina* (DEIS) and *Draft General Re-evaluation Report for the Savannah Harbor Expansion Project, Chatham County, Georgia and Jasper County, South Carolina* (DGRR). NMFS Southeast Region is a cooperating agency with the Corps of Engineers, Savannah District (COE), for this project under the National Environmental Policy Act, and NMFS is also engaged in consultation with the COE for the project's effects on essential fish habitat (EFH) and endangered and threatened species, under the Magnuson-Stevens Fishery Conservation and Management Act and the Endangered Species Act (ESA), respectively. Further, the Water Resources Development Act of 1999 authorizes the Secretary of Commerce to approve the selected plan and determine that the associated mitigation plan adequately addresses the potential environmental impacts of the project.

Over the last two years NMFS has provided comments on the proposed project, as well as requests for information needed to better understand the potential impacts of the project on NMFS' trust resources. Many of these issues have been addressed through ongoing discussions with the COE, but some key issues remain outstanding. Enclosed we provide comments on the project, based on the DEIS and DGRR, which address project concerns related to EFH and ESA trust resources. We believe these remaining issues need to be resolved, and the resulting revised information incorporated into the Final Environmental Impact Statement. We will continue to work with the COE to seek mutually acceptable resolution of remaining issues.

Of paramount importance to NMFS is assuring the impacts of the project do not threaten the continued existence of the shortnose sturgeon, an endangered species that still persists in the Savannah River. The sturgeon's remaining foraging and refuge habitat is largely



within the Harbor, and the dredging and hydrological changes of the project will degrade large portions of this habitat, rendering it unsuitable for shortnose sturgeon. The two deficiencies of the DEIS and mitigation plan relating to shortnose sturgeon highlighted here are preventing us from fully evaluating project impacts on this species and significantly affecting the adequacy of the proposed mitigation plan.

Habitat Suitability Assessment for Shortnose Sturgeon

The habitat suitability assessment provided in the DEIS for shortnose sturgeon contains inconsistencies and deficiencies, which we have identified in discussions with the COE on multiple occasions. Thank you for your personal involvement in proposing and participating in yesterday's video conference to clarify these issues. We look forward to receiving the information and analyses we requested as soon as possible so we can have a complete assessment of the project's impact to shortnose sturgeon habitat, which is necessary for us to be able to comment meaningfully on the different project alternatives. At this time, we are unable to make any recommendations about the acceptability of any of the proposed deepening alternatives. However, we may offer specific depth recommendations after receiving the information and analyses that we discussed on the call and highlighted in the enclosure.

These inconsistencies and deficiencies in the sturgeon habitat assessment are also preventing us from initiating consultation on the project under section 7 of the ESA. NMFS expects to issue a biological opinion on project impacts within 135 days of the date these issues are resolved.

Mitigation for Sturgeon Impacts at the New Savannah Bluff Lock and Dam

While the impacts of the proposed project on endangered shortnose sturgeon cannot be fully understood prior to completing section 7 consultation, proposed dredging and hydrological changes are expected to have substantial adverse effects on that species' foraging and refuge habitat. Adequately mitigating for this habitat loss will require re-establishing access to habitat above the New Savannah Bluff Lock and Dam (NSBLD). The NSBLD is the lowest dam on the Savannah River and impedes the sturgeon's movement upstream. Because the SHEP is expected to remove downstream habitat, without additional access upstream, overall habitat will be greatly reduced. Access to currently unavailable upstream habitat will mitigate this habitat constriction.

As currently proposed the COE's fish passage is not likely to be successful in passing sturgeon to justify its use as mitigation against the much more certain impacts of the harbor deepening. If a fish passage structure is to be used as mitigation for impacts of the harbor deepening there will need to be extensive changes to the proposed design. Even if an effective design can be agreed upon, the fish passage structure would require maintenance and repair in perpetuity. The removal of the NSBLD is our preferred method to allow sturgeon access to upstream habitats. In comparison to the uncertain success and impermanence of the proposed passage structure, removal of the NSBLD would certainly restore access to upriver habitat in perpetuity. Additionally, cost information we included in our enclosed comments indicates removal would be the less expensive option in the short- and long-term. Such action would be consistent with the

COE Savannah District's recommendation in the September 2000 report on the NSBLD disposition study.

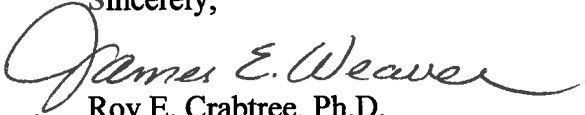
We are aware that, as a Congressionally-authorized structure, the COE would be required to seek Congressional authorization to remove the NSBLD. However, the COE must also seek authorization for the increased costs of the Savannah Harbor Expansion Project. Combining these authorization requests presents an ideal opportunity to redress the environmental damage of the COE's legacy dam while advancing the modern economic benefits of the project.

With respect to the EFH consultation, NMFS believes three key topics of information require further attention, and we request this information be included in the FEIS.

- First, the Ocean Bar Channel Extension is a project feature added relatively late to the project design. One consequence of the feature is that hardbottom habitat may be adversely affected by dredging the channel extension. In addition, additional dredge material will need to be placed in the area of the potential hardbottom dredging impact. To date, the COE has assured NMFS that surveys will be completed of the bar channel extension and that this survey information will be adequate to describe potential impacts of dredging to hardbottom habitat. Further, the areas where the additional dredged material will be placed support important managed species including red snapper. The dredge material has been proposed to be placed and configured in a way that would provide suitable fishery habitat in the impacted hardbottom areas. To fully assess the likely success of this mitigative measure, NMFS requests plans be included in the FEIS for the dredge material placement and configuration as well as information on monitoring the effectiveness and durability of these features.
- Second, dredge material is proposed for placement at a feeder berm near Tybee Island. This material is intended to replenish the beaches of Tybee Island downstream of the feeder berm. To ensure this result is likely, NMFS requests modeling be conducted to demonstrate the likely fate and disposition of the material placed at the Tybee Island feeder berm.
- Third, although considerable progress has been made in developing the Monitoring and Adaptive Management Plan described in DEIS Appendix D, NMFS requests further elaboration in two areas:
 - The Plan should specify criteria for evaluating the success of mitigation measures and should clearly articulate triggers for implementing corrective action as indicated by monitoring results and determined necessary in coordination with the resource agencies.
 - The Plan presently proposes to monitor wetlands and marshes for use by finfish but does not include monitoring of invertebrates such as shrimp and crabs. As key components of the ecosystem and as managed stocks (in the case of white shrimp), NMFS believes it is very important to understand the response of these species to the altered dynamic equilibrium that will be established in the estuary following project construction.

We appreciate the COE's efforts to identify and resolve the many technical and conservation issues associated with this large, complex, and potentially very important project. We will continue to provide interagency coordination on this project under all our authorities and to work with the COE to bring the remaining issues to resolution. Our primary contact for endangered species issues is Ms. Kay Davy. She may be reached by phone at (954) 356-6791 or by e-mail at Kay.Davy@noaa.gov . Questions regarding EFH may be addressed to Pace Wilber at (843) 762-8601 or by e-mail at Pace.Wilber@noaa.gov .

Sincerely,


For Roy E. Crabtree, Ph.D.
Regional Administrator

Enclosure

**National Marine Fisheries Service (NMFS) Comments on:
Draft Tier II Environmental Impact Statement for the Savannah Harbor Expansion
Project, Chatham County, Georgia and Jasper County, South Carolina (DEIS) and
Draft General Re-evaluation Report for the Savannah Harbor Expansion Project,
Chatham County, Georgia and Jasper County, South Carolina (DGRR)**

January 25, 2010

As indicated in our letter dated November 24, 2010, NMFS is conducting a joint consultation pursuant to the essential fish habitat (EFH) provisions of the Magnuson-Stevens Fishery Conservation and Management Act and section 7 of the Endangered Species Act of 1973, as amended, on the Savannah Harbor Expansion Project (SHEP).

Section 7 of the Endangered Species Act (ESA)

NMFS Protected Resources Division has reviewed information included in the DEIS, the DGRR, and subsequent information that has been provided by the Savannah District Army Corps of Engineers (COE). The following comments on the protection of endangered species under NMFS' authority are based on the current information available. We will be providing additional comments with the issuance of the upcoming Biological Opinion.

Affected Species

Sea Turtles

Deepening of the Savannah Harbor Entrance Channel and construction of the Channel Extension will require dredging to be conducted over a long project period. The COE has proposed the use of hopper dredges for the offshore dredging in the project area. NMFS believes the use of hopper dredges over an extended time period greatly increases the chances of impact with sea turtles and may make it necessary to use relocation trawling as an aid in their protection. The revision of the new South Atlantic Regional Biological Opinion (SARBO) is underway and may contain additional measures to be implemented. Regardless of whether or not the SARBO is completed by the time the project dredging is to begin; the COE should be pro-active in its commitment to protect sea turtles. The Biological Opinion to be issued in conjunction with our review of SHEP is likely to provide additional recommendations and estimates on turtle take.

North Atlantic Right Whales

NMFS has strong concerns about the proposed use of hopper dredges and the adherence to speed limits in the project area. The COE provided project-specific information regarding their proposal to adhere to the 10-knot speed restriction and provided a statement that can be found in Appendix B, page 99 of the DEIS. The information states that the COE will adhere to the 10-knot speed restriction for hopper dredges during calving season and adhere to the new South Atlantic Regional Biological Opinion (which addresses vessel speeds), once it is finalized.

NMFS acknowledges the COE's commitment to adhere to the 10-knot speed restriction. However, we note that on page 181 of Appendix B of the DEIS it states: "...hopper dredges will be restricted to 10 knots when loaded with material transiting to disposal areas and to 12 knots when light-loaded returning from disposal areas during the calving season." Subsequent personal communication with staff within the COE's South Atlantic Division confirmed that the vessel speed when loaded and when light-loaded will be 10 knots. The information should be correctly stated in the FEIS to reflect the COE's commitment to adhere to the 10-knot speed restriction.

Recent Proposed Listing of Atlantic Sturgeon

The Atlantic sturgeon was recently proposed for listing. If the listing becomes final before section 7 consultation is concluded, a discussion of the project effects on the species will be included in the Biological Opinion. If a decision has not been reached, Atlantic sturgeon will be included by Conference under section 7 of the ESA.

Since so very little information is known about Atlantic sturgeon in the Savannah River, we will need to make some basic assumptions based on the best available data. It is known that adult Atlantic sturgeon can tolerate high salinities and are often found in the ocean, so we can assume that they would also be found utilizing the entire lengths of the Front, Middle, and Back Rivers. Project effects could impact Atlantic sturgeon. Low dissolved oxygen could limit the availability of acceptable habitat and the proposed hydrological modifications for flow re-routing (i.e., the closure of Rifle Cut and the filling of the Sediment Basin), may have additional impacts on this species as they may not be able to use the Back River for moving between their upriver spawning habitat and their downstream foraging habitat in the estuary. Some of the measures proposed for mitigating impacts to shortnose sturgeon would also be appropriate for Atlantic sturgeon.

Shortnose Sturgeon

Habitat Suitability Modeling

Through extensive prior coordination NMFS has been working with the COE to develop the best modeling of existing habitat of the shortnose sturgeon, use of the most appropriate habitat criteria, and to evaluate potential project effects associated with the different deepening scenarios. During meetings held in 2001 to discuss SHEP, the Fisheries Interagency Coordination Team provided guidance on fisheries issues and developed a conservative set of parameters for modeling habitat suitability for the shortnose sturgeon. The Fisheries Coordination Team determined the conditions (in Appendix P) which the water quality and hydrodynamic models would use to identify acceptable and unacceptable habitat. River flow rates and time of year were also specified. Average river flows were used to represent long term conditions, but additional models were run to represent drought years.

Overall, the habitat suitability maps produced using the habitat criteria indices for adult shortnose sturgeon showed reasonably good agreement with previous field data collected on shortnose sturgeon, however, the maps produced for juvenile sturgeon did not show good agreement between documented habitat, as determined by field research, and the modeled results. In using a conservative maximum salinity index of ≤ 4 ppt, as developed by the Fisheries Coordination Team, the output excluded documented habitat for the larger juvenile shortnose sturgeon. It is believed this occurred due to the ability of larger juveniles to tolerate salinities higher than 4 ppt, whereas higher salinities have been proven to be detrimental to small juveniles in lab experiments. In order to generate maps that would include available habitat of the large juveniles, NMFS proposed that the maximum salinity index should be increased to ≤ 14.9 ppt, which was the maximum salinity measured during research conducted by Collins et al. (2001), where large juveniles (measuring 32.3 cm to 47.6 cm fork length) were located. (It is important to note that sampling of smaller juveniles has not been conducted in the lower Savannah River, although they are presumed to occur there.) The COE acknowledged our request to revise the salinity criteria. Once the new criteria were used in the modeling of habitat, the mapped results showed a more accurate depiction of acceptable habitat, particularly in the area of the lower Middle River, which includes a deep hole (~7.9 meters depth) used by large juvenile and adult sturgeon during the winter, and also within the Front River at the confluence with the lower Middle River to above Steamboat Creek.

Ground-truthing of the habitat suitability maps was based on field research conducted in the lower Savannah River, which indicated that large juvenile shortnose sturgeon prefer the Front River from just above the deeper Kings Island Turning Basin to the mouth of Abercorn Creek (located near Interstate 95). During the winter, they also heavily utilize the deep hole located in the lower Middle River and adjacent portions of the Middle River. They have not been documented in the Back River. Within the project area, adult shortnose sturgeon have been found to utilize the entire length of the Front River, the entire length of the Middle River, the uppermost reaches of the Back River, and the Sediment Basin/Tide Gate area within the lower Back River. They migrate upriver to the base of the New Savannah Bluff Lock and Dam for spawning. They have not been shown to use the full length of the Back River and recent tracking data, conducted by The Nature Conservancy, indicates adult sturgeon may enter the Sediment Basin from the lower end of the Back River or access it by traveling through Rifle Cut, which connects the Middle and Back Rivers. According to personal accounts from biologists conducting research in the Back River and a bathymetry map of the project area produced by the COE, there are portions of the middle section of the Back River above Rifle Cut that have depths that may be too shallow for the passage of sturgeon during certain tide stages. Firsthand accounts by these same biologists also report that portions of the Sediment Basin have become too shallow to navigate.

The COE performed analyses using the habitat criteria for the existing conditions (-42 feet) and for the five deepening scenarios (-44, -45, -46, -47, and -48 feet). The models predicted outcomes with and without the proposed flow re-routing and dissolved oxygen injection. (Flow re-routing mitigation was proposed to offset potential impacts to the adjacent Savannah National Wildlife Refuge. It is important to note that over 160 different flow re-routing models were conducted to evaluate the effects of each mitigation plan. The proposed injection of dissolved oxygen as mitigation is addressed later in this document.)

In addition to the modeling runs shown in the DEIS, the COE performed other analyses that included parameters such as high dissolved oxygen loading superimposed on the habitat parameters for adult shortnose sturgeon during the summer and winter and also for large juvenile shortnose sturgeon during winter conditions. Other scenarios included project effects with the deepening only, deepening plus hydrological modifications, and deepening with the hydrological modifications and dissolved oxygen injection. While NMFS appreciates the time and effort by the COE to produce the modeled outputs, there is much uncertainty in the results and maps depicting suitable habitat have conflicting information. This is probably due to the highly complex nature of the modeling design. NMFS remains hopeful that the COE will be able to deliver model outputs that provide accurate predictions of the project effects, but at this time we do not have these products. A preliminary assessment based on information in the tables provided in the DEIS (although they may not be entirely accurate) show that the 47-foot (National Economic Development Plan) and 48-foot (Maximum Authorized Plan) deepening alternatives would result in significant habitat loss for adult shortnose sturgeon during January conditions (439 acres lost) and August conditions (113 acres lost). There would also be loss of juvenile shortnose sturgeon habitat during January conditions (21.6 acres lost). Specific measures to address the predicted loss of foraging habitat for shortnose sturgeon within the project area were not identified in the DEIS.

Some of the proposed flow re-routing modifications include closing Rifle Cut and allowing the Sediment Basin to fill-in. The COE's assessment of the habitat suitability models with the flow re-routing modifications indicate that areas above the Sediment Basin within the Back River will become "suitable habitat" for shortnose sturgeon. However, NMFS is concerned that this is an inaccurate assessment as the elimination of Rifle Cut, which connects the Middle and Back Rivers, coupled with the shallow depth of the Sediment Basin, could result in the Back River becoming a dead end for adult sturgeon trying to migrate between their upriver spawning habitat and downstream foraging habitat. Juvenile shortnose sturgeon already cannot enter through the lower end of the Back River due to the high salinities found there. We have concerns that what the COE is showing as habitat gained in some areas of the Back River (and we are still evaluating usage of the area) would produce an inaccurate assessment of the mitigation effects. While more habitat may be created, that could be classed as "suitable" when based on salinity and dissolved oxygen parameters, it may be located in areas not used by sturgeon or in areas that

will become inaccessible to sturgeon after the flow re-routing modifications have been completed. Therefore, the “gain” would have no value to sturgeon.

COE-Proposed Measures to Address Impacts to Shortnose Sturgeon

Dissolved Oxygen Injection

Measures to address impacts to water quality associated with the project deepening have been proposed. Project impacts include a decrease in dissolved oxygen (DO) levels associated with the increase in channel depth, the increase in the volume of water over the project area, and the decrease in average river velocity, which will reduce mixing of oxygen throughout the water column. With the decrease in DO, the ability of the river system to handle introduced point source and non-point source loads of pollutants will also be decreased. DO typically drops during the summer months in the Savannah River associated with a lower oxygen diffusion rate and a higher uptake from biological organisms.

The area the COE identified as of primary concern for low DO is located between Fort Pulaski and the Seaboard Coastline Railroad Bridge, a length of approximately 27 river miles. This also includes the primary areas identified as important foraging habitat for the shortnose sturgeon within the lower Savannah River. According to the DEIS, model predictions from the SHEP studies indicate that further deepening will have additional impacts on the dissolved oxygen regime in the Savannah Harbor. Using guidance provided by the Water Quality Interagency Coordination Team, the analyses conducted were based on average drought river flow conditions (August 1999). Other sensitivity analyses included average river flows (August 1997) and 2004 point source loads. Project impacts to DO were found to be higher during drought conditions than during average flow conditions. Supplemental model runs provided to NMFS after the publication of the DEIS have shown that when the 2004 point source loads are added to average river flows, there is an additional loss of acceptable habitat in the Front River adjacent to and upriver from the confluence with the lower Middle River. While this is a preliminary assessment and may not be completely based on accurate data, it may show that compounded effects of high point source loads and deepening of the harbor may result in additional loss of habitat for shortnose sturgeon. To offset the decrease in DO associated with the project, the injection of DO using Speece cones is proposed. The injection systems would be located along the banks of the Savannah River at three sites: the Georgia Pacific facility, located above the project area; and at International Paper within the project area on the West and East sides of Hutchinson Island along the Front River and Back River. The systems would be operated during July through September to provide the needed amount of oxygen. The cost to operate the systems would use a large portion of the mitigation budget. NMFS has previously expressed a concern to the COE about whether the on-going cost to operate the systems can be maintained in perpetuity. In its response, the COE stated that funding for any portion or feature of the project, whether

mitigation or navigation, is subject to the normal budgetary process and appropriation by the US Congress. The COE stated they cannot predict or speculate on the amount of appropriations that a future Administration or Congress may provide to operate the Savannah Harbor Navigation Project. Without funds to operate the Navigation Project, the COE said they would have no funds to operate the project's mitigation features. They further stated that failure to operate all aspects of the project as described in the EIS and the Record of Decision (including its mitigation features) would subject the COE to legal challenges that it is operating the project outside its NEPA clearances. NMFS is concerned that the environmental impacts will continue in perpetuity, while the mitigation measures will only be operational as long as funding is available. The COE's record of not providing adequate maintenance of the mitigation features within the Savannah National Wildlife Refuge partially substantiates this concern.

NMFS also questions the efficacy of the injection systems to actually increase DO in the areas of concern. It is critical for the continued existence of shortnose sturgeon that DO remains at levels acceptable to shortnose sturgeon, particularly for juveniles which cannot tolerate low DO, even for short duration. The DEIS states that the injection system has been designed to remove the incremental effect of a deeper channel in 97 percent of the bottom half of the water column. Using the bottom half instead of the deepest layer of the water column for the modeling design may not benefit shortnose sturgeon since they are bottom feeders and they would encounter the lowest DO along the deepest portions of the river. If the current design and placement of the injection system does not provide any benefit for the foraging shortnose sturgeon, its use as a measure to offset impacts to shortnose sturgeon is negated. **NMFS continues to be concerned that this is a very risky operation with a high degree of uncertainty.**

Proposed Sill at Lower Middle River

Recent discussion with the COE has raised concern about the proposed construction of a higher sill within the lower Middle River. A low sill currently exists, but as a measure to block the salt wedge from entering the lower Middle River after the deepening, construction of a higher sill is proposed. It is important to protect the deep hole, which is heavily utilized by shortnose sturgeon, and located just beyond the existing sill, from receiving the higher salinities that will occur with the deepening in the Front River. It was thought that by raising the height of the sill, the heavier, more saline water would be prevented from entering the area surrounding the deep hole. While NMFS believes that construction of the sill could benefit the shortnose sturgeon, **NMFS is also concerned that the maintenance requirements needed to keep the sill functioning properly have not been included in the COE's budget. Monitoring of the sill should also be included in the Monitoring and Adaptive Management Plan.**

Fish Passage at New Savannah Bluff Lock and Dam

While NMFS agrees with the COE that there are impacts to shortnose sturgeon associated with the inaccessibility to spawning habitat above the New Savannah Bluff Lock and Dam and that

providing access to this habitat would benefit sturgeon, we disagree with the proposal to construct a fish passage bypass around the dam, as currently designed. The construction of a bypass facility to pass shortnose (or Atlantic) sturgeon at this site may not be successful. Unlike shad and herring which swim high in the water column and orient to surface currents, sturgeon are primarily found on the bottom and have distinctly different swimming behavior. Shortnose sturgeon may not be able to adapt to the currently proposed facility. The construction of the proposed design for the purpose of passing sturgeon could be a failed venture that would require additional mitigation measures as a part of adaptive management.

According to the COE, the construction of a fish bypass at the New Savannah Bluff Lock & Dam would involve the least cost and would be the most environmentally acceptable method of providing a measure to offset impacts to the shortnose sturgeon. Information on page 65 of Appendix C of the DEIS states that the cost of removing the lock and dam would exceed the cost to construct a fishway. However, the COE did not include the total costs associated with providing fish passage at the New Savannah Bluff Lock and Dam in their estimates. The lock and dam also need extensive repairs and rehabilitation, which in 2001 was estimated to cost approximately \$6.8 million. According to the Congressional authorization, fish passage construction and rehabilitation of the lock and dam are linked. The rehab cost (\$6.8 M at 2001 prices) plus the estimated cost of fish passage construction (\$6.3 M), well exceed the cost of dam removal (\$7.5 M). Other costs to consider are the monitoring for detection of sturgeon, the monitoring and maintenance of the fishway, and the construction of a mixing tower to aid in temperature adjustment between the mixing bodies of water. Additionally, there is a need to have a greater flow than the proposed 5 percent attraction flow for shortnose sturgeon. Shortnose sturgeon may require an attraction flow of 10 percent of the available flow during all river conditions. Shortnose sturgeon would require a wider and deeper facility than is currently designed. Additionally, with the recent proposed listing of the Atlantic sturgeon, this species would also need to be accommodated and would require a wider and deeper fish passage facility. In addition to the costs associated with the rehabilitation of the lock and dam, and the upfront costs associated with the construction of a fish bypass and its infrastructure, there would be continual maintenance needed for the bypass and for the lock and dam. There are no proven results that indicate that the COE would maintain the lock and dam as it has not had maintenance provided for a long time. There is also no guarantee that funds would be available to provide needed maintenance of the fish passageway in perpetuity. NMFS recommends that the COE re-address the cost estimates to better reflect all of the associated costs involved in construction and maintenance of the fish bypass and lock and dam.

The regional resource agencies were recently contacted (on October 1, 2010) by the COE to provide input on the proposed fish passage design. The responses received from the agencies clearly indicated that there is concern about the design and that the best alternative would be removal of the lock and dam. Comments provided about the design emphasized the lack of its

proven effectiveness to pass sturgeon. Previous comments provided to the COE by NMFS explained how a single miscalculation or any combination of the various attributes of the design could cause it to fail. For example, a lack of adequate water flow, an inadequate attraction flow to direct sturgeon to the bypass, wrong placement of boulders or resting places within the bypass, the wrong slope of the rock ramp, or inadequate depth and width characteristics could contribute to the structure not being successful in passing sturgeon.

From a risk management perspective, NMFS continues to strongly support removal of the lock and dam and believes this is the best and most meaningful mitigation offered that will result in a benefit for the endangered shortnose sturgeon.

Essential Fish Habitat provisions of the Magnuson-Stevens Fishery Conservation and Management Act

The NMFS Habitat Conservation Division has reviewed the DEIS, the DGRR, and information subsequently provided by the COE. With the exceptions noted below, these documents and information provide sufficient information to complete the EFH consultation and to develop appropriate EFH conservation recommendations.

Project Impacts

Entrance Channel (Ocean Bar Channel) Deepening and Extension

In November 2009, the Savannah District first advised NMFS of the need to extend the Ocean Bar Channel seaward of station -60+000B (this station marks the seaward limit of the existing channel). The length and dredging needed for this extension depend on the project depth (DEIS Table 3-1). Under the locally preferred plan (LPP), the channel would be lengthened 38,600 feet and require approximately 4,212,500 cubic yards of dredging (DEIS Table 3-9). This material would be disposed at two locations, referred to as "Site 11" and "Site 12" in the DEIS, and configured in a manner to serve as an artificial reef attractive to fish. Within the footprint of the existing Ocean Bar Channel (i.e., landward of station -60+000B), 9,113,013 cubic yards would be dredged. This material, along with some additional material from near the harbor entrance, would be placed in seven to nine nearshore areas (DEIS Section 3.07 and Section 5.13) near Tybee Island. Currents and waves would separate sandy material from silty material, remove the silty material from the area, and transport the sandy material onto the beach at Tybee Island.

As indicated in past correspondence with the COE (most recently September 9, 2010 and November 24, 2010) NMFS Habitat Conservation Division requests additional information to complete evaluation of this portion of the project as it is currently proposed, including:

- Surveys for hardbottom habitat within and near the Ocean Bar Channel extension, Site 11 and Site 12;
- Designs for the mounds that would be constructed at Sites 11 and 12;
- Projections of the design life of the mounds at Sites 11 and 12 along with descriptions of any maintenance that would occur;

- Monitoring plans for evaluating the success and durability of the mounds at Sites 11 and 12 and descriptions of how monitoring results would inform maintenance of the mounds and determine if corrective actions are needed, should the mounds not perform as designed;
- Clarification on the projected use of Sites 5 and 6, which are shown in figures (e.g., Figure 3-2) describing the nearshore placement areas but which are not discussed in the text;
- Verification that hardbottom habitat does not occur in or near the nearshore placement areas;
- Estimates of the amount of material expected to be transported to the beach from the nearshore mounds near Tybee Island and descriptions of the fate of the remaining material (e.g., will the eroded fine material affect borrow areas used for traditional beach nourishment projects);
- Discussion of the feasibility of placing material during winter months only into the nearshore mounds to avoid impacting benthic communities during periods of peak production and foraging by fishery resources;
- An element of the Adaptive Management Program that focuses on monitoring the nearshore placement of dredge material to evaluate the success of nearshore placement, assesses the impacts from the placement, and describes how monitoring results would inform maintenance and guide corrective actions, should the mounds not perform as designed.

While this additional information is needed for the NMFS Habitat Conservation Division to complete its evaluation, we offer below some general comments. Given the past and previous detrimental effects of the navigation channel on the beaches of Tybee Island, the NMFS Habitat Conservation Division supports plans to ameliorate those impacts. Assuming the dredged material from the extension of the Ocean Bar Channel is beach quality, the surest manner to address the impacts at Tybee Island would be to place the material from the channel extension directly onto the beach at Tybee Island. Dredged material from more landward areas that is not of sufficient quality for direct beach placement could be placed into the offshore dredge material disposal site. If the upcoming surveys of the Ocean Bar Channel extension show hardbottom habitat would be impacted by the project, these impacts could be addressed via options such as the State of Georgia's artificial reef program. However, if the COE is committed to disposing material at Sites 11 and 12 in manners that may provide suitable fish habitat, NMFS will work with the COE on the design of the mounds and the monitoring that will gauge effectiveness and inform maintenance decisions.

Monitoring and Adaptive Management

By letter dated July 31, 2009, NMFS provided the COE with a detailed review of the adaptive management program and the monitoring needed to implement the program. DEIS Appendix D provides a revised plan for the adaptive management program. While the revised plan provides some additional detail on the monitoring and includes an updated budget, principal omissions from the last review remain in the current version of Appendix D:

- The plan does not provide explicit criteria for evaluating the success of mitigation measures or triggers for initiating corrective actions. The plan should include a mechanism that ensures results from monitoring feed into operation of the dredges and the oxygen injection system. Also, the success criteria and triggers would need to take into account expected rates of sea level rise and the new hydrodynamic regime that would be established in the estuary as a result of project construction.

- The plan does not include monitoring of the marshes for use by crabs, shrimp, and other invertebrates that provide the forage base for fishery species. We do note, however, that since our letter from July 2009, the COE has added fish monitoring of the marshes, but only for the post-construction phase of SHEP. Monitoring for fish and invertebrates should be conducted in synchronization with the marsh vegetation monitoring.