From:	chamcl1@aol.com
To:	CESAS-PD, SAS
Cc:	ChamcL1@aol.com; judy.jennings@comcast.net; johickson@comcast.net
Subject:	Concerns regarding the deepening of the Savannah River
Date:	Tuesday, January 25, 2011 4:51:24 PM

As a concerned resident of Savannah. I am very concerned about the current plan for the deepening of our harbor, the environmental ramifications are not fully understood and the results could be ecologically disastrous. Dredging the harbor will adversely affect tourism, wildlife migration and the fishing industry. The encroachment of salt water will adversely effect drinking water, incurring additional expenses and major modification of water treatment plants to desalinate the water, in case of leakage into the aquifer. The environmental ramifications exceed the potential economic benefits at this time. I do not believe that a sufficient cost - benefit analysis has been conducted. Our economy is already in the red, the money could be better spent on more pressing issues. My contact information is

Carol Chambers
11 East 52nd st.
Savannah, GA 31405
912 236 3723

"Life is short,
and we do not have much time to gladden the hearts of those who travel the way with us.
So, be swift to love
and make haste to be kind."

Carol Chambers

757-MR-01-EV01

Comment: *As a concerned resident of Savannah. I am very concerned about the current plan for the deepening of our harbor, the environmental ramifications are not fully understood and the results could be ecologically disastrous. Dredging the harbor will adversely affect tourism, wildlife migration and the fishing industry. The encroachment of salt water will adversely effect drinking water, incurring additional expenses and major modification of water treatment plants to desalinate the water, in case of leakage into the aquifer. The environmental ramifications exceed the potential economic benefits at this time. I do not believe that a sufficient cost - benefit analysis has been conducted. Our economy is already in the red, the money could be better spent on more pressing issues. My contact information is*

Response: The environmental impact/mitigation planning process included multiple steps, viz., field/model assessment, development of avoidance feature, impact minimization, and mitigation of unavoidable losses. This iterative process included years of close coordination with both federal and state agencies. The effects of the proposed harbor deepening have been thoroughly addressed in the EIS. However, as stated in EIS-Appendix D, many of the evaluations involve predictions about future effects to biological resources; hence, there is some uncertainty about the impacts which the recommended alternative will actually produce. Those uncertainties include the accuracy of the predictive models [uncertainty risk] and the biological responses, per se, that will manifest as a result of changes in the environment. This is reason why the District plans to implement adaptive management measures [as described in Appendix D].

With respect to your specific comment regarding tourism, the District received a letter from the Savannah Area Chamber of Commerce [dated January 19, 2011] in which it stated: "On behalf of our 2,100 business members representing over 77,000 employees in our area, we strongly encourage the U.S. Army Corps of Engineers to proceed with the Savannah Harbor Expansion Project."

Regarding impacts to the Floridan aquifer, the Corps conducted extensive groundwater studies which are discussed in EIS-Sections 4.02.1 and 5.5. The overall conclusion is that the proposed harbor deepening would have minimal adverse impacts on groundwater. The full results of the field work, groundwater modeling, and GIS analyses are described in Section 5 of the Engineering Appendix of the GRR. They are described in further detail in a document titled "*Supplemental Studies to Determine Potential Groundwater Impacts to the Upper Floridan Aquifer, Savannah Harbor Expansion Project, Final Report, June 2007"*.

Lastly, the cost analysis for the project was robustly accomplished. Very thorough cost and economic analyses were conducted by the District; the results of which were reviewed by the Corps Deep-Draft Navigation Center of Expertise in Mobile, AL, as well as expert economists from the private sector. Details are included in Section 10 and Appendix A of the GRR.

SOUTHERN ENVIRONMENTAL LAW CENTER

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January 25, 2011

VIA E-MAIL AND U.S. MAIL

Jeffrey M. Hall, Colonel
U.S. Army Corps of Engineers
100 West Oglethorpe Avenue
Savannah, Georgia 31401
CESAS-DE@usace.army.mil

Re: Notice of Availability of a Draft Tier II Environmental Impact Statement and Draft General Reevaluation Report for Savannah Harbor Federal Navigation Project, Chatham County, GA and Jasper County, SC; S.C. Coastal Conservation League et al. v. Westphal, C/A No. 9-00-0798-23 (D.S.C. 2001)

Dear Colonel Hall:

On November 15, 2010, the Savannah District of the U.S. Army Corps of Engineers (the "Corps" or "Savannah District") issued a Joint Public Notice (the "JPN") providing Notice of Availability of a Draft Tier II Environmental Impact Statement ("DEIS") and Draft General Reevaluation Report ("Draft GRR" or "GRR") pursuant to the authority provided by Section 102(b)(9) of the 1999 Water Resources Development Act for the Savannah Harbor Federal Navigation Project, Chatham County, Georgia and Jasper County, South Carolina (hereinafter referred to as the "Project," the "Proposal," or "SHEP").

On behalf of the South Carolina Coastal Conservation League, the South Carolina Wildlife Federation, the Center for a Sustainable Coast, the National Wildlife Federation, and the Savannah Riverkeeper (the "Conservation Groups"), the Southern Environmental Law Center ("SELC") submits this comment letter to express our substantial concerns about this proposed Project.[1] As described in more detail below, this proposal raises serious problems regarding compliance with the National Environmental Policy Act ("NEPA"), 42 U.S.C. §§ 4321 et seq. (2010); the federal Clean Water Act ("CWA"), 33 U.S.C. §§ 1251 et seq. (2010); the Coastal Zone Management Act ("CZMA"), 16 U.S.C. §§ 1531, et seq.; and the Endangered Species Act ("ESA"), 16 U.S.C. §§ 1531 et seq. (2010), among other applicable laws.

In particular, we are troubled by the central assumption underlying the DEIS and Draft GRR that the proposed deepening Project is unrelated to efforts by the Georgia Ports Authority ("GPA") to maintain or increase its business. Such an assumption not only strains credulity, but is also directly contradicted by the Corps' Tier I Environmental Impact Statement, statements by GPA officials, and GPA's willingness to pay a substantial sum of money for an extra foot's

[1] These comments are also submitted pursuant to South Carolina Coastal Conservation League et al. v. Westphal, C/A No. 9-00-0798-23 (D.S.C. 2001), in which United States District Judge Michael Patrick Duffy entered an order prescribing certain parameters of the Tier II studies being conducted by the Corps.

worth of depth. In making this dubious assumption, the Corps has undermined its economic analyses and skewed the environmental studies by failing to evaluate the indirect and cumulative effects associated with this proposal.

Even if one accepts for purposes of argument the assumption that this Proposal is not needed to increase Garden City Terminal ("GCT") throughput, the no-action alternative stands out as a clear winner since it would obviate the need to spend over $600 million in public money, protect natural resources of national significance, and yet have no effect on GCT's business.

In addition, substantial concerns have also been raised regarding the failure of the proposed channel as designed to safely accommodate fully-loaded Post-Panamax ships, further eroding the stated rationale for this Project, especially when weighed against the substantial economic cost and environmental impacts. And finally, the Corps has simply failed to consider, as NEPA and the CWA require, a sufficient range of alternatives for accommodating the anticipated larger class of containerships and instead has arbitrarily limited its review of alternatives to different depths in the Savannah River. Stated another way, the Corps has studiously avoided asking perhaps the most important question here in light of the limited availability of federal funds: whether the federal government could deepen a different port in the Southeast region for less money and with fewer impacts on the environment. For these and other reasons stated below, we respectfully request that the Corps remedy the significant flaws in the DEIS and Draft GRR before proceeding with a FEIS.[2]

The Proposed Project

As proposed in the JPN, the Corps has prepared the DEIS and GRR to incrementally evaluate deepening the Savannah Harbor Federal Navigation Project to a maximum authorized depth of -48 feet Mean Lower Low Water ("MLLW") as authorized by the Water Resources Development Act of 1999, Public Law 106-53, Section 102(b)(9). The current authorized depth is -42 feet MLLW. The studies purport to evaluate the engineering, environmental, and economic acceptability of various alternative Project depths (44, 45, 46, 47, and 48 feet) for the present and future harbor conditions over a 50-year analysis period. The maximum proposed Project length is approximately 38 miles, and the tentatively recommended plans include the 47-foot depth alternative (the National Economic Development Plan ("NED Plan")) and GPA's preferred 48-foot alternative (the Maximum Authorized depth alternative). JPN at 3. Recommended improvements also include channel deepening from the Atlantic Ocean through the Harbor Entrance Channel to the Garden City Terminal; channel widening to create meeting areas at Long Island and Oglethorpe Ranges; widening and deepening of the Kings Island Turning Basin; and channel widening at three bends. Id. The deepening proposal also includes a two foot allowable overdepth and up to six feet of advance maintenance. Id.

The SHEP proposal also involves the discharge of fill to construct and maintain submerged and nearshore berms, the continued discharge of effluent from confined disposal facilities, and the transportation of sediments dredged from the entrance channel to the Savannah Ocean Dredged Material Disposal Site. The proposal also contemplates the discharge of dredged

[2] This letter incorporates by reference our previous comment letters on this Project.

material for several aspects of the mitigation plan, including closing Rifle Cut; construction of a flow diversion structure and other modifications at McCoys Cut; deepening the upper portions of Middle and Back Rivers; removing the Tidegate and its abutments; and constructing additional features including a submerged sill and berm at the mouth of Back River, a submerged sill at the mouth of Middle River, three dissolved oxygen injection systems, a fish passage structure at the New Savannah Bluff Lock and Dam, a boat ramp on Hutchinson Island, and a restoration project at Disposal Area 1S. Id. at 2.

Environmental Impacts

This Proposal would involve substantial adverse impacts to resources of national significance and of great value to the states of South Carolina and Georgia. Over time, repeated deepenings and operation of the Tidegate have caused saltwater from the Atlantic Ocean to intrude up the Savannah River, seriously altering the area's natural intermixture of saltwater and freshwater. This saltwater intrusion has resulted in a number of significant problems, including severe losses of the tidal freshwater marshes, which the U.S. Fish and Wildlife Service ("FWS"), has identified as the single most critical natural resource in the harbor. DEIS at 5-8. After decades of saltwater encroachment, the area's once extensive tidal freshwater marsh is now largely contained within the Savannah National Wildlife Refuge (the "Refuge"). Tidal freshwater marsh within the Savannah River estuary have already been reduced from approximately 12,000 acres to about 3,300 acres due to previous deepenings, and the majority of remaining freshwater tidal marsh is found within the Refuge. This Proposal would cause direct impacts to as many as 14.08 acres of wetlands and indirect impacts to as many as 1,212 acres of freshwater tidal wetlands (the Corps estimates this number will be reduced to 337 acres as a result of proposed flow-altering modifications). DEIS at 5-10; JPN at 4.

Successive deepenings of the Savannah River have also contributed to the reduction of dissolved oxygen ("DO") levels to critically low levels on the River's bottom. Dissolved oxygen declines imperil aquatic species while channel maintenance and deepenings directly destroy and disrupt wildlife habitat through dredging and the emplacement of millions of cubic yards of dredged spoil. This proposal also threatens to contaminate groundwater supplies by increasing salinity and reducing the thickness of the confining layer separating the bottom of the Savannah River and the Upper Floridan aquifer thereby facilitating saltwater intrusion into the aquifer under the navigation channel. Similar concerns have been lodged regarding increased levels of chlorides at the City of Savannah's Municipal and Industrial intake on Abercorn Creek, a tributary of the River.

Other natural resources threatened by the Project include shortnose sturgeon (*Acipenser brevirostrum*), Atlantic sturgeon (*Acipenser oxyrincus oxyrincus*), and striped bass (*Morone saxatilis*). The shortnose sturgeon, which occurs in large coastal rivers of eastern North America, was recognized as federally endangered in 1967. Of particular concern here are the ways in which this proposed Project will impact Savannah River's population of federally-endangered shortnose sturgeon and Atlantic sturgeon (which has recently been proposed for listing as endangered by the National Marine Fisheries Service ("NMFS")) by decreasing dissolved oxygen levels and increasing salinities in their core habitat. The federal Final Recovery Plan for shortnose sturgeon states that because populations from different river

systems are reproductively isolated, the loss of a single river system's shortnose sturgeon population "risk[s] the permanent loss of unique genetic information critical to the survival and recovery of the species [as a whole]." Final Recovery Plan for the Shortnose Sturgeon at 7 (Dec. 1998). In addition, the Project threatens to harm other federally-listed species, such as North Atlantic right whales, sea turtles, and manatees.

History of the Project

GPA, acting under Section 203 of WRDA of 1986, 33 U.S.C. § 2231, prepared a draft feasibility study and environmental impact statement for this Project and submitted that study to the Corps, which published the DFS/EIS for public comment on May 10, 1998. Faced with overwhelmingly negative comments regarding the adequacy of the study, GPA announced it would prepare a "Supplemental Impact Statement" to address, among other things, "all the environmental concerns raised" by the DFS/EIS.

GPA, however, was racing to obtain congressional authorization for the Project as part of the Water Resources Development Act of 1998. Faced with a narrowing time window for the WRDA of 1998 bill, GPA decided to submit a "finalized" version of the DFS/EIS to the Corps for transmittal to Congress before supplemental studies had been completed. The repackaged draft, titled the Savannah Harbor Expansion Feasibility Study and Environmental Impact Statement (collectively, the "Tier I EIS"), stated that the channel expansion was economically feasible, cost effective, technically possible, and environmentally acceptable.

In 2000, the South Carolina Coastal Conservation League, the South Carolina Wildlife Federation, the Center for a Sustainable Coast, and the National Wildlife Federation filed suit in the United States District Court for the District of South Carolina against the Corps, challenging the Tier I EIS prepared for the Savannah Harbor Expansion Project.

That case was resolved by an order issued February 28, 2001.[3] In dismissing the plaintiffs' claims as unripe, the Court made it clear that it was doing so on the understanding that issues raised by the plaintiffs with regard to the Tier I EIS could be raised in the Tier II phase of the SHEP studies. The Court explained:

> Defendants' counsel stated during a hearing conducted by this court on February 15, 2001 that Plaintiffs will not be precluded from participating in the Tier II process and that even such broad concerns as site selection may be evaluated in that process. Therefore, the Defendants' [*i.e.*, the Corps of Engineers] are judicially estopped from later claiming that such issues cannot be raised during the Tier II process. . . .[4]

In WRDA 1999 (Section 101(b)(9)), Congress conditionally authorized deepening the channel to a maximum depth of 48 feet Mean Low Water (MLW). According to WRDA 1999, the Project may be carried out only after the Secretary of the Interior, the Secretary of

[3] South Carolina Coastal Conservation League et al. v. Westphal, C/A No. 9-00-0798-23 (D.S.C. 2001).

[4] Id., Feb. 28, 2001 Order, at 9.

Commerce, the Administrator of the Environmental Protection Agency, and the Secretary of the Army approve the selected plan and determine that the associated mitigation plan adequately addresses the potential environmental impacts of the Project. As a result, the Corps has now released its Tier II DEIS and Draft GRR.

Overview of Regulatory Requirements

Although the Corps does not process and issue permits for its own activities, it "authorizes" its own discharges, applying all applicable substantive requirements, including the Section 404(b)(1) Guidelines. 33 CFR § 336.1; 40 C.F.R. § 230.2(a)(2); see also Regulatory Guidance Letter ("RGL") 88-09 (July 21, 1998, expired Dec. 31, 1990) (describing Corps' duty to comply with same substantive legal requirements applicable to Section 404 permittees); RGL 05-06 (Dec. 7, 2005) (explaining that RGLs remain valid post-expiration unless superseded by regulation or subsequent RGL).

Given the scale of this Project and the environmental impacts that would result, the Corps has prepared and released the Tier II DEIS. Pursuant to NEPA, the EIS must explore a reasonable range of potential alternatives to meet the primary objective of the Project. In fact, the primary purpose of the DEIS is to carefully explore a reasonable range of locational and functional alternatives that meet some or all of the primary project purposes, including a "no-action" alternative, and compare their overall relative direct and indirect environmental impacts. 40 C.F.R. §§ 1502.14(d), 1508.25(b). The Project's harm to the environment and the relative degree to which each alternative would meet the Project purpose over time, including foreseeable induced development as a result of the Project, must be considered as part of this study. 40 C.F.R. §§ 1502.14(d), 1508.8.

An evaluation under Section 404(b)(1) Guidelines of the Clean Water Act is required for the proposed discharges of dredged or fill material and their effluent into waters of the United States. Corps projects, such as this, can only be authorized if they represent the least damaging "practicable alternative" that will meet the basic purpose and need for the project. 40 C.F.R. § 230.10(a). The Section 404(b)(1) Guidelines further prohibit discharges of dredged or fill material if it "[c]auses or contributes . . . to violations of any applicable State water quality standard." Id. § 230.10(b)(1). Additionally, the Corps' criteria for evaluating a permit application under Section 404 of the CWA are set forth at 33 C.F.R. § 320.4. Pursuant to these regulations, the "[d]ecision whether to issue a permit will be based on an evaluation of the probable impacts, including cumulative impacts, of the proposed activity and its intended use on the public interest." See 33 C.F.R. § 320.4(a) (listing relevant factors to be considered).

Closely related to the Section 404(b)(1) Guidelines is the CWA Section 401 certification process. Pursuant to this process, the South Carolina Department of Health and Environmental Control ("DHEC") and the Georgia Environmental Protection Division ("GAEPD") must certify that the Project will not harm water quality, taking into account feasible alternatives, wildlife habitat in the area, and other factors. See 33 U.S.C. § 1341. Section 401 water quality certification is a prerequisite to the issuance of a Section 404 permit, and may be denied when the project will have unacceptably high adverse impacts on aquatic resources. S.C. Code Regs. 61-101(F)(5); see also S.C. Code Regs. 61-101(F)(3)(c). The Corps has also requested coastal

zone consistency determinations from both South Carolina and Georgia.

Careful study and consultation with NMFS and FWS is required pursuant to Endangered Species Act (ESA) in connection with the Project given the presence of the endangered shortnose sturgeon, North Atlantic right whales, sea turtles, manatees, wood storks, and other imperiled wildlife. Section 7 of the ESA requires that each federal agency "shall insure that any action authorized, funded or carried out by such agency . . . is not likely to jeopardize the continued existence of any" listed species. 16 U.S.C. § 1536(a)(2). Further coordination with FWS is required by the Fish and Wildlife Coordination Act, 16 U.S.C. §§ 661 to 667e, which provides the basic authority for the FWS's involvement in evaluating impacts to fish and wildlife from proposed water resource development projects. The Magnuson-Stevens Fishery Conservation and Management Act, 16 U.S.C. §§ 1801 et seq., also requires the Corps to consult with NMFS on projects affecting Essential Fish Habitat. 16 U.S.C. § 1855(b)(2); 50 CFR § 600.920(a).

Legal Issues

Although NEPA dictates procedures, not outcomes, it is nevertheless an "action-forcing" statute that aims to improve the quality of agency decisions and protect the environment. See Robertson v. Methow Valley Citizens Council, 490 U.S. 332, 348 (1989). The NEPA process is designed to "bring pressure to bear on agencies" and is "almost certain to affect the agency's substantive decision." Id. at 349 (internal quotation marks omitted). Under NEPA, an agency must "make[] its decision to proceed with the action after taking a 'hard look at environmental consequences.'" Sabine River Authority v. Department of Interior, 951 F.2d 669, 676 (5th Cir. 1992) (citation omitted).

NEPA's environmental impact statement requirement has a dual purpose in achieving these goals. First, it requires federal agencies to thoroughly and objectively investigate, evaluate, and disclose environmental consequences associated with any major federal action. Requiring an EIS ensures that agencies "will have available, and will carefully consider, detailed information concerning significant environmental impacts," Robertson, 490 U.S. at 349, and thereby "fosters informed decision-making." Oregon Natural Desert Ass'n v. BLM, 625 F.3d 1092, 1122 (9th Cir. 2010). Second, it serves as an "environmental full disclosure law so that the public can weigh a project's benefits against its environmental costs." Nat'l Audubon Society v. Hoffman, 132 F.3d 7, 12 (2d Cir. 1997).

In an attempt to fulfill these purposes, the Corps has prepared a DEIS for the proposed SHEP. To satisfy NEPA, the DEIS must describe the purpose and need for the proposed action and must consider all reasonably foreseeable, significant, adverse impacts of the proposed action. 40 C.F.R. § 1502.13, 16. The DEIS must consider the cumulative and indirect impacts of the proposed action, including reasonably foreseeable expansions in the scope of the proposed action. Id. § 1502.16. The DEIS must also consider all reasonable alternatives to the proposed action. 42 U.S.C. § 4332(C)(iii), (E); 40 C.F.R. § 1502.1.

I. The DEIS and GRR Violate NEPA.

A. The Corps has Violated its Duty under NEPA by Failing to Provide Sufficient Information to Allow the Public a Meaningful Opportunity to Comment.

In order to attain its goals of encouraging a "productive and enjoyable harmony between man and his environment" and promoting "efforts which will prevent or eliminate damage to the environment," 42 U.S.C. § 4321, NEPA imposes procedural safeguards that must be carefully adhered to. See, e.g., Robertson, 490 U.S. at 351; Hodges v. Abraham, 300 F.3d 432, 445-46 (4th Cir. 2002); Nat'l Audubon Soc'y v. Dep't of the Navy, 422 F.3d 174, 184 (4th Cir. 2005). Although NEPA does not contain specific public comment and review procedures, federal courts have consistently found that public involvement lies at the center of NEPA's procedural requirements. See, e.g., California v. Block, 690 F.2d 753, 770-771 (9th Cir. 1982); Hodges, 300 F.3d at 438; Nat'l Audubon, 422 F.3d at 184; Sierra Nevada Forest Protection Campaign v. Weingart, 376 F. Supp. 2d 984, 990 (E.D. Cal. 2005) (saying NEPA's goal is "informed agency decision-making through informed public participation").

Federal regulations implementing NEPA recognize that "public participation [is] essential," 40 C.F.R. § 1500.1 (the "CEQ Guidelines"), and direct agencies to "involve . . . the public, to the extent practicable, in preparing [environmental] assessments." See 40 C.F.R. § 1501.4. The Corps' "NEPA procedures must insure that environmental information is available to public officials and citizens *before* decisions are made and *before* actions are taken." 40 C.F.R. § 1500.1(b) (emphasis added); see also Ohio Valley Envtl Coalition v. U.S. Army Corps of Eng'rs, 674 F. Supp. 2d 783, 808-09 (S.D. W.Va. 2009) (same); Sierra Nevada, 376 F. Supp. 2d at 990 (NEPA regulations "require that an agency give environmental information to the public and then provide an opportunity for informed comments to the agency"). According to the CEQ Guidelines, such procedures are necessary because "public scrutiny [is] essential to implementing NEPA." 40 C.F.R. § 1500.1(b).

Here, the Corps has failed to make available sufficient information to provide for meaningful public comment. Both the DEIS and GRR rely heavily on the use of various models by the Corps. For example, models utilized by the Corps include an Environmental Fluid Dynamics Computer Code ("EFDC") model, which is a three-dimensional surface water modeling system for hydrodynamic and reactive transport simulations of rivers and other water bodies; and the Water Quality Analysis Simulation Program ("WASP"), which is a dynamic compartment-modeling program for aquatic systems. The EFDC model provides ocean flow and tidal dynamics, upstream flow, and other data that is then incorporated into the WASP model through a hydrodynamic linkage file. GRR, App'x C at 102-03. The hydrodynamic and water quality models were modified and calibrated by the agencies and their consultants specifically for this project to evaluate a range of significant issues, including impacts to wetlands, fishery habitat, water quality, and dissolved oxygen. GRR, App'x C at 103, 105. Despite heavy reliance by the Corps on these models to evaluate critical aspects of the Project, neither the DEIS nor the draft GRR include sufficient information to allow the public to scrutinize the results derived from the modeling exercises.

Another example is the SHE groundwater model that was designed to simulate the intrusion of salt water from the Savannah Harbor. The Corps has not disclosed information

needed to assess the results of these modeling efforts. For example, the Corps' use of the DYNSYSTEM groundwater modeling codes, which are proprietary and unavailable to the public, render meaningless any effort by the public to intelligibly understand how the Corps has reached its conclusions. Furthermore, the Corps did not provide with the DEIS or GRR model file archives of the SHE model, which are needed to evaluate the legitimacy of the Corps' modeling efforts. Without access to these proprietary codes and model file archives, a third-party review of the groundwater modeling for the Project is not possible.

Simply put, without the requested information, a rigorous review of the modeling undertaken for major components of the DEIS and GRR, including fundamental issues related to wetland impacts, lowering of dissolved oxygen, salinity intrusion, groundwater contamination, and habitat analyses for fisheries, to name a few, is impossible. The failure to include this information with the DEIS and GRR and the decision to withhold such information until the comment period has nearly expired effectively takes away from the Conservation Organizations (and other interested members of the public) the opportunity to meaningfully review the DEIS and GRR. As such, the Corps' has frustrated NEPA's goal of informed agency decision-making through informed public participation.

On October 22, 2010, we submitted a FOIA request to the Corps requesting specific information related to the use of these models in order to allow for meaningful review. After initially saying that it would be unable to turn over the requested information until March (after the close of the comment period), the Corps sent a CD to counsel for the Conservation Organizations, which arrived on January 19, 2011 – three full business days prior to the close of the official comment period. The Conservation Organizations are in the process of determining whether the Corps has turned over all of the requested information. Once it is determined that the necessary information has been provided by the Corps, the Conservation Organizations intend to review the modeling analyses conducted in support of the DEIS and GRR and supplement this initial comment letter.

B. The DEIS and GRR Lack Needed Information.

The Corps' failure to include current data in the DEIS and GRR is unreasonable and arbitrary. Although an agency's obligation to perform research and experiments necessary to gather new data is governed by NEPA's "rule of reason," the agency must not disregard current data which is already in existence. Atchison, Topeka & Santa Fe Ry. v. Alexander, 480 F. Supp. 980, 992 (D.D.C. 1979), aff'd in part, rev'd in part on other grounds sub nom., Izaak Walton League of Am. v. Marsh, 655 F.2d 346 (D.C.Cir.1981). As the D.C. Circuit has explained, an agency may not "shut its eyes to the events of the recent past" and rely on outdated information. Id. (quoting Seatrain International, S.A. v. FMC, 598 F.2d 289, 293 (D.C. Cir. 1979)).

For purposes of its economic analyses, the Corps relies on baseline commodity forecasts completed in 2004. The trade forecast used by the Corps appears to seriously overstate the Project's benefits because more recent data from the Bureau of Census shows that imports fell 21 percent between 2008 and 2009, while exports fell by 13 percent.[5] These same statistics

[5] U.S. Census Trade Data is available at http://data.usatradeonline.gov/View/dispview.aspx. Percentage drops are based on containerized vessel tonnage only. The 2010 data is available only through November. While year to date

(available through November 2010) show that while there has been a rebound in 2010, this rebound is not likely to bring trade back to the 2008 level. Since lower traffic levels mean fewer project benefits, recent changes in the world economy could seriously alter the basic benefit-cost equation. The decision by the Corps to rely on pre-recession trade forecasts is arbitrary and capricious.

In addition to relying on old data, the Corps has also released its DEIS and GRR prior to completing its development of new information needed to evaluate the proposal. According to the GRR, the proposed harbor deepening would increase chloride levels at the City of Savannah's water intake during drought conditions. GRR at 168. The GRR states:

> In recognition of the concerns about the impact prediction tool, the Corps is presently obtaining additional data to enhance the capability and reliability of the predictive modeling tool. Those results should be available in the Final EIS.
>
> * * *
>
> If the proposed deepening project is found to produce sustained chloride concentrations that adversely affect [the] City of Savannah's Municipal and Industrial water intake on Abercorn Creek, then the USACE would construct this supplemental intake line at a cost of $35.9 million.

GRR at 169. By releasing its draft studies prior to evaluating additional data the Corps has determined it needs to refine its modeling, the Corps has taken away the public's opportunity to fully comment at this stage of the NEPA process. Moreover, if the Corps ultimately determines that a supplemental intake line is needed, such a determination will require revisions to the economic analyses, as well as additional federal and state permitting decisions. The decision to issue the DEIS without the data relating to the severity of impacts to the City's water supply violates NEPA.

C. The DEIS Violates NEPA because it Does not Properly Delineate the Purpose and Need of the Project.

The statement of purpose and need is a critical component of an Environmental Impact Statement. Pursuant to NEPA, an EIS shall "briefly specify the underlying *purpose and need* to which the agency is responding in proposing the alternatives including their proposed action." 40 C.F.R. § 1502.13; 33 C.F.R. § 325, App'x B(9)(b)(4) (emphasis added).

The Tier II DEIS is seriously flawed with respect to its purpose and need statement. At best, the Tier II DEIS violates NEPA by failing to set forth a clear statement of purpose and need. At worst, the DEIS presents a statement of purpose and need that is contrary to the previous articulation of project purpose found in the Tier I EIS. Such a conflicting statement

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exports through November are almost at 2008 levels, imports remain well below 2008. The estimated benefits for the project are primarily for imports.

would be arbitrary and capricious and would also violate NEPA.

1. The Purpose and Need Statement in the Tier II DEIS is, at Best, Impermissibly Vague and is, at Worst, in Conflict with the Tier I EIS.

The Tier I EIS prepared for this Project states that: "*[c]ontinued growth of the Port necessitates* that it remain efficient and cost competitive" and that "[b]ased on an evaluation of the study area and its needs, the objectives of the proposed project are as follows: (a) provide better passage for the existing fleet of larger vessels through the harbor at all tides, thus reducing shipping delays; and (b) provide for safe and efficient transit of larger vessels expected to call on Savannah Harbor in the future." Tier I EIS at 14 (emphasis added). In other words, the original statement of project purpose clearly acknowledges that GPA seeks to continue growing its business by deepening its channel for safe and efficient transit of larger ships.

The Tier I EIS' statement of project purpose is consistent with the many statements made GPA over the years, which leave no doubt as to GPA's overriding goal for this Project.

- "GPA considers increased channel depth to be vital to continued growth of port activities in Savannah." Georgia Ports Authority Press Release (July 13, 1998) (attached as Ex. A).

- "It is essential that we deepen the Savannah navigational channel in order that the port of Savannah remain competitive in the U.S. South Atlantic range" and "that Georgia's ports continue to act as a catalyst in helping to contribute to the economic growth and prosperity of the state." Ben Schmitt, Approval for River Deepening in Peril, Savannah Morning News (Oct. 8, 1998) (quoting Tom Swinson, spokesman for GPA) (attached as Ex. B).

- "Georgia's ports have long played an important role as a catalyst in the economic growth and prosperity of our state. Today, that role and the state's ability to aggressively attract cargo, create more jobs and promote industrial development stand to be greatly diminished if plans to deepen the Savannah Harbor fail." Doug J. Marchand, Deepening Harbor Will Keep Port Competitive, Savannah Morning News (July 6, 1998) (attached as Ex. C).

- "As the world market continues to grow, so must the size of container vessels and the ability of the modern port to handle critical vessel requirements if it is to retain its customers." Id.

The current Tier II DEIS is far less forthcoming regarding GPA's principal goal for this Project. Although it is difficult to tease out a statement of project purpose from the main body of the Tier II DEIS itself, the DEIS does offer that: "The primary problems identified—and the need for the project—relate to the inefficient operation of containerships in the Federal navigation channel at Savannah Harbor, which affect the Nation's international trade transportation costs." DEIS at 3-1.

At best, it is unclear if the DEIS even includes a statement of purpose and need and

whether the above-quoted statement was intended as such a statement. At worst, this language is intended to be a statement of project purpose, which indicates that the Corps is attempting to walk away from its earlier stated purpose in the Tier I DEIS. If the Corps in its Tier II DEIS has shifted the project purpose, then the Tier II DEIS is arbitrary and capricious and is in violation of NEPA. Under NEPA, tiering affords an agency the choice of supplementing an earlier EIS with a "subsequent statement or analysis at a later stage . . . ." 40 C.F.R. § 1508.28(b). Among other reasons, tiering may help an agency "to focus on issues which are ripe for decision and exclude from consideration issues already decided or not yet ripe." Id. Tiering does not, however, allow for changing the purpose of a project, as this could nullify or otherwise undermine analyses in a prior EIS on which the later tier is based. The Corps must at the very least explain its abandonment of the Tier I statement of purpose in the final Tier II EIS.

2. The Corps Must Devise a Statement of Purpose and Need that Reflects the Activity's Underlying Purpose and Need from a Public Interest Perspective.

Even if the Tier II DEIS's statement of project purpose could be made to be consistent with the Tier I EIS, such a statement would be unduly narrow. In order to comply with NEPA, the Corps must devise a new statement of project purpose that reflects the Project's underlying purpose and need from a public interest perspective.

Courts regularly have held that the statement of purpose and need should be defined to reflect the objective, general need for the proposed activity rather than the specific, narrow course of action preferred by the applicant. The rule as articulated by one federal appellate court is representative: "[T]he evaluation of 'alternatives' mandated by NEPA is to be an evaluation of the alternative means to accomplish the *general goal* of an action; it is not an evaluation of the alternative means by which a particular applicant can reach his goals." Van Abbema v. Fornell, 807 F.2d 633, 638 (7th Cir. 1986) (emphasis added). In addition, the Corps' regulations expressly warn against a restricted statement of purpose:

> Normally, the applicant should be encouraged to provide a statement of his proposed activity's purpose and need from his perspective (for example, "to construct an electric generating plant"). However, whenever the NEPA document's scope of analysis renders it appropriate, the Corps also should consider and express that activity's underlying purpose and need from a public interest perspective (to use that same example, "to meet the public's need for electric energy").

33 C.F.R. § 325, App'x B(9)(b)(4); see also Simmons v. U.S. Army Corps of Eng'rs, 120 F.3d 664, 666 (7th Cir. 1997) (saying "[o]ne obvious way for an agency to slip past the strictures of NEPA is to contrive a purpose so slender as to define competing 'reasonable alternatives' out of consideration (and even out of existence"); Envtl Defense Fund v. United States Corps of Eng'rs, 492 F.2d 1123, 1135 (5th Cir. 1974) (explaining NEPA requires a "thorough consideration of all appropriate methods of accomplishing the aim of the action"). Furthermore, it is imperative that "the Corps, will in all cases, exercise independent judgment in defining the purpose and need for the project from both the applicant's and the public's perspective." 33 C.F.R. § 325, App'x

B(9)(b)(4).

Here, the Corps must "consider and express th[e] activity's underlying purpose and need from a public interest perspective . . . ." Id. By concluding that this Project is needed for the "[c]ontinued growth of the Port," Tier I EIS at 14, the Corps would be artificially restricting its analysis to alternatives that benefit GPA to the exclusion of other reasonable alternatives beyond the Garden City Terminal for accommodating the larger class of container ships. Such an approach would violate NEPA and would frustrate a true alternatives analysis, which must include an evaluation of whether another port or ports in the Southeast could accommodate the larger class of container ships with a higher cost benefit ratio and fewer impacts on the environment. In other words, a general objective of the Project might be to accommodate the larger class of Post-Panamax vessels in the Southeast as opposed to simply evaluating alternative depths of deepening the Savannah Harbor. Without a clear purpose and need statement and a true "Multi-Port Analysis" that evaluates the relative costs and benefits of achieving the general objective of the Project from a public interest perspective, the Corps, as further discussed below, will be unable to comply with NEPA.

D. The National Economic Development Analysis ("NED") and the National Environmental Policy Act Analysis Are Defective Because They Are Based on the False Assumption That Container Traffic at the Port Is Unrelated to Whether the River Is Deepened.

Just as the Corps has attempted to increase its chances of obtaining approval for the Project by contorting the project purpose, the Corps attempts to do the same by relying on an economic assumption that deepening the port will not increase business at the port. As part of its civil works planning process, the Corps must evaluate all federal civil works projects to determine whether the projects have positive benefit-cost ratios. See U.S. Army Corps of Engineers, Planning Guidance Notebook, ER 1105-2-100 (April 2000). If a project has a negative benefit-cost ratio, it cannot be constructed. Id. This NED analysis is integrally related to the NEPA analysis that the Corps must perform because both analyses are based on assumptions of what would occur if a project were constructed versus what would occur if the project were not constructed. These "with-project" and "without-project" assumptions establish critical benchmarks for the entire NED process and are key components of the NEPA process.

The Corps' Planning Guidance Notebook, which sets forth the NED process, describes these assumptions as follows:

> (1) The without-project condition is the *most likely* condition expected to exist in the future in the absence of a proposed water resources project. Proper definition and forecast of the future without-project condition are critical to the success of the planning process. The future without-project condition constitutes the benchmark against which plans are evaluated.
>
> (2) The with-project condition is the most likely condition expected to exist in the future with the implementation of a particular water resources development project. Comparison of conditions with the project to conditions without the

> project will be performed to identify the beneficial and adverse effects of the proposed plans. These with and without-project comparisons *provide the framework for the evaluation of alternative plans.*

Corps Planning Guidance Notebook at 2-8 to 2-9 (emphasis added). In short, to conduct a proper NED analysis, the Corps must make an accurate assessment of what it thinks will be the *most likely* future with-project and without-project conditions.

Similarly, NEPA requires that the Corps consider actions or events that are "reasonably foreseeable." 40 C.F.R. § 1508.7 to 1508.8. Under either analysis, the Corps or any other federal agency cannot simply elect to adopt an assumption that is something other than the *most likely* future condition or a state of affairs that is reasonably foreseeable, but that is exactly what the Corps has done in this case.

In the recent Stakeholders Evaluation Group ("SEG") meeting on the Corps' economic analysis, Dr. Bernard Moseby, the Savannah District's economist, stated quite candidly that he did not even attempt to capture what is *most likely* going to happen to container traffic levels at the Port if the harbor is deepened. Instead, he simply assumed that they were going to grow at the same rate as they would without the deepening. Dr. Moseby stated in the meeting:

> In the evaluation, we're looking at Savannah port based on the projected growth for Savannah. And the *most conservative* thing to do is to use the same tonnage and growth rates in the without project condition as with with project [sic] condition.
>
> But the *most conservative*, defensible position was to assume that the same traffic would be used in the without project condition, 42 feet, and at each alternative depth.[6]

During this discussion, Dr. Moseby also admitted that he did not attempt any approach that could have yielded a more accurate assessment because he did not have a model that would allow him to make such an assessment. As he explained in the meeting:

> I didn't do a big picture analysis with all these ports and all the interactions between them. I don't think the Corps would – you've got to have a model that would to – that would do that. I don't.[7]

In an attempt to clarify this issue, Dr. Morgan Rees, GPA's consultant, offered the following:

> [I]f you do it the way the Corps has done it, you yield a pretty conservative estimate. And if you are thinking about maximizing the utility of spending a dollar of tax money, you're getting a good, solid, dependable, conservative answer because of the way the formulation process works. In other words, you're not going to be wasting the money. It may not – because of the complexity of the

[6] Transcript, SEG Meeting at 102-04 (Dec. 10, 2010).
[7] Id. at 103.

> system, it may not go precisely the way the Corps is predicting it will go in the report, but you can have a high level of assurance it's going to be well spent, whether you reach capacity in 2032, you reach capacity in 2038, whether the Panama Canal gets completed in 2014 [or] 2018.
>
> You're still going to get a good return on your dollar. *So given that you have a high level of confidence of getting a good return on the dollar, you've got to question pretty seriously how much detail and precision you ought to go to complete the report and make a recommendation.* [8]

Taken as a whole this discussion reveals that the Corps did not feel it had the time, resources, or desire to develop the *most likely* or *reasonably foreseeable* future with-project and without-project assumptions; instead, it decided to take a short cut and use the "conservative" assumption that container traffic levels would stay the same whether the harbor was deepened or not.

From the Corps' perspective, this approach may have had some benefits. By taking it, the Corps avoided devoting time and money to developing a multi-port model or include in NEPA's alternatives analysis other ports in the Southeast or making a robust inquiry into indirect impacts or cumulative affects under NEPA, or garnering broad political support if it had to admit that a deeper Savannah Harbor would take business away from neighboring ports.

1. The Corps' Position That Container Traffic Growth Is Unrelated to the Proposed Project Is at Odds with Virtually All Non-Corps Stakeholders.

By adopting an unacceptably conservative assumption, the Corps violated another tenet of its civil works planning process—the common sense requirement. The Planning Guidance Notebook clearly states that "the planning process must reflect reason and *common sense* . . . ." Corps Planning Guidance Notebook at 1-1. To conclude that a deeper, wider, and more efficient harbor is not going to attract more commerce is counterintuitive at the least. It is not surprising that, without exception, those in the Savannah Harbor community have been quick to point out that a deeper, wider, and more efficient harbor will in fact be good for business.

The GPA, which has already pledged $182 million towards the Project,[9] has made it very clear that it sees the Project as an essential component of the future growth of the Port. As described above, the GPA's position has been consistent from the outset of this Project—that the deepening is "vital to continued growth of port activities in Savannah." GPA Press Release (July 13, 1998) (attached as Ex. A). And that's why the Tier I EIS stated that the "*[c]ontinued growth of the Port necessitates* that it remain efficient and cost competitive." Tier I DEIS at 14 (emphasis added). More recently, Curtis Foltz, the new executive director of the GPA, stated in

[8] Id. at 128-29 (emphasis added).
[9] See Aaron G. Sheinin & James Salzer, Deal Warns of Cuts, Promises Progress in First State of the State, Atlanta Journal-Constitution, (Jan. 12, 2011) available at http://www.ajc.com/news/georgia-politics-elections/deal-warns-of-cuts-802278.html (last visited Jan. 24, 2011); Mary Carr Mayle, Kingston: Harbor Deepening Still Very Much Alive, Savannah Morning News (Oct. 2, 2010), available at http://savannahnow.com/news/2010-10-03/kingston-harbor-deepening-still-very-much-alive (last visited Jan. 24, 2011).

a speech to the House and Senate appropriations committees: "The ships and jobs will only come to Savannah if the harbor is deepened."[10] This statement is directly at odds with the Corps' assumption that the container traffic at the Port will follow the same trajectory regardless of whether the harbor is deepened or not. Mr. Foltz has also said that, "The Savannah harbor deepening project is critically important to continued economic growth in the southeastern United States."[11] But based on the Corps' assumption, container traffic is not going to diverge from its current trend line.

Expanding still further, Mr. Foltz commented recently that, "expanding the Port of Savannah is a linchpin to the continued competitiveness of Georgia, the Southeast — and indeed the United States in the global economy."[12] Again, the Corps' projection portends of no faster container growth with or without the Project.

In fact, the GPA is so convinced that deepening the harbor is going to have a dramatic impact on container traffic that it is opting to spend and extra $20.4 million to have the Corps dredge the harbor to 48 feet instead of the 47 feet that the Corps supports.[13]

GPA is not alone in its conviction that the harbor deepening is essential to the welfare of the Port. Mark Holifield, the Home Depot executive in charge of logistics, is quick to point out that, "It is critical to maintain the competitive advantage that Savannah provides to Georgia and the region," because "if trade (advantages) shift, we would have to re-evaluate our investments" by considering other ports.[14] As Mr. Holifield implies, Home Depot might start to ship through another port that can accommodate larger ships if the Savannah Port cannot.

Politicians have jumped on the faster-harbor-growth band wagon as well. U.S. Representative Lynn Westmoreland recently said the following:

> This expansion will increase the freight capacity of the port of Savannah by 20 percent, all the while creating 10,800 new jobs and $242 million in additional income for employees. Some federal investment in this project would provide a significant return for the American taxpayer while bringing one of our country's top ports into the next generation of ocean commerce.[15]

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[10] Walter C. Jones, Georgia Ports' New Boss Makes Case for Harbor Deepening, Savannah Morning News, (Jan. 20, 2010), available at http://savannahnow.com/latest-news/2010-01-20/georgia-ports-new-boss-makes-case-harbor-deepening (last visited Jan. 24, 2010).

[11] Mayle, supra note 10.

[12] Curtis J. Foltz & Mark Holifield, Expanded Port Means More Jobs, Atlanta Business Chronicle, (Nov. 19, 2010) available at, http://bizjournals.com/atlanta/print-edition/2010/11/19/expanded-port-means-more-jobs.html (last visited Jan. 24, 2011).

[13] Mary Carr Mayle, Harbor Deepening Gets Big Boost, Savannah Morning News, (July 16, 2010), available at http://savannahnow.com/news/2010-07-17/harbor-deepening-gets-big-boost (last visited Jan. 24, 2011).

[14] Id.

[15] Lynn Westmoreland, Westmoreland: Obama—Support Harbor Deepening, Savannah Morning News, (Oct. 29,

Based on the Corps' "Multiport Analysis," however, even if the deepening were to create a 20 percent increase in freight capacity thus allowing larger ships to enter the Harbor, that extra capacity would go unused – at least in the short term – because, according to the Corps, associated land transportation costs would make it uneconomical for shipping lines to divert containers from other ports to Savannah Harbor.[16]

Agreeing with Rep. Westmoreland, rather than the Corps, Georgia's U.S. Senators have also made their position clear. U.S. Senators Johnny Isakson, R-Georgia, and Saxby Chambliss, R-Georgia, have requested $105 million in federal funds to continue the deepening Project. Both have submitted requests to the Senate Appropriations Committee to include the funding for SHEP in the fiscal year 2011 Energy and Water Appropriations bill. Chambliss justified the request by stating that, "The Savannah harbor must be deepened to keep up with the expansion of the Panama Canal. This project will provide tremendous benefit to Georgia, the Southeast and our nation as a whole."[17]

Both the outgoing and the incoming Governors of Georgia concur that the harbor deepening Project is worth the investment of state funds. Former Governor Perdue recently stated that "[Savannah Harbor's growth] won't last forever if we make no progress toward the deepening . . . So we don't want to inconvenience them or their customers and encourage them to go elsewhere."[18] In other words, Perdue appears to feel that if the harbor is not deepened, the big ships will not come. Governor Nathan Deal seems to agree, because he just announced Georgia's willingness to add another $32 million dollars to the $150 million that Georgia has already committed to the Project.[19]

Based on the stakeholders quoted above, it would seem that only the Corps believes that a 48-foot deep harbor would be no more of a draw for foreign and domestic shipping lines than a 42-foot deep harbor. This conclusion, of course, is contrary to the Tier I DEIS and the conventional wisdom of the stakeholders most likely to benefit from a deeper Savannah Harbor. To say that the Corps' assumption is the "most likely" or the "reasonably foreseeable" outcome of the harbor deepening is deepening is arbitrary and capricious.

2010), available at http://savannahnow.com/column/2010-10-30/westmoreland-obama-support-harbor-deepening (last visited Jan. 24, 2011).

[16] U.S. Army Corps of Engineers Savannah Harbor Expansion Project, Economics Appendix, at 173 (Nov. 5, 2010) (hereinafter Economics Appendix).

[17] Senators want $105M for Savannah Harbor, Atlanta Business Chronicle, (Apr. 5, 2010), available at http://www.bizjournals.com/atlanta/stories/2010/04/05/daily13.html (last visited Jan. 24, 2011).

[18] Larry Peterson, Kingston: It'll Be Tough to Deepen Savannah Harbor in Time to Float Big New Ships Due in 2014, Savannah Morning News, (Sept. 27, 2010), available at http://savannahnow.com/news/2010-09-28/kingston-itll-be-tough-deepen-savannah-harbor-time-float-big-new-ships-due-2014 (last visited Jan. 24, 2011).

[19] Sheinin & Salzer, supra note 10.

2. Even Corps Statements in the GRR and DEIS Belie the Corps' Assumption that the Proposed Harbor Deepening and the Container Traffic Are Unrelated.

In the Tier I EIS's statement of purpose the Corps expressed that "*[c]ontinued growth of the Port necessitates* that it remain efficient and cost competitive." Tier I DEIS at 14 (emphasis added). The Corps' "conservative assumption" taken in the Tier II DEIS and GRR is directly at odds with its position in the Tier I EIS; however, as evidence that it is not entirely comfortable with its "conservative assumption," there are several passages in the GRR and DEIS where the Corps returns to its prior position and expresses, albeit fleetingly, "common sense." In a telling passage in the GRR, the Corps admits that delays at the current 42 foot Savannah Harbor caused one shipping line to offload its containers at Charleston, which has a 45 foot harbor, instead of at Savannah. GRR at 56-57. This suggests that if Savannah Harbor is not deepened, other shipping lines may make a similar choice. This, of course, is directly at odds with the Corps' assumption that the same growth rate of container traffic at Savannah Harbor will occur with or without the proposed Project.

In other passages in the GRR, the Corps states that the harbor deepening will allow ships to reach their assigned berths on a more reliable schedule. This, in turn, is expected to encourage carriers to assign more of their large vessels to routes including the Savannah Harbor. GRR at 126. Similarly, the Corps predicts that the channel deepening will "encourage[] the deployment of larger vessels to Savannah." Id. at 127. All of these statements imply that a deeper Savannah Harbor will be more attractive to foreign shipping lines.

Like the GRR, the DEIS also includes passages that directly contradict the fundamental assumption that the Corps uses in its economic analysis. For example, in one of these passages, the Corps emphatically states that: "Harbor deepening would increase the amount of goods brought into the Savannah port." DEIS, App'x L at 34. A deeper port would mean bigger ships, fewer ships, shorter queues, and less waiting on the tide. Why wouldn't that translate into more business for Savannah Harbor? Savannah Harbor has grown so rapidly over the past decade because its landside operation has become a state-of-the-art facility. Why wouldn't a deeper more efficient portside operation yield similar benefits? Judging from the Corps' inconsistent analysis of this critical issue, the Corps does not appear to be entirely sure.

Until the Corps clears up the ambiguity of its position, it is difficult to judge the validity of the Corps' conclusions. Dr. Robert Stearns, whom SELC retained to review the economic components of the DEIS and GRR, concurs. As he provides in his attached report:

> In light of the divergent views between the Corps' economic models and the shipping community's assessment of the effect the project would have on container traffic, the Corps has not adequately explained why its assumption is valid and the shipping community's assessment is invalid. The answer to this question is paramount because:
>
> - if the Corps is correct, then there is no need to deepen the channel to keep Savannah Harbor functional and competitive; or

- if the shipping community is correct, then the Corps' economics analysis is fundamentally flawed because the Corps' NED analysis rests on its assumption that the with and without project scenarios would produce the same amount of container traffic.

Expert Report of Robert N. Stearns, Ph.D., at 6 (attached hereto as Ex. D) (hereinafter referred to as the "Stearns Report"). Furthermore, this ambiguity makes the Corps' GRR and DEIS legally deficient.

For instance, NEPA requires that the Corps consider all indirect effects of the harbor deepening. 40 C.F.R. §§ 1502.16(b), 1508.8(b). More container traffic would mean more distribution space would ultimately be required. The Corps highlights this issue in the DEIS where it states the following:

> Harbor development remains the most likely action to adversely affect the salt and brackish marshes remaining in the Savannah River estuary. *Harbor deepening would increase the amount of goods brought into the Savannah port. This could trigger the need for additional distribution centers and other support facilities or the expansion of exi[s]ting ones.* These new or expanded support facilities could impact wetlands. In-kind mitigation would be required where wetland impacts are unavoidable.

DEIS, App'x L at 34 (emphasis added).

As the above quote foretells, more distribution space in coastal Georgia may well mean the filling in of wetlands, as well as other environmental harm. Yet the Corps conveniently sidesteps such an analysis by relying on its assumption that container traffic at the port is going to grow at the same rate with or without the proposed deepening; therefore, there is no need for the Corps to examine any indirect impacts of the Project because, under the Corps' approach, there will be no additional indirect effects – that is, the same number of distribution centers will be required with or without the Project. While convenient for the Corps, this approach is divorced from reality. The question of indirect effects is discussed further in Section I.E. below.

3. Since the Corps's Positive Benefit-Cost Ratio Is Based Solely on Greater Port Efficiencies, the Corps Should Discuss Who the Likely Beneficiaries of These Cost Savings Will Be.

Another shortcoming of the Corps' economic analysis is that it does not address who is going to benefit from the harbor deepening. As the Corps explains at great length in the GRR and DEIS, a deeper Savannah Port will, according to the Corps, mean that bigger ships will be able to dock at the Garden City Terminal. As a result, the Corps contends, fewer ships will have to travel up and down the harbor channel. Also, ships will not be dependent on the tides to reach their berths. All in all, there will be cost savings, according to the Corps. But who will benefit from these alleged cost savings? Will these cost savings be passed on to the American consumer in the form of lower consumer prices or will they be pocketed by foreign manufacturers or

foreign shipping lines? The answer to this question is critical because, as Dr. Stearns points out in his analysis, if foreign interests are going to be the beneficiaries of the harbor deepening, all the United States will be doing by deepening the harbor is increasing our foreign trade deficit. More specifically, he asserts that:

> Foreign manufacturers and shipping lines may keep the savings of shipping through Savannah for themselves and pass none of these savings to U.S. consumers. Under such circumstances, the U.S. taxpayer would be asked to foot the bill to pay for a project that generates greater profits or lower prices for producers and consumers in other countries.

Stearns Report at 14. In short, by deepening our harbors, the United States could be making it less expensive for foreign countries to sell their goods in America. The Corps' economic analysis will not be complete until it addresses this fundamental question.

4. The Corps Must Explore More Thoroughly the Constraints Associated with Savannah Harbor.

As the Corps contends throughout the GRR and DEIS, shipping lines are building larger and larger ships, because these vessels can transport cargo more efficiently. Yet the design ship for the SHEP is a Post-Panamax Generation Two ship that was built in 1997. GRR at 121. Already ships that are significantly larger than the design ship are being built, yet the Corps does little to explain why it does not anticipate that these Post-Panamax Generation Three ships will call on Savannah Harbor.

While the GRR does contain information that states there are no air draft issues for the design ship, it acknowledges that it will be very difficult for Post-Panamax Generation Three ships to pass under the Talmadge Bridge. GRR, Econ. App'x at 51. Although the GRR does explain that two ships in the design-ship class will be able to pass at certain areas within the channel, it does not explain whether two Post-Panamax Generation Three ships would be able to pass in the channel. The Corps avoids these questions by simply stating that Generation Three ships will probably not call on Savannah Harbor, which is a counterintuitive position. If bigger ships mean greater efficiencies for Savannah Harbor, why does that principle not extend to Generation Three ships? As the GPA's Curtis Foltz has remarked, "Ships aren't getting any smaller. They're only getting bigger."[20]

The reason that this issue is so critical now, is that if it is in Savannah Harbor's long-term interests to have Generation Three ships call on it, then any additional work that would be necessary to allow their entry should be included in the current proposal. If, for instance, the Talmadge Bridge must be raised or the channel passing lanes must be further widened, then the economic and environmental costs associated with that work must be included in the current economic and environmental analysis. As Dr. Stearns explains in his attached report:

[20] Dan Chapman, Atlanta Leaders Push for Deeper Savannah Port, Atlanta Journal-Constitution, (Dec. 1, 2010), available at http://www.ajc.com/business/atlanta-leaders-push-for-762157.html (last visited Jan. 24, 2011).

> If a major bridge alteration were part of SHEP, there is a real possibility that the high cost of this related work would mean that SHEP would not generate any net economic benefits as traditionally defined by the Corps. The analytical assumption that Generation Three ships will not call at Savannah Harbor is a convenient way to dismiss this potential problem. If the Corps' baseline vessel forecast is right, there is a strong probability that the largest ships would be calling at some ports on the Southeast Atlantic Coast. Given the shipping lines' business practice of multiple ports of call, GPA may soon want to accommodate these larger ships at Savannah Harbor. The height of the Talmadge Bridge will become an increasingly contentious issue.

Stearns Report at 12 (citation omitted). The same would be true if the channel or passing lanes had to be enlarged to accommodate Generation Three ships. If the economic costs associated with such additional work are not factored into the current NED analysis, then the NED analysis will be skewed. And, as Dr. Stearns suggests above, if these costs were not factored in to the NED analysis, then a positive benefit/cost ratio would not result.

Irrespective of whether Post-Panamax Generation Three ships ever call on the Port, GPA may quickly decide that it needs a larger channel. On January 11, 2011, the Savannah River Maritime Commission ("SRMC") met to discuss the DEIS and GRR for the deepening Project. At this meeting, which was open to the public, consultants retained by the SRMC gave presentations regarding their preliminary evaluation of this Project. One of the consultants for the SRMC focused many of his comments on the navigational and safety aspects of the Project. In sum, the SRMC has cast a substantial level of doubt on whether the designed channel will be able to handle Post-Panamax shipping. Of particular concern are the following issues which we summarize here:

- According to the SRMC, the proposed channel is shallower than applicable design standards for fully loaded Post-Panamax ships, resulting in lower margins of safety. For example, the Navigation Study for Savannah Harbor Channel Improvements (Sept. 2004) determined that ships with a draft of 47.5 feet would hit the bottom in normal conditions in a channel with a depth of 52 feet. See Navigation Study at 34, Table 1. Since the currently proposed offshore channel is shallower, the SRMC predicts that a ship drawing 43 feet would be perilously close to running aground.

- Of further concern as it relates to draft is the SRMC's suggestion that the GRR misstates the applicable tide. Although it is true that there is a seven to eight foot tidal range at GCT, tidal range is closer to six feet at Fort Pulaski and four feet in the offshore channel. Overstating the extent of the tidal ranges raises additional concerns regarding the designed channel's capacity for handling fully loaded Post-Panamax ships, even on high tide.

- The offshore channel, as designed, would be about 570 feet wide. Post-Panamax ships have a beam of 160 feet (or, 28 percent of the offshore channel), and these ships can begin to veer off course due to wind and currents. If such a ship turns 10 degrees, the ship will take up to 56 percent of the channel width. In light of the proposed channel

design and the increasing size of ships expected, this presents a safety issue that needs to be studied more closely. Further, the designed proposed channel width will be even narrower than the current width, limiting further the size of ship that can utilize the post-project harbor.

- The GRR predicts that the GCT will ultimately have a demand of over 6,000 ships per year (or, 16 per day) however, SRMC's analysis suggests that the Port can only accommodate 12 ships per day due to the fact that as designed SHEP is essentially a one-way channel. The Corps or the local sponsor should conduct a traffic study to support its claim that GCT will be able to handle 6,000 ships per year.

- The Vertical Ship Motion Study for Savannah, GA, GRR, App'x 1.1.16, indicates that there will only be 120 days per year when wave conditions would be calm enough for a ship travelling at a speed of 6 knots and at a draft of 46 feet to transit the expanded channel without grounding. However, given the configuration of the proposed ocean channel, which is narrow and involves a sharp curve, consultants for SRMC have raised concerns that 6 knots is a dangerously slow speed for a container vessel to pass through the proposed ocean channel. In fact, consultants for SRMC have indicated that ships off the southeast coast often have to travel at 14 knots to stay in a narrow channel, such as the proposed SHEP channel; however a ship with a draft of 46 feet in the proposed channel will clearly hit the bottom at that speed. Further study is necessary to determine whether Post-Panamax ships can successfully navigate the ocean channel.

- Moreover, if the narrow design of the ocean channel requires ships to navigate at 14 knots, we are concerned that such a rate of speed would be in excess of NOAA's ship speed rule. See 73 Fed. Reg. 60,173 (Oct. 10, 2008) (requiring all vessels 65 feet or longer travel at *10 knots or less* in certain locations (SMAs), including off Savannah, along the east coast of the U.S. Atlantic seaboard at certain times of the year to reduce the threat of ship collisions with critically endangered North Atlantic right whales).

For these reasons, the concerns raised by the SRMC relating to the navigational capacity of the proposed expanded channel deserve serious consideration by the Corps. Accordingly, we recommend that the Corps require the additional studies recommended by the SRMC. If these studies find that additional dredging must be performed to make the channel larger, then it will be necessary for the Corps to incorporate these costs into the NED analysis and to incorporate any additional environmental impacts into the DEIS.

5. The Corps May Be Poised to Violate NEPA's Ban on Segmentation.

If the costs associated with raising the Talmadge Bridge and widening and deepening the shipping channel for Post-Panamax Generation Three ships—and possibly other Post-Panamax ships as described above—need to be included as components of the Project, then a DEIS that does not include consideration of their environmental impacts runs afoul of NEPA's bar against segmentation. It is well-settled that breaking a project "into small component parts" to avoid reviewing them together, "is to engage in illegal 'segmentation." New River Valley Greens v.

U.S. Dep't of Transp., No. 97-1978, 1998 U.S. App. LEXIS 22127, at *8 (4th Cir. Sep. 10, 1998) (quoting 40 C.F.R. § 1508.27(b)(7)).

A hallmark of segmentation is an initial proposed action involving "such a large and irretrievable commitment of resources that it may virtually force a larger or related project to go forward notwithstanding the environmental consequences." New River Valley Greens, 1998 U.S. App. LEXIS 22127, at *9. This conclusion is based in the regulations implementing NEPA, which provide that "proposals which are related to each other closely enough to be, in effect, a single course of action shall be evaluated in a single impact statement," including actions that "are interdependent parts of a larger action" and actions that "automatically trigger" other actions. 40 C.F.R. §§ 1502.4(a), 1508.25(a).

For our purposes, the question is whether the GPA is going to be content with a harbor that purportedly has an upper limit of Generation Two ships, or is going continue to seek to make the harbor larger and larger to capture the associated efficiencies of bigger ships. The Corps cannot wear blinders and ignore the latter situation and then pull them off five years from now when the GPA insists that to remain competitive it must raise the bridge and widen and deepen the channel.

E. The DEIS Relies on the Corps' Unreasonable Economic Assumptions to Dodge Analysis and Disclosure of Environmental Impacts.

As courts have recognized "[i]naccurate economic information may defeat the purpose of an EIS by 'impairing the agency's consideration of adverse environmental effects' and by 'skewing the public's evaluation' of the proposed agency action." NRDC v. U.S. Forest Serv., 421 F.3d 797, 811 (9th Cir. 2005) (quoting Hughes River Watershed Conservancy v. Glickman, 81 F.3d 437, 446 (4th Cir. 1996). The Corps' DEIS is a prime example. Despite NEPA's requirement that the Corps assess SHEP's indirect effects, the Corps in the GRR states: "It is important to note that the total cargo handled at Garden City Terminal is not projected to change due to implementation of the project. Therefore, secondary impacts associated with additional cargo traffic are not anticipated." GRR at 141. The Corps relied on this arbitrary and unreasonable assumption throughout the DEIS, thereby avoiding analysis and disclosure of many significant environmental impacts resulting from the Project.

1. Impacts to Air Quality.

The DEIS dismisses the Project's adverse impacts to air quality based on the unsubstantiated and implausible assumptions in its economic analysis, claiming, in sharp contrast to discussion in the Tier I EIS and numerous statements by GPA that the Project will not expand the Port's business. See DEIS at 5-108 (claiming that increased cargo movement through Savannah Harbor "would be the result of increasing demand for goods which move through the port and not a result of a harbor deepening").

Adding insult to injury, the DEIS's cursory discussion of air quality impacts makes inconsistent, competing claims regarding the manner in which the increased cargo would be transported. At times, the DEIS states that deepening the harbor from -42 to -48 feet will not

affect choices made by shippers or trade routes of ships calling on the Savannah Port, and will therefore have no impact on air quality. See, e.g., DEIS, App'x K at 66 (stating that because "a change in harbor depth in Savannah of up to 6 feet would not provide sufficient rationale for vessel lines to alter their trade routes or place larger (more efficient) vessels on those routes, the vessel fleets expected to occur With and Without the proposed harbor deepening would remain the same"); id., App'x K at 100 (stating that "no changes to air quality would occur as a result of the project").

In other instances the Corps is even more ambitious in its optimism, claiming that the Project will improve air quality by changing the behavior of shippers who, instead of making more trips with smaller ships, would upgrade to larger vessels and make fewer calls on Savannah. See, e.g., DEIS at 5-107 (stating that "[i]t is apparent from the Corps' Fleet Forecast . . . that the numbers of vessels calling on the Port of Savannah for years 2015, 2020, 2025, 2030, 2032 and 2065 will be significantly greater for the existing depth of -42 feet than the maximum proposed depth of -48 feet"); id. at 5-108 (asserting that reductions in air emissions would result "if larger container vessels were allowed to regularly call at the port"). The Corps does not include any supporting studies or analysis to even attempt to substantiate either of its conflicting conclusions. For the same reasons previously discussed in Sections I.C.2., I.D., supra, NEPA requires the Corps to complete a realistic analysis of the Project's impacts on the Port's growth and to incorporate the results into a full and complete analysis of the Project's impacts to air quality.

The DEIS further misleads the public concerning the Project's likely air pollution impacts by asserting that "maritime industries are not major air emitters" and "[t]he air quality in the harbor area is generally good." DEIS at 5-105. In fact, marine shipping operations constitute a major source of harmful air pollutants. Ocean-going vessels, land-side equipment, and secondary emissions from port development have significant impacts to air quality. For that reason, EPA recently produced an Evaluation Report, addressing these emissions. See EPA Needs to Improve Its Efforts to Reduce Air Emissions at U.S. Ports, Report No. 09-P-0125 (Mar. 23, 2009), available at http://www.epa.gov/oig/reports/2009/20090323-09-P-0125.pdf (last visited Jan. 25, 2011). The report explains that air pollution from port activities "impact[s] communities surrounding port areas" and has "significant environmental and human health impacts, such as cancer and asthma." Id. at 1-2. Emissions of greatest concern include nitrogen oxides (NOx), particulate matter (PM), sulfur oxide (SOx), carbon monoxide (CO), hydrocarbons (HC), and air toxics, especially diesel exhaust. Id. at 2.

The Report goes on to explain that "[d]iesel and other emissions from port activities" harm onshore communities through "increased cancer rates, asthma, other respiratory and cardiovascular diseases, and premature death." Id. at 3. EPA has recognized that impacts of diesel emissions from ports extend beyond local communities to "contribute significantly to regional air pollution." Id. at 2, 3. Similarly, a 2008 study by the National Oceanic and Atmospheric Administration found that commercial shipping results in "a significant impact on air quality and health on both local and regional scales." Id. at 3.

In addition, the DEIS acknowledges that the Air Emission Inventory prepared for the Project "does not include a detailed dispersion modeling assessment" of air toxics or a "risk-

based assessment of the health impacts" attributable to the Project. DEIS at 5-106. The DEIS must include detailed dispersion modeling to accurately assess and disclose impacts to local communities and to account for the fact that those nearest the source face the greatest threat from air toxics, as well as the potential for "hot spots" of aggravated effects to occur. Similarly, given the wide and growing recognition of the significant harm port-generated air pollution can do to human health, the Corps must include a risk-based health impact study. A legally sound EIS cannot ignore these impacts on the environment and surrounding communities, much less downplay their significance, as the DEIS has done here. Moreover, NEPA requires the Corps to consider environmental justice in its EIS. The Corps appears to have ignored this obligation in declining to consider which communities will be most impacted by air pollution.

Finally, the DEIS does not assess the Project's impacts to the affected areas' status under the Clean Air Act ("CAA"), 42 U.S.C. §§ 7401-7671q (2010). The DEIS states only that the affected areas are presently in attainment for the all National Ambient Air Quality Standards ("NAAQS") and claims the Project is therefore compliant with the CAA because this present status means the Corps need not prepare a conformity determination pursuant to CAA Section 176. The DEIS fails, however, to analyze and disclose whether the Project would push the impacted areas into non-attainment or maintenance status and what the Project's incremental impacts on compliance, or lack thereof, with applicable NAAQS will be. This omission is significant because the Project might have the potential to bring the affected area into non-attainment with the applicable standards for PM. The DEIS references an earlier EPA report indicating increases in PM 2.5 concentrations from 2000 to 2006, resulting in measurements exceeding the allowable daily range in 14% of the measurements taken for the study. DEIS, App'x K at 100. Similarly, EPA has proposed more stringent standards for ground-level ozone and has also predicted counties with ports might have difficulty meeting the standard. Report No. 09-P-0125, at 5. Failure to meet PM and ozone standards threatens not only regional public health, but could also lead to far-reaching planning requirements, emissions controls, and potential penalties under the CAA.

2. Sea Level Rise and Greenhouse Gas Emissions.

On February 18, 2010, Nancy H. Sutley, Chair of the Council on Environmental Quality, issued Draft NEPA Guidance on Consideration of the Effects of Climate Change and Greenhouse Gas Emissions to the heads of federal departments and agencies. One purpose of the guidance was to recommend ways in which Federal agencies could improve their consideration of the effects of greenhouse gas emissions and climate change in their evaluation of proposals for Federal actions under NEPA. See Draft Guidance at 1. In addition, the Corps has issued Engineering Circular 1165-2-211 Water Resource Policies and Authorities Incorporating Sea-Level Change Considerations in Civil Works Programs. The Corps' guidance states that "[p]otential relative sea-level change must be considered in every USACE coastal activity as far inland as the extent of estimated tidal influence." Engineering Circular 1165-2-211 at 1. We have the following comments relating to how the Corps has addressed sea level rise considerations in connection with SHEP.

- The DEIS and GRR should include a section explaining how Engineering Circular 1165-2-211 was applied to this Project and what were the results of its application.

- It is unclear from the DEIS and GRR to what extent the Corps has considered issues related to climate change in evaluating the dissolved oxygen injection system. In exchange for exacerbating already present, unnaturally low levels of dissolved oxygen in the water column, the Corps is proposing, as mitigation, to inject dissolved oxygen into the Savannah River. Pursuant to the proposal, this system would have to be run continuously during the summer months in perpetuity. As discussed previously, we question the soundness of a decision to place a river on a permanent respirator of sorts. We are further troubled by a decision to implement a mitigation strategy that requires such a significant source of energy in perpetuity in light of climate change considerations. Perhaps the Corps should evaluate ways in which to mitigate for the new energy consumption created by its mitigation proposal.

- The DEIS and GRR should address the extent to which the Corps factored different sea level rise scenarios into its analysis with respect to air draft issues. To the extent the Corps did consider this issue, how did sea level rise inform the Corps' air draft analysis?

- In the GRR, the Corps explains some of the ways in which the agency expects sea level rise to impact the Savannah River estuary. For example, the Corps suggests that sea level rise could reduce tidal freshwater marshes by approximately 370 acres in light of the historic rate of rise and also acknowledges that impacts could be far more extensive under other scenarios. GRR at 93. The Corps anticipates sea level rise would also affect other natural resources due to increased salinity levels. Anticipated impacts include those to fisheries and increased chlorides at the City of Savannah's water intake. GRR at 93. Under NEPA, the Corps cannot take the position that it need not provide full mitigation for impacts resulting from SHEP because some of these same resources will be affected as a result of climate change. The Corps must fully mitigate for the earlier impacts from SHEP now, especially since impacts from the SHEP will occur in the short-term whereas climate change related impacts will occur gradually over many years.

3. Additional Indirect Environmental Impacts

NEPA regulations define indirect effects as:

> Indirect effects, which are caused by the action and are later in time or farther removed in distance, but are still reasonably foreseeable. Indirect effects may include growth inducing effects and other effects related to induced changes in the pattern of land use, population density or growth rate, and related effects on air and water and other natural systems, including ecosystems.

40 C.F.R. § 1508.8(b). Among other effects, NEPA "requires agencies to consider the significance of growth induced by the federal action." Georgia River Network v. United States Army Corps of Eng'rs, 334 F. Supp. 2d 1329, 1344 (N.D. Ga. 2003). Here, the Corps declined to do so, even though the DEIS itself contains statements contradicting its claim that the Project has no bearing on the port's growth. In particular, the DEIS states that:

> Harbor development remains the most likely action to adversely affect the salt and brackish marshes remaining in the Savannah River estuary. *Harbor deepening would increase the amount of goods brought into the Savannah port. This could trigger the need for additional distribution centers and other support facilities or the expansion of exi[s]ting ones.* These new or expanded support facilities could impact wetlands. In-kind mitigation would be required where wetland impacts are unavoidable.

DEIS, App'x L at 34 (emphasis added). It adds that, as port development has increased on the Savannah River, "the Savannah District Corps of Engineers Regulatory Office has observed an increase in Section 404 permits for facilities (warehouses, distribution centers, etc.) which support port operations." DEIS, App'x L at 33. It follows that the largest port project in the history of the Savannah Harbor will undoubtedly induce and require further development — including port infrastructure expansion, road and freight rail construction, increased traffic, additional warehouse facilities, and other changes in land use patterns. This induced development would invariably have negative environmental effects.

The Corps' assumption that the Project is unrelated to GPA's business skews the DEIS in other ways too. For example, the DEIS, on the one hand, acknowledges that the introduction of non-native or invasive species can have "detrimental affects on an ecosystem." DEIS at 5-156. "Invasive species have been introduced into new areas through the discharge of ballast water from deep-draft vessels. Increasing the amount of ballast water exchange within the port is the primary avenue through which the proposed harbor deepening could have an adverse effect on this issue." DEIS at 5-156. However, the DEIS then concludes:

> The proposed harbor deepening is not expected to increase the number of vessels that call at the port of Savannah. The economic analysis forecasts a decrease in the number of vessels with a deeper channel over that which would have been necessary to move the same volume of cargo through the port using a smaller fleet of vessels. *Since there is no increase in the number of vessels expected to call as a result of the proposed deepening, there would be no additional risk from invasive species through ballast water.*

Id. (emphasis added). In these ways and others, the Corps assessment of indirect impacts is based on a flawed economic assumption that SHEP will result in no increase of cargo going through the Port.

F. Failure to Consider Cumulative Effects Associated with the Project.

Under NEPA, the Corps is required to thoroughly assess the cumulative effects of the proposed SHEP. 40 C.F.R. § 1508.7 & 1508.25. NEPA's implementing regulations define cumulative effects as "impacts on the environment which result from the incremental impact of the action when added to other past, present, and reasonably foreseeable future actions regardless of what agency (federal or non-federal) or person undertakes such other actions." 40 C.F.R. § 1508.7. The cumulative impact analysis "must be more than perfunctory; it must provide a useful analysis of the cumulative impacts of past, present, and future projects. . . . [A] cumulative impact

analysis must be timely. It is not appropriate to defer consideration of cumulative impacts to a future date when meaningful consideration can be given now." Kern v. U.S. BLM, 284 F.3d 1062, 1075 (9th Cir. 2002) (citation and internal quotation marks omitted). The Corps has failed to consider adequately SHEP's cumulative impacts.

1. The Cumulative Impacts of Garden City Terminal's Improvements and Other Future Port-Associated Projects.

The GRR states that the "Panama Canal Expansion Project will be fully operational by 2014, which will allow the passage for vessels with up to 50 feet of draft. The Georgia Ports Authority has planned and funded improvements at Garden City Terminal [("GCT")] to coincide with the Panama Canal Expansion Project." GRR at 14. GCT has planned to invest at least $130 million dollars of improvements in the next ten years "to coincide with the Panama Canal Expansion Project." GRR at 14; see also DEIS, App'x O at 21 (discussing GCT-related projects). Some of the proposed GCT improvements and GCT-associated projects are described below:

- "If the harbor is deepened, [GPA] plans to double the amount of cargo Savannah can handle by 2020. It also expects to spend another $1.1 billion on cranes and rail yards to accommodate twice as many containers."[21]

- In 2010, the State of Georgia approved $120 million in bond revenue to use toward completing the Jimmy DeLoach Highway from Interstate 95 to the Garden City Terminal. DEIS at 5-150.

- Long-term highway plans include "the Brampton Road Connector which will provide direct access from the Garden City Terminal to Interstate 516 and connections to Interstate 16." DEIS at 5-150.

- "Other actions to increase terminal capacity would entail incorporation of adjacent GPA properties into container operations." DEIS, App'x O at 22.

- Measures to augment the container capacity of GCT include "off-site storage of long-dwell empties." DEIS, App'x O at 23.

Importantly, the DEIS states that the "[h]arbor deepening would increase the amount of goods brought into the Savannah port. This could trigger the need for additional distribution centers and other support facilities or the expansion of exi[s]ting ones. These new or expanded support facilities could impact wetlands." DEIS, App'x L at 34. Given these significant planned improvements at GCT as well as related, planned highway projects, the Corps must consider and evaluate any potential environmental impacts of the GCT expansion projects with those of SHEP. Similarly, the DEIS should consider other reasonably foreseeable improvements at other facilities, both public and private, along the Savannah River, especially improvements associated with increased cargo from the SHEP.

[21] Chapman, supra note 21.

2. The Cumulative Impacts of Future Savannah Harbor Projects.

A cumulative impact analysis must not examine a project in isolation, "without considering the 'net' impact that all projects in the area may have on the environment." LaFlamme v. FERC, 852 F.2d 389, 402 (9th Cir. 1988). The Corps' analysis of cumulative impacts is flawed — focusing narrowly on the "short-term" nature of the potential adverse environmental impacts and ignoring cumulative impacts that "can result from individually minor but collectively significant actions taking place over a period of time," 40 C.F.R. § 1508.07, as well as the potential for other individually significant actions. The DEIS fails to include in its cumulative impacts analysis reasonably foreseeable alterations to the Savannah River.

Since 1927, there have been four extensive harbor deepenings and numerous other projects, such as the Sediment Control Works Project and berth deepenings, with serious environmental impacts. DEIS, App'x L at 10. Given the history of deepening projects in the harbor, it is reasonably foreseeable that as technology advances and container ships become larger, there will be more deepening projects. The DEIS states that "due to ongoing ship-building trends, the size of the vessels calling at ports along the US east coast is expected to increase." DEIS at 3-4. The foreseeability of these projects is bolstered by GPA's strong desire to remain a competitive international port as evidence by GPA's willingness to pay millions for an additional foot more than the NED depth of 47 feet. Thus, the DEIS should consider and evaluate not just deepening to 48 feet, but future deepening to greater depths.

Similarly, as discussed in detail in Section I.D.4., supra, the widening of the harbor and the raising of the Talmadge Bridge are "reasonably foreseeable" projects that will allow the harbor to accommodate the Generation Three ships and other larger vessels. Pilots familiar with the harbor have expressed that SHEP would not support two-way traffic. In the interests of safety and in order to accommodate the world's largest ships in the future, it is likely that the GPA will widen the harbor. Also, the DEIS does not consider the potential elevation of the Talmadge Bridge so that the harbor may accommodate Generation Three ships. Given the continuing enlargement of container ships and GPA's strong desire to remain competitive, the raising of Talmadge Bridge is reasonably foreseeable under NEPA. The DEIS's failure to examine foreseeable future harbor projects does not satisfy NEPA's requirement that the Corps examine "past, present and reasonably foreseeable future actions." 40 C.F.R. § 1508.7.

3. The Cumulative Impacts of SHEP and the Jasper Terminal.

The cumulative impacts analysis requirement is based on the notion that "even a slight increase in adverse conditions that form the existing environmental context may threaten significant harm . . . ." Ga. River Network, 334 F. Supp. 2d at 1338. The DEIS' failure to examine a foreseeable Jasper Terminal, which would more than slightly alter the environmental context on the Savannah River does not satisfy NEPA's requirement that the Corps examine "past, present and reasonably foreseeable future actions." 40 C.F.R. § 1508.7. It is imperative that the proposed Jasper Terminal and its environmental impacts are analyzed in combination with SHEP, given that the construction of both projects would occur in close vicinity on the Savannah River and would impact the same coastal resources. Indeed, it is quite possible that certain environmental impacts on the Savannah River estuary caused by SHEP – such as the

destruction or alteration of wetlands and marshes – could be exacerbated by the construction of the Jasper Terminal. Similarly, construction of the SHEP could exacerbate the impacts of Jasper. For example, if the Jasper Terminal proceeds as planned, its location would be at least partially on one of SHEP's confined dredge material disposal facilities (CDFs), Site 14A/B. The DEIS states that "the lost dredged material disposal capacity would need to be replaced elsewhere . . . . Replacement of that capacity through the expansion of the CDFs to the north into existing salt marsh would result in extensive secondary wetlands impacts which would need to be mitigated." DEIS, App'x O at 75. This could result in additional environmental impacts given that construction of CDFs in area has resulted in the loss of over 6,000 acres of wetlands. DEIS, App'x L at 33. Indeed, it is possible that the severity of the cumulative impacts would preclude construction of the Jasper terminal if SHEP is allowed to proceed first, without consideration of Jasper.

The Corps virtually ignores the Jasper Terminal in its cumulative impacts analysis. The two major port projects, however, are closely connected, as evinced by the DEIS's numerous discussions of the Jasper Terminal in the DEIS and the Corps' own consideration of the Jasper Terminal in relation to Garden City Terminal's operations. See, e.g., GRR at 223-226; see also DEIS at 5-120 (stating that the deposition of dredged sediments from SHEP would "raise the elevation of the property, resulting in less fill being required in the future to raise the site to an elevation for [Jasper] terminal operations"). Where the DEIS does recognize the environmental impacts of the Jasper Terminal, its consideration of such impacts is woefully inadequate. Specifically, the DEIS states that "[d]eepening the existing navigation channel to River Mile 5 [i.e. the Jasper Terminal] would be expected to have only minimal impacts on the salinity and dissolved regimes in Savannah Harbor. Detailed impacts to fishery habitat cannot be predicted until detailed plans become available." DEIS, App'x at L at 46. First, NEPA prohibits conclusory findings of no adverse environmental impact without sufficient evidence to support these assertions. See Sierra Club v. Marsh, 769 F.2d 868, 881 (1st Cir. 1985). Second, the DEIS's assertion of a lack of information on the Jasper Terminal's impact on fisheries goes directly against NEPA's regulation concerning "incomplete or unavailable information." 40 C.F.R. § 1502.22. If, during an agency's evaluation of environmental effects, there is incomplete or unavailable information, the agency "shall always make clear that such information is lacking." Id. § 1502.22(b). Moreover, if the incomplete or unavailable information can be obtained and the "overall costs of obtaining it are not exorbitant," the agency must include the information in the EIS. Id.

Furthermore, the failure to consider the Jasper Terminal belies GPA's own statements on the subject. For example, as recently as December 2010, GPA Executive Director Curtis Foltz discussed the reasonably foreseeable Jasper Terminal:

> The Jasper port is a very solid project . . . . They are currently doing commercial viability studies to help support the long-term need for the project. Initial engineering designs have been completed. It's all moving forward, as it was expected to, on its current timeline. I think it is recognized, certainly by the Georgia [Congressional] delegation, that long term, a port in that region helps to

support that area of the country's demographic growth.[22]

Yet, when the GPA and the Corps had the opportunity to discuss the two projects in a coordinated fashion, they chose not to.

It is well established that NEPA "does not limit the inquiry to the cumulative impacts that can be expected from proposed projects; rather, the inquiry extends to the efforts that can be anticipated from 'reasonably foreseeable future actions.'" Fritiofson v. Alexander, 772 F.2d 1225, 1243 (5th Cir. 1985); see also City of Davis v. Coleman, 521 F.2d 661, 676 (9th Cir. 1975) ("Reasonable forecasting and speculation is thus implicit in NEPA . . . ."). The DEIS's inadequate cumulative impact analysis directly conflicts with the purpose of the cumulative impacts requirement, which "is to provide readers with a complete understanding of the environmental effects a proposed action will cause." N.C. Alliance for Transp. Reform v. U.S. Dep't of Transp., 151 F. Supp. 2d 661, 698 (M.D.N.C. 2001). The Corps' failure to examine cumulative impacts of SHEP and the Jasper Terminal renders the DEIS incomplete and in violation of NEPA.

4. In Assessing the Project's Impacts for Both NEPA and CWA Purposes, the Corps Cannot Ignore EPA's Proposed Revisions to the Total Maximum Daily Load ("TMDL") for DO in the Estuary.

The Savannah River estuary, which will be "directly affected" by the Project, DEIS at 5-37, suffers from critically low DO levels in the summer months. DO is "a critical resource in the harbor." Id. And, because the stretch of the Savannah River through the harbor and into the estuary fails to meet Georgia's water quality standards for DO, this river segment is currently listed on Georgia's CWA Section 303(d) list as impaired for DO. DEIS at 5-37; see 33 U.S.C. § 1313(d) (requiring states to implement total maximum daily loads ("TMDLs") to reduce pollution in impaired waterways). In 2006, EPA promulgated a TMDL for DO in the Savannah Harbor. See EPA, Final TMDL for DO in Savannah Harbor (Oct. 2006) (hereinafter "2006 TMDL"), available at http://www.georgiaepd.org/Files_PDF/techguide/wpb/TMDL/Savannah/EPA_SavannahHarbor_DO_TMDL_2006.pdf. The TMDL provides that "[t]he Savannah Harbor cannot accept any discharges of oxygen-demanding substances and still attain the applicable [DO] criterion." TMDL at 10.

In explaining this conclusion, EPA stated that Georgia and South Carolina would work cooperatively to "assess options for developing and adopting appropriate criteria for this waterbody" and that the existing Savannah Harbor Project would factor into this analysis. Id. at 11. Specifically, EPA recognized that "[s]ince the existing Harbor deepening and control structures have depressed the dissolved oxygen in the River, the biological impacts of this depressed dissolved oxygen regime and the ability to mitigate its impacts will be factors in the development of an appropriate dissolved oxygen criterion for the Savannah Harbor." Id.

[22] Ed Lightsey, All About Business: Georgia Ports: Georgia's Ports Have Accounted for 10,000 New Jobs Throughout the State in the Last Two Years, Georgia Trend(Dec. 2010), available at http://www.georgiatrend.com/features-business-industry/12_10_ports.shtml.

EPA has since proposed a revised TMDL. EPA, Draft Revised TMDL for DO in Savannah Harbor (Apr. 2010) (hereinafter "Draft Revised TMDL"), available at http://www.epa.gov/region4/water/tmdl/georgia/savannah_harbor_tmdl_draft_201056.pdf.pdf (last visited Jan. 24, 2011). The proposed revised TMDL, in contrast to the existing "no discharge" TMDL, would require an aggregate reduction in point source discharges of oxygen depleting substances of approximately 85 percent. See id. It does not, however, take into account impacts to DO from the proposed Project, nor does the Corps consider the impacts of its actions on dischargers affected by the TMDL. The Corps' failure to take into account cumulative impacts of the revised TMDL and the impacts of its Project on point source dischargers violates NEPA and impermissibly skews its review under the Section 404(b) Guidelines. Particularly given the substantial uncertainty surrounding its proposed DO mitigation, the Corps must consider the Project's potential impacts to dischargers and relationship to the TMDL.

The Project is a factor in implementation of the TMDL, as EPA previously acknowledged in explaining the relationship of previous deepenings to the 2006 TMDL, and the Corps must analyze it as such. The Corps must consider, for example, whether water quality trading in which SHEP proponents fund reductions in point source discharges affecting DO levels would better serve water quality and the objectives of both Section 303(d) and Section 404. The Corps' failure to do so also further skews its economic analysis. The available information suggests that foreign shippers, not domestic interests, would receive the lion's share of the s benefits from the SHEP, which would likely exacerbate the existing DO impairment in the harbor. In effect, the Project would subsidize these foreign interests not only at the taxpayer expense associated with the Project, but at the expense of local point-source dischargers, who would be required to achieve even greater discharge reductions to compensate for the added impacts of the SHEP.

G. To Comply with NEPA, the Corps Must Prepare a Programmatic EIS.

Under NEPA, where "several proposals for [projects] that will have cumulative or synergistic environmental impact upon a region are pending concurrently before an agency, their environmental consequences must be considered together." Kleppe, 427 U.S. at 410. Accordingly, a comprehensive or programmatic EIS "is appropriate . . . where the proposal itself is regional or systemic in scope, or where the proposal is one of a series of interrelated proposals that will produce cumulative systemwide [sic] effects that can be meaningfully evaluated together." Georgia River Network, 334 F. Supp. 2d at 1342 (quoting Izaak Walton League of America, 655 F.2d at 374).

In other words, NEPA requires that where "foreseeable similar projects in a geographical region have a cumulative impact, they should be evaluated in a single" programmatic EIS. City of Tenakee Springs v. Clough, 915 F.2d 1308, 1312 (9th Cir. 1990); see also 40 C.F.R. § 1508.7. Currently, there are multiple planned or proposed port deepening projects in the Southeast. GRR at 70. If constructed, these projects would have cumulative and synergistic environmental impacts that should be examined in a programmatic EIS. The Corps' failure to prepare a programmatic EIS for SHEP and related port projects is a violation of NEPA.

The Corps states that the "expected future growth of container cargo along the East Coast

[will] require expansion in the capacity of several deepwater container terminals" and "expansion of any existing container terminal or creation of a new terminal would cause environmental impacts." DEIS at 3-6. In the south Atlantic region, at least four port projects are planned or proposed—including Savannah, Jacksonville, Charleston, and Norfolk. GRR at 70. Each deepening project includes the expenditure of substantial federal funds, each project requires numerous federal permits, and each project presents significant environmental impacts on federally controlled coastal resources. Each project, when combined with others, could cause cumulative and synergistic impacts on the nation's environment, including its major rivers and estuarine and marine systems. The Corps "must give a realistic evaluation of the total impacts and cannot isolate a proposed project, viewing it in a vacuum." Grand Canyon Trust v. Federal Aviation Admin, 290 F.3d 339, 342 (D.C. Cir. 2002). . The Corps' review of these projects in isolation undermines two of NEPA's keystone objectives: informed public participation and informed agency decision-making. See Citizens for a Better Henderson v. Hodel, 768 F.2d 1051, 1056 (9th Cir. 1985).

The potential cumulative and synergistic environmental effects of the port expansion projects demand a programmatic analysis. The projects in the south Atlantic together present heightened risks to endangered species such as the right whale and shortnose sturgeon. Additionally, these projects are proposed in multiple rivers and marine systems on the East Coast and would cumulatively alter and destroy rare tidal areas including wetlands and marshes of national importance. The projects would also degrade estuarine wildlife values, fisheries, and disrupt coastal sediment flows. Considering the potential adverse impacts the projects would have on coastal resources and marine life, it is imperative that the Corps analyze the adverse impacts of SHEP in conjunction with the impacts of the other proposed port projects in the south Atlantic.

A programmatic analysis of environmental impacts is especially appropriate here where multiple ports are competing against others for the growing container business and the capability to accommodate Post-Panamax ships. To prepare for the Panama Canal port expansion, port authorities along the east coast are proposing deepening projects. Because each project is being pursued and examined separately, there is a possibility that the combined impact would result in more harm than good. For example, without a comprehensive analysis of the proposed projects, the country could end up with port expansions that provide marginal benefits while resulting in significant destructive impacts on the environment. Under NEPA, the regulations require that the Corps analyze proposed actions in the same EIS when it is the "best way to assess adequately the combined impacts of similar actions." 40 C.F.R. § 1508.25(a)(3). In examining the impacts of SHEP separately from other projects, the Corps has ignored that the crucial aspect of a programmatic EIS—the determination of "whether the various agency actions, when combined, have an effect on the environment that might be overlooked if examined separately . . . ." Sierra Club v. Watkins, 808 F. Supp. 852, 863 (D.D.C. 1991).

While the Corps' Multiport Analysis considers whether SHEP would have an economic affect on other ports in the Southeast, it has not considered the cumulative environmental impacts of the projects. A programmatic EIS is necessary in this case because it would (1) ensure that the Corps considers alternative means of meeting the demands of a new class of containerships, and (2) potentially reveal that the federally funded expansion of multiple port

facilities is not in the public interest. It is only through a "comprehensive consideration of pending proposals [that] the [Corps can] evaluate different courses of action." Kleppe, 427 U.S. at 410. Until the Corps prepares a programmatic EIS examining the ports that are now vying for the Post-Panamax ships, it will not be in compliance with NEPA.

H. The DEIS Violates NEPA Because it Does not Contain an Adequate Alternatives Analysis.

The alternatives analysis is "the heart of the environmental impact statement. 40 C.F. R. § 1502.14. It requires federal agencies to "study, develop, and describe appropriate alternatives to recommended courses of action in any proposal which involves unresolved conflicts concerning alternative uses of available resources." 42 U.S.C. § 4332(E). And in conducting this analysis, the agencies must "rigorously explore and objectively evaluate all reasonable alternatives." 40 CFR § 1502.14(a). The level of scrutiny required by NEPA in the alternatives analysis is proportional to the scope of the proposed project and the nature of the environmental impacts associated with it. See Brooks v. Volpe, 350 F. Supp. 269, 275-76 (W.D. Wash. 1972).

Here, the Project is enormous. To complete the Project, the Corps would have to dredge a 36 mile channel along the ocean floor and up the Savannah River; re-plumb the estuary; eliminate rare tidal freshwater wetlands and saltwater marsh; and displace endangered fish from their habitat. A project of this magnitude, in an ecosystem which is both exceptionally complex and suffering from the cumulative impacts of a long series of previous dredging and flow management projects, requires the most detailed scrutiny before a preferred alternative is selected. So far, the Corps has not taken the "hard look" that NEPA requires.

1. Because the DEIS Does not Consider Other Ports in the Region as Possible Alternatives, the DEIS does not Comply With NEPA.

Although the Corps does examine other ports in the Southeast to determine whether their container throughputs would be impacted if Savannah Harbor were deepened, the Corps does not examine whether the Corps should undertake harbor expansion projects at one or more of these other ports instead of at Savannah Harbor. The DEIS does not explain whether or not, for example, the Jacksonville or Charleston harbors could be deepened and improved to the same extent as Savannah Harbor for a lesser amount of money and fewer environmental impacts. This is critical in determining whether the DEIS is sufficient, because, as the Ninth Circuit Court of Appeals held in Citizens for a Better Henderson, a "viable but unexamined alternative renders [the] environmental impact statement inadequate." 768 F.2d at 1057.

2. The Failure to Adequately Evaluate Jasper as an Alternative Violates NEPA.

The DEIS's consideration of the Jasper Terminal falls far short of NEPA's requirement that the DEIS "rigorously explore and objectively evaluate" alternatives to the proposed action. 40 C.F.R. § 1502.14(a). Unlike all other alternatives considered by the Corps, the Jasper Terminal will likely be constructed. Even GPA's executive director, Curtis Foltz, recognizes the future Jasper Terminal, recently stating that the "Jasper port is a very solid project" and that the

project is "moving forward, as it was expected to, on its current timeline."[23] Thus, the Jasper Terminal is not simply a Corps-defined hypothetical alternative, but a viable alternative that could have dramatically less environmental impacts than deepening to the Garden City Terminal. The Corps' failure to conduct a fair and balanced consideration of the Jasper Terminal renders its alternatives analysis inadequate under NEPA.

The DEIS inconsistently treats the planned upgrades at GCT and the land-side construction costs of alternatives, especially those of the Jasper Terminal. This inconsistency offends NEPA's requirement that alternatives are treated consistently and fairly. On one hand, the DEIS excludes from the preferred alternative at least $130 million of improvements at GCT planned in anticipation of the expanded Panama Canal on the basis that these upgrades would occur with or without the expansion of the Canal. Yet the DEIS treats the construction of the Jasper Terminal as part of that alternative's costs even though the DEIS acknowledges that the Jasper Terminal would occur with or without the expansion of the Canal. See, e.g., DEIS, App'x O at 34 (The Jasper Terminal "would supplement container handling capacity [at Garden City] to help meet the growth in future demand."). This inconsistent treatment precludes any meaningful analysis of the Jasper Terminal as an alternative because the purported $357 million of construction costs for the Jasper Terminal alone present GCT as the least expensive alternative. DEIS, App'x O at 35, Table 6. The actual dredging and mitigation of the Jasper Terminal, however, are almost two-thirds less expensive than they are for the preferred deepening project to GCT. See id.

In addition, the Jasper Terminal would result in a reduction of demand for services provided by GPA at GCT and therefore some of GPA's proposed spending for improvements at the terminal and associated facilities may become unnecessary. In other words, Jasper Terminal would allow GPA to avoid significant expenditures at GCT and certain sunk costs could be recovered. For example, properties currently owned by GPA that are intended for future utilization could be sold, rather than developed for additional throughput. See DEIS, App'x O at 21. The DEIS improperly excludes these costs savings despite GPA's informing the Corps that it will implement GTC upgrades as needed. See DEIS, App'x O at 25. An adequate assessment of Jasper Terminal as an alternative to SHEP must include the cost savings for GPA that would result from the Jasper Terminal and these must be quantified and used to offset the construction cost of the Jasper Terminal (if they are to be included). At the same time, the SRMC has expressed concern that the design of the Project's channel may make it practically impossible to develop the Jasper Terminal given the fact that the proposed channel, as designed, will not be able to accommodate two-way traffic. Thus, the Jasper Terminal should be considered now as an alternative to ensure that the current Proposal will not unintentionally undermine the prospects for developing the Jasper Terminal.

3. The Alternatives Analysis is Flawed Because it Does not Consider all the Components of the Various Alternatives in a Consistent Manner.

As described above, in order for an alternatives analysis to be lawful, the agency conducting the analysis must include all aspects of each alternative and do so in a consistent

[23] Lightsey, supra note 23.

manner. The Corps did not accomplish this with its analysis of the Project. Specifically, the Corps' preferred alternative does not include the landside improvements to the Garden City Terminal that have been performed and will be performed to ready the terminal for Post-Panamax ships. See DEIS, App. O at 36. It goes on to explain that GPA has planned these improvements "to coincide with the Panama Canal Expansion Project." GRR at 14. In the DEIS, however, the costs of upgrades at the Garden City Terminal are entirely disconnected from the Project and therefore are not included in the project costs. In contrast, the Corps does include these costs in the "without project alternative," as well as all of the other alternatives to deepening to the Garden City Terminal. DEIS, App. O at 35-36. This, of course, skews the entire alternatives analysis. If the GPA landside improvements were undertaken with a deeper port in mind, they should be factored into the alternatives analysis in a consistent manner. The Corps should not be permitted to ignore these costs for some alternatives, while considering them for others.

II. The Proposed Project would Violate the Clean Water Act ("CWA")

Although the Corps, as a matter of policy, does not issue itself permits for its own activities, it "authorizes" its own discharges, applying all applicable substantive requirements, including the Section 404 Guidelines found at 40 C.F.R. § 230.10. 33 C.F.R. § 336.1(a) (2011); 33 C.F.R. § 337.6 (2011); 40 C.F.R. § 230.2(a)(2) (2011); see also Regulatory Guidance Letter ("RGL") 88-09 (July 21, 1998, expired Dec. 31, 1990); RGL 05-06 (Dec. 7, 2005). As explained below, this proposal violates the CWA in the following respects.

A. The Proposal Fails to Satisfy the CWA and the 404(b)(1) Guidelines and Must Therefore Be Denied.

1. The Corps failed to set forth a proper statement of purpose and need and has not adequately considered alternatives.

Section 404(b)(1) of the CWA, 33 U.S.C. § 1344(b)(1) (2010), directs the EPA to issue Guidelines that define the circumstances under which dredged or fill material may be discharged into wetlands or other waters. Importantly, the Guidelines provide that the Corps shall not grant a Section 404 permit "if there is a practicable alternative to the proposed discharge which would have less adverse impact on the aquatic ecosystem, so long as the alternative does not have other significant adverse environmental consequences." 40 C.F.R. § 230.10(a) (2011). An alternative to discharge to a wetland "is practicable if it is available and capable of being done after taking into consideration cost, existing technology, and logistics in light of overall project purposes." 40 C.F.R. § 230.10(a)(2). Where a discharge is proposed for a wetland or other special aquatic site, all practicable alternatives to the proposed discharge that do not involve a discharge to the wetland "are presumed to have less adverse impact on the aquatic ecosystem, unless clearly demonstrated otherwise." 40 C.F.R. § 230.10(a)(3). In addition, if the activity associated with a discharge to a wetland does not require access or proximity to or siting in a wetland (i.e., is not "water dependent"), practicable alternatives that do not involve wetland sites "are presumed to be available, unless clearly demonstrated otherwise." 40 C.F.R. § 230.10(a)(3).[24]

[24] The Guidelines "couple a general presumption against all discharges into aquatic ecosystems with a specific presumption that practicable alternatives to the fill of wetlands exist." Hough v. Marsh, 557 F. Supp. 74, 82 (D.

To implement the Guidelines (and NEPA, as discussed above), the Corps must first present a correct statement of a project's "basic purpose." See 40 C.F.R. § 230.10(a)(3). After the Corps defines the basic purpose of the project, it must then determine whether that basic purpose is "water dependent." See id. An activity is "water dependent" if it requires access or proximity within a wetland to fulfill its basic purpose. Id.

As discussed above in Section I.C.1., the Tier I EIS stated that: "*[c]ontinued growth of the Port necessitates* that it remain efficient and cost competitive" and that [b]ased on an evaluation of the study area and its needs, the objectives of the proposed project are as follows: (a) provide better passage for the existing fleet of larger vessels through the harbor at all tides, thus reducing shipping delays; and (b) provide for safe and efficient transit of larger vessels expected to call on Savannah Harbor in the future." Tier I EIS at 14 (emphasis added). In other words, the original statement of project purpose clearly acknowledged the connection between deepening and GPA's business goals.

The current DEIS is far less forthcoming regarding GPA's overriding goal for this Project. For example, the Corps devotes all of Appendix H of the DEIS to complying with the requirements of the Section 404(b)(1) Guidelines, yet nowhere does Appendix H provide the basic and overall purpose for the proposed Project. Although it is difficult to tease out a statement of project purpose from the main body of the Tier II DEIS itself, the DEIS does offer that: "The primary problems identified—and the need for the project—relate to the inefficient operation of containerships in the Federal navigation channel at Savannah Harbor, affect the Nation's international trade transportation costs." DEIS at 3-1. If this statement is intended to be a statement of project purpose, it shows that the Corps is attempting to walk away from its earlier statement in the Tier I DEIS, which makes clear that this Project is, in fact, directly related to GPA's intent to maintain or grow its business. And, despite the effort in the Tier II DEIS to ignore the plain relationship between deepening and GPA's business, many public statements from GPA over the years leave little doubt as to the overriding goal of GPA with this Project. See, e.g., Georgia Ports Authority Press Release (July 13, 1998) (attached hereto as Ex. A) ("GPA considers increased channel depth to be vital to continued growth of port activities in Savannah."); see generally Section I.C., supra.

In order to comply with the 404(b)(1) Guidelines and NEPA, the Corps must clarify its statement of project purpose and need. Without such a statement, compliance with the 404(b)(1) Guidelines is not possible.[25] In reformulating its statement of project purpose, the Corps should remain mindful that, as in the NEPA context, it must not "contrive a purpose so slender as to define competing 'reasonable alternatives' out of consideration (and even out of existence)."

Mass. 1982). "[A]n applicant . . . must rebut both of these presumptions in order to obtain a permit." Bersani v. Robichaud, 850 F.2d 36, 39 (2d Cir. 1988).

[25] Further, without a clearly delineated statement of project purpose and need, it is also not possible to conclude whether this is a water dependent project. Perhaps it is obvious to the Corps that this is a water dependent project because the Corps and GPA intend to deepen the harbor involves the deepening of a harbor. If, however, the project purpose is to create transportation efficiencies that are in the national interest, or even to maintain or increase GPA's bottom line, then it is not so clear that the overall project purpose is water related.

Simmons v. U.S. Army Corps of Eng'rs, 120 F. 3d 664, 666 (7th Cir. 1997).

2. Section 404(b)(1) Bars Approval of Projects that Cause or Contribute to Violation of Water Quality Standards.

The Section 404(b)(1) Guidelines prohibit authorization of a discharge of dredged or fill material that "[c]auses or contributes . . . to violations of any applicable State water quality standard." 40 C.F.R. § 230.10(b)(1). The DEIS shows that the Project would contribute to existing violations of numeric water-quality standards in the Savannah Harbor, which is already impaired by inadequate dissolved oxygen DO levels. The DEIS further shows that the Project would cause or contribute to violations of narrative water quality and antidegradation standards by damaging the aquatic ecosystem and eliminating or impairing existing uses. In addition, the DEIS fails to adequately analyze and disclose impacts to water quality and the level of uncertainty in the analysis conducted, suggesting that additional or greater violations may also result.

a). The Project will Contribute Violations of DO Standards in a Waterway Listed on Georgia's CWA Section 303(D) List as Impaired for DO.

As the DEIS explains, the greatest area of concern for DO is the Savannah River estuary, which will be "directly affected" by the Project. DEIS at 5-37. The stretch of the Savannah River through the harbor and in the estuary already suffers from critically low DO levels in the summer months. Due to the waters' failure to meet the applicable numeric standards, this river segment is currently listed on Georgia's CWA Section 303(d) (33 U.S.C. § 1313(d)) list as impaired for DO. DEIS at 5-37.

The DEIS admits that the Project will contribute to the existing violations of DO standards by exacerbating this impairment. Specifically, the DEIS admits that the proposed Project will have additional adverse impacts to DO levels. See, e.g., DEIS at 5-48 (stating that "[d]eepening the navigation channel would adversely impact dissolved oxygen levels in the harbor"); id. at App'x S p. 51 (same). And, in Table 5-19, it sets forth modeling results and a narrative that describes the Table as showing "a substantial decrease in dissolved oxygen levels" in "critical cells." DEIS at 5-43; see also App'x S p. 48 (same).[26] Moreover, the DEIS predicts 1-2 percent increases in the percentage of the harbor's waters violating DO standards. DEIS at 5-42. Because the Project will admittedly contribute to and cause further violations of DO standards in an already impaired waterway, approval of this Project is prohibited by Section 404(b)(1) of the CWA.

b). The Project would Violate the Applicable Narrative Water Quality Standards.

Water quality standards contain both numeric and narrative criteria for protecting existing and classified uses. See S.C. Code Ann. Regs. § 61-68(A)(1) (2009) (explaining that South

[26] Predictions of substantial adverse effects to DO levels are also supported by past experience. The DEIS acknowledges that creation and maintenance of the existing (42-foot) channel has adversely affected the DO regime in the harbor by lowering DO concentration by 1 mg/l. DEIS at 5-37.

Carolina's "water quality standards include the uses of the waters, the numeric and narrative criteria, and the antidegradation rules contained in [Regulation 61-68]"); 40 C.F.R. §§ 131.2 & 131.6 (describing purpose and required content of state water quality standards).

Consistent with the CWA, South Carolina has set a goal of "maintain[ing] and improv[ing] all surface waters to a level to provide for the survival and propagation of a balanced indigenous aquatic community of flora and fauna and to provide for recreation in and on the water." S.C. Code Ann Regs § 61-68(A)(4). To that end, the state's water quality standards require that "[u]ses in all waters shall be protected, wherever attainable, regardless of flow." Id. § 61-68(C)(3). And, the standards applicable to the waters affected by the Project specifically require that they be suitable for "fishing" (with exceptions concerning the commercial harvesting of clams, mussels, or oysters in two of the three affected river segments) and for "survival and propagation of a balanced indigenous aquatic community" of flora and fauna. Id. § 61-68(G)(10)-(12). Regulation 61-68 defines a "[b]alanced indigenous aquatic community" as "a natural, diverse biotic community characterized by the capacity to sustain itself through cyclic seasonal changes, presence of necessary food chain species and by a lack of domination by pollutant tolerant species." Id. § 61-68(B)(11).

The Project would violate these standards by impairing existing and classified uses and eliminating conditions necessary for the survival of a balanced indigenous aquatic community. In particular, the Project will cause deterioration of DO levels and saltwater intrusion. The decline in DO concentrations represents "a major concern for all fish and aquatic organisms." See Expert Report of Shawn P. Young, Ph.D. at 6 (attached hereto as Ex. E) (hereinafter referred to as the "Young Report"). Increased salinity impacts "the aquatic community as a whole, including freshwater marshes," and affects shortnose-sturgeon and striped-bass habitat. Id. at 9. It may also change the presence and abundance of benthic invertebrate and forage fish species. Id. at 4-5, 7, and 9. The Project's adverse impacts, especially with respect to DO and salinity, threaten to violate water quality standards by precluding the survival and propagation of the "natural, diverse biotic community" indigenous to these waters. S.C. Code Ann Regs § 61-68(B)(11), (G)(10)-(12). Most notably, the Project could "preclude" striped bass restoration in the Savannah River and possibly destroy the fishery, which has been described as a nationally important resource. Tier I FEIS at H-62 & H-205 (comments of U.S. Fish and Wildlife Service and Georgia Department of Natural Resources on Tier I DEIS); SELC, Comments on Tier I FEIS (Oct. 19, 1998). "[H]istorically, the Savannah River was Georgia's most important striped bass fishery," DEIS at 4-21, but it suffered a dramatic decline after the Corps grossly underestimated impacts of its previous activities, Young Report at 3, 15. And, while the Corps proposes a striped-bass stocking program as mitigation, even assuming the program were fully funded and implemented, under the CWA and applicable water quality standards, such a program could not adequately compensate for the adverse impacts and resulting violations. The CWA and state standards require preservation of the chemical, physical, and biological integrity necessary to support a "self sustaining" indigenous aquatic community; S.C. Code Ann Regs § 61-68(B)(11); 33 U.S.C. § 1313(d) (requiring states implement additional measures where existing discharge restrictions do not adequately protect the "protection *and propagation*" of a "balanced, *indigenous* population of shellfish, fish, and wildlife" (emphasis added)).

Additionally, NMFS has previously explained that the importance of the lower Savannah

fisheries "cannot be overemphasized." Tier I FEIS at H-188. In addition to the striped-bass fishery, the river presently supports American shad, "the most valuable commercial anadromous fish in the southeast," and other important game and/or commercial fish. DEIS at 4-20. It also contains endangered species, such as the shortnose sturgeon, and the Atlantic sturgeon, which NMFS has proposed for listing as endangered. As discussed in Section VI below, this proposal will directly reduce the likelihood of both the survival and recovery of shortnose and Atlantic sturgeon by reducing the reproductive fitness, numbers and distribution of each species. Young Report at 17. The changes in the character of the channel and quality of the water brought about by the Project would adversely impact these and other species, yet the analyses in the DEIS and GRR do not fully consider these impacts, Young Report at 16, and thus fail to provide reasonable assurance that other violations of narrative standards will not also occur.

Similarly, Georgia's water quality standards mandate that "existing instream water uses and the level of water quality necessary to protect the existing uses *shall be maintained and protected.*" Ga. Comp. R. & Regs. r. 391-3-6-.03(2)(b)(i) (emphasis added). For the same reasons just described, the proposed Project violates Georgia's water quality standards as well.

c). The Project would Violate Antidegradation Standards and Section 404(b)(3).

Antidegradation standards stem from the CWA's goal of "restor[ing] and maintain[ing] the chemical, physical, and biological integrity of the Nation's waters," 33 U.S.C. § 1251(a), and are promulgated as part of the state water quality standards required under CWA Section 303(c). See PUD No. 1 of Jefferson County v. Washington Dept. of Ecology, 511 U.S. 700, 705 (1994).

EPA regulations require state water quality standards to incorporate an "antidegradation policy" sufficiently protective to ensure that, at a bare minimum, "[e]xisting instream water uses and the level of water quality necessary to protect the existing uses shall be maintained and protected" in all waters. 40 C.F.R. § 131.12(a)(1) (2011); see also 33 U.S.C. § 1313 (dictating required content of state water quality standards). "EPA has explained that under its antidegradation regulation, 'no activity is allowable . . . which could partially or completely eliminate any existing use.'" PUD No. 1 of Jefferson County, 511 U.S. at 718 (alteration in original) (citing EPA, Questions and Answers on Antidegradation 3 (Aug. 1985)). EPA has further explained that "[w]ater quality should be such that it results in no mortality and no significant growth or reproductive impairment of resident species," and "[a]ny lowering of water quality beyond this full level is not allowed." EPA, Questions and Answers on Antidegradation 7 (Aug. 1985), available at http://www.epa.gov/waterscience/standards/library/antidegqa.pdf (last visited Jan. 24, 2011).

Accordingly, South Carolina's and Georgia's water quality standards contain antidegradation rules intended to preserve the integrity of the state's waterways. As relevant here, South Carolina's antidegradation rules mandate that "[e]xisting water uses and the level of water quality necessary to protect these existing uses shall be maintained and protected regardless of the water classification," id. at § 61-68(D)(1), as well as that "[w]here surface water quality exceeds levels necessary to support propagation of fish, shellfish, and wildlife, . . . that quality shall be maintained and protected unless [DHEC] finds, after intergovernmental

coordination and public participation, that allowing lower water quality is necessary to important economic or social development in the areas where the waters are located," id. § 61-68(D)(2). Georgia's water quality standards contain analogous requirements. See, e.g., Ga. Comp. R. & Regs. r. 391-3-6-.03(2)(b)(ii) (providing that where "water quality exceed levels necessary to support propagation of fish, shellfish, and wildlife . . . that quality shall be maintained and protected . . . .").

As described above and in Sections II.A.2.(d). and VI, infra, the Project would significantly degrade water quality and threatens to eliminate the survival and propagation of self-sustaining populations of species present in and indigenous to the affected waters. It therefore violates the applicable South Carolina and Georgia antidegradation standards.

Moreover, the Corps' Section 404(b) Guidelines specifically prohibit authorization of discharges that would "cause or contribute to significant degradation of the waters of the United States." 40 C.F.R. 230.10(c). The Guidelines state that such effects include, among other things, significant adverse effects of the discharge on "life stages of aquatic life" and on "aquatic ecosystem diversity, productivity, and stability." Id. The same impacts giving rise to the violations of state water quality standards also violate the Section 404(b) Guidelines.

d). There is No Reasonable Assurance that the DO Injection System Will Remedy the Violations of Water Quality Standards.

Both the DEIS and GRR state that mitigation, through the use of Speece Cones to artificially inject oxygen into the water, will fully offset decreases in DO with incidental benefits. GRR at 192; DEIS at 5-51. More specifically, to mitigate the ways in which the deepening proposal will further exacerbate DO problems in the River, the Corps has "identified use of Speece cones as the specific technique to inject oxygen into the water . . . ." GRR, App'x B at 30. These systems would be land based, with water being withdrawn from the river through pipes, then treated and returned to the river. GRR, App'x B at 30. The water intake structure would include screens to reduce the intake of trash and other suspended solids. GRR, App'x B at 30. The intake and discharge would be located along the side of the river and not extend out into the navigation channel. GRR, App'x B at 30. For a number of reasons, the Corps cannot lawfully rely on this uncertain, unproven, and potentially unfunded mitigation plan in assessing the impact of the Project on DO levels.

According to the GRR, currently, the Savannah District annually receives approximately $13 million for operation and maintenance ("O&M") dredging and maintenance of the upland disposal areas. This does not include funds for dike raising, dike maintenance, and mosquito control. GRR at 220. The proposed sill to be constructed at the eastern edge of the sediment basin as part of the SHEP proposal will cause the basin to fill, resulting in an increase of O&M dredging and maintenance costs to over $24 million. GRR at 220. Against this backdrop, the "Dissolved Oxygen facilities will be constructed and maintained by the Corps." GRR, App'x B at 5. The costs for operating the dissolved oxygen injection systems are based on their continued operation for a period of 180 days per year. Included in the annual O&M costs are the replacement costs for the Speece cone and intake and discharge lines at 40 year intervals; and

replacement of the oxygen flow control, oxygen generator and side stream pump at 20 year intervals." GRR at 220. In sum, the annual operating costs for the Speece Cones are anticipated to be more than $1.3 million, and the Corps – and not GPA – will be responsible for this cost. It also does not appear that the Corps has provided any financial assurances that it will have the funding to operate and maintain the DO injection system for the length of the Project. Instead, it appears as if the Corps will have to rely on the annual appropriations process to fund this significant annual cost.

This feature of the mitigation plan conflicts with the new mitigation rules promulgated under the CWA.[27] Among other things, the Mitigation Rule was intended by the EPA and Corps to "improve[] the planning, implementation and management of compensatory mitigation projects by . . . requiring . . . *assurances of long-term protection of compensation sites, financial assurances*, and identification of the parties responsible for specific project tasks." 73 Fed. Reg. at 19,594. Under the Rule, mitigation plans must contain a long-term management plan, adaptive management plan, and financial assurances. Specifically, the Rule states that the "district engineer shall require sufficient financial assurances to ensure a high level of confidence that the compensatory mitigation project will be successfully completed, in accordance with applicable performance standards." Id. at 19,638 to 19,639; codified at 33 C.F.R. § 332.1(n)(1) (2011). Here, despite the importance of mitigating for further exacerbating the River's already severe dissolved oxygen problems and the exorbitant and ongoing cost of the technology selected to perform the mitigation, there is no reasonable assurance provided that the Corps will be able to successfully operate and maintain this element of the mitigation plan since it appears that it has been made subject to the annual appropriations process. As such, this mitigation measure fails to provide reasonable assurance (and similarly fails to comply with the Mitigation Rule).

In addition to the inadequacy of the purported mitigation, the Corps has not undertaken a sufficient analysis of the Project's impacts to DO. The Corps has not accounted for the full scope of the dredging required by the Project. In particular, it does not appear that the Corps considered the "[t]wo feet of allowable overdepth and up to 6 feet of advance maintenance in selected areas" that "would also be included for the proposed action." DEIS at 3-22. This added excavation and the potential for erosion in the loosened channel would further reduce DO. See DEIS at 5-37 (saying "as the channel depth increases, the ability of oxygen to reach the river bottom decreases, causing lower average levels of dissolved oxygen at the bottom . . . ."). It apparently means that the actual channel depth resulting from the proposed Project could be as much as 56 feet. But, the DEIS and DO modeling appear to ignore what this might mean in terms of further deterioration in DO levels. As a result, the modeling conducted could not actually predict impacts to DO and salinity, nor could the Corps accurately assess impacts to aquatic resources. Cite report. If the Corps ignored the full scope of the dredging and attendant impacts to DO, it necessarily underestimated the negative impacts and the amount of mitigation that would be necessary to compensate for the impacts. And, it is not entitled to rely on inaccurate models to support its conclusions. Cf. Native Ecosystems Council v. U.S. Forest

[27] On April 10, 2008 the EPA and the Corps issued a Final Rule on Compensatory Mitigation for Losses of Aquatic Resources under section 404 of the Clean Water Act. See 73 Fed. Reg. No. 70, 19,594-19,687 (Apr. 10, 2008) (codified at 40 C.F.R. pt. 230.91 and 33 C.F.R. pt. 325 and 332) (hereinafter referred to as the "Mitigation Rule").

Serv., 418 F.3d 953, 964 (9th Cir. 2005) ("An agency may not rely on incorrect assumptions or data in an EIS.").[28]

Moreover, it also appears that although the locations of the injection cones are now different than previously identified, the Corps has not studied mixing or dispersion of the injected oxygen at these locations. The DEIS neither analyzes nor frankly discloses this change of plans. The Corps must explain the basis for this deviation from its plans and assess impacts of the altered location. It likewise must account for the altered costs associated with the move. The DEIS recognizes that operational expense increases with distance from the areas needing increased DO. DEIS App'x C p. 43. In redoing its fundamentally flawed economic analysis, the Corps will need to factor in this cost.

More generally, the DEIS understates the uncertainty of and risks associated with both the projections of water quality impacts and the proposed mitigation. While the DEIS relies on a demonstration project in support of its conclusions, the results of that study were inconclusive. In fact, FWS has explained that, "There is a great deal of risk and uncertainty regarding impacts and the channel and flow modifications and dissolved oxygen mitigation plans. Based on the available information, there is a high degree of uncertainty as to how effective oxygen injection would be. See DEIS, App'x E (letter from Timothy N. Hall (FWS) to Colonel Edward J. Kertis, Jr. (Corps) dated Nov. 4, 2008). The Corps' failure to adequately analyze the Project's impacts to DO and the efficacy of the purported DO mitigation precludes reliance on the DO injection system as a mitigation technique.

Moreover, as with the mitigation proposed for striped bass, the mitigation proposed for DO, even if assumed to be fully funded and effective, could not replace what was lost. As the DEIS explains, the Project would adversely affect DO levels in three ways. First, the increased depth would decrease the ability of oxygen to reach the river bottom and thereby cause lower DO levels at the bottom of the river. DEIS at 5-37. Second, by enlarging the channel prism, the Project would move additional saltwater into the upper part of the harbor and into the estuary, which decreases those waters' capacity to accept oxygen from the air. Id. Third, as the channel prism enlarges, velocity decrease, reducing mixing through the water column. Id. Thus, the Project's effects reduce DO levels by reducing its "reaeration capacity." SEG DO/TMDL Issue Summary, at 2, available at http://sav-harbor.com/WP/DO_WP.pdf (last visited Jan. 24, 2011). Injecting air into the water from land-based Speece cones cannot restore the aeration capacity of the waterway. And, as discussed above, the CWA requires that the functions and values necessary to support a "self-sustaining," aquatic ecosystem, i.e. one not dependent on anthropogenic intervention.

Finally, the Corps must also take into account that the proposed mitigation would not be entirely benign. The DEIS recognizes that fish would become entrained in the oxygen injection system. And, although it states that approach velocities will be adjusted to "minimize" such impacts, it does not analyze or discuss what the impacts will be. DEIS at 5-48. The oxygen-injection system will also have noise impacts to the surrounding areas and greenhouse gas emissions, which the Corps must take into fully consider.

[28] Additionally, the DEIS fails to consider the potential of NOx emissions from the Project to add nitrogen to the waters, further depressing DO levels.

B. The Project Does Not Qualify for a Section 401 Water Quality Certification from South Carolina.

"The CWA requires the Corps to seek state water quality certification for discharges of dredged or fill material into waters of the U.S." 33 C.F.R. § 336.1(a)(1); see also 33 C.F.R. § 337.10 (2011); 33 C.F.R. § 338.2(c) (2011). To certify a project as consistent with its water quality standards, South Carolina must have "reasonable assurance" that the Project will not violate those standards. S.C. Code Ann. Regs. § 61-101(A)(4). "The water quality standards include the uses of the waters, the numeric and narrative criteria, and the antidegradation rules contained in [Regulation 61-68]." Id. § 61-68(A)(1). As explained above, the proposed Project would violate a number of these standards. See infra at Section II.A.2. And, more specific regulatory provisions addressing the state's review under Section 401 require that South Carolina deny the requested certification.

Consistent with the CWA's mandate, South Carolina's water quality standards emphasize a "preventative approach" that recognizes the difficulty of restoring water quality once degraded. S.C. Code Ann. Regs. § 61-68(A)(3). To that end, Section 401 certification must be denied if the "the proposed activity permanently alters the aquatic ecosystem in the vicinity of the project such that its functions and values are eliminated or impaired." S.C. Code Ann. Regs. § 61-101(F)(5)(a). As explained above, here, the proposed Project would result in severe and permanent adverse impacts to the affected waters. See infra at II.A.2.(d).

Similarly, if "there is a feasible alternative to the activity, which reduces adverse consequences on water quality and classified uses, "the proposed activity cannot receive certification. Id. 61-101(F)(5)(b). The availability of feasible alternatives to the proposed Project, discussed in detail in Section I.H. above, precludes issuance of a Section 401 water quality certification.

In addition, certification must be denied if "the proposed activity adversely impacts waters containing State or Federally recognized rare, threatened, or endangered species." S.C. Code Ann. Regs. § 61-101(F)(5)(c). Here, the DEIS and GRR acknowledge that the proposed Project will have significant adverse impacts on the federally endangered shortnose sturgeon. Indeed, the DEIS admits that "substantial adverse impacts" remain to shortnose sturgeon habitat even in the seemingly unlikely event that the proposed flow alterations and oxygen-injection system function as hoped and, in fact, benefit sturgeon. DEIS at 5-68; but see NRDC v. Kempthorne, 506 F. Supp. 2d 322, 355 (E.D. Cal. 2007) (stating, in ESA context, that "at a minimum, a mitigation strategy must have some form of measurable goals, action measures, and a certain implementation schedule"); Nat'l Wildlife Fed'n v. Nat'l Marine Fisheries Serv., 254 F. Supp. 2d 1196, 1211-12 (D. Or. 2003) (finding agency's reliance on mitigation measures that were not reasonably certain to occur to be arbitrary and capricious).

Finally, certification must be denied if: "the proposed activity adversely impacts special or unique habitats, such as National Wild and Scenic Rivers, National Estuarine Research Reserves, or National Ecological Preserves, or designated State Scenic Rivers." S.C. Code Ann. Regs. § 61-101(F)(5)(d). Here, the DEIS acknowledges that the proposed Project will severely impact the Savannah National Wildlife Refuge, most significantly through the destruction of

tidal freshwater marshes. See infra Section VIII.C.; DEIS at 5-117. For that reason as well, certification must be denied.

C. The Project is not entitled to a Section 401 Water Quality Certification from Georgia.

The proposed Project would violate the Georgia Water Quality Control Act, O.C.G.A. §§ 12-5-20 et seq. ("GWQCA"), and therefore the Georgia Environmental Protection Division ("Georgia EPD" or "EPD") should not issue a CWA Section 401 Water Quality Certification ("WQC") in connection with this Proposal.

As a threshold matter, we are concerned with Georgia's approach to granting a WQC for the Project. Given the size and scope of the Project and the Project's significant environmental impacts, the South Carolina Health and Environmental Control Department has determined its review may require the statutorily-provided time period of one year to consider the Corps' request for a WQC. In contrast, Georgia EPD has already assured the Corps that it will receive certification in the coming months while, at the same time, acknowledging the agency has not had time to complete its review.[29] EPD is apparently operating under the mistaken assumption that the Corps is entitled to a WQC. To the contrary, the currently proposed Project would violate water quality standards under Georgia law. Considering the Project's degradation on water quality, it is imperative that EPD approach its obligations under the CWA in a cautious and critical manner. Consistent with this approach, and in compliance with 33 U.S.C. § 1341(a)(1), EPD should afford the citizens of Georgia an opportunity to review and comment on a draft WQC prior to reaching a final decision in this matter.

The GWQCA's primary objective is to "enhance water quality and prevent pollution." See Ga. Comp. R. & Regs. r. 391-3-6-.03(2)(a). SHEP's expected water quality degradation flies in the face of Georgia's Anti-Degradation Policy, which states that "[e]xisting instream water uses and the level of water quality necessary to protect the existing uses shall be maintained and protected." Id. at 391-3-6-.03(2)(b)(i) (emphasis added). The lower Savannah River that would be affected by the Project is already listed as impaired for dissolved oxygen under CWA Section 303(d). The Corps expressly recognizes that the Project "would adversely affect DO, a critical resource," DEIS at 5-37 and, thus, as discussed in detail in Section II.A.2(d), the Project would exacerbate DO problems.

Further reductions in DO will negatively impact existing uses in the river, such as the endangered population of shortnose sturgeon, Atlantic sturgeon, striped bass, and other fisheries. According to the GRR, the Project's reductions in DO levels could reduce the shortnose sturgeon's habitat by up to an additional 16 percent. GRR at 163. Moreover, as discussed in Section II.A.2(d), there is considerable uncertainty regarding the effectiveness of the primary measure, the oxygen injection system, intended to mitigate for the decreased DO levels in the river. There are no other "measures identified that could be implemented in the estuary that would restore sturgeon habitat or enhance existing habitats." Id. In its current form, the Project

[29] See Mary Carr Mayle, SC Opposes Savannah River Deepening Plan, Augusta Chronicle, (Jan. 5, 2011), available at http://chronicle.augusta.com/latest-news/2011-01-05/sc-opposes-savannah-river-deepening-plan (last visited Jan. 24, 2010).

would cause further degradation of DO, which, in turn, will inflict additional harm on existing uses in the river. Approval of this Project in its current form will prevent EPD from protecting and maintaining the water quality of the Savannah River, including its existing uses. For these reasons, a 401 WQC cannot be lawfully issued for this Project.

III. The Project Would Needlessly Thwart the Policies of South Carolina's Coastal Zone Management Program ("CMP"), in Violation of the Coastal Zone Management Act ("CZMA") and South Carolina Law.

Pursuant to the federal CZMA, 16 U.S.C. § 1451 et seq. (2010), the Corps must ensure that its activities in South Carolina's coastal zone are consistent to the maximum extent practicable with the state's CMP. See 16 U.S.C. § 1456(c)(1)(A) ("[e]ach Federal agency activity within or outside the coastal zone that affects any land or water use or natural resource of the coastal zone shall be carried out in a manner which is consistent to the maximum extent practicable with the enforceable policies of approved State management programs"). To that end, "e[]ach Federal agency carrying out an activity subject to [Section 1456(c)(1)(A)] shall provide a consistency determination to [the appropriate state agency] at the earliest practicable time, but in no case later than 90 days before final approval of the Federal activity unless both the Federal agency and the State agency agree to a different schedule." 16 U.S.C. § 1456(c)(1)(C).[30] This consistency determination should include "[c]omprehensive data and information" sufficient to support its conclusions. S.C. CMP at V-20. A federal agency may use its NEPA documents as a vehicle for consistency review under the CZMA, provided that those documents include the information and adhere to the timeframes required by the CZMA implementing regulations. 15 C.F.R. § 930.37.

DHEC "is responsible for commenting on and concurring with or objecting to Federal agency consistency determinations," and may do so through "the issuance or denial of relevant State permits" provided it "review[s] individual projects to ensure consistency with all applicable State management program policies and that applicable public participation requirements are met." 15 C.F.R § 930.6(b), (c). Where, as here, a project requires both a Section 401 water quality certification and a coastal zone consistency certification, "the coastal zone consistency certification determination shall be issued as a component of, and concurrently with, the water quality certification." S.C. Code Ann. Regs. § 61-101(A)(7). Because the Project will also require a critical area permit, however, DHEC ultimately might instead make its consistency certification decision through that permitting process. See id. § 61-101(A)(8).

Here, the DEIS and GRR set forth a fundamentally flawed and incomplete analysis of the Project's impacts and therefore fail to supply the "[c]omprehensive data and information," S.C. CMP at V-20, DHEC needs to properly review the Corps' consistency determination. See supra at I.E. For that reason alone, DHEC should object to the Corps' consistency determination. Moreover, even the limited analysis provided shows that the proposed Project would not be carried out in a manner consistent with South Carolina's CMP and will cause serious and unnecessary damage to critical areas of the State's coastal zone. Accordingly, DHEC should deny the Corps' certification request and insist that the Corps explore practicable and less

[30] In South Carolina, the relevant agency is the Office of Ocean and Coastal Resource Management ("OCRM"), an arm of DHEC.

damaging alternatives.

As an initial matter, DHEC must deny certification under the CZMA for the same reason it must do so under Section 401 of the CWA. CZMA Section 307(f) "requires States to incorporate all requirements established pursuant to the Federal Clean Water Act and Clean Air Act into their management programs." S.C. CMP at V-11; see also id. at III-20(7) (mandating that "[p]roposed port development or expansion and operation must meet existing air and water quality standards"). Because the Project would violate water quality standards and the Corps' 404 Guidelines, and thus the CWA, see supra at II.A.2., it is inconsistent with the CWA requirements incorporated into the CMP. And, the Corps' failure to properly analyze and disclose air pollution impacts, see supra at I.E.1., precludes it from certifying consistency, as DHEC lacks reasonable assurance that the Project will not violate any CAA requirements. South Carolina's CMP requires that all port expansion projects meet air and water quality standards. CMP at III-20(7). And, the Project fails to comport with that mandate.

The CMP requires further that projects affecting navigation, such as this one, be coordinated with the South Carolina State Ports Authority ("SCSPA"). CMP III-21; see also. S.C. Code Ann. Regs. § 30-11(B)(2) (requiring DHEC to obtain "a certificate from the South Carolina State Ports Authority declaring that the proposed project or activity would not unreasonably interfere with commercial navigation and shipping" before issuing a critical area permit for projects in waterways used for commercial navigation and shipping or in areas set aside for port development in an approved management plan); id. § 30-1(A)(3) (stating that DHEC's critical area permitting regulations "are to be read as part of, and to be construed with, the policies set forth in the South Carolina Coastal Management Program"). The SCPSA has expressed concern that the Project, as currently proposed, would adversely impact its interest in and the potential for the Jasper Ocean Terminal. Letter to Dean Moss (Savannah River Maritime Commission) from Colden R. Battey, Jr. (SCPSA) dated Dec. 17, 2010. In particular, the disposal cells slated for use by the SHEP proposal could preclude construction of the Jasper terminal. Id. The Corps and GPA must address these issues in the FEIS and must coordinate with the SCPSA to ensure that the Project does not adversely affect South Carolina's overall interests in port development and navigation, as well as to ensure that all reasonable alternatives to and reasonably foreseeable impacts of the Project receive the legally mandated consideration.

Finally, for the reasons discussed in Sections II.B. and V, infra, the proposed Project does not satisfy South Carolina's regulatory requirements pertaining to the "critical areas" of the coastal zone impacted by the Project. "The critical areas are of vital importance to the State." S.C. Code Ann. Regs. § 30-11(A). The CMP therefore prohibits dredging and excavation that would "contribute to water quality degradation" or result in "lethal fish entrapments." S.C. CMP at III-56. It likewise prohibits dredging for public projects in wetland areas unless the activity is water dependant and there are no feasible alternatives. Id. And, recognizing that the "creation and maintenance of navigational channels" is a "specialized form of dredging activity" with "a potential for severe environmental impacts," the CMP provides that such activity "should meet a demonstrated public need." Id. The Corps' proposal cannot be squared with these policies.

IV. The Project Is Inconsistent with Georgia's Coastal Management Program.

The Project is inconsistent with Georgia's Coastal Management Program ("GCMP") and therefore the Georgia Coastal Resources Division ("CRD") should not concur with the Corps' determination of consistency. Under the Georgia Coastal Management Act, to attain consistency with GCMP, Georgia must determine that a project is consistent with state law regulating the state's coastal resources. See O.C.G.A. § 12-5-322(3), (12). For the following reasons, the Project does not comply with various state laws governing coastal resources and is inconsistent with the objectives of the GCMP.

The GCMP's missions is to "balance economic development in Georgia's coastal area with preservation of natural, environmental, historic, archaeological, and recreational resources for the benefit of Georgia's present and future generations." GCMP at 25. One of the primary laws furthering this mission is Georgia's Coastal Marshlands Protection Act (CMPA), O.C.G.A. §§ 12-5-280 et seq. The CMPA regulates activities and structures in the state's marshlands, intertidal areas, mudflats, waters bottoms, and tidal wetlands. The DEIS states that the Project "would affect wetlands within the jurisdiction of the [CMPA]." DEIS, App'x I at 29. Specifically, the Project would convert at least 337 acres of tidal freshwater wetlands in the Savannah National Wildlife Refuge to brackish marsh and would destroy 15.68 acres of salt marsh on the Black River. Id. at 29. Despite the significant impacts to these unique resources, the DEIS concludes that with mitigation in the form of preservation and restoration the project is consistent with the GCMP and CMPA. See id. at 30. Notably, however, the CMPA does not include or contemplate mitigation as means of offsetting destruction of marsh or wetlands under CMPA's jurisdiction. Setting aside the proposed mitigation, the Corps should conclude that the destruction of 337 acres of freshwater wetlands included in the Refuge is not consistent with the GCMP's objective of providing a "coastal zone in which the area and functional integrity of wetlands that impact the coastal region of Georgia are maintained." GCMP at 29. The destruction of hundreds of acres of coastal wetlands and marshlands renders the Project inconsistent with the GCMP.

Among its coastal objectives, the GCMP aims to "[p]rovide a coastal zone in which wildlife species listed as special concern, threatened, or endangered are recovered to healthy, viable populations." GCMP at 28. To effectuate this goal, the Project must be in compliance with Georgia's Endangered Wildlife Act ("EWA"), O.C.G.A. §§ 27-3-130 et seq. Under the EWA, the "destruction of the habitat of any protected animal species on public lands is prohibited." Ga. Comp. R. & Regs. r. 391-4-10-.06(a)(3). Appendix I's discussion of consistency with the EWA recognizes that the Project's dredging of the Savannah River will result in loss of habitat for the endangered shortnose sturgeon. DEIS, App. I at 33. Yet, Appendix I states that "[w]ith the proposed mitigation in place for the Shortnose sturgeon, the proposed Project is fully consistent with this policy." DEIS, App. I at 33. To the contrary, the language of the Georgia EWA is unequivocal, stating "the destruction of the habitat of any protected animal species on public lands is prohibited." Ga. Comp. R. & Regs. r. 391-4-10-.06(a)(3). The DEIS's conclusion that the Project is consistent with the GCMP is flat wrong because the Project violates the Georgia EWA.

An additional program objective is to "[p]rovide a coastal zone in which the integrity and

functioning of the sand-sharing system is maintained." GCMP at 29. Georgia's Shoreline Protection Act (SPA), O.C.G.A. §§ 12-5-231 et seq. is the state's primary legal authority on the protection and management of Georgia's sand-sharing system—including sand dudes, beaches, sandbars and shoals. Also, Georgia law addresses erosion caused by dredging for navigation purposes in tidal inlets, rivers, and harbors. O.C.G.A. §§ 52-9-1 et seq. It is state policy that there should be no net loss of sand from the island beaches because of dredging. O.C.G.A. § 52-9-1. The Corps' recent study concluded that existing dredging Project at the port has contributed to nearly eighty percent of Tybee Island's beach erosion. DEIS, App. I at 17. Yet, the Corps concludes that because the Project would "result in only minor changes in nearshore wave patterns" the Project "would be expected to have very little impact on the Tybee Island shoreline." Id. However, the Corps erroneously examines the Project's potential impacts in isolation, and fails to consider the cumulative impact of the Project and existing beach erosion. For these reasons, the Project is not consistent with the GCMP.

The Project is inconsistent with the objectives of the GCMP and Georgia law protecting water quality on the coast. The GCMP seeks to ensure "that permits approved for coastal area activities are designed to minimize negative impacts on water quality . . . ." GCMP at 26. As described in Section II.C., the GWQCA states "[e]xisting instream water uses and the level of water quality necessary to protect the existing uses shall be maintained and protected." Id. 391-3-6-.03(2)(b)(i) (emphasis added). The DEIS recognizes that the Project will have significant impacts on the dissolved oxygen DO levels in the Savannah River, a water body already listed as impaired for DO. The lowering of DO would have deleterious effect on the fish populations in the Savannah River, especially the endangered shortnose sturgeon. However, Appendix I's discussion of water quality is devoid of any discussion of lowering DO levels. See DEIS, App'x I at 64-65.

The GCMP requires that the port expansion be consistent with the Georgia Air Quality Control Act, O.C.G.A. §§ 12-9-1 et seq. It is undetermined whether Project is consistent with the air quality policy of the GCMP because, as described in Section I.E.1., the DEIS fails to adequately assess the Project's air quality impacts. The DEIS states that the Project would "improve ambient air quality in Savannah Harbor" because the "total number of container ships would decrease . . . ." DEIS, App'x I at 26. However, this bold assertion is based on a flawed economic assumption, is contradicted by other DEIS statements, and lacks supporting data (described in Section I.D.). A determination of consistency cannot be attained without requiring the Corps to further assess the effects of the Project on air quality.

V. The Corps Has Failed to Apply for and Is Not Entitled to a Critical Area Permit from DHEC.

The South Carolina Coastal Zone Management Act ("South Carolina CZMA") "was passed by the 1977 General Assembly of South Carolina to provide for the protection and enhancement of the State's coastal resources." S.C. Code Ann. Regs. § 30-1(A)(1) (2009). Pursuant to the South Carolina CZMA, "[e]xcept for those exemptions as specified in the 1977 Coastal Zone Management Act, as amended, any person wishing to alter a critical area must receive a permit from [DHEC]." S.C. Code Ann. Regs. § 30-2(B) (2009). The statute's enumerated exemptions exclude "[d]redge and fill performed by the United States Corps of

Engineers for the maintenance of the harbor channels and the collection and disposal of the materials so dredged." S.C. Code Ann. § 48-39-130(D)(4) (2009); S.C. Code Ann. Reg. § 30-5(A)(4) (2009). But, they do not similarly exclude a Project such as this one, which consists of "improvements to" and "expansion of" an existing navigation project. Corps, GPA, & DHEC, Joint Public Notice, at 1, 2 (Nov. 15, 2010). And, under the CWA, the Project must comply with the state's permitting requirements. See 33 U.S.C. § 1344(t).

The Corps, however, has not applied for the required critical area permit. The JPN lists a Section 401 water quality certification and concurrence with the Corps' coastal zone consistency determination as the only authorizations requested and believed to be required from South Carolina. JPN at 8. The Corps' failure to recognize its obligation to obtain the necessary permit has the potential to frustrate or lead to inefficiencies in DHEC's review, as DHEC processes applications for Section 401 certifications according to different procedures when an applicant seeks a critical area permit for the same project. See S.C. Code Ann. Regs. § 61-101(A)(7) & (8). And, early coordination is particularly important here, as the concurrence of not only DHEC, but also SCSPA, will be required. See S.C. Code Ann. Regs. § 30-11(B)(2) (requiring DHEC to obtain "a certificate from the South Carolina State Ports Authority declaring that the proposed project or activity would not unreasonably interfere with commercial navigation and shipping" before issuing a critical area permit for projects in waterways used for commercial navigation and shipping or in areas set aside for port development in an approved management plan).

While the Corps must submit an application if it wishes to proceed with the Project, it is important to note that the Corps would not be entitled to a permit due to the inconsistencies with the CMP policies and critical area regulations previously discussed. See supra at III.

VI. The Biological Assessment Prepared Pursuant to the Endangered Species Act Is Deeply Flawed.

Section 7 of the ESA requires that each federal agency "shall, in consultation with and with the assistance of [the expert service agencies] insure that any action authorized, funded or carried out by such agency . . . is not likely to jeopardize the continued existence of any" listed species "or result in the destruction or adverse modification" of the species' critical habitat. 16 U.S.C. § 1536(a)(2) (2010). Under the regulations implementing this consultation process, each federal agency is required to determine whether its activities "may affect" a listed species. 50 C.F.R. § 402.14(a) (2011). If it is determined that the agency action may affect listed species, formal consultation is required unless FWS or NMFS determines, based on the best available scientific evidence, that the action is "not likely to adversely affect" the species at all. 50 C.F.R. § 402.14(a) & (b).

If formal consultation is sought, such consultation will culminate in the issuance of a biological opinion. The "[b]iological opinion is the document that states the opinion of the Service as to whether or not the Federal action is likely to jeopardize the continued existence of the listed species or result in the destruction or adverse modification of critical habitat." 50 C.F.R. § 402.02 (2011). NMFS' and FWS' joint regulations define [j]eopardize the continued existence of" as "to engage in an action that reasonably would be expected, directly or indirectly,

to reduce appreciably the likelihood of both the survival and recovery of a listed species in the wild by reducing the reproduction, numbers, or distribution of that species." 50 C.F.R. § 402.02. Courts have explained that "even where baseline conditions already jeopardize a species, an agency may not take action that deepens the jeopardy by causing additional harm." Nat'l Wildlife Fed'n v. Nat'l Marine Fisheries Serv., 524 F.3d 917, 930 (9th Cir. 2008). Additionally, under the applicable regulations, an action is "jeopardizing" if it keeps recovery "far out of reach," even if the species is able to still cling to survival. Id. at 931. Jeopardy therefore can be found not only where an action plunges a species towards extinction, but where it suppresses the species below the path needed for recovery.

If the biological opinion concludes that the proposed action is not likely to jeopardize a protected species, the project can be completed. If, however, the biological opinion concludes that "jeopardy or adverse modification exists, NMFS [or FWS] must suggest reasonable and prudent alternatives . . . that it believes would not violate section 7(a)(2) and that can be implemented by the action agency." Aluminum Co. v. Administrator, 175 F.3d 1156, 1159 (9th Cir. 1999) (citing 16 U.S.C. § 1536(b)(3)(A)). If no reasonable and prudent alternatives exist, the action agency can seek an exemption, cancel the project, or continue with the project and risk violating the ESA. "The action agency is technically free to disregard the Biological Opinion and proceed with its proposed action, but it does so at its own peril," as it could face liability under the ESA and invite a challenge under the Administrative Procedures Act. Bennett v. Spear, 520 U.S. 154, 170 (1997); see generally National Wildlife Federation v. Coleman, 529 F.2d 359, 371-72 (5th Cir. 1976).

Further, pursuant to the ESA, conferences between representatives of the action agency and the expert agency are required for all federal actions that are likely to adversely affect the continued existence of a species proposed to be listed, such as the Atlantic sturgeon. 16 U.S.C. § 1536(a)(4). If the proposed species is subsequently listed prior to completion of the action, the action agency (in this case, the Corps) must review the action to determine whether formal consultation is required. 50 C.F.R. § 402.10.

The Corps has prepared a biological assessment ("BA") for this Project evaluating the potential impacts of the deepening proposal on endangered and threatened species and has included it at Appendix B to the DEIS. DEIS at 6-2. The assessment is being coordinated with the FWS (jurisdiction over the Florida manatee, piping plover, and nesting sea turtles) and NMFS (jurisdiction over other protected marine and aquatic species which may occur in the project vicinity) pursuant to Section 7 of the ESA. DEIS at 6-2.

A. Shortnose Sturgeon

The shortnose sturgeon ("SNS") was listed as an endangered species in 1967. Causes for decline were attributed largely to overfishing, bycatch in other fisheries, habitat fragmentation mainly due to dams blocking migration to spawning habitats, and water quality degradation Protecting and restoring spawning habitats and river flow conditions in those habitats is an essential part of the species recovery plan. Reestablishing access to historical spawning habitat and ensuring the presence of proper environmental conditions that were once found during the river's natural state are paramount.

The GRR explains that "expected reductions in habitat volume for shortnose sturgeon range from -11.0 to +10.6 percent, depending on channel depth, life stage, and season." GRR at 163. The GRR states further that the results of the hydrodynamic modeling indicate that the impacts to shortnose sturgeon would not be substantially reduced by the initial mitigation plan and that "no measures were identified that could be implemented in the estuary that would restore sturgeon habitat or enhance existing habitats." GRR at 163. The Corps states further that "[s]ince no means of increasing the volume of acceptable habitat within the estuary could be identified, a fishway around the New Savannah Bluff Lock & Dam . . . was recommended." GRR at 163. According to the Corps, the proposed fishway around the dam would allow migrating fish to move upstream past the facility, which would open up an additional 20 miles of habitat upstream of the dam to reaches shortnose sturgeon had used historically. GRR at 164. The Corps contends that the horseshoe rock ramp design would also allow fish to move downstream, thereby allowing young fish spawned upriver to access other habitats needed in later life stages. GRR at 164. Against this backdrop, the BA concludes that "the proposed project may affect, but is not likely to adversely affect Shortnose or Atlantic sturgeon or their critical habitat." BA at 182. We strongly disagree with this conclusion.

To begin with, the Savannah River Estuary provides essential habitat for the continued existence of shortnose sturgeon, and the DEIS does not accurately characterize the effects of such a large-scale disruption to sturgeon habitat. See Expert Report of Shawn P. Young, Ph.D. at 3. Researchers have concluded that the Savannah River shortnose sturgeon population has not been successfully reproducing, and, according to Dr. Young, the proposed harbor deepening Project will likely have significant negative effects on the remaining population in the a number of ways.

This Project will result in a reduction in available habitat and require SNS to seek and select new home ranges of lesser quality. Young Report at 4-6. Sturgeon are bottom-feeders, and the proposed deepening Project will eliminate the benthic community in dredged areas. Young Report at 5-6. It will take years for this community to reestablish itself, and if it does, the benthic community may not be comprised of the same quality and quantity of prey items. Young Report at 5-6. The loss of feeding opportunities will require shortnose sturgeon to find and move to other areas that may or may not provide suitable prey items, and the increased expenditure of energy resulting from this increased movement would be detrimental to the population, resulting in poor health and lower reproductive potential. Young Report at 6.

The deepening Project will also lower DO levels in the harbor, which is a major concern for all fish and aquatic organisms. Young Report at 6. Low dissolved oxygen will affect re-colonization of benthic organisms after substrate dredging and may alter species presence and abundance after re-establishment. Young Report at 7. This will in turn affect sturgeon and other benthic fish feeding and nutrition. In light of the importance of the estuary to juvenile and adult sturgeon; the current low levels of dissolved oxygen; and the questions involving the effectiveness of the oxygenation system, Dr. Young believes the Corps has underestimated the threat of this proposal to sturgeon. Young Report at 7.

Another concern for SNS is the turbidity caused by re-suspension of sediments and the

pollutants that may re-enter the water column after sediment exposure. Young Report at 7-8. Although the DEIS states that a sediment study was conducted to determine chemicals present in solid sediments, it does not appear as if the Corps conducted actual exposure toxicity tests to determine how the deepening Project would impact sensitive species, such as SNS. Young Report at 7-8. These studies should be undertaken and will likely reveal that the SHEP will have substantial negative effects on species such as SNS beyond the level described in the DEIS. Young Report at 8.

As the DEIS and the GRR acknowledge, the deepening Project will also exacerbate problems related to saltwater intrusion. Young Report at 9. Juveniles prefer low levels of salinity, and juveniles experience decreased energy and aerobic capacity, resulting in decreased growth and survival as salinity levels rise. Changes in prey species abundance due to increased salinity, on top of dredging and low dissolved oxygen, "will likely have profound impacts on the entire estuarine fish community, including shortnose sturgeon, Atlantic sturgeon, and striped bass." Young Report at 9.

As noted previously, the DEIS that: "Neither the Corps nor the [resource] agencies could identify any measures that could be implemented in the estuary that would restore sturgeon habitat or enhance existing habitats." DEIS at 5-91. Instead, the Corps suggested a method of allowing fish to move by the lowest dam on the river, the New Savannah Bluff Lock & Dam (NSBL&D) at Augusta, Georgia, which is operated by the Corps. DEIS at 5-91. The theory behind this proposal is that a "fishway around the structure would allow migrating fish to move past the dam" and "would open up an additional 20 miles of habitat upstream of the dam to Shortnose sturgeon, reaches that they had used in the past." DEIS at 5-91. Although the concept of fish passage offers some potential benefits to fisheries more generally, the Corps' proposal is deeply flawed because, as explained below, sturgeon species are unlikely to use the fish passage facility proposed in this case. Young Report at 11-16.

B. Atlantic Sturgeon

Atlantic sturgeon is a long-lived, late-maturing, estuarine-dependent, anadromous species that can live up to 60 years and reach lengths up to 14 feet. Proposed Listings for Two Distinct Population Segments of Atlantic Sturgeon in the Southeast as Endangered under the ESA, 75 Fed. Reg. 61904, 61905 (Oct. 6, 2010). Historically, Atlantic sturgeon were present in 38 rivers ranging from Labrador south to the St. Johns River in Florida, with spawning occurring in at least 18 rivers. Id. at 61906. In the past, there were large numbers of Atlantic sturgeon in many rivers along the Atlantic coastline, but the population suffered from severe declines due to overfishing in the late 1800s. Prior to the collapse of the fishery, Georgia's rivers were estimated to have 11,000 spawning females. Id.

Despite a fishing moratorium imposed by NMFS in 1998, Atlantic sturgeon have continued to suffer negative impacts from a range of factors throughout its habitat. Today, the South Atlantic DPS is estimated to number less than 6 percent of its historic population. Atlantic Sturgeon Status Review Team, Status Review of the Atlantic Sturgeon (*Acipenser oxyrinchus oxyrinchus*) (2007). In this DPS, spawning has been confirmed in the Savannah, and on October 6, 2010, NMFS published its Proposed Listings for two distinct population segments of the

Atlantic sturgeon in the Southeast, the Carolina DPS and the South Atlantic DPS. See 75 Fed. Reg. 61904 (2010). The formal status review found that unintended catch of Atlantic sturgeon in fisheries, vessel strikes, poor water quality, dams, lack of regulatory mechanisms for protecting the fish, and dredging were the most significant threats to the fish.

As pointed out by Dr. Young, the DEIS lacks baseline information and an impact assessment on the Savannah River Atlantic sturgeon. Young Report at 9. The omission of discussion and impact assessment of a species proposed for listing as Endangered needs to be rectified, especially where it has been determined that the proposed activity under review – in this case, dredging – is an obstacle to the species' recovery. Young Report at 9. In addition to lacking baseline information, the main focus of impact evaluation, mitigation, and funded research has been placed on the shortnose sturgeon; however, the Atlantic sturgeon has been neglected. Young Report at 10.

As with shortnose sturgeon, the proposed deepening will have significant negative effects on the health and survival of Atlantic sturgeon. The proposal will likely adversely affect the continued existence of the species by (1) causing a reduction in available habitat and causing changes in summer and winter habitat selection with negative consequences likely; (2) requiring these species to find new foraging habitats if they avoid the project altogether or leaving these species without a source of food due to the elimination of benthic prey from the large-scale dredging; and (3) causing these species to suffer physiologically from potential changes in water quality, including lower dissolved oxygen, increased turbidity and pollutants, caused by re-suspension of sediments, and increased salinity. Young Report at 4.

Although shortnose and Atlantic sturgeon share common traits, the DEIS assumes that the life history and behavior of Atlantic sturgeon and shortnose sturgeon is so similar that the SHEP impacts and the mitigation package will have the same outcome for both species. Young Report at 10. Such an assumption is erroneous. Young Report at 10. For example, a recent study of juvenile sturgeon abundance on in the Hudson River Estuary, has found that juvenile shortnose sturgeon prefer habitats upstream of the saltwedge (low salinity), while juvenile Atlantic sturgeon prefer habitats downstream of the saltwedge (higher salinity). Young Report at 10. Other scientists have documented differences in life history, including temperature selection and spawning habitat preferences. Young Report at 10. As previously noted, there will be some similar impacts, but there is a strong likelihood that the two species will also suffer differently in other ways. Young Report at 10. Greater analysis, therefore, is required to determine the impacts to Atlantic sturgeon and what mitigation is needed to address the harm from this Project. Young Report at 10-11.

C. Proposed Mitigation and Sturgeon

As part of the SHEP mitigation package, the Corps has proposed a fishway at the New Savannah Bluff Lock & Dam ("NSBLD") near Augusta, Georgia, 150 miles upriver of Savannah Harbor, as mitigation for damages to shortnose sturgeon habitat in the estuary. Young Report at 11. The Corps was unable to identify any forms of mitigation within the estuary to offset the loss of critical juvenile rearing habitat. Id. Accordingly, the fishway is a trade-off intended to alleviate impacts to important juvenile habitat by allowing passage to upstream habitat. The

problem is that although a fishway might provide some benefits to other species, this proposal is highly unlikely to benefit sturgeon. According to Dr. Young, the DEIS fails to demonstrate that the proposed fish passage design – the Horseshoe Rock Ramp – will have success at passing either species of sturgeon. Id. The proposal also lacks a detailed fish passage plan listing objectives and goals for the species that would purportedly benefit from the facility. Moreover, for a fish passage facility to be effective, a suitable environment must be present above the dam to support spawning and the development of eggs, larvae, and juveniles. Id. at 11. Should sturgeon select the Augusta Shoals for spawning habitat, it will be important to ensure that proper flows and water temperature are provided. At present time, the release schedules from J. Strom Thurmond Dam (JST) do not provide adequate flows during certain times of year. Young Report at 13. The City of Augusta also diverts a significant portion of flow into the Augusta Canal, substantially reducing flow for fish and aquatic organisms. Id.

Even if it could be demonstrated that the Horseshoe Rock Ramp could be constructed at the NSBLD, modifications would likely be necessary to specifically accommodate sturgeon. Id. at 11. It is likely these changes would substantially increase the cost of the fish passage facility, and additional funding would be needed up front to ensure proper maintenance of the structure in perpetuity. The fish passage proposal would certainly require far greater levels of committed funding than currently proposed, and even then, it is uncertain that the proposed design will work here to address impacts to sturgeon. The most effective mitigation action would be the complete removal of NSBLD along with all other dams/obstructions upstream to the JST and those in the Stevens Creek Basin, a major tributary of the Savannah River between JST and the City of Augusta, in combination with a flow schedule designed to promote biological integrity. Id. at 12.

In light of these concerns and the others expressed in Dr. Young's report, we believe the Corps' conclusion that the "the proposed project may affect, but is not likely to adversely affect Shortnose or Atlantic sturgeon or their critical habitat" completely misses the mark. DEIS, App'x B at 182. To the contrary, Dr. Young believes that this Proposal "will directly reduce the likelihood of both the survival and recovery of shortnose and Atlantic sturgeon by reducing the reproductive fitness, numbers and distribution of each species." Young Report at 16. For these reasons, this Proposal weighs heavily in favor of the preparation of a biological opinion by NMFS to determine if the proposal will jeopardize shortnose sturgeon. We also believe that conference consultation is required for Atlantic sturgeon pursuant to 16 U.S.C. § 1536(a)(4).

D. North Atlantic Right Whales

This Project also threatens one of the most endangered marine mammals in the world – the North Atlantic right whale – with perhaps less than 300 still alive. DEIS, App'x B at 96. As NMFS has acknowledged, the death of even one right whale due to non-natural causes could lead to the extinction of the species. Moreover, the expansion of port facilities is particularly relevant for this imperiled species as "[c]ollisions with ships are the single largest cause of right whale mortality in the western North Atlantic." 71 Fed. Reg. 77,704, 77,710 (Dec. 27, 2006). According to NMFS:

The available evidence strongly suggests that the western population of North

> Atlantic right whale cannot sustain the number of deaths that result from ship strikes and fishing gear interactions. If the impact of these activities continues at current rates, it is likely to result in the *extirpation of the western population of North Atlantic right whales*. Given the low population size of North Atlantic right whales in the eastern Atlantic Ocean, the extirpation of right whales in the western Atlantic Ocean would render the entire species effectively extinct.

71 Fed. Reg. at 77,714 (emphasis added).

In assessing the threat of vessel strikes to right whales resulting from this proposal, the BA states as follows:

> Vessel traffic has increased in the harbor since the last deepening in 1994. The Corps expects the number of vessels that call at the Port will increase in the future in response to population growth in the Southeast. That growth is expected to occur With or Without the proposed harbor deepening. The Corps' economics evaluations indicate that deepening the Federal navigation channel would not increase vessel traffic using Savannah Harbor, but would instead allow a decrease in the number of vessel calls. The Fleet Forecast found within the Economic Appendix in the GRR, states that over the 50-year project time (from 2015 to 2065) the projected number of vessels arriving at Savannah Harbor would be substantially higher for the existing -42 foot depth than for the proposed deepening to -48 feet. The reason for this decrease of vessels with a deeper navigation channel is the same volume of cargo could be carried by fewer, larger vessels as could be carried by a vessel fleet with a higher proportion of smaller vessels. In addition, in excess of 70 percent of the vessels presently do not call on Savannah Harbor at their maximum capacity or design draft. The "light loading" of vessels increase costs to the shipper, which are eventually passed onto the consumer. The proposed deeper channel would allow these "light loaded" vessels to increase their loads to their maximum capacity, thereby decreasing the number of vessels calling on the Port of Savannah.

DEIS, App'x B at 121. In other words, the Corps contends that fewer whales will be struck by vessels if the Project is completed because fewer ships will be calling on the harbor. As explained above, this position is based on an assumption that is not shared by the shipping community. The shipping community, including GPA, believes that the growth of the container traffic at the harbor will accelerate if the harbor is deepened. If GPA and the shipping community is correct, then there will be greater numbers of ships calling on the harbor. Reliance on this flawed assumption here undermines the evaluation of the Project's potential impact on right whales. Further, as discussed in Section I.D.4., the channel appears to be designed in such a manner as will require ships to travel at a speed in excess of the 10 knot speed restrictions.

E. Sea Turtles

Four federally listed, endangered sea turtle species, the Kemp's ridley (*Lepidochelys kempii*), leatherback (*Dermochelys coriacea*), loggerhead (*Caretta caretta*) and the hawksbill

(*Eretmochelys imbricata*), and one threatened species, the green (*Chelonia mydas*), feed in and migrate through the waters affected by the SHEP. GPA's proposal threatens harm to sea turtles due to the proposed dredging activities. Specifically, channelization of inshore and nearshore habitat and the disposal of dredged material in the marine environment can destroy or disrupt resting or foraging grounds and may affect nesting distribution through alteration of physical features in the marine environment. In addition, the associated lighting can negatively affect nesting activities. Moreover, the BA ignores the threat to turtles of ship strikes despite the fact that boat strikes have been identified as a significant and growing threat to sea turtles. Boat collisions can cause immediate death to turtles or severely debilitate them, leading to infection and decreased reproductive fitness. The frequency of injury from propellers and collisions is higher in areas where recreational boating and vessel traffic are intense. Recovery Plan for U.S. Population of Atlantic Green Turtle (1991) at 9 and Recovery Plan for U.S. Population of Loggerhead Turtle, Second Revision (2008) at I-56. Presumably, the BA ignores the threat of boat strikes, as it does with right whales, due to its conclusion that the Project will result in fewer, not more, ships over time.

F. Manatees

The West Indian manatee inhabits coastal, estuarine, and riverine systems in the southeastern United States, the Greater Antilles, eastern Mexico and Central America, and south to northeastern Brazil. About 3,000 West Indian manatees remain in the United States. The Florida subspecies (*T. manatus latirostris*) occupies the northern end of the species' range. These manatees occur primarily in Florida and southeastern Georgia. According to the Florida Manatee Recovery Plan, the most significant problem presently facing manatees is death or serious injury from boat strikes. U.S Fish and Wildlife Service, Florida Manatee Recovery Plan *(Trichechus manatus latirostris)*, Third Revision, at 23. The BA states that in 2008 the Georgia Department of Natural Resources indicated it had recovered three male carcasses in the Savannah River and that "[a]ll three were located at the downtown Savannah waterfront and apparently died from ship propeller lacerations (e.g. one was cut in half)." DEIS, App'x B at 83. Again, the BA does not even mention or assess potential impacts due to increased shipping activity as a result of the Project.

For these reasons and others, the DEIS and GRR fail to adequately assess or accurately disclose the effects of the Proposal on federally endangered and threatened species such as Shortnose sturgeon, North Atlantic right whales, sea turtles, manatees, and other wildlife. For these reasons, the Corps' determination that the Proposal may affect, but is not likely to adversely affect these species, is erroneous, and we believe formal consultation with NMFS and FWS is required.

VII. Consultation Pursuant to the Magnuson-Stevens Fishery Conservation and Management Act and the Fish and Wildlife Conservation Act.

A. Essential Fish Habitat Consultation.

Beyond the ESA, inter-agency consultation is also required under the Magnuson-Stevens Fishery Conservation and Management Act, 16 U.S.C. §§ 1801 et seq. (the "Magnuson-Stevens

Act"). That Act requires that a federal agency "shall consult with [NMFS] with respect to any action authorized . . . or proposed to be authorized . . . that may adversely affect any essential fish habitat ["EFH"] identified under this Act." 16 U.S.C. § 1855(b)(2); 50 C.F.R. § 600.920(a). For "any federal action that may adversely affect EFH, Federal agencies must provide NMFS with a written assessment of the effects of that action on EFH." 50 C.F.R. § 600.920(e)(1). The assessment must include, among other things, an analysis "of the potential adverse of the action on EFH and the managed species." 50 C.F.R. § 600.920(e)(3)(ii).

Although the DEIS includes an Essential Fish Habitat Evaluation, DEIS, App'x S, it is or understanding that EFH consultation has not yet commenced.

B. Fish and Wildlife Coordination Act.

Finally, coordination with the between the Corp and FWS is required pursuant to the Fish and Wildlife Coordination Act, 16 U.S.C. § 661 et seq. That law provides that "whenever the waters of any stream . . . are proposed or authorized to be . . . deepened . . . or modified for any purpose whatsoever, including navigation," the agency proposing, authorizing or permitting the action "shall first consult" with the FWS and with the "head of the agency exercising administration over the wildlife resources of the particular State wherein the . . . facility is to be constructed, with a view to the conservation of wildlife resources by preventing loss of and damage to such resources . . . ." 16 U.S.C. § 662 (emphasis added). The DEIS includes a draft Fish and Wildlife Coordination Report, in which FWS expresses substantial concerns about the Proposal, including the dissolved oxygen injection system and the impacts to fisheries. DEIS, App'x E. Coordination pursuant to the Fish and Wildlife Coordination Act must be completed before the Project can proceed.

VIII. The Mitigation Proposal Is Inadequate.

Although much of our letter already includes comments regarding specific elements of the mitigation package, we briefly summarize some of our chief concerns here:

A. Global Concerns.

- Overall, it does not appear as if the Corps has made much of an effort to comply with the new rules for compensatory mitigation under the CWA. On April 10, 2008, EPA and the Corps issued a Final Rule on Compensatory Mitigation for Losses of Aquatic Resources under section 404 of the Clean Water Act. See 73 Fed. Reg. 19,594-19,687 (Apr. 10, 2008) (codified at 40 C.F.R. § 230.91 and 33 C.F.R. §§ 325 and 332) (hereinafter referred to as the "Mitigation Rule" or the "Rule"). A central feature of the new Rule is the use of a watershed approach for purposes of all forms of mitigation. See 33 C.F.R. § 332.3(c)(1) ("The ultimate goal of a watershed approach is to maintain and improve the quality and quantity of aquatic resources within watersheds through strategic selection of compensatory mitigation sites."). The Rule states that:

> The district engineer must use a watershed approach to establish compensatory mitigation requirements in DA permits to the extent

> appropriate and practicable. Where a watershed plan is available, the district engineer will determine whether the plan is appropriate for use in the watershed approach for compensatory mitigation. In cases where the district engineer determines that an appropriate plan is available, the watershed approach should be based on that plan. Where no such plan is available, the watershed approach should be based on information provided by the project sponsor or available from other sources.

33 C.F.R. § 332.3(c). Although the DEIS includes statements indicating that the Corps "evaluated several sites within coastal Georgia," DEIS 5-6, for example, there is no indication that the Corps attempted to follow the Mitigation Rule's requirements relating to the utilization of a watershed approach or other key features of the Rule.

- Moreover, the mitigation package as a whole includes a great degree of uncertainty. As explained in greater detail in Section II.A.2.(d), the funding required for the elements of the proposed mitigation package is not assured by either the Corps or GPA. In fact, as explained above in Section II.A.2.(d), it is our understanding the funding needed to ensure that the dissolved oxygen injection system, for example, is maintained and operated in perpetuity will be subject to the precarious federal appropriations process. Without assurance that the proposed mitigation measures will be adequately funded, there can be no confidence in the success or effectiveness of the package as a whole. This approach again runs counter to the Mitigation Rule, which as explained above in Section II.A.2.(d), specifically provides that the "district engineer *shall require* sufficient financial assurances to ensure a high level of confidence that the compensatory mitigation project will be successfully completed, in accordance with applicable performance standards." 33 C.F.R. § 332.3(n)(1) (emphasis added).

B. Mitigation for Direct Wetland Impacts Is Flawed.

This Proposal would cause direct impacts to as many as 14.08 acres of wetlands. JPN at 4. To compensate for the direct impacts of 14.08 acres, the Corps has proposed grading down a former dredge spoil site to an elevation that would allow the growth of *Spartina alterniflora.* DEIS at 5-6. We have the following concerns:

- The proposed location for the mitigation for the 14.08 acres of direct impacts to wetlands is "a previously used sediment placement area (CDF 1S) within Savannah Harbor." DEIS at 5-6. According to the Corps, this area, which is located adjacent to the confluence of the Front River and the Middle River and is within the Refuge, was identified as having the "greatest opportunity to support the long term success of a restored salt and brackish marsh system." DEIS 5-6. The proposed restoration includes grading it down to an elevation that would allow the growth of *Spartina alterniflora.* DEIS at 5-6. If the site does not naturally revegetate as expected, the Corps would plant *Spartina* to provide the basis for subsequent growth across the site. DEIS at 5-7. It is not clear why the Corps does not simply re-plant *Spartina* from the outset. Moreover, it also unclear at what point the Corps will decide to re-plant the site and how extensive the re-planting will be. For example, Table 5-2 presents the "Revegetation Rate for Created

Marsh," but it does explain whether, for example, the Corps will initiate planting activities if 15 percent vegetative cover is not attained in year one. Finally, if the Corps does decide to re-plant, the DEIS does not specify how extensive such planting will be.

C. Mitigation for Indirect Wetland Impacts Is Lacking.

This Proposal would cause indirect impacts to as many as 1,212 acres of freshwater tidal wetlands (the Corps estimates this number will be reduced to 337 acres as a result of proposed flow-altering modifications). DEIS at 5-13; JPN at 4. After investigating and rejecting sites where indirect wetland impacts could be mitigated through restoration, enhancement, or creation, the DEIS indicates that the Corps began to focus on preservation opportunities. DEIS at 5-31 – 5-35. In exchange for impacting 337 acres of freshwater wetlands, the Corps has proposed preserving 2,683 acres of wetlands. DEIS at 5-35.We have the following concerns about the proposal to mitigate for indirect impacts.

- Part of the mitigation package relating to impacts to tidal freshwater marshes is to implement several flow-altering modifications of the river. As discussed above in Section I.A., it was not possible at this time to perform a rigorous review of the Corps' modeling completed in connection with the Project, and we remain concerned about the significant uncertainty regarding the ability of the flow-altering modifications to limit indirect impacts to 337 acres. Moreover, we are further concerned that proposed changes to the hydrology of the river may have unintended consequences. For example, while limiting damage to the tidal freshwater wetlands, the changes in hydrodynamics may have unintended effects to fisheries, including shortnose sturgeon, Atlantic sturgeon, and striped bass.

- We are concerned about the Corps' decision to rely on the Savannah District's Standard Operating Procedure for Compensatory Mitigation (March 2004) (the "SOP") since the SOP was designed to provide guidance for projects involving ten acres of impact or less. The SOP states that it "is applicable to regulatory actions requiring compensatory mitigation for adverse impacts to 10 acres or less of wetland or other open waters" and that the "SOP may be used as a guide in determining compensatory mitigation requirements for projects with impacts greater than the above wetland and stream limits, or for enforcement actions, *however, higher than calculated credit requirements would likely be applicable to larger impacts.*" SOP at 1 (emphasis added). In light of the extent of impacts from this Proposal to resources of national importance, we recommend that the Corps adopt a far greater ratio for preserving wetlands.

- The Mitigation Rule underscores the importance of providing in-kind mitigation for unavoidable impacts to "difficult-to-replace" aquatic features, such as freshwater tidal wetlands: "For difficult-to-replace resources (e.g., bogs, fens, springs, streams, Atlantic white cedar swamps) if further avoidance and minimization is not practicable, the required compensation should be provided, if practicable, through *in-kind* rehabilitation, enhancement, or preservation since there is greater certainty that these methods of compensation will successfully offset permitted impacts." 33 C.F.R. § 332.3(e)(3) (emphasis added). We understand the Corps' position that it was difficult to identify

preservation opportunities involving freshwater tidal wetlands; however, if in-kind mitigation cannot be undertaken here, we believe that strongly counsels in favor of far more preservation mitigation as provided for in EPA Region 4's Mitigation Policy.

D. Dissolved Oxygen Injection System Cannot Be Relied On.

- As discussed previously above in Section II.A.2.(d), we have serious doubts relating to the proposal to utilize the oxygenation system for purposes of mitigating the impacts associated with the lowering of already low levels of DO in the water column. In addition to not being able to verify the Corps' modeling results at this time, we are already skeptical of the proposal given the results of the demonstration project, which indicated that any reported benefits were within the natural ranges of variability. Moreover, it is highly dubious that such a system can be maintained and run effectively in perpetuity, especially in light of the fact that funding for its maintenance and operation is not even assured.

E. Fish Passage Is Unlikely to Benefit Shortnose Sturgeon.

- As explained above, in Section VI.C., the Corps has proposed a fishway at NSBLD as mitigation for damages to shortnose sturgeon habitat in the estuary. The DEIS fails to demonstrate that the proposed fish passage design – the Horseshoe Rock Ramp – will have success at passing SNS. The proposal also lacks a detailed fish passage plan listing objectives and goals for the species expected to benefit from the facility. Moreover, for a fish passage facility to be effective, a suitable environment must be present above the dam to support spawning and the development of eggs, larvae, and juveniles. Even if it could be demonstrated that the Horseshoe Rock Ramp could be constructed at the NSBLD, modifications would likely be necessary to specifically accommodate sturgeon. It is likely that these changes would substantially increase the cost of the fish passage facility, and additional funding would be needed up front to ensure proper maintenance of the structure in perpetuity. The fish passage proposal would certainly require far greater levels of committed funding than currently proposed, and even then, it is uncertain that the proposed design will work here to address impacts to sturgeon. The most effective mitigation action would involve the complete removal of NSBLD along with upstream modifications to promote a flow schedule designed to promote biological integrity.

F. Striped Bass Mitigation Proposal Is Weak.

- We are troubled about the proposal to provide a lump sum payment in exchange for significant impacts to the striped bass fishery. Such a proposal should only be considered as a measure of last resort. If no alternative measures can be identified to protect the existing fishery, this proposal must be significantly expanded as impacts to spawning habitat will likely be greater than predicted. Young Report at 3. The Corps has proposed to fund at a 20 percent spawning habitat loss level, but this amount falls well short of what would be needed. Young Report 15. In fact, the Corps has previously underestimated impacts from estuary modifications to the striped bass population in the 1970s and 1980s. Id. The Tide Gate and Diversion Canal installed in the late 1970s and

operated through the 1980s caused a 96 percent decline in striped bass reproduction, prompting a moratorium on striped bass fishing and harvest for an extended period of time. Id. The losses were a result of saltwater intrusion and hydrodynamic changes negatively impacting spawning and the survival of early life stages, and a major re-stocking effort was needed to rebuild the population. Id. To avoid repeating the mistakes of the past, the Corps should anticipate funding at a 100 percent loss level with funding made available prior to initiation of the Project.

- The stocking program, as Dr. Young recommends, should ensure striped bass broodstock are of Savannah River genetic origin, and genetic testing should be conducted before annual aquaculturing occurs. Id. at 16. The Savannah River striped bass are known to be genetically distinct from other river systems. Id. Striped bass in the many Atlantic and Gulf Coast rivers have some distinct physiology and behavior that increases success in the natal system, but may be a liability in restoring populations with genetics outside the natal system. Id.

IX. The Corps' Adaptive Management Plan is Deficient.

In Appendix D of the DEIS, the Corps explains that because the Project is so complex and because the environmental responses to the Project are so uncertain, the Corps will employ "adaptive management" to ensure that certain impacts to the environment caused by the Project will be fully mitigated. DEIS, App'x D at 3. As the Corps relates in Appendix D:

> The Savannah Harbor Expansion Project . . . has the potential to adversely affect nationally important resources. In addition, since predictions are made about future effects to biological resources, there is a degree of uncertainty about the impacts which the recommended action would actually produce. Those uncertainties include both the accuracy of the predictive impact tools and the biological responses that will occur as a result of changes in the environment.

DEIS, App'x D at 3. The Corps defines the adaptive management process as "evaluating the accuracy of the predicted environmental impacts, assessing the effectiveness of the mitigation features, and modifying the project as needed to ensure the levels of environmental effects predicted in the [EIS] are not exceeded." Id.

For the wetlands mitigation component of the Project, the Corps must adhere to the requirements of the Corps' Mitigation Rule, which defines adaptive management as follows:

> *Adaptive management* means the development of a management strategy that anticipates likely challenges associated with compensatory mitigation projects and provides for the implementation of actions to address those challenges, as well as unforeseen changes to those projects. It requires consideration of the risk, uncertainty, and dynamic nature of compensatory mitigation projects and guides modification of those projects to *optimize performance.* It includes the selection of appropriate measures that will ensure that the aquatic resource functions are provided and involves analysis of monitoring results to identify potential problems of a compensatory mitigation project and the identification

and implementation of measures to rectify those problems.

33 CFR §332.2 (emphasis added). The Corps has boiled this process down to the following elements: "Predict → Mitigate → Implement → Monitor → Adapt." DEIS, App'x D at 3. All five of these elements are central to effective adaptive management.

To ensure that the adaptive management works correctly, the Corps must develop an adaptive management plan, which the Corps' mitigation rule defines as follows:

> (12) *Adaptive management plan.* A management strategy to address unforeseen changes in site conditions or other components of the compensatory mitigation project, including the party or parties responsible for implementing adaptive management measures. The adaptive management plan will guide decisions for revising compensatory mitigation plans and implementing measures to address both foreseeable and unforeseen circumstances that adversely affect compensatory mitigation success.

33 CFR §332.4(c)(12) (emphasis added). The Corps' adaptive management plan for the Project as set forth in Appendix D of the DEIS is deficient in several respects.

A. There is no Guarantee that Adequate Money will be Available to Fund Mitigation Triggered by the Adaptive Management Plan.

As the Corps explains in its adaptive management plan, there are five components to a adaptive management – predicting impacts, developing appropriate mitigation for those impacts, implementing the mitigation, monitoring the mitigation, and adapting the mitigation as necessary. DEIS, App'x D at 3. The Corps has not made adequate provisions in its adaptive management plan to ensure that the fifth element – adapting the mitigation – will be completed. If, for instance, the chloride levels in the tidal freshwater wetlands reach levels higher than expected and many more of these rare wetlands are degraded as a result, then more wetlands mitigation would be required than is provided for under the adaptive management plan. And under the Corps' plan there is no guarantee that money will be available for such mitigation because the necessary funds will have to be approved by the Administration and appropriated by Congress on a yearly basis. In the current of climate of fiscal restraint, there is no assurance that Congress would appropriate money for additional mitigation for a civil works project that would, by that time, be completed.

The other federal agencies that have to sign off on the Project with the Corps – the EPA, the Department of Interior, and the Department of Commerce – have repeatedly sought assurances that the money for monitoring and adaptive management will be available when it is needed.[31] Likewise, the SHEP Stakeholders Evaluation Group has demanded as much.[32] According to an internal Corps memorandum, the Corps cannot make such assurances. Instead, it appears that the Corps is seeking to have the Georgia Department of Transportation, the local sponsor, place in an escrow account its share, as well as the federal share—approximately $48

[31] Savannah Harbor Expansion Project (SHEP) Monitoring and Adaptive Management Funding Customer Funded Escrow, Savannah District Fact Paper, p. 2, June 25, 2010 (Revised July 9, 2010).
[32] Id.

million total—of the monitoring and adaptive management costs.[33] By establishing this escrow account, at least this amount would not be subject to the whims of Congress. It does not appear, however, that the Corps has been successful in convincing the local sponsor to set aside this money, because the adaptive management plan in the DEIS only suggests that the local sponsor "may" establish an escrow account for *its share* of the monitoring and adaptive management monies. DEIS, App'x D at 32. The federal share would still need to be appropriated by Congress on a yearly basis. Id. Thus, the validity of the Corps' adaptive management plan is still very much in play.

On top of the uncertainty surrounding the funding of the monitoring and adaptive management components of the Project, there is a significant question as to whether the adaptive management sums incorporated in the plan are sufficient. For example, the adaptive management plan allows $1,341,500 for the purchase of additional wetlands if the wetlands mitigation incorporated in the project mitigation plan proves insufficient. Id. at 34. This figure represents only 5 percent of the mitigation costs the Corps included in the wetlands mitigation plan. The Corps does not explain why it chose this amount. Without more, this calculation is arbitrary and capricious.

Furthermore, the Corps does not explain what happens if the harbor deepening destroys far more wetlands than the Corps has predicted. If, for instance, the Project destroys 15 percent more wetlands than the Corps predicts, will the Corps mitigate for those wetlands destroyed that are above the Corps' 5 percent "cap"? This is especially important because there is such a disparity in the amount of wetlands that are at risk as a result of the Project. If the "replumbing" of the estuary works correctly, the Corps predicts that 337 acres of freshwater wetlands will be destroyed. DEIS, App'x C at 54. But if the re-plumbing does not work according to plan this number could be significantly higher.

In a similar vein, the Project calls for the use of three "Speece cones" to increase dissolved oxygen levels in the harbor. Id. at 95. If more Speece cones are needed to raise dissolved oxygen levels to acceptable levels, the adaptive management cost schedule only authorizes the Corps to spend an additional 10 percent for more Speece cones. DEIS, App'x D at 34. It would seem, based on the Corps' numbers, that this amount would not even cover one additional Speece cone. This is alarming when one takes into account that it was not that long ago that the Corps was suggesting that as many as twenty-nine Speece cones would be needed for the Project.[34] As the FWS has pointed out, it is inappropriate to use the performance goals for the Project as the thresholds for remedial action under the adaptive management plan.[35] Because of the uncertainty of the models, the actual impacts of the proposed Project could differ substantially from the predicted impacts.[36] Consequently, the amount of funding set aside for adaptive management should be increased to 10 or 15 percent of the initial cost of construction of the various mitigation components. And this additional amount should be included in the cost of the Project.

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[33] Id.
[34] See SEG Meeting Transcript at 101 (Feb. 14, 2006).
[35] See Letter from Cynthia K. Dohner, Regional Director, U.S. Fish & Wildlife Service, to Col. Jeffrey Hall, U.S. Army Corps of Engineers at 2 (Sept. 9, 2010).
[36] Id.

B. The Modeling Undertaken for the Project Does not Appear to Take into Account other Pollution Control Activities that are Occurring on the Savannah River.

The Federal Modeling Performance Goals do not seem to recognize that other pollution control efforts are ongoing on the Savannah River upstream of the harbor. For example, to come into compliance with the TMDL for dissolved oxygen, upstream dischargers will be undertaking projects to reduce their contributions of biological oxygen demand to the River. These efforts could have a significant impact on dissolved oxygen levels in the harbor. If the Corps fails to take this into account in its monitoring, then it will not get a true reading of whether or not certain components of the adaptive management plan should be triggered. In other words, the Project should not be able to escape its obligations to increase dissolved oxygen levels because upstream dischargers are acting responsibly.

C. The Monitoring Component of the Adaptive Management Plan Is Deficient.

The preconstruction monitoring for physical characteristics and biological resources should be extended to three lunar cycles to ensure an accurate baseline is established. In addition to wetlands and shortnose sturgeon, the Atlantic sturgeon and stripped bass should be monitored. Also, a monitoring plan should be developed to cover the planting of vegetation at the brackish marsh creation site. Furthermore, if additional mitigation is required under the adaptive management plan, the current plan only allows for one year of additional monitoring. This period should be increased to three years. Finally, the proposed long-term monitoring plan appears to be funded for only one year past the initial 5-year post-construction monitoring period. If this long-term monitoring is dependent on future Congressional appropriations, it is unlikely that this monitoring will ever take place. The Corps needs to find a way to better assure that this monitoring will be funded.

Conclusion

We appreciate the opportunity to submit these comments on the proposal to deepen the Savannah Harbor. For the reasons described herein, we believe the Proposal raises serious concerns under the National Environmental Policy Act, the Clean Water Act, the Endangered Species Act, and other state and federal laws and regulations. Our review of the DEIS and Draft GRR reveal that the Corps has failed to provide the public with a meaningful opportunity to review a major, publicly-funded infrastructure project by not providing timely access to the numerous models relied upon by the Corps in rendering its analysis. Until the public is afforded the ability to rigorously review the Corps' analysis, the Corps has frustrated the goals of NEPA by severely limiting public input.

Additionally, the Corps' underlying assumption that this Project is unrelated to the growth of the Georgia Ports Authority's underlying business defies reality, the consistent position of GPA, and the Tier I EIS. In making this suspect assumption, the Corps has undermined its economic analyses and undermined the environmental studies by failing to evaluate many of the negative effects associated with this Proposal. If the Corps is correct that

the Project is unrelated to the Port's underlying business, then there is no need to deepen the channel to keep Savannah Harbor competitive. Moreover, even if this Project could generate transportation efficiencies, the Corps has failed to determine that any savings would benefit the American public. Further, in light of questions raised regarding the ability of the proposed channel to safely accommodate fully-loaded Post-Panamax ships, the stated rationale for this Project is greatly diminished, especially when weighed against the substantial economic costs and environmental impacts.

And finally, the Corps has simply failed to consider a sufficient range of alternatives for accommodating the anticipated larger class of containerships. The refusal to consider whether the federal government could deepen a different port in the Southeast more cost effectively and with fewer impacts on the environment is deeply troubling, especially in these difficult economic times when federal dollars are in short supply. For these and other reasons stated above, we respectfully request that the Corps remedy the significant flaws in the DEIS and Draft GRR before proceeding with this Proposal.

Sincerely,

Christopher K. DeScherer

William W. Sapp

Enclosures

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Jane Greiss, FWS
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Exhibit A

Savannah press

Georgia Ports Authority

DEEPWATER TERMINALS: Savannah • Brunswick
BARGE TERMINALS: Bainbridge • Columbus
TRADE DEVELOPMENT OFFICES: Savannah • Brunswick • Atlanta • New York • Oslo • Athens • Tokyo • Singapore • Hong Kong • Seoul • Sydney • Melbourne

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NEWS

For Immediate Release
July 13, 1998

SAVANNAH, GEORGIA U.S.A.-- The Georgia Ports Authority (GPA) has refined its plan to deepen the Savannah Harbor Navigation Channel by proposing to give state and federal government environmental agencies veto power over the project if their environmental concerns are not satisfied.

GPA Executive Director Doug J. Marchand said Monday, "We all recognize that the ports authority has the responsibility to provide for the economic development of Georgia and the entire multi-state geographic area which we serve. We also have the responsibility to be the best possible steward of the environment. For that reason, we are proposing what I believe to be an unprecedented plan to allow environmental resource agencies to help shape and to pass judgment on our plan to deepen the Savannah harbor."

The proposal comes as GPA is nearing completion of a study to determine the economic, engineering, and environmental feasibility of deepening the navigation channel. The next phase would be Congressional authorization to proceed with the design of detailed engineering plans that include advanced studies of the impact of the project on wildlife, fish and plant habitats, water quality, and properties adjacent to the navigation channel.

The final phase—construction of the project— can only proceed upon approval of a satisfactory Environmental Impact Statement and after Congress and the State of Georgia approve construction funding.

GPA has also identified the locally preferred plan for project depth. "After discussions with our present steamship line customers and our negotiations with potential new lines concerning the draft needs of the future, it was determined that the optimum draft for Savannah is -48'," Marchand said. "This would accommodate vessels currently planned, provide adequate under-keel clearance, and best suit carrier needs." The initial study used a depth of -50' to assess maximum impacts. The National Economic Development (NED) plan, which considers the highest net federal benefit and determines federal interest in cost-sharing a project, is also established at -48'.

The GPA plan provides the framework for environmental agencies to work with the GPA and the Corps of Engineers through a "stakeholders evaluation group" to identify the scope of the scientific studies which are required to measure any environmental impacts that might occur at various increased depths of the channel. The agencies could prevent further consideration of the project if agreement cannot be reached on the scope of the studies.

In the event studies proceed, the environmental agencies next would review the data the studies produce. When environmental impacts are predicted, the studies will include a proposal to avoid, minimize or mitigate those impacts. The agencies could prevent further consideration of the deepening project if it is determined that the mitigation plan is inadequate.

The GPA proposal is based on a draft initially proposed by the Georgia Department of Natural Resources. The proposal has been discussed with the agencies, and was transmitted to them in revised draft form on Friday. Ports authority representatives will begin meetings with the agencies on Tuesday to review details of the plan. GPA also will ask Members of the Georgia Congressional delegation to include the final version of the plan in the provision of the Water Resources Development Act of 1998 (WRDA 98) that would authorize the Savannah deepening project subject to satisfactory resolution of all environmental concerns.

Marchand said, "We recognize that the public and the state and federal environmental organizations all have legitimate concerns about the impact of any new activities in the sensitive Savannah River basin. We have been working for more than a year to identify and address those concerns and our proposal is insurance to all involved that we are prepared to fully address their concerns. However, we cannot even begin to study their concerns unless the deepening project is included in WRDA 98."

GPA considers increased channel depth to be vital to continued growth of port activities in Savannah. More than half of the container vessels currently calling at the port must either load to less than capacity or wait for high tides in order to safely transit the channel. Because of the trend of steamship companies to increase efficiency by increasing vessel size, it is anticipated that deep draft vessel calls will increase by over 445 percent over the next 50 years.

A 1997 economic impact study estimates that Georgia's public and private terminal operations directly or indirectly support 80,100 jobs, are responsible for $1.8 billion in wages, generate $23 billion in revenue and account for $565 million in state and local taxes each year.

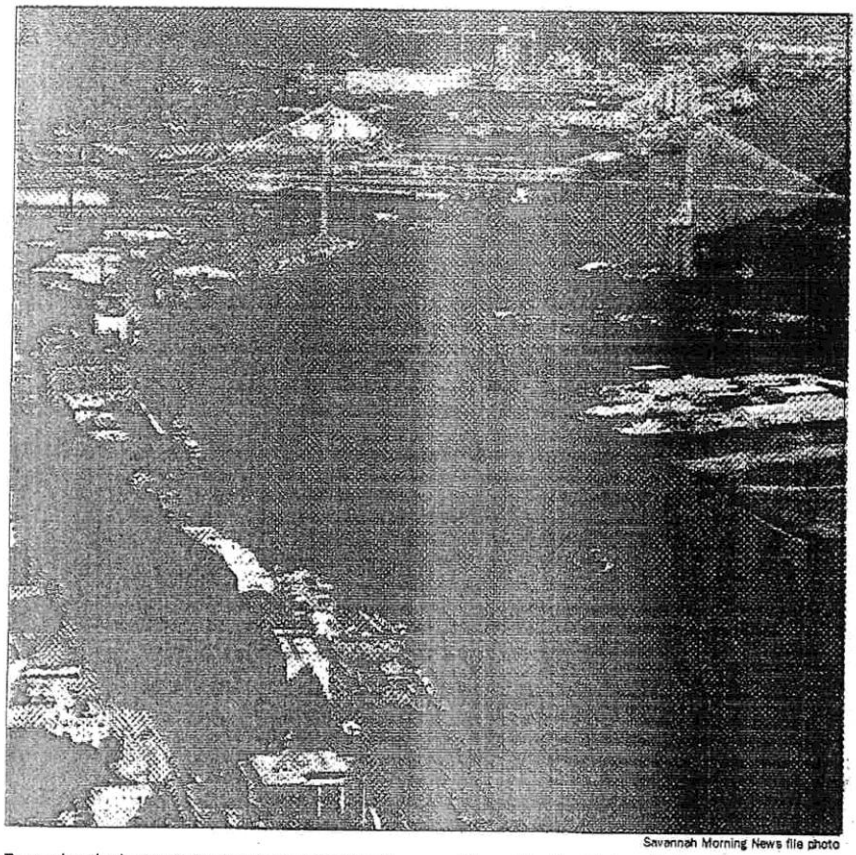
The Georgia Ports Authority operates modern and efficient deepwater port facilities in Savannah and Brunswick, Georgia and provides value added services to facilitate international trade. Inland barge terminals operated under the auspices of the Georgia Ports Authority are located in Bainbridge and Columbus, Georgia.

Visit the GPA website at http://www.gaports.com

For additional information, please contact James C. McCurry, Manager, Legislative Affairs at 912-964-3806 (800-342-8012) or via E-mail at jmccurry@gaports.com

Exhibit B

Approval for river deepening in peril



Savannah Morning News file photo

Deepening the harbor in Savannah will keep the city competitive with other Eastern Seaboard ports.

Savannah Morning News, Thursday, October 8, 1998

River

Continued from page 1A

one's going to be final minute if at all."

The Georgia Ports Authority has already spent $6 million to study the feasibility of deepening the harbor. The project is estimated to cost $200 million.

The Senate has approved a version of the bill, but the House must approve its version. Then a House/Senate conference committee must work out any differences.

The bill to fund the water act has the full support of the Senate, said Julie Robinson, spokeswoman for U.S. Sen Max Cleland, D-Ga.

But failure by Congress to act before it adjourns for the year could cost Savannah dearly in economic benefits from the ports, which provided 67,638 ports- and transportation-related jobs statewide in 1997.

Savannah ports officials previously have said that increased container cargo here could provide an additional 9,300 jobs (mostly in Georgia), $1.7 million in Georgia wages, $15 million in national sales and revenues, and $34,000 in state and local taxes.

Ports officials are locked in a battle with Charleston, S.C., to be named the third of what's expected to be only three megaport hubs on the Eastern Seaboard. Ports in New York and Virginia likely have a lock on the other two slots in the "hub-and-spoke" system — similar to how airlines operate — that is being devised for East Coast ports. The system, in which the hubs would funnel shipments to the smaller ports, is in reaction to a new breed of huge container ships plying international waters.

In Savannah, officials estimate port traffic could drop by nearly 50 percent long-term if the local port doesn't achieve "hub" status.

Charleston, S.C., already is lowering its harbor from 40 to 45 feet, with work to be completed in 2003.

"It is essential that we deepen the Savannah navigation channel in order that the port of Savannah remain competitive in the U.S. South Atlantic range," Swinson said. "And that Georgia's ports continue to act as a catalyst in helping to contribute to the economic growth and prosperity of the state."

Funding for the deepening project would take place over the next several years, Swinson said. But, he added, "everything is contingent on the results of the design phase."

Typically, the Water Resources Development Act is a biannual piece of legislation, Swinson said, meaning no action could push local plans back two years. However, Congress could come back and act on the bill in 1999.

A dispute over a California dam is the main reason the legislation has stalled, Kingston said. At issue is a disagreement between two California congressmen over how to control flooding in Sacramento from the American River.

"If they can get this done it will pass," Kingston said. "If they can't, the whole thing becomes a split."

Sam Drake, refuge manager for Savannah Coastal Refuges, said he's keeping a close watch on what Congress does.

Drake is concerned that deepening the channel would lead to saltwater intrusion into freshwater marshes.

Intrusion could threaten various plant species and wildlife, such as cypress trees, striped bass and short-nosed sturgeon, he said.

"I feel like it's a little premature to authorize the project," Drake said. "The best we can hope for is language in the bill that allows resource agencies to have input into the recommended depth to make it the least environmentally damaging."

But Kingston said if the act passes, people with concerns will still be able to give input to the dredging process.

"I'd hate to start all over again," he said. "It would be difficult to get back to where we are."

Legal issues reporter Ben Schmitt can be reached at 652-0366.

Exhibit C

7-6-98 SMN

Deepening harbor will keep ports competitive

By Doug J. Marchand

Georgia's ports have long played an important role as a catalyst in the economic growth and prosperity of our state.

Marchand

Today, that role and the state's ability to aggressively attract cargo, create jobs and promote industrial development stand to be greatly diminished if plans to deepen the Savannah harbor fail.

As ocean carriers form new alliances, execute more efficient strategies for vessel deployment and invest in the construction of larger vessels capable of carrying 5,000-7,000 TEUs (TEU is a unit of measurement for determining the number of containers in 20-foot equivalent units. Example: One 40-foot-long container equals 2 TEUs), it is essential that Georgia's ports remain competitive and ready to meet the challenges of the international shipping community.

Over the past several years the size and capacity of container vessels, which at present account for more than 60 percent of the Port of Savannah's total tonnage, have far exceeded the levels previously predicted.

Specifically, container vessels currently calling the Port of Savannah, some measuring more than 900 feet in length and carrying more than 4,000 TEUs, were previously not projected to call Savannah, (America's 10th-largest container port) for another 20 years.

As a result of the accelerated growth in the size of today's container vessels, combined with the growing volume of cargo transiting the port's facilities, the Savannah River navigation channel is not capable of adequately accommodating many of the vessels now calling the port.

The inadequate channel depth has forced over 52 percent of container ships calling Savannah in 1996 to either load to less than capacity or to wait for high tides to fuels transit the channel. Such operational constraints lead to dramatic increases in transportation costs, which are subsequently passed on to consumers.

Research indicates that for every two-foot deficiency in channel depth encountered by a vessel, ocean carriers experience additional operating costs exceeding $12 million per year. Ultimately these operational constraints and higher operational costs force port users to seek more readily accessible port facilities.

From Fiscal Year 1989 through the end of Fiscal Year 1998 (a period of 10 years), the Georgia Ports Authority has moved more than 9 million tons of cargo. During that same period, cargo activity at the Port of Savannah has surpassed 72.6 million tons.

These figures represent the Georgia Ports Authority's 11th-consecutive year of growth with FY98 totals surpassing 11.4 million tons, an increase of 6 percent over FY97 figures. At the Port of Savannah, FY98 tonnage will surpass 8.7 million tons, a 4-percent increase over the previous 12-month period and a 36-percent increase over FY89.

This 10-year period encompasses two significant events in Savannah: the opening of the new Talmadge Bridge and the deepening/widening of the navigation channel. Without benefit of those projects, we would not have enjoyed the increase in tonnage nor the corresponding increases in economic productivity measured in terms of jobs, personal incomes, sales revenue and state/local taxes.

A recent study of growth projections in the U.S. South Atlantic port range for container movement forecasts averages greater than 5.5 percent annually over the 2000 to 2050 study period, while imports of containerized goods are forecast to increase at an average annual rate of 3.9 percent during the same time.

The Port of Savannah's estimated growth in TEUs is projected to average 4.3 percent per year over the study period. This translates into an estimated growth in TEUs, beginning in 2000, of 52 percent every 10 years for 50 years.

The projected growth will be carried on larger and larger vessels, compelling the need to deepen the navigation channel. If a deepening project is not undertaken, projected growth and larger vessels cannot be accommodated.

In addition to accommodating the movement of commercial traffic, the Port of Savannah is renowned for its reputation and role in supporting the rapid deployment of U.S. military equipment and personnel. The U.S. Army conducts regular deployment readiness exercises via the Garden City Terminal.

Results of a 1997 economic impact study indicate that Georgia's public and private terminal operations directly or indirectly support 80,100 jobs, are responsible for $1.8 billion in wages, generate $23 billion in revenue and account for $583 million in state and local taxes annually.

The impact of the port industry on not only the Savannah area, but to the more than 7.5 million Georgians statewide, is tremendous. As the world market continues to grow, so must the size of container vessels and the ability of the modern port to handle critical vessel requirements if it is to retain its customers.

It is imperative that Georgia continue to grow as a center of international commerce and that this and future generations of Georgians reap the rewards of a port prepared to accommodate the ongoing and diverse needs of the international shipping community.

Doug Marchand is executive direc-

Exhibit D

Expert Report of Robert N. Stearns, Ph.D.

I. Experience and Qualifications

I have had a 40-year career as both teacher and practitioner in public policy and economics. The Corps of Engineers Civil Works program has been a major focus of my work, starting in 1976 when I served as an economist for the U.S. Coast Guard (Department of Transportation) and continuing today in my capacity as a consultant. For nearly ten years (1986-1995), I worked for the Department of the Army, first as a senior policy advisor for the Corps' Civil Works program and later as Deputy Assistant Secretary for Project Management. In these capacities, I had extensive experience in developing new policies and presenting ideas to Congress, the Office of Management and Budget (OMB) and other high ranking government officials. More recently, I served as a senior analyst for the National Academy of Public Administration for its 2007 study, "Prioritizing America's Water Resources Investments: Budget Reform for Civil Works Projects at the U.S. Army Corps of Engineers."

These experiences have given me an extensive knowledge of Corps water resources projects and a wide range of planning and budgetary issues. While my primary focus has been on the economics of transportation projects, my responsibilities have required me to be fully informed on virtually every aspect of the Civil Works program.

My career includes 15 years teaching economics, quantitative methods, and statistics at the college level, most recently as an adjunct professor at the University of Maryland's School of Public Policy. I received a Ph.D. in economics from Yale University and a B.A. in mathematics from Swarthmore College.

II. Materials Reviewed

In performing this work, I have reviewed all of the following:

- Draft General Re-Evaluation Report for Savannah Harbor Expansion Project Chatham County, Georgia and Jasper County, South Carolina, 15 November 2010 (GRR).
- Economics Appendix to above referenced GRR, November 2010.
- Multiport Analysis, Savannah Harbor Expansion Project (attachment to Economics Appendix), July 2006.
- Savannah Harbor Expansion Project Deep-Draft Channel Improvements Economic Analysis: Commodity Projections (attachment to Economics Appendix), August 2004.
- Savannah Harbor Expansion Project Regional Port Analysis (Attachment to Economics Appendix), July 2007.
- Engineering Investigations, Savannah Harbor Expansion Project, Chatham County, Georgia and Jasper County, South Carolina Draft, November 10, 2010.

- Draft Tier II Environmental Impact Statement for Savannah Harbor Expansion Project Chatham County, Georgia and Jasper County, South Carolina, 15 November 2010.
- U.S. Army Corps of Engineers, Savannah Harbor Expansion Project web site.
- Relevant newspaper articles available on the internet.

III. Summary

I have been retained by the Southern Environmental Law Center (SELC), which is preparing comments on the Savannah Harbor Expansion Project (SHEP). SELC has requested that I review and evaluate the economic analyses that the Army Corps of Engineers (Corps) has performed for SHEP. Specifically, I have been asked to provide my expert opinions on the following subjects:

(i) whether the Corps performed an appropriate National Economic Development (NED) analysis on SHEP;

(ii) whether the Corps performed the "multi-port analysis" correctly;

(iii) whether the air draft issues involving the Talmadge Bridge were adequately considered in the economic analysis;

(iv) whether the purported benefits of the project will accrue to the United States or will be spread around the international community; and

(v) to what extent will this project help the United States meet other primary national economic goals.

Based on my background, education, training, experience, and the materials I have reviewed prior to formulating my opinion, I have concluded the following:

(i) statements by the Georgia Ports Authority (GPA) and other business and community leaders indicate their belief that this project is needed for the port's underlying business, thereby contradicting the Corps' contention that the port's growth rate will be the same with or without the project. The GRR and the DEIS fail to rectify these divergent views;

(ii) the Corps' so-called "multi-port analysis" and "regional port analysis" are based on inconsistent assumptions and fail to address the most important question of which port (or ports) in the southeast could be enlarged to accommodate the Post-Panamax ships with the least cost and fewest environment impacts;

(iii) the Corps' forecasts made in 2004 did not anticipate the 2008-09 international economic downturn and therefore are overly optimistic in predicting future

container traffic levels. Less container traffic reduces project benefits. The Corps' attempts to account for this downturn are inadequate;

(iv) the trend in larger ships calling at Savannah, induced in part by the deeper channel, may create new incentives to raise the Talmadge Bridge to accommodate even larger ships, leading to significant additional costs that taxpayers will have to bear;

(v) the Corps fails to acknowledge that many of the so-called "national" economic benefits from the cost savings associated with the proposed improvements to the port may actually accrue to foreign manufacturers and shipping lines rather than U.S. consumers and industries, and consequently the Corps fails to raise important national policy issues that should have been considered;

(vi) the benefits of deepening U.S. ports such as Savannah to reduce the cost of imports must be seriously weighed against the impact this has on the competitive position of U.S. manufacturers in international commerce; and

(vii) the Corps provides no evidence that any permanent jobs will result from the Port expansion, especially in light of the analytical assumption that the Port of Savannah's market share will not change because of the expansion.

IV. The Corps' Assumption that Deepening is Unrelated to Market Share is Contrary to Views Held by the GPA and Others in the Port Community.

The Corps' Planning Guidance Notebook states that in conducting a "National Economic Development" analysis, the Corps must base its analysis on the most likely with- and without-project scenarios.[1] In analyzing this project, the Corps assumed that the growth rate of the port as measured by tonnage received and shipped would be the same regardless of whether the port was deepened or not:

> Under with-project conditions, *the same volume of cargo is assumed to move through Savannah Harbor*, however, a deepening project will allow shippers to load their vessels more efficiently or take advantage of larger vessels. This is the main driver of the NED benefits.[2]

This "assumption" is repeated in the Corps' Multiport Analysis:

> [U]nder a 'least total cost analysis' with-project conditions [a deeper channel] should not be expected to shift any containerized cargo away from

[1] U.S. Army Corps of Engineers, Planning Guidance Notebook (Corps Planning Guidance Notebook), ER 1105-2-100, p. 2-6 (April 2000).
[2] U.S. Army Corps of Engineers Savannah Harbor Expansion Project, Draft Economics Appendix (Economics Appendix), p. 30 (November 5, 2010)(emphasis added).

> competing ports for the major benefiting services and their current deployments.[3]

There is no doubt that the GPA believes that market share would be lost if the harbor is not deepened. GPA spokespersons have stated repeatedly that failure to deepen the harbor will put Savannah at a substantial competitive disadvantage and that without the harbor deepening, the container traffic through the port would remain at its current level or may even decrease as larger ships decide to call on other, deeper ports. Curtis Foltz, the new executive director of the GPA, recently stated in a speech to the House and Senate appropriations committees: "The ships and jobs will only come to Savannah if the harbor is deepened."[4] Mr. Foltz has also said that, "The Savannah harbor deepening project is critically important to continued economic growth in the southeastern United States."[5] Expanding still further, Mr. Foltz commented recently that, "expanding the Port of Savannah is a linchpin to the continued competitiveness of Georgia, the Southeast and indeed the United States in the global economy."[6]

In fact, the GPA is so convinced that deepening the harbor is going to have a dramatic impact on container traffic that it is reported to be ready to spend $20.4 million[7] to have the Corps dredge an extra foot so the harbor will reach a depth of 48 feet instead of the 47 feet that the Corps selected as the plan with greatest net benefits. In addition, GPA "expects to spend another $1.1 billion on cranes and rail yards to accommodate twice as many containers [by 2020]."[8]

The Corps acknowledged that shippers have similar views:

> Each of the carriers interviewed were very supportive of channel modifications at Savannah Harbor and stated that without a deeper channel, shipping inefficiencies would worsen given the growth in cargo and the increased vessel sizes…. The carriers emphasized repeatedly that East Coast ports would need to be able to receive loaded Post-Panamax vessels upon Panama Canal expansion or risk losing services to ports which can accommodate this traffic.[9]

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[3] U.S. Army Corps of Engineers, Multiport Analysis for the Savannah Harbor Expansion Project, p. 103 (July 2006)(Multiport Analysis).

[4] Walter C. Jones, *Georgia Ports' New Boss Makes Case for Harbor Deepening,* Savannah Morning News, January 20, 2010.

[5] Mary Carr Mayle, *Kingston: Harbor Deepening Still Very Much Alive,* October 3, 2010, http://savannahnow.com/news/2010-10-03/kingston-harbor-deepening-still-very-much-alive.

[6] Curtis J. Foltz and Mark Holifield, *Expanded Port Means More Jobs,* Atlanta Business Chronicle November 19, 2010, http://bizjournals.com/atlanta/print-edition/2010/11/19/expanded-port-means-more-jobs.html.

[7] Mary Carr Mayle, *Harbor Deepening Gets Big Boost,* Savannah Morning News, July 17, 2010. The Corps has estimated the incremental construction costs from 47 to 48 feet to be 33.4 million. GRR at 180. All of these incremental costs must be picked up by the local sponsor.

[8] Dan Chapman, *Atlanta Leaders Push for Deeper Savannah Port*, The Atlanta Journal-Constitution, December 1, 2010, http://www.ajc.com/business/atlanta-leaders-push-for-762157.html.

[9] Economics Appendix at 29.

Retailers also agree. For example, Mark Holifield, the Home Depot executive in charge of logistics, has remarked that, "It is critical to maintain the competitive advantage that Savannah provides to Georgia and the region," because "if trade advantages shift, we would have to re-evaluate our investments" by considering other ports.[10]

Politicians, too, have touted the expansion as a big boon to the economy. U.S. Representative Lynn Westmoreland recently said the following:

> This expansion will increase the freight capacity of the port of Savannah by 20 percent, all the while creating 10,800 new jobs and $242 million in additional income for employees. Some federal investment in this project would provide a significant return for the American taxpayer while bringing one of our country's top ports into the next generation of ocean commerce.[11]

Likewise, Georgia's new governor, Nathan Deal, just announced Georgia's willingness to add another $32 million dollars to the project.[12] This amount is on top of the $150 million that the state has already guaranteed.[13]

Even the Corps itself has cast some doubt on its own assumption that serves as the foundation of its NED analysis, as the following statement shows:

> Harbor development remains the most likely action to adversely affect the salt and brackish marshes remaining in the Savannah River estuary. *Harbor deepening would increase the amount of goods brought into the Savannah port.* This could trigger the need for additional distribution centers and other support facilities or the expansion of existing ones. These new or expanded support facilities could impact wetlands. In-kind mitigation would be required where wetland impacts are unavoidable.[14]

In light of the divergent views between the Corps' economic models and the shipping community's assessment of the effect the project would have on container traffic, the Corps has not adequately explained why its assumption is valid and the shipping community's assessment is invalid. The answer to this question is paramount because:

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[10] Dan Chapman, *Atlanta Leaders Push for Deeper Savannah Port*, The Atlanta Journal-Constitution, December 1, 2010, http://www.ajc.com/business/atlanta-leaders-push-for-762157.html.
[11] Lynn Westmoreland, *Westmoreland: Obama—Support Harbor Deepening*, Savannah Morning News, October 30, 2010, http://savannahnow.com/column/2010-10-30/westmoreland-obama-support-harbor-deepening.
[12] Aaron G. Sheinin and James Salzer, *Deal Warns of Cuts, Promises Progress in First State of the State*, The Atlanta Journal-Constitution, Jan. 12, 2011.
[13] Mary Carr Mayle, *Kingston: Harbor Deepening 'Still Very Much Alive*,' Savannah Morning News, Oct. 2, 2010.
[14] Draft Tier II Environmental Impact Statement for Savannah Harbor Expansion Project Chatham County, Georgia and Jasper County, South Carolina, p. 33, November 15, 2010 (emphasis added).

- if the Corps is correct, then there is no need to deepen the channel to keep Savannah Harbor functional and competitive; or

- if the shipping community is correct, then the Corps' economics analysis is fundamentally flawed because the Corps' NED analysis rests on its assumption that the with and without project scenarios would produce the same amount of container traffic.

The following example is not taken from any Corps document, but it will help to illustrate that if traffic levels are not the same for the with- and without-project conditions, then some of the Corps' assumptions and conclusions are flawed. In this hypothetical example, a year after the deeper Panama Canal is opened, a shipper has decided to import 1,000 twenty-foot containers from the Far East into the United States through Savannah. If the Channel depth at Savannah is 42 feet, he will hire a Generation One Post Panamax ship to carry this cargo.[15] If the Channel depth is 48 feet, he will hire a Generation Two Post Panamax ship,[16] which will allow the shipper to save $20 per container.[17] As a result, use of the bigger ship and deeper channel will result in a total cost savings of $20,000 for the shipper. In the Corps' economic analysis, this savings could be added to other similar savings to obtain the major component of the anticipated project benefits.

If GPA and other members of the shipping community are correct, the failure to deepen the harbor may lead the shipper to look for a deeper port that can accept the bigger ship. This will most likely be a cost-based decision. It may mean, for example, that instead of using Savannah at 42 feet, the shipper might choose Norfolk as the port of entry. The savings associated with switching ports could be as much as $19,999.[18] But for purposes of this example, if the savings associated with switching to Norfolk are only $9,000, then the benefits attributable to a deeper Savannah Harbor would only be $11,000 instead of the full $20,000 that results from the Corps' assumption of no-diversion. This hypothetical shows that project benefits could be smaller if the shipping community is right about Savannah Harbor losing traffic if the channel is not deepened. And, if the project benefits are smaller than calculated by the Corps, then net benefits (benefits minus costs), which drive the decision for a deeper channel, will also be less than reported in the NED analysis.

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[15] Assumption Two listed in the "Summary of Assumptions" is that "[Post Panamax] ships will call on the Savannah Harbor in both the without and with-project conditions on the larger trade routes which are currently constrained by the Canal." Economic Appendix at 74. In the without project case, this can be accomplished by such actions as "riding the tide" (Economics Appendix at 23-24), or not using Savannah as the first port of call into the South Atlantic Coast (Economic Appendix at 12).

[16] *See* Assumption Three in the Economics Appendix at 74.

[17] According to the Corps' Multiport Analysis, the cost savings per twenty foot container (TEU) for vessels moving from the Far East (FE) to the East Coast of the United States (ECUS) and thence to Europe (EU) will be $18.74. Multiport Analysis, Table 39 at 100.

[18] The savings associated with switching to Norfolk could not be more than $20,000 because if this were true, the shipper would be using Norfolk, *with or without* the deeper harbor at Savannah. Of course, land shipment costs to the final destination must also be factored into the analysis.

V. The "Multi-Port" Analysis Omits Material Factors and is based on Inconsistent Assumptions.

For purposes of the multiport analysis, the Corps has failed to adequately consider the interplay between different ports and competing port expansions. Economic principles dictate that to be complete, a comprehensive multiport analysis for SHEP should include each of the following study elements:

(i) the extent to which the port of Savannah would lose or gain container traffic depending on whether deepening occurs and to what depth;

(ii) the effect deepening of Savannah Harbor would have on container traffic at other neighboring ports;

(iii) whether instead of deepening multiple ports on the eastern seaboard, a single "super port" should be created with the other ports functioning as "feeder" ports; and

(iv) whether, in light of the limited availability of federal funds, the Federal government could deepen a different port in the southeast more cost effectively and with fewer impacts on the environment.

The Corps' NED approach to study elements (i) and (ii) is to assume that there would be no traffic gains or losses (see Section IV above). These questions are then revisited extensively in the Corps' Multiport Analysis that was completed in July 2006. The conclusion of this study, based on "least cost routing" models, is that deepening Savannah Harbor would not divert traffic from other ports. This finding is consistent with the Corps' NED assumption that market share is independent of channel depth, yet (as described above), conflicts with the position of the port community.

Study element (iii) is covered in the Corps' Regional Port Analysis that was completed in July 2006. This study element was motivated by stakeholder concerns:

> [S]ome project stakeholders expressed that there should be a study of allocating Federal improvement funds at one regional port in the South Atlantic range, rather than deepening several ports. They seemed to believe that this would make sense economically (since fewer funds would be expended) and environmentally (since the impact of dredging would only occur at one port rather than at several).[19]

The Corps methodology was (1) to assume that all growth traffic in the South Atlantic port area would flow through the designated "super port;" and (2) to evaluate whether or not any of the existing ports had the existing or planned terminal capacity to accommodate the traffic:

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[19] U.S. Army Corps of Engineers, Savannah Harbor Expansion Project Regional Port Analysis (Regional Port Analysis, p. 1 (July 2007).

> A regional port concept that concentrates existing capacity and/or future growth in demand at a particular "port" in the region was examined by *shifts in port throughput* (Table 6) *and shifts in growth of container volumes among adjacent ports* (Table 7).[20]

The Corps' conclusion is that a "super port" concept would not work because no port has the (current and planned) land side capacity to handle the entire growth potential for the southeast Atlantic Coast.

As an initial matter, it is interesting to note that for purposes of this report, the Corps has concluded that deepening *can* affect market shares, an assumption clearly at odds with the NED analysis. In addition to this inconsistency, the Regional Port Analysis is flawed because the authors failed to at least consider the possibility that ports would still be able to compete successfully for at least some of the projected growth traffic even if they were in competition with a single "super port." If the authors had considered this possibility, they might have come to a significantly different conclusion. For example, with the construction of a so-called "super port," it is possible (consistent with the assumption of the Corps Regional Port Study) that as the overall level of traffic grows, most of the incremental containers shipped to the East Coast would arrive on Post Panamax ships and that those ships would almost always call on the super port.

It would seem more likely that even with a super port, smaller ships would still make direct calls on smaller ports and light-loaded larger ships would as well. Unless the Corps cannot rule out this more likely scenario, then it cannot assume that all incremental cargo shipped to the East Coast would head directly to the super port. The conclusions of the Regional Port Analysis, however, conveniently support the scenario of deepening multiple ports. By failing to consider the possibility that smaller ships would still make direct calls on smaller ports and larger ships would continue to light load, the stakeholders concerns have not been adequately addressed. At the same time, the inconsistency in the assumptions of the Regional Port Analysis that deepening *can* affect market shares are in stark contrast to the Corps' other study elements and are a major weakness in the Corps' overall analysis.

By focusing on terminal capacity constraints, the Corps' Regional Port Study missed a major opportunity to develop a strategic plan for federal spending on port improvements throughout the Southeast Atlantic Coast region. This question, clearly one of the stakeholder concerns as acknowledged by the Corps (see above) is equivalent to my Study Element (iv). It was apparently not considered even though it is a critical issue of national importance. With limited federal resources available for port development projects, it is essential to determine where incremental port development funding can be most efficiently spent.

By failing to determine where incremental port development funding can be most efficiently spent, the Corps has not completed a rational and complete assessment of the

[20] Id. at 7 (emphasis added).

benefits and costs of this project. If, for example, there is only sufficient funding to deepen one harbor in the southeast at this time and another already-existing port in the region could be deepened to 48 feet for $200 million and cause limited environmental impacts, whereas the Savannah Harbor project will cost over $500 million dollars and will cause greater environmental impacts, it would make little sense to move forward with SHEP. Without this type of comparison, the NED analysis is flawed.

VI. The Traffic and Fleet Forecasts Used by the Corps Likely Overstate Project Benefits in a Significant Way.

The projected benefits for this project depend crucially on two forecasts. The first is the baseline commerce measured in either tons or in the number of containers[21] that Savannah is predicted to import or export. The second is the world fleet of container ships available to use in the delivery of these products to or from Savannah. The trade forecasts are a statistical projection of past trends and are "optimistic" in the sense that future levels far exceed current levels.[22]

Historically, economies and trade between nations has grown in correlation. The recent downturn in world economies is a significant departure from the long-term trends and may be a more important indicator of possible changes in this trend. The trade data (from U.S. Census) shows that imports fell 21 percent between 2008 and 2009, while exports fell by 13 percent.[23] These same statistics (available through November 2010) show that while there has been a rebound in 2010, this rebound is not likely to bring trade back to the 2008 level.

By using baseline commodity forecasts completed in 2004, the Corps could not have anticipated these recent events. Since lower traffic levels mean fewer project benefits, changes in the world economy could seriously alter the basic benefit/cost equation. The Corps "considered" the dip in trade in one of its sensitivity scenarios and concluded that it would reduce project benefits by only one percent.[24] The recent economic downturn appears to have affected the Corps' forecasts, but only slightly.

This conclusion raises two important questions. First and most obviously: is it based on sound economic analysis? While the Corps "used" 2009 data in its sensitivity scenario, it did not simply use 2009 traffic as its new forecasting baseline. Instead, it calculated a baseline by taking the average for trade-route specific data from 2005 through 2009.[25] Thus, the downturn was given only a 20 percent weight in a revised baseline. This procedure is arbitrary and raises serious questions about the projected

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[21] While there is some non-container port traffic, the argument for deepening Savannah Harbor is based primarily on the effect it would have on container ship traffic.

[22] For example, the expected level of imports in 2020 is predicted to be almost twice the level in 2008.

[23] U.S. Census Trade Data is available at http://data.usatradeonline.gov/View/dispview.aspx . Percentage drops are based on containerized vessel tonnage only. 2010 data is available only through November. While year to date exports through November are almost at 2008 levels, imports remain well below 2008.

[24] GRR at 232.

[25] A fuller (although not complete) explanation of the methodology of this sensitivity analysis is given in the Economics Appendix at 119-120.

totals for future years, especially in the next decade. As a consequence of the procedure chosen, the Corps' forecast for 2010 is significantly higher than actual tonnage. The forecasts predicted that container traffic (combined exports and imports) would be 10.1 percent higher in 2010 in comparison to 2008.[26] Using Census data that is now available through November 2010, the actual tonnage (while rebounding from the extraordinary losses in 2009), is only 0.1 percent above the 2008 levels.[27]

The second question is: if commodity forecasts should be lowered, what difference would it make? If traffic is growing at a slower rate, the benefits may not even exceed project costs, a possibility that the Corps acknowledges:

> This is not to say that there are no future circumstances in which there is not a plan with benefits exceeding costs, but rather such circumstances are not likely. For example, a no-growth or very low-growth scenario with substantially less PPX vessels, such as Sensitivity 9, could result in plans wherein benefits do not exceed costs.[28]

Even if the Corps' conclusion that such scenarios are not likely, with actual traffic failing to meet the Corps' short term forecasts, consideration should be given to delaying the start of the project. Because net benefits are calculated by discounting future years, the project's net benefits and benefit-to-cost ratio may actually be higher with a later startup date. Postponing construction may not only be better from a benefit/cost (NED) perspective, but it would also support the broader federal objective of deficit reduction that has become a critical national priority. In light of these concerns, the Corps should include a sensitivity scenario that gives greater weight to recent trade data and show what happens to project economics if the trade developments are significantly below the baseline forecasts. A full evaluation of this scenario would include consideration of timing alternatives for the project and disclose the comparative benefits and costs of differing construction schedules. Failure to conduct this analysis would be unreasonable.

VII. The Corps Dismisses the Possibility that a Deeper Channel May Induce Even Larger Ships and thereby Ignores the Cost of Raising the Talmadge Bridge.

As larger and larger ships enter Savannah Harbor, new issues arise concerning the safety of the trip. One particular concern is the Talmadge Bridge that allows vehicular traffic to cross over the Savannah River between the harbor facilities and the open ocean. This issue was considered, and the Corps reached a conclusion that it would not be an issue for the ships expected to be used in Savannah. The problem was described as follows:

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[26] *See* Economics Appendix at 40-41.
[27] Census data is available at http://data.usatradeonline.gov/View/dispview.aspx. To estimate full 2010 figures (December amounts are not yet available), the 2009 share of traffic in December was assumed to be the same as the 2010 share of traffic in December.
[28] Economics Appendix at 129.

> The Talmadge (Savannah River) bridge has an air draft height of 185 ft. above MHHW, as per design drawings provided by Georgia DOT. See Figure 6.2.4.3-1. This height is based on the lower edges of the span above the navigation channel. Height above MHHW actually ranges from 192 ft. to 200 ft. in the middle of the span. The 185 ft. distance is used by the Savannah Harbor pilots as the official (conservative) air draft of the bridge.
>
> * * *
>
> The Savannah office for the USCG deferred to the Savannah River Harbor Pilots Association for restrictions on air draft. The Savannah River Harbor Pilots Association stated that there was no official policy regarding the air draft of vessels coming into the harbor. From information gained, a vessel's air draft is provided to the pilot and the Coast Guard before the vessel enters the channel. One carrier interviewed stated they use 3 ft as minimum allowance.[29]

The Corps concludes that the Talmadge Bridge presents no air draft problems for Generation Two Post-Panamax ships, the so-called "design vessels" that are expected to call at Savannah if the Harbor is deepened to 48 feet:

> USACE was provided with proprietary information listing vessels that were considered to make up the design fleet. The "workhorse" for the projected fleet is expected to be an 8200 (+/- 400) TEU [Generation Two] vessel. The upper height limit for these vessels was listed at 62 m (meters) or 157 ft for the design draft of 47.6 ft. Even if the superstructure was raised 10 ft to accommodate another tier of containers and the vessel was light loaded by an additional 10 ft (any more would not be economically considered according to IWR), the air draft would only increase to 177 ft which is still within an acceptable tolerance considered by the Savannah River Harbor pilots.[30]

So, the Corps' "worst case" scenario would involve the ship missing the bridge by 8 feet. Since the minimum "safe" distance appears to be 3 feet, the Talmadge Bridge does not present a height restriction problem for the ships the Corps expects to see entering the harbor. Simply stated: "Neither the design vessel nor the design fleet mix will violate the air draft restriction presented by the Talmadge (Savannah River) Bridge."[31] The key to this conclusion is the word "design." It is inevitable that larger ships will be built (Generation Three Post-Panamax ships). In fact, the Corps baseline forecast of Post-Panamax fleet composition shows Generation Three ships becoming 18 percent of the total fleet by 2015, up from the current share of two percent.[32] Not surprisingly, given the information provided above, the Corps expects that such ships would encounter problems going under the Talmadge Bridge:

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[29] Engineering Investigations, Savannah Harbor Expansion Project, Chatham County, Georgia, and Jasper County, South Carolina, Draft, November 10, 2010, pp. 65-67. MHHW stands for "Mean Higher High Water."

[30] Id. at 68-69. "IWR" refers to the Corps' Institute for Water Resources.

[31] Id. at 69 (November 10, 2010).

[32] Economics Appendix at 52 (see Table 28).

> Another major constraint at Savannah is the Talmadge Memorial Bridge, a 20-year old, cable-stayed bridge, which provides a vertical clearance of 185 feet. The keel-to-mast height of the Emma Maersk is reported to be 251 feet, so even after adjusting for tide and retractable masts, its air draft exceeds the allowable clearance of the bridge. If such vessels do indeed call at Savannah, they would need to be light loaded considerably.[33]

The Corps contends that the larger Generation Three ships will not call on Savannah Harbor, but will instead be used elsewhere in the world, where ports are bigger and deeper. Therefore, a Generation Three ship was not used as the "design" vessel for this project.

If a major bridge alteration were part of SHEP, there is a real possibility that the high cost of this related work would mean that SHEP would not generate any net economic benefits as traditionally defined by the Corps. The analytical assumption that Generation Three ships will not call at Savannah Harbor is a convenient way to dismiss this potential problem. If the Corps' baseline vessel forecast is right,[34] there is a strong probability that the largest ships would be calling at some ports on the Southeast Atlantic Coast. Given the shipping lines' business practice of multiple ports of call, GPA may soon want to accommodate these larger ships at Savannah Harbor. The height of the Talmadge Bridge will become an increasingly contentious issue.

There is a fundamental two-way relationship between channel depths and vessel sizes. Deeper channels induce larger ships and larger ships induce deeper channels. Recent comments by Curtis Foltz, the new executive director of the GPA illustrate this point: "Anything short of 48 feet is something that we would be disappointed with. Ships aren't getting any smaller. They're only getting bigger."[35] The Talmadge Bridge's height restriction may not actually be a long-term constraint on ship size despite the Corps NED assumptions for SHEP. A deeper channel for Savannah Harbor significantly increases the likelihood that raising the bridge will soon be requested.

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[33] Economics Appendix at 51.

[34] In this case the Corps says that the economic recession may have significantly altered the possibility of Generation Three Ships being built: "Despite a flurry of ship building following the introduction of the Emma Maersk and MSC Daniela to the world fleet, many ship builders have cancelled orders or scaled back the dimensions of their requested vessels in the orderbook. Part of this was due to the contraction in the global economy." Economics Appendix at 51. This is a fundamentally different view of the effect of the recession on commodity forecasts, where the Corps' sensitivity analysis is that the downturn would effect transportation cost savings (and therefore benefits) by only one percent. Economics Appendix at 120.

[35] Dan Chapman, *Atlanta Leaders Push for Deeper Savannah Port*, The Atlanta Journal-Constitution, December 1, 2010, http://www.ajc.com/business/atlanta-leaders-push-for-762157.html.

VIII. The Corps Does not Establish that the Benefits of the Harbor Deepening Would Benefit the United States' Economy.

As with all other navigation projects, the Corps bases its economic analysis on the United States Water Resources Council's "Economic and Environmental Principles and Guidelines for Water and Related Land Resources Implementation Studies," March 10, 1983. These principles were written to provide guidance to studies of water resource projects. They require that agencies calculate "*national economic benefits*:"

> Contributions to national economic development (NED) are increases in the net value of the *national output* of goods and services, expressed in monetary units. Contributions to NED are the *direct net benefits that accrue in the planning area and the rest of the Nation.*[36]

The Corps implementing guidelines for applying these Principles and Guidelines are contained in the Corps' Planning Guidance Notebook (ER 1105-2-100). For Savannah Harbor, the relevant portion of this document states:

> National Economic Development Benefits. The base economic benefit of a navigation project is the reduction in the value of resources required to transport commodities. Navigation benefits can be categorized as follows:
>
> > (a) Cost reduction benefits for commodities for the same origin and destination and the same mode of transit thus increasing the efficiency of current users. This reduction represents a NED gain because resources will be released for productive use elsewhere in the economy…
>
> Examples for deep draft navigation are reductions in costs associated with the use of larger vessels, with more efficient use of existing vessels, with more efficient use of larger vessels, with reductions in transit time, with lower cargo handling and tug assistance costs, and with reduced interest and storage costs.[37]

Under the guidance of the Planning Guidance Notebook, it is permissible to include in NED benefits the transportation cost savings for any commodity movement regardless of origin or destination. This would include imports from other countries or exports to other countries. To the contrary, the underlying Principles and Guidelines require a measurement of benefits accruing in the planning area and to the rest of the nation and should therefore exclude benefits accruing to foreign entities. There are clearly important differences between these two documents.

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[36] United States Water Resources Council, "Economic and Environmental Principles and Guidelines for Water and Related Land Resources Implementation Studies," p. iv (March 10, 1983)(emphasis added).
[37] Corps Planning Guidance Notebook at 3-5.

A primary source of benefits attributed to this project by the Corps is derived from the fact that a deeper harbor leads to lower transportation costs of goods imported into this country, mostly from the Far East. Such savings, assuming that they occur, will be distributed among various entities. The savings may be absorbed by the exporting company or by shipping companies (thereby generating what economists define as "producer surplus"), or passed on to the consumer ("consumer surplus"). Determining how the savings would be distributed would depend on a number of factors, including the elasticities of supply and demand. The Principles and Guidelines clearly state that the Corps' analysis should be focusing on benefits to the planning area and the rest of the nation. The analysis for Savannah Harbor Expansion is therefore incomplete unless the Corps attempts to determine where SHEP benefits are likely to accrue.

From a U.S. policy perspective, in the "worst case" scenario, there would be virtually no injection of any money into the U.S. economy as a result of project deepening. Foreign manufacturers and shipping lines may keep the savings of shipping through Savannah for themselves and pass none of these savings to U.S. consumers.[38] Under such circumstances, the U.S. taxpayer would be asked to foot the bill to pay for a project that generates greater profits or lower prices for producers and consumers in other countries. In an era of huge federal deficits, the project might actually be financed by the very countries who obtain the greatest benefits from the project.

What might a "best case" scenario look like? In this section, I have focused on U.S. imports, because that is where most of the benefits appear to have been generated. Although the Corps does not provide the precise breakdown of benefits to exports and imports, it is possible to infer the relative shares, at least by order of magnitude. I begin by presenting the relevant data on the distribution of project benefits by benefit category, reproduced from the Economics Appendix:[39]

Benefit Category	Average Annual Benefits for 48' Project Depth (Thousands of dollars)	% Share of Total Benefits
Transportation Cost Saving	$139,151	92.54
Tide Delay Reduction	$10,400	6.92
Meeting Area (Long Island Oglethorpe)	$810	0.54
Total Average Annual Economic Benefits	$150.361	100.00

[38] Also in the worst case scenario, different supply and demand elasticities in the export market may cause the savings from exports to be passed on to foreign consumers.
[39] Economics Appendix, Table 165 at 185.

The Corps' Multiport Analysis shows how much could be saved per 20 foot equivalent container (TEU) at various channel depths over various trade routes.[40] This information is summarized here:

Vessel Cost Savings by Project Depth for Benefiting Services ($/TEU)

Depth and Direction of Traffic	FE ECUS MED	FE ECUS EU	FE SUEZ ECUS
48 in (imports)	$13.27	$18.74	$3.34
48 out (exports)	$5.92	$3.94	$4.32
48 out as % of 48 in	45%	22%	124%

FE ECUS MED- Far East to East Coast U.S. to Mediterranean via Panama Canal
FE ECUS EU- Far East to East Coast U.S. to Europe via Panama Canal
FE SUEZ ECUS- Far East to East Coast U.S. via Suez Canal[41]

Finally, U.S. Census data shows the breakdown between imports and exports. For 2009, imports, metric tons of containerized cargo = 6.0 million; export, metric tons of containerized cargo = 9.7 million. The import share of total trade = 38 percent.[42]

All of the data presented in this section show first that transportation costs saving is *the* major benefit category and while exports through Savannah outnumber imports, the project will have a much greater impact on imports for shipments coming through the Panama Canal. According to the Corps, in 2007, 69 percent of total calls were by services that transit the Panama Canal.[43] If, for purposes of illustration, two-thirds of the transportation cost-savings benefits are for imports and, in the best case scenario, all of the savings are passed on to the consumer, the citizens of Georgia (pop. = 9.8 million) and South Carolina (pop. = 4.6 million) may, in a best case scenario, enjoy a per capita reduction in their purchases of imported goods of roughly $6.50 per year.[44]

The Corps may argue that once NED benefits are calculated, any subsequent breakdowns of the data, such as those presented here, are "out of scope." But there is a critical difference between measuring "benefits to the nation" (as described in the Principles and Guidelines), and "measuring NED benefits" (as described in the Corps' own Planning Guidance Notebook). Projects of the SHEP's magnitude must be analyzed using both perspectives, something the Corps has not done.

[40] Multiport Analysis, Table 39, at 100.
[41] *See* Multiport Analysis at 7 for a description of trade routes.
[42] U.S. Census Foreign Trade Data is available at http://data.usatradeonline.gov/View/dispview.aspx
[43] Economics Appendix at 25.
[44] Population estimates are from U.S. Census Bureau (estimates are for 2009), 2/3 of transportation cost savings = $92.7 million per year. If instead of 2/3, total benefits were distributed to U.S. consumers of imports, the per capita figure would be $6.96. For the estimated savings given in my example, assume that the final destinations of imports through Savannah Harbor are either in Georgia or South Carolina.

IX. A Deeper Channel Would not Make the U.S. More Competitive in International Markets.

Should the United States government help U.S. manufacturers improve their competitive position in international markets? While policy makers' answers might range from a resounding yes to one that is scrupulously neutral (i.e., "let the markets decide"), it is doubtful that few if any would support policies or actions that would actually hurt the U.S. manufacturing base. How does the Savannah Harbor Expansion Project fare in an analysis of this important question?

Tables 15 and 18 in the Corps' Economics Analysis Appendix[45] give a descriptive picture of which containerized goods are being exported and imported through Savannah, where they are going to and coming from. Since the data in these tables mirrors the aggregate U.S. Census data, I will use the information provided by the Corps.

Table 15 lists the top five import commodity groups coming from each of the top five sending countries. Table 18 does the same thing for exports. One useful way of arraying this data is to rank, in order, the amounts from Tables 15 and 18 (separately). In each of my tables presented below, I present the top 15 commodity type/country combinations.[46]

Top 15 Commodity/Type Country Combinations for Containerized Imports through Savannah 2007

Rank	Commodity Description	Country	Tons
1	Furniture and Fixtures	China	541,146
2	Other Manufacturing nec	China	393,846
3	Metal Products	China	315,461
4	Non-Metallic Products nec	China	186,399
5	Plastic Products nec	China	184,569
6	Non-Metallic Products nec	Brazil	179,507
7	Synthetic Resins	South Korea	107,348
8	Iron & Steel	Japan	72,887
9	Natural Rubber	Thailand	63,111
10	Textiles	Brazil	56,575
11	Natural Rubber	Indonesia	49,570
12	Iron & Steel	Brazil	46,702
13	Metal Products	Taiwan	41,703
14	Textiles	India	39,023
15	Machinery & Equipment nec	Japan	38,689

[45] Economics Appendix at 35 & 37.
[46] The listings include containerized traffic only.

Top 15 Commodity/Type Country Combinations for Containerized Exports through Savannah 2007

Rank	Commodity Description	Country	Tons
1	Stone, Clay and Other Crude Materials	Japan	1,164,794
2	Meat/Dairy/Fish requiring Refrigeration	China	387,524
3	Stone, Clay and Other Crude Materials	China	316,983
4	Pulp	China	283,064
5	Stone, Clay and Other Crude Materials	Taiwan	249,205
6	Scrap	China	239,761
7	Cotton	Turkey	233,642
8	Synthetic Resins	China	207,418
9	Paper & Paperboard & Products	Turkey	176,460
10	Pulp	Japan	171,522
11	Stone, Clay and Other Crude Materials	South Korea	146,084
12	Pulp	Italy	114,276
13	Pulp	Turkey	102,753
14	Pulp	Brazil	86,740
15	Machinery & Equipment nec	South Korea	78,820

These tables tell many stories (such as the degree to which U.S. imports come from China). My purpose here is to point out perhaps the most important difference between the tables. The imports through Savannah are generally manufactured products and not "raw materials," while the exports are generally the opposite. So while deepening the harbor may make it less expensive to export stone, clay, and glass to Japan, it also makes it less expensive to import furniture and fixtures from China. From the perspective of the U.S. manufacturing base, this seems like a poor trade-off.

X. Under the Corps' Economic Assumptions, this Project would not Create a Significant Number of Sustainable New Jobs.

As I stated earlier in Section IV, the Corps assumes the Savannah Harbor Expansion Project will not induce any additional port traffic. This assumption severely limits the project's ability to create new jobs for Georgia and South Carolina beyond the work associated with the actual deepening itself. Clearly, there will be no induced jobs created by changing market share if the Corps is correct that this project is unrelated to increasing the port's business. Increased business (i.e., more imports and exports using the port) is no doubt the main source of job creation that might be anticipated by the local sponsor.

Possibly, by reducing the prices of imported goods, U.S. consumers will have more disposable income to spend on other goods and services which has the potential to create some new jobs. But as I have already shown (Section VIII), the disposable income effect under the best case scenario is likely to be miniscule and even this will not create U.S. jobs if consumers use their extra disposable income, whatever the amount, to buy additional foreign manufactured goods.

Despite its own analytical assumptions, in its General Reevaluation Report, the Corps claims that the job impact of deepening the channel will be 5,671 new jobs.[47] However, I am unable to connect this estimate to any other part of the analysis.

United States' ports often cite economic studies that measure the number of jobs that are either created by the port or sustained because of port activities. One such example is "The Economic Impact of Georgia's Deepwater Ports on South Carolina's Economy in FY 2009," April 2010, authored by Jeffrey M. Humphreys.[48] While it is true that ports are important economic engines for their communities and states, the "jobs issue" here is not how many jobs are supported by the port, but the extent to which the number of jobs may change if the harbor is deepened. Given the assumption that underlies the Corps' NED analysis, the answer is that this proposed deepening will not result in additional jobs since the port's underlying business will remain unchanged. In fact, as Table 42 shows in the Corps Economics Appendix,[49] if the channel is deepened there will be fewer, albeit larger, ships calling at Savannah. If jobs at the port are linked more closely to the number of ships calling than to the number of containers handled, a deeper channel might actually mean fewer jobs in the local economy.

XI. Conclusions

According to the Corps' recently released draft General Reevaluation Report,[50] the Corps is asking the American tax payer and the project's local sponsor to pay over $600 million to deepen the Savannah Harbor to 48 feet. If the Corps is correct that the project is unrelated to the port's underlying business, then there is no need to deepen the channel to keep Savannah Harbor functional and competitive. Even if the deepening would produce efficiencies that would in turn reduce shipping costs, the Corps has failed to determine that these efficiency savings will accrue to U.S. citizens. On the other hand, if the Georgia Port Authority is correct that the deepening is needed to maintain or increase its business, then the Corps' economics analysis is fundamentally flawed. Moreover, the Corps has failed to perform a true multiport analysis to determine, in light of the limited availability of federal funds, if the federal government could deepen a different port in the southeast more cost effectively and with fewer impacts on the environment. In evaluating port expansion projects, it is especially important that the Corps' analytical basis for its recommendation to proceed be objective, rigorous and comprehensive. For the Savannah Harbor Expansion Project, the Corps has not met these standards.

[47] GRR at 195.
[48] Mr. Humphreys acknowledges that the study was supported by a grant from the Georgia Port Authority.
[49] Economics Appendix at 73.
[50] GRR at 180.

Dated: January 25, 2011

Respectfully submitted,

Robert N. Stearns, Ph. D.

Exhibit E

EXPERT REPORT OF SHAWN P. YOUNG, PH.D.

I, Shawn Paul Young, Ph.D., provide this expert report on behalf of the Southern Environmental Law Center (SELC) in the matter of the Savannah Harbor Expansion Project (SHEP). I submit this report as a private consultant in this matter. The opinions and conclusions that I express in this expert report are my own.

My current business address is Shawn Paul Young, LLC, P.O. Box 507, Bonners Ferry, Idaho, 83805. My professional and educational experience is summarized in the updated curriculum vitae attached to this report. I received a B.S. in Environmental Studies from Northland College; a M.S. in Aquaculture, Fisheries, and Wildlife Biology from Clemson University; and a Ph.D. in Fisheries and Wildlife Sciences from Clemson University. I have 13 years of experience researching the effects of human activities on fisheries and aquatic ecosystems. This includes 11 years of experience performing field research and environmental consultation on aquatic resources of southeastern rivers, including the Savannah River. I have previously held visiting faculty and/or research appointments in fisheries sciences and aquatic ecology at the University of Idaho, Purdue University, and Clemson University. In addition to my professional qualifications, I am an avid outdoorsman – fishing, hunting, and enjoying nature in every manner since my early childhood.

My main research interests focus on fisheries ecology and management in altered ecosystems. I have been consulted by public, state, federal, and academic sectors in the subject areas of fish and aquatic ecology. I have in publication, in press, and in review twenty-seven peer-reviewed articles relevant to fisheries and aquatic ecology. I have presented scientific

presentations at numerous professional meetings, academic seminars, and citizen fishing association functions.

In addition to my professional education, training, research, and publications, I have considered the findings of other scientists as listed in the Literature Cited section found at the end of this document, and the following information about the Savannah Harbor Expansion Project in forming my opinions. The information I considered has included facts that I would ordinarily consider and rely on in reaching opinions about the health, function, and viability of fisheries resources.

a. General Re-evaluation Report (GRR)

b. GRR Appendix C Attachment 3: Supplemental Studies

c. Draft Tier II Environmental Impact Statement (DEIS)

d. DEIS Appendices

My opinions and the rationale for these opinions regarding the impacts from the proposed dredging to deepen Savannah Harbor follow.

GENERAL EXPERT OPINION – SHEP IMPACTS TO FISH POPULATIONS

At the outset, it is important to note that the information provided by the Corps in the DEIS and GRR is incomplete. I have done my best to review this project in light of the fact that a rigorous, independent review by the public of some of the key modeling issues is not possible at this time. Once the Corps releases sufficient information regarding the modeling to allow for such a review of important conclusions made in the DEIS and GRR on issues such as water quality and dissolved oxygen, I may choose to supplement this initial report.

Even with this caveat, having reviewed the relevant materials that have been made available, it is my professional opinion that deepening Savannah Harbor to -45 or -48 feet will

have a significant impact on the shortnose sturgeon (*Acipenser brevirostrum*), Atlantic sturgeon (*Acipenser oxyrincus oxyrincus*), and striped bass (*Morone saxatilis*) populations in the Savannah Harbor and that the impacts will be substantially higher than the level of impacts predicted by the United States Army Corps of Engineers (USACE) in the GRR and DEIS. The DEIS does acknowledge that the project will have impacts, but underestimates the potential environmental degradation of such a project and the associated adverse impacts on aquatic organisms. Fisheries experts with knowledge of shortnose and Atlantic sturgeon ecology have identified dredging as a contributor to their declining numbers and distribution, and future dredging of their habitat as an obstacle to recovery (NMFS 1998, ASSRT 2007, Federal Register Volume 75 61904-61929 Oct 6, 2010).

Additionally, previous USACE projects in the Savannah River estuary have severely underestimated environmental impacts to fish populations, including an unforeseen 96% decline in striped bass spawning and a 97% decline in striped bass fishing (Reinert et al. 2005) during the 1970-80's directly attributed to estuary modifications.

The estuary in the vicinity of Savannah Harbor is an important habitat for the Savannah River shortnose sturgeon and Atlantic sturgeon populations and is essential to their continued existence. The DEIS acknowledges this importance; yet, does not accurately estimate the effects of such a large-scale disruption to the estuarine habitat with a projected duration of up to six years. Researchers have concluded that Savannah River shortnose and Atlantic sturgeon have not been successfully reproducing, and most of the current population originates from stockings intended to boost the population to offset this lack of reproduction. The harbor deepening project will have significant negative effects on the health and survival of already endangered shortnose sturgeon and Atlantic sturgeon populations and will reduce their potential recovery by

(1) causing a reduction in available habitat and causing changes in summer and winter habitat selection with negative consequences likely; (2) requiring these species to find new foraging habitats if they avoid the project altogether or leaving these species without a source of food due to the elimination of benthic prey from the large-scale dredging; (3) causing these species to suffer physiologically from potential changes in water quality, including lower dissolved oxygen, increased turbidity and pollutants, caused by re-suspension of sediments, and increased salinity.

In sum, the Biological Assessment, included as an appendix to the DEIS, concludes that "the proposed project may affect, but is not likely to adversely affect shortnose or Atlantic sturgeon or their critical habitat." Biological Assessment at 182. For the reasons described in my report, I strongly disagree with this conclusion. Accordingly, I recommend that the Corps and National Marine Fisheries Service (NMFS) engage in formal consultation and that the NMFS prepare a Biological Opinion.

Much of the rationale behind the conclusions regarding impacts to shortnose sturgeon and striped bass and the proposed mitigation listed in the DEIS is based upon modeling that parcels the estuary into sub-units instead of treating the estuary as an ecosystem in itself. The USACE appears to assume that the percent of a species' habitat affected by the project as determined from modeling will have the same level of effects on a given species. Fish are not randomly distributed; thus, a loss of critical habitat that is small in area may impact a large proportion of the population. Fish typically select specific areas within the general useable habitat that will maximize health and fitness, and may utilize several areas throughout the year for different purposes. This is the case with shortnose sturgeon, Atlantic sturgeon, and striped bass in the Savannah River estuary. Shortnose sturgeon juveniles and adults, Atlantic sturgeon juveniles, and striped bass eggs, larvae, and juveniles all use specific areas in the estuary depending on

flow, food availability, salinity and dissolved oxygen. A small percentage loss of total available habitat for these species in the Savannah estuary can (and in this case are likely to) have large impacts.

Dredging and Sturgeon

The proposed ruling to list the Atlantic sturgeon as federally endangered and the shortnose sturgeon recovery plan specifically discuss dredging as a cause for endangerment and an obstacle to recovery for both species. The project will cause long-term habitat modifications that will likely change sturgeon distribution with potentially negative consequences. Collins et al. (2000) found shortnose sturgeon juveniles exhibited a switch in home ranges during the 1990's and attributed the distribution and behavioral changes to harbor modifications.

> During 1988-1992, juveniles were concentrated in Kings Island Turning Basin. It appears that harbor modifications (deepening; tide gate removed from service; New Cut closed) since then have changed the hydrographic conditions and caused the fish to move from that area (Collins et al. 2002).

Dredging – Loss of benthic community

The effects of large-scale dredging over a 3-6 year period will likely have a profound negative effect on the foraging behavior of shortnose and Atlantic sturgeon. Sturgeon are known to be benthic (bottom) feeders. Thus, dredging has a major impact on sturgeon feeding behavior because dredging causes the elimination of the benthic organism community when the benthic substrate is removed. The DEIS acknowledges the immediate and complete loss of the benthic community in dredged areas. The benthic community will re-establish after some period of time, but the benthic community will not likely be comprised of the same quantity and quality of prey items as the pre-dredging community (Kenny and Rees 1996, Boyd et al. 2005). Re-colonization of dredged areas is dependent on several factors, intensity and extent of deepening and maintenance dredging, benthic species' life history and resiliency to disturbance, hydrodynamics

and water quality of affected area, and substrate type (Kenny and Rees 1996, Boyd et al. 2005, Szymelfenig et al. 2006). Re-colonization will likely take years considering 38 million cubic yards of material will be dredged across several years in order to deepen the harbor to -48 feet, and maintenance dredging will occur annually.

Shortnose sturgeon are not opportunists and only switch to other prey when preferred foods are unavailable, and research indicates that shortnose sturgeon are continuous feeders (NMFS 1998). Also, shortnose and Atlantic are reported to have different prey item preferences, but the adult shortnose and juvenile Atlantic sturgeon may compete for food (ASSRT 2007). Thus, the loss of preferred prey items or competition over limited resources will likely cause a habitat shift to alternative feeding grounds that may or may not provide adequate food or water quality. Increased energy expenditure in the form of increased movement to find other food sources and potentially poor nutrition from a change in prey items is likely to result in poor health, poor condition, and lower reproductive potential. If this occurs in a population already in low abundance with little to no recruitment, the effects would be severe to an individual, and detrimental to the population as a whole for both Savannah River shortnose and Atlantic sturgeon.

Dredging – Dissolved oxygen

The large-scale dredging is expected to cause a decline in dissolved oxygen concentrations. This is a major concern for all fish and aquatic organisms. The estuary is already impaired by low dissolved oxygen concentrations, as low as ~ 3 ppm during the summer. Most fish species require > 2.0 – 3.0 ppm dissolved oxygen levels for survival, and physiological impairment such as reduced growth and condition for many fish begins at < 5.0 ppm (Neill and Bryan 1991). This includes shortnose sturgeon (Jenkins et al. 1993, NMFS 1998, Campbell and

Goodman 2004), Atlantic sturgeon (Secor and Gunderson 1998, Federal Register 2010), and striped bass (Bain and Bain 1982, Coutant 1990). Dissolved oxygen needs are dependent on water temperature and life history stage of the organism. Increased temperature requires increased oxygen consumption by fish, and typically early life stages have higher oxygen requirements to support accelerated metabolism during these periods of rapid development.

Low dissolved oxygen, hypoxia, is also known to negatively impact aquatic invertebrates (Winn and Knott 1992). Hypoxia will in turn affect re-colonization of benthic organisms after substrate dredging. Re-colonization will take longer, and hypoxia may alter species presence and abundance after re-establishment (Szymelfenig et al. 2006). This will in turn affect sturgeon and other benthic fish feeding and nutrition. Further depletion of dissolved oxygen in the Savannah Harbor will likely have adverse impacts beyond those predicted in light of the importance of the estuary to juvenile and adult sturgeon and to all life stages of striped bass; the current impairment of dissolved oxygen concentrations in the harbor area; and the lack of confidence in the ability of the artificial oxygenation system expressed by federal agencies.

Dredging – Re-suspended sediments and pollutants

For fish and aquatic organism populations, a major concern for any dredging operation is the turbidity caused by re-suspension of sediments and the pollutants that may re-enter the water column after sediment exposure (Wilber and Clark 2001). The DEIS states that a sediment study was conducted to determine chemicals present in solid sediments. The study concluded that the only pollutant of concern is cadmium. The study measured levels of common organic, inorganic, and metals found in the Savannah Harbor sediments, but did not conduct actual exposure trials to pore-water where sensitive organisms such as shortnose sturgeon are exposed to waters

containing the re-suspended pollutants. Pore-water tests better reflect the toxicity levels organisms will encounter in the water than just solid sample surveys.

This should have been done considering the potential for the deposition of other un-tested uncommon pollutants from upstream and nearby facilities that may affect fish, and the general lack of knowledge on the sub-lethal and lethal effects of most common and uncommon pollutants that were found. Also, even if no single substance was identified at elevated concentrations, the many pollutants released from such a large amount of dredging materials being re-suspended may act in concert to create a harmful aquatic environment. In previous studies of Savannah River sediment toxicity, aquatic invertebrates experienced increased mortality (Winger and Lasier 1995, 2000). These studies indicate that SHEP will likely have substantial negative impacts beyond those stated in the DEIS.

In a recent study on the Roanoke River (Cope et al. 2010), researchers conducted exposure toxicity tests on shortnose sturgeon and fathead minnows. The results found that young shortnose sturgeon placed in the river suffered significantly higher mortality rates compared to sturgeon held in a controlled environment and also compared to fathead minnows exposed to the same riverine environment. Possible conclusions were that an identified toxicant with unknown effects on shortnose sturgeon was responsible; an untested or undetectable pollutant was present; or a synergistic effect of multiple pollutants makes the Roanoke River inhospitable for young shortnose sturgeon. Pollution in the form of toxicants is also listed as a reason for sturgeon decline and an obstacle to recovery (Federal Register Volume 75), and the effects of most pollutants on sturgeon species is not known. This may very well be the case with Savannah Harbor sediments, and proper testing is a reasonable expectation and should be conducted prior to the initiation of the project.

Dredging – Saltwater intrusion / increased salinity

Savannah Harbor deepening will allow the saltwedge to move upriver. Thus, saltwater intrusion will increase. This will increase the salinity of important habitats for juvenile and adult shortnose and Atlantic sturgeon, for striped bass spawning and early life stages, and the aquatic community as a whole, including freshwater marshes. Salinity affects ion/water balance in fish and aquatic organisms. Salinity preference and tolerance varies by species and between life history stages of a species, and determines habitat selection and ultimately organism community structure in an estuarine environment. Shortnose sturgeon juveniles prefer low salinity, and salinity tolerance increases with body size. Juvenile shortnose sturgeon salinity can tolerate up to 20 ppt, but suffer decreased energy and aerobic capacity, resulting in decreased growth and survival, as salinity increases (Jarvis et al. 2001, Jarvis and Ballantyne 2003, Zeigeweid et al. 2008). Atlantic sturgeon preference and tolerance is not well defined. Juveniles select lower salinity habitat, and adults are known to inhabit marine environments. Savannah River striped bass eggs and larvae are negatively impacted and experience mortality as salinity increases toward 15-18 ppt (Winger and Lasier 1994).

Also, benthic invertebrate and forage fish species presence and abundance may change with increased salinity. A change in prey species presence and abundance due to increased salinity, direct removal by dredging, and low dissolved oxygen will likely have profound impacts on the entire estuarine fish community, including shortnose sturgeon, Atlantic sturgeon, and striped bass.

MITIGATION ISSUES – FISHERIES

The SHEP DEIS has no mitigation directly targeting Atlantic sturgeon. The DEIS also lacks baseline information and an impact assessment on the Savannah River Atlantic sturgeon.

The National Oceanic and Atmospheric Administration (NOAA) recently proposed to list the South Atlantic distinct population segment (DPS) of Atlantic sturgeon, under which the Savannah River population is included, as endangered under the Endangered Species Act (ESA) (Federal Register Volume 75 61904-61929 Oct 6, 2010). Within the proposed ruling, dredging is listed as a contributor to their declining populations and an obstacle to recovery. The omission of discussion and impact assessment of a species proposed for listing as Endangered needs to be rectified. Even if there is a general lack of knowledge concerning the Savannah River Atlantic sturgeon population, the DEIS should state so in order to prompt research efforts to fill in the information gaps concerning population size and structure, spawning habitat selection, habitat selection of early life stages, and estuary use in the SHEP vicinity. The main focus of impact evaluation, mitigation, and funded research has been placed on the shortnose sturgeon for good reason; however, the Atlantic sturgeon has been neglected.

The DEIS incorrectly assumes that the life history and behavior of Atlantic sturgeon and shortnose sturgeon is so similar that the SHEP impacts and the mitigation package will have the same outcome for both species. For example, a recent study of juvenile sturgeon abundance on in the Hudson River Estuary, has found that juvenile shortnose sturgeon prefer habitats upstream of the saltwedge (low salinity), while juvenile Atlantic sturgeon prefer habitats downstream of the saltwedge (higher salinity) (http://www.amnh.org). Other scientists have documented differences in life history (Kieffer and Kynard 1993, Bain 2002), including temperature selection (Niklitschek and Secor 2010) and spawning habitat preferences (NMFS 1998, ASSRT 2007). There will be some similar impacts, but there is a strong likelihood that the two species will also suffer differently in other ways. The mitigation package has placed all emphasis on shortnose

sturgeon. Atlantic sturgeon should be individually evaluated in terms of potential impacts and prioritized and targeted by mitigation actions.

As part of the SHEP mitigation package, the USACE has proposed a fishway at the New Savannah Bluff Lock & Dam (NSBLD) near Augusta, Georgia, 150 miles upriver of Savannah Harbor, as mitigation for damages to shortnose sturgeon habitat in the estuary. No mitigation could be identified within the estuary to offset the loss of critical juvenile rearing habitat. Thus, the fishway is a proposed trade-off intended to alleviate one major problem (impacts to important juvenile habitat) by allowing fish passage to upstream habitat. The problem is that although a fishway might provide some benefits to other species, this current proposal, without more, is highly unlikely to benefit sturgeon. In addition, the mere construction of a passage facility or the successful passage of fish upstream of an obstacle does not ensure spawning success or successful recruitment. A proper environment must be present above the obstacle to support spawning and the development of eggs, larvae, and juveniles. Also, the adults and the early life stages must be able to migrate downstream through the obstacle.

In this case, the DEIS does not demonstrate that the proposed fish passage design – the Horseshoe Rock Ramp – will have success at passing either species of sturgeon or that environmental conditions above NSBLD will support sturgeon spawning. Thus, it is uncertain if the fishway in itself will actually improve sturgeon spawning success. Even if it could be demonstrated that this design will work here, future modifications will likely be necessary to specifically accommodate sturgeon species. These changes would likely substantially increase the cost of the fish passage facility, and additional funding would be needed up front to ensure proper maintenance in perpetuity. The fish passage proposal would certainly require far greater levels of committed funding than currently proposed, and even then, it is uncertain that the

Horseshoe Rock Ramp design will work in this situation to address impacts to both species of sturgeon.

Further, the DEIS does not include a detailed fish passage plan as part of the proposed mitigation actions to offset impacts to shortnose sturgeon. There is no comprehensive fish passage plan listing objectives and goals for the species expected to benefit from the facility, including shortnose sturgeon. Whenever a new fish passage facility is proposed, there is a precedent for a fish passage plan to be completed. This has been a vital part of many recent FERC re-licensing cases across the United States. These fish passage plans typically list how many of each fish species will be passed and a list of recruitment goals with specific numbers. The SHEP DEIS only discusses the general objective of passing fish at NSBLD. A fish passage plan is a reasonable expectation given this is a standard practice for the construction and operation of new fish passage facilities nationwide.

The most effective mitigation action would be the complete removal of the NSBLD along with all other dams/obstructions upstream to J. Strom Thurmond Dam (JST) and those in the Stevens Creek Basin, a major tributary entering the Savannah River between JST and the City of North Augusta in combination with a flow schedule promoting biological integrity. This would eliminate any obstruction to migration of all life stages. Also, no long-term costs would be incurred for continued operation of the obsolete Lock and Dam nor a fishway. Moreover, the removal of this dam would have the benefit not only of providing access to habitat upstream, but it would allow more natural riverine processes that may provide suitable habitat for sturgeon.

The mere installation of a fishway at NSBLD falls well short of providing the necessary habitat conditions for successful reproduction and recruitment once a fish has bypassed NSBLD, the ultimate goal of the mitigation plan for shortnose sturgeon. Once fish successfully pass

NSBLD, they will likely select the "Augusta Shoals" for spawning habitat. The Augusta Shoals may provide adequate spawning substrate, but flow will be paramount. However, there will be periods when the necessary flows in terms of discharge amount and natural temporal availability will not be provided under flow-release schedules from JST. This is particularly true during periods of drought, which have been increasingly common in the Savannah River Basin. Drought conditions have prompted the USACE to take water management actions in the form of reduced flow from JST to conserve reservoir storage (USACE 2010a). These flow reductions impact the Savannah River's hydrology and biology from JST to the estuary. Conditions at the Augusta Shoals are further complicated by the fact that the City of Augusta diverts a significant portion of the flow into the Augusta Canal, substantially reducing flow for fish and aquatic organisms. Also, reduced freshwater flow will increase saltwater intrusion negatively impacting freshwater marshes and altering aquatic habitat conditions in the estuary. Reduced freshwater flows and increased depth of the estuary at Savannah Harbor will act in concert to worsen the saltwater intrusion.

If and when sturgeon and other fish species pass NSBLD, they are assumed to find better spawning habitats above Augusta, GA. However, proper flows are not ensured because the USACE has yet to finalize and adopt a strict comprehensive flow plan to promote diadromous and freshwater fish reproduction and recruitment below Thurmond Dam. Also, the City of Augusta has recently agreed to release a minimum of only 1,500 - 1,800 cfs during low flow periods (USACE 2010a, b). The USACE does not increase flow to offset the water diversion by the City of Augusta. So, even if USACE releases low flows of 4,000 or possibly 3,100 - 3,600 cfs during droughts to conserve reservoir storage, only 1,500-1,800 cfs will be present for fish spawning.

Several agencies, academic institutions, and organizations have addressed this issue of improving river flow and water quality in the middle and lower Savannah River including the estuary to benefit fish and aquatic organisms. Flow recommendations were developed during the 2003 Savannah River Flow Workshop (Duncan and EuDaly 2003). The 1,500 – 1,800 cfs minimum flow is much lower than the recommended flows stated in the 2003 workshop's river flow prescription.

Furthering the discussion of flows for fish populations, the USACE and state agencies have an agreement that pool elevation stability in the reservoirs themselves for largemouth spawning should be a priority in water management decisions (USACE 2010a). This appears to signify that freshwater sportfish populations in the reservoirs have priority over reproduction of threatened and endangered diadromous and freshwater species in the Savannah River below the USACE projects.

The mitigation proposal should include a mandated priority to provide adequate flows as suggested by the previously sponsored workshops to support fish populations and to improve the biological integrity of the Savannah River from JST Dam to the mouth. In my professional opinion and experience researching the fish populations in the Savannah River, along with conclusions from other scientists involved in studies of Savannah River ecology (Duncan et al. 2003, Marcy et al. 2005, Grabowski and Isely 2007), this is of paramount importance to ensure successful mitigation, and should be implemented as mitigation.

Flow releases from Thurmond Dam affect the Savannah estuary salinity and hydrodynamics (Duncan and EuDaly 2003). Thus, final adoption of the flow prescriptions from the Savannah River Basin Comprehensive Study (Duncan and EuDaly 2003) is a viable mitigation action. Re-establishing access to historical spawning habitat in combination with

ensuring the presence of proper environmental conditions, including flow, for all life history stages of fish and aquatic organisms should be part of the mitigation package.

As part of the SHEP, the USACE has proposed to fund the enhancement of Georgia DNR's striped bass aquaculture program as mitigation for damages to striped bass. However, the USACE will only fund at a 20% spawning habitat loss level. This proposal holds some merit as a last resort restoration strategy, but the program will likely need to be expanded as impacts to spawning habitat will likely be greater than predicted. Supporting evidence comes from the fact that the USACE underestimated impacts from estuary modifications to the striped bass population in 1970 - 80's. The Tide Gate and Diversion Canal installed in the late 1970's and operated through the 1980's caused a 96% decline in striped bass reproduction, prompting a moratorium on striped bass fishing and harvest for an extended period of time. This was due to increased saltwater intrusion and hydrodynamic changes negatively impacting spawning and the survival of early life stages (Reinhart et al. 2005). A major re-stocking effort was needed to rebuild the population. The USACE should anticipate funding at a 100% loss level given their gross underestimation of damages to the striped bass population due to previous activities/modifications.

The DEIS fails to acknowledge and discuss that there is evidence of two distinct subpopulations of striped bass in the Savannah River, an estuary-spawning and a non-estuary spawning subpopulation, and both may use the estuary as nursery habitat (Martin and Paller 2007). The USACE does not account for the potential impacts on the non-estuary spawning subpopulation. The mitigation proposed would only address the estuary spawning subpopulation. The stocking program will likely need to be revised to account for differential

impacts and restoration strategies for these two sub-populations that may utilize somewhat different life history strategies within the Savannah River.

The stocking program should ensure striped bass broodstock are of Savannah River genetic origin. Genetic testing should be conducted before annual aquaculturing occurs. The Savannah River striped bass are known to be genetically distinct from other river systems. Striped bass in the many Atlantic and Gulf Coast rivers have some distinct physiology and behavior that increases success in the natal system (Secor et al. 2000), but may be a liability in restoring populations with genetics outside the natal system.

The USACE plans to implement an artificial oxygenation system to remedy the low dissolved oxygen concentrations already found in the Savannah Harbor vicinity that are anticipated to worsen with SHEP. Although the DEIS discusses a trial run of the system with some purported success at raising dissolved oxygen concentrations ~0.5 ppm, some governmental agencies express significant reservations with respect to its effectiveness and cost over a 50-year period (DEIS Appendix E). Also, USACE underestimated dissolved oxygen losses from the last harbor deepening to -42 feet (EPA Informal Comments on Preliminary SHEP DEIS September 10, 2010). I share these concerns because such a system has not yet been proven reliable over such an area and time period.

Conclusions

- SHEP will result in adverse modification of critically important habitat for Savannah River shortnose and Atlantic sturgeon.
- The SHEP will directly reduce the likelihood of both the survival and recovery of shortnose and Atlantic sturgeon by reducing the reproductive fitness, numbers and distribution of each species.

- Baseline conditions in the Savannah River have already eliminated successful reproduction and caused a severe decline in shortnose and Atlantic sturgeon populations; thus, further habitat destruction or modification from SHEP will cause additional harm, jeopardizing the existence of shortnose and Atlantic sturgeon populations.
- The DEIS should be revised to include detailed discussion of impacts to Atlantic sturgeon.
- Pore-water toxicity tests should be conducted to determine effects of sediment re-suspension on organisms in the vicinity of Savannah Harbor.
- SHEP will likely have greater negative impact on striped bass than predicted in the DEIS.
- Revisions to the SHEP mitigation plan are needed to include other beneficial actions, and funding for mitigation must be increased and pre-approved in its entirety.

In summary, my professional opinion is that the Savannah Harbor deepening project will have greater impacts to fish and aquatic organisms than the level anticipated by the USACE. I further disagree with the conclusion reached in the Biological Assessment that "the proposed project may affect, but is not likely to adversely affect Shortnose or Atlantic sturgeon or their critical habitat." Biological Assessment at 182. Accordingly, I recommend that the Corps and National Marine Fisheries Service engage in formal consultation and that NMFS prepare a Biological Opinion in connection with this action. Also, alternative mitigation actions need to be explored to further offset adverse impacts and to maximize the benefits of the proposed mitigation. The anticipated funding level should be raised to a level commensurate with the extent of anticipated impacts and it should be ensured that sufficient funds are available and not made subject to federal appropriations to provide mitigation for a worst case scenario. Finally,

as more information is made available to the public regarding this project, I reserve the right to supplement my opinions.

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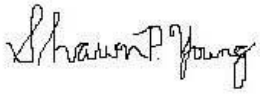
Dated: January 21, 2011

Respectfully submitted,



Shawn P. Young, Ph.D.

Southern Environmental Law Center

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765-DC-149-EV01, 765-DC-149-EC01

Comment: *In particular, we are troubled by the central assumption underlying the DEIS and Draft GRR that the proposed deepening Project is unrelated to efforts by the Georgia Ports Authority ("GPA") to maintain or increase its business. Such an assumption not only strains credulity, but is also directly contradicted by the Corps' Tier I Environmental Impact Statement, statements by GPA officials, and GPA's willingness to pay a substantial sum of money for an extra foot's worth of depth. In making this dubious assumption, the Corps has undermined its economic analyses and skewed the environmental studies by failing to evaluate the indirect and cumulative effects associated with this proposal.*

Response: The Corps believes the assumptions concerning the relationship between SHEP and the capital improvements at the Savannah Harbor are reasonable and appropriate. The Georgia Ports Authority (GPA) has embarked on a 10-year capital improvement program to increase container capacity at the Garden City Terminal (GCT) to a maximum capacity of 6.5 million TEUs annually by the year 2020. This program includes equipment purchases and upgrades, transportation infrastructure improvements, and container area expansion. The GPA capital improvement program is not tied to deepening the navigation channel.

In analyzing whether SHEP would divert container traffic from other South Atlantic ports, the Corps has properly assumed that GPA's Savannah Harbor improvements would continue, as is occurring, and that scheduled capital improvements at other regional ports would likewise occur. The Corps then evaluated expected demand and determined that over the next 20 years, growth in containerized cargo would require the planned capacity at Savannah Harbor and other South Atlantic ports, including Norfolk, Charleston, Wilmington, Jacksonville and Jasper County. Based on these analyses, the Corps concluded that SHEP would not divert containerized traffic from other ports. Then, the Corps analyzed whether a deeper navigation channel in the Savannah River would produce transportation cost savings. The Corps applied sound planning and economic forecasting, which showed annual net national economic benefits of $177 million.

765-DC-149-OC-01

Comment: *Even if one accepts for the purposes of argument the assumption that this Proposal is not needed to increase Garden City Terminal throughput, the no-action alternative stands out as a clear winner since it would obviate the need to spend of $600 million in public money, protect natural resources of national significance, and yet have no effect on GCT's business.*

Response: The no-action or "without project" alternative was thoroughly considered in the GRR/EIS, but was not selected because it would not fulfill the project purpose and need, which are to address navigation inefficiencies in Savannah Harbor. The no-action alternative would not allow larger and/or more fully loaded vessels to transit the harbor, and the nation would not realize benefits from lower transportation costs. By not enabling more efficient navigation in the harbor, the no-action alternative would not realize more than $177 million in net annual economic benefits that could be achieved with harbor deepening, even after taking the $647 million cost of SHEP into account. And while it is true that with the no-action alternative there would be no additional environmental impacts in the Savannah area, the $647 million cost of SHEP includes comprehensive avoidance and mitigation that would reduce any potential impacts to natural resources to acceptable levels.

765-DC-149-EN01

Comment: *In addition, substantial concerns have also been raised regarding the failure of the proposed channel as designed to safely accommodate fully-loaded Post-Panamax ships, further eroding the stated rationale for this Project, especially when weighed against the substantial economic cost and environmental impacts.*

Response: Safety was a primary consideration in the channel design. Tidal restrictions were taken into consideration for the fleet forecast though the HarborSym analysis. The pilots use their professional judgment and training to take advantage of the tide and navigate ships in the channel while maintaining underkeel clearance. The Vertical Motion Study (June 2011) defines the adequacy of a channel in terms of days of accessibility. An inbound (more restrictive than outbound) 46-ft draft vessel traveling at 10 knots would have 360 days per year accessibility given a 50-ft depth in the entrance channel (+1 ft tide) for durations up to 8 hr each day of the 12.5-hr tidal cycle. Faster ship speeds, longer durations, and deeper depths are possible, but require "trade-offs" in speed, duration, depth, and days of accessibility.

765-DC-149-OC02

Comment: *And finally, the Corps has simply failed to consider, as NEPA and the CWA require, a sufficient range of alternatives for accommodating the anticipated larger class of containerships and instead has arbitrarily limited its review of alternatives to different depths in the Savannah River. Stated another way, the Corps has studiously avoided asking perhaps the most important question here in light of the limited availability of federal funds: whether the federal government could deepen a different port in the Southeast region for less money and with fewer impacts on the environment. For these and other reasons stated below, we respectfully request that the Corps remedy the significant flaws in the DEIS and Draft GRR before proceeding with a FEIS.*

Response: The Corps has satisfied its obligations under NEPA and the CWA to consider reasonable and practicable alternatives. The SHEP NEPA alternatives analysis ranged from considering other potential options or sites for the project, including other South Atlantic ports, to evaluating potential specific locations for disposal of dredged or fill material along Savannah Harbor and in the Atlantic Ocean along the entrance channel. The SHEP NEPA alternatives analysis is found in various places in the EIS and GRR including EIS Section 2.0, Purpose and Need for Action; EIS Section 3.0, Alternatives; EIS Appendix H, Section 404(b)(1) Evaluation (Practicable Alternatives); EIS Appendix O, Formulation of Alternatives; GRR Section 6, Formulation of Alternatives; various other sections in the GRR; GRR Appendix A, Economics; GRR Appendix A, Attachment 6 (Regional Port Analysis); GRR Appendix A, Attachment 4 (Multiport Analysis); and GRR Appendix D, Plan Formulation Appendix.

The SHEP NEPA alternatives analysis includes the following key elements: (1) the statement of project purpose and need (EIS Section 2.0); (2) a Regional Port Analysis (GRR, Appendix A, Attachment 6); (3) a Multiport Analysis (GRR, Appendix A, Attachment 4); (4) analysis of various structural and non-structural alternatives (EIS, Section 3.0; GRR, Appendix D); (5) analysis of deepening to eight alternative locations or sites for a port/terminal along the Savannah River (EIS, Section 3.0 and Appendix O; GRR Section 6 and Appendix D); (6) analysis of six different depths of harbor deepening along the Savannah River (EIS, Section 3.0 and Appendix O; GRR, various sections); (7) analysis of alternative disposal sites, methods, or beneficial use of dredged sediments (EIS, Section 3.01.1 and 3.07); (8) analysis of related maintenance dredging requirements (EIS, Section 3.08-3.10); and (9) analysis of the no-action alternative (EIS, Section 3.01.1 and Appendix O; GRR Section 6.12.1).

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765-DC-149-EV02, 765-DC-149-EV03

Comment: *The Corps has Violated its Duty under NEPA by Failing to Provide Sufficient Information to Allow the Public a Meaningful Opportunity to Comment.*

Here, the Corps has failed to make available sufficient information to provide for meaningful public comment. Both the DEIS and GRR rely heavily on the use of various models by the Corps. For example, models utilized by the Corps include an Environmental Fluid Dynamics Computer Code ("EFDC") model, which is a three-dimensional surface water modeling system for hydrodynamic and reactive transport simulations of rivers and other water bodies; and the Water Quality Analysis Simulation Program ("WASP"), which is a dynamic compartment-modeling program for aquatic systems. The EFDC model provides ocean flow and tidal dynamics, upstream flow, and other data that is then incorporated into the WASP model through a hydrodynamic linkage file. GRR, App'x C at 102-03. The hydrodynamic and water quality models were modified and calibrated by the agencies and their consultants specifically for this project to evaluate a range of significant issues, including impacts to wetlands, fishery habitat, water quality, and dissolved oxygen. GRR, App'x C at 103, 105. Despite heavy reliance by the Corps on these models to evaluate critical aspects of the Project, neither the DEIS nor the draft GRR include sufficient information to allow the public to scrutinize the results derived from the modeling exercises.

Response: The Corps has provided information concerning the two models used to analyze potential impacts from deepening the Savannah River navigation channel. Moreover, there has been extensive coordination with the public, partnering agencies, Cooperating Agencies, and stakeholders occurred throughout the study process as documented in EIS-Section 1.01 and GRRSection 1.5. Since its inception in 1999, the Stakeholders Evaluation Group (SEG) has provided a public forum and assisted in identifying scientific studies/analyses that should be performed to identify environmental impacts resulting from harbor deepening. The principal charge of the SEG was the development of consensus among the participants regarding the scope and content of the scientific investigations/analyses performed pursuant to developing the EIS, the appropriate increment of channel depth ultimately selected, together with suitable mitigation measures for unavoidable losses.

The SEG provided input to GPA, federal, and state agencies on all aspects of the scientific investigations, analyses, and mitigation options for the proposed action. In addition to incorporating the SEG's input, the District performed studies and investigations which were necessary to evaluate the proposed project alternatives properly. From 1999 through 2010, **over 70 public meetings**, including approximately 70 full SEG meetings, plus numerous additional interim and committee meetings were held. Two public workshops were conducted at the beginning of the project (NEPA scoping) to identify issues that the public believed would be important in evaluating the deepening proposal. These meetings provided opportunity for the affected public to comment "before decisions have been made and before any action has been taken".

The District does not concur that it presented insufficient information to allow meaningful public comment on the modeling efforts. The tools employed in the study were developed by subject matter experts from federal/state agencies and private industry over a number of years as summarized in Section 7.4 of the Engineering Appendix of the GRR. The models were used to assess future impacts predicted to occur with the various proposed depth alternatives. Their use employed state-of-the-art techniques that were independently reviewed and verified. These tools were just part of a comprehensive study approach which was refined over a 13-year study period to ensure all impacts

were adequately assessed. The analyses performed and data presented in various reports were coordinated with the principals [interagency teams, non-federal sponsor, and stakeholders] and adequately evaluate the impacts of the noted project alternatives. The detailed information summarized in the subject reports, combined with the technical reports included as appendices and supplemental data, provide the reader with sufficient information to make meaningful comment. The sheer volume of data [appendices and supplemental materials, independent verification, organizational certification, and the extensive record of public and interagency coordination] are evidence ofthe fact that the modeling tools employed and results presented are more than adequate for reasonable decision-making.

The commenter also stated that it submitted a Freedom of Information Act request for specific information relating to the use of the models identified, and indicated that the Corps provided the requested information on January 29, 2011. The commenter stated that it intended to review the modeling analyses and supplement the initial comment letter, however, no supplemental comments were received.

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765-DC-149-EC02

Comment: *For purposes of its economic analyses, the Corps relies on baseline commodity forecasts completed in 2004. The trade forecast used by the Corps appears to seriously overstate the Project's benefits because more recent data from the Bureau of Census shows that imports fell 21 percent between 2008 and 2009, while exports fell by 13 percent.5 These same statistics (available through November 2010) show that while there has been a rebound in 2010, this rebound is not likely to bring trade back to the 2008 level. Since lower traffic levels mean fewer project benefits, recent changes in the world economy could seriously alter the basic benefit-cost equation. The decision by the Corps to rely on pre-recession trade forecasts is arbitrary and capricious.*

Response: The commodity forecast for GCT has been updated to include historical data [2005-2010] for tonnage values, number of TEUs, and other pertinent container information. Additionally, a regression analysis [2005-2010] was performed for each world region route to establish a baseline forecast. However, circumstances precluded the universal use of regression analysis. For example, the ECUS Africa service has limited data [just 2005 and 2006] since trade on this route is so intermittent. Accordingly, a straight average was used. The FE ECUS, EU PEN, and FE ECUS PEN services were capped at 2010 tonnage levels versus using the regression results. This decision was reached because services recently shifted from routes using the Panama Canal to those transiting the Suez Canal.

Route-specific Savannah Harbor growth rates were developed from a 2010 Global Insight (GI) South Atlantic Trade forecast (as performed in the original analysis). These rates were applied to the new forecast baseline to establish the long-term trade forecast (measured in metric tons).

A discussion regarding why the original GI forecast was replaced with the methodology noted above for developing growth rates has been included in the GRR-Economic Appendix. GI forecast data are used to derive rates of growth/change and those rates are applied to actual Savannah cargo information.

GPA data were used because of the time lag necessary to obtain PIERS and WCSC statistics. GPA's data had a broad base, viz., historical information, pilot/harbor master accounts, and WCSC sources. The District evaluated these data and found them to be reasonable for this study. Moreover, PIERS and WCSC data were used to calibrate/adjust the LFA model.

Recent shipping research suggests that as the Northeast China market matures, the manufacturing axis may relocate to Southeast Asia then possibly to India. The future is less certain for Africa given its overall lack of infrastructure (compared to SE Asia/India). Other potential developments include the possibility of an Arctic passage, potential new trans-shipment centers, world events near the Suez Canal, and a host of other factors relating to the future without project condition. While even the near-term is difficult to predict [with accuracy], as trends develop, they will be acknowledged [and evaluated] in any subsequent economic analysis.

The Corps ' guidance on deep-draft navigation projects emphasizes using empirical data [whenever possible] and to make forecasts over a 50-year period of analysis. This is a prudent approach because data on past and present problems help shape the future without-project condition scenario. This, in turn, serves as a baseline for project formulation and evaluation [comparisons]. As expected, a 50-year forecast contains uncertainty; therefore, several sensitivity analyses were performed using lower growth rates, no growth, and increased packaging densities. The results show project improvements [deepening] are economically justified under most sensitivity analysis scenarios.

It is important to note that economic conditions can change markedly from year to year. For example, in 2009 there were dramatic declines in worldwide cargo volumes and shipbuilding [economic downturn] whereas more recently external events such as Middle East unrest and the tsunami in Japan have likewise affected the shipping industry. Therefore, application of a longer [50-year] period of analysis helps to reduce short-term volatility and provides a more accurate economic picture [smoothing the curve].

The Corps examined more recent post-recession container traffic data which confirmed that shipping growth had resumed its upward trend. The updated economic analysis uses actual TEU traffic volumes through 2010. Using those volumes, the analysis forecasts TEU volumes at the base year of 2015 until 2030. In 2008, just before the start of the national economic downturn, the Garden City Terminal handled 2.6M TEU. The volumes decreased to 2.4M TEU in 2009, but have recovered to 2.9M TEU in 2010, the latest full year reported by GPA. These data show that if anything, earlier forecasts of container traffic had been conservative.

Also, the District performed sensitivity analyses using alternate growth forecasts, some of which addresses the noted concern about import growth from China. These sensitivity analyses were carefully developed by the PDT/reviewers and addressed the main sources of uncertainty.

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765-DC-149-EV04

Comment: *In addition to relying on old data, the Corps has also released its DEIS and GRR prior to completing its development of new information needed to evaluate the proposal. According to the GRR, the proposed harbor deepening would increase chloride levels at the City of Savannah's water intake during drought conditions. GRR at 168.*

Response: The DEIS stated that the Corps was continuing to collect chloride data and would use that data to attempt to improve the capabilities of its impact predictive tools. Those studies have been completed and reviewed by the City of Savannah and Georgia DNR-EPD. As a result, the FEIS contain a revised approach to mitigate for potential impacts on chloride levels at the City of Savannah's water intake during drought conditions and high tides -- construction of a raw water impoundment. That mitigation technique was evaluated in the DEIS but the mitigation technique identified at that time was

construction of a supplemental water intake further upstream. A raw water impoundment is now identified as the most cost effective technique to address impacts to chloride levels at the City's water intake.

The GRR and EIS address deepening impacts, alternative channel depths, mitigation of unavoidable consequences, and the adaptive management measures which would be employed. The Corps' Engineering Research and Development Center provided expert advice and technical assistance over the course of the study. All of the documents/analyses included in the EIS have been subjected to extensive internal/external review by subject matter specialists. Close coordination has been maintained with the City of Savannah to gain information relative to potential site-specific impacts and possible solutions to local problems. The DEIS contained the results of studies and analyses available at publication [and any omissions were prominently noted in the document]. In recognition of concerns expressed by the City of Savannah during the noted coordination, the District agreed to obtain additional data to refine its chloride predictions regarding potential impacts at the City's water intake in Abercorn Creek.

The updated analysis in the Final EIS used enhanced impact prediction measures. The results of the refined evaluation indicate that during drought periods and certain tidal conditions, chloride concentrations could significantly increase in the vicinity of the water intake. This possibility, in combination with the City of Savannah's water treatment process, could result in concentrations of lead and disinfection by-products which exceed the regulatory threshold for drinking water. As mitigation, the District would construct a raw water impoundment system to address any potential violations of drinking water standards. During periods of low chloride levels, water would be pumped from the existing Abercorn Creek intake a storage reservoir for subsequent use as needed. When chloride levels become elevated in the creek, water in the impoundment would be pumped to the City's potable treatment plant for processing/distribution. When chloride concentrations within Abercorn Creek return to more usual [acceptable] levels, the raw water storage impoundment could be refilled and made ready for future use.

765-DC-149-EV05, 765-DC-149-EC03, 765-DC-149-EC04, 765-DC-149-EV06

Comment: *The Tier II DEIS is seriously flawed with respect to its purpose and need statement. At best, the Tier II DEIS violates NEPA by failing to set forth a clear statement of purpose and need. At worst, the DEIS presents a statement of purpose and need that is contrary to the previous articulation of project purpose found in the Tier I EIS. Such a conflicting statement would be arbitrary and capricious and would also violate NEPA.*

The current Tier II DEIS is far less forthcoming regarding GPA's principal goal for this Project. Although it is difficult to tease out a statement of project purpose from the main body of the Tier II DEIS itself, the DEIS does offer that: "The primary problems identified—and the need for the project—relate to the inefficient operation of containerships in the Federal navigation channel at Savannah Harbor, which affect the Nation's international trade transportation costs." DEIS at 3-1.

Response: The EIS clearly defines the project's purpose and need and does not materially differ from that stated in the Tier I EIS.

The statements of purpose and need in the Tier I EIS and the Final EIS are clear, consistent, and have not changed over time, viz., to improve the efficiency of deep-draft navigation transiting Savannah Harbor. Evaluation of alternatives to improve efficiency is appropriate because shipping demand continues to grow and fleets are shifting composition to include a larger class of vessels. The GRR and EIS documented [in detail] the process used to verify the purpose and need statement as part of plan formulation and analysis (GRR Section 6 and EIS-Appendix O).

The Tier I and Final EIS address the same issues, i.e., large vessels calling on Savannah Harbor are constrained by the current channel depth of 42-feet mlw. These vessels must light load and/or wait for high tide conditions to navigate the harbor safely. This situation will become more problematic as shipping fleets convert to larger post-Panamax ships [replacing the older, smaller vessels] to take advantage of the economies resulting for the Panama Canal's expansion. Where a navigation channel is insufficient to accommodate larger vessels in the shipping fleets, navigation improvements are evaluated as a potential means [alternative] to reducing shipping costs.

Projections of world trade and growth in demand for shipping containerized cargo through east coast ports support expansion of capacity at Savannah Harbor and elsewhere. In response to steady growth and traffic forecasts, the Georgia Ports Authority and the State will continue to invest in facilities to increase landside terminal capacity. The District remains convinced that the Garden City Terminal Savannah Harbor will achieve its maximum capacity of 6.5 million TEUs around 2030.

The GRR/EIS address whether navigation channel improvements are justified to service existing and future shipping fleets reliably. The Tier I EIS stated: "Container traffic at the Port of Savannah increased by 20% during 1991-1995, greatly exceeding expectations. Continued growth of the Port necessitates that it remains efficient and cost competitive." In order to meet that need, "the objectives of the proposed project are as follows: (a) provide better passage for the existing fleet of larger vessels through the harbor at all tides, thus reducing shipping delays; and (b) provide for the safe and efficient transit of larger vessels expected to call on Savannah in the future." (Tier I EIS, 1998, page 14)

The comments provide misplaced emphasis on the need to accommodate growth (Tier I EIS language quoted above in the fourth sentence of the preceding paragraph). The subject sentence simply recognizes the necessity of a successful port remaining efficient and cost competitive as traffic volume grows. Moreover, the comments misconstrue the language recognizing growth in traffic as a statement that a deeper harbor is intended to increase the volume of cargo moving through the port. The comments then – incorrectly -- conclude that all costs and environmental effects of growth should have been attributed to expansion of the federal channel and analyzed as consequences thereof.

The subject channel improvements are intended to improve the efficiency of moving containers through the harbor. The 1998 documents state that the project purpose was to improve navigation efficiency to achieve cost savings; not channel deepening to attract growth. For example, the problem identification analysis in the 1998 Feasibility Study states:

> The currently authorized channel depths in the Savannah Harbor continue to constrain traffic. Under present conditions, many ships calling the port incur costly tidal delays and light loading. As traffic continues to increase, and as vessels in the world fleet continue to grow in size due to the retirement of smaller ships, in the absence of a harbor expansion plan the problem will only become worse in the future. Some shippers modify vessel itineraries in order to accommodate the existing channel depths in Savannah. These companies have indicated it would be more economical to use a deeper port of call, which a deeper Savannah Harbor would allow them to do.

The foremost problems in Savannah Harbor were identified in the 1998 documents (much as they were in the DEIS and Draft GRR) to include existing shippers experiencing higher costs due to light loading, tidal delays, turning and overall maneuverability, all of which would grow with increases in annual tonnage and use of larger, more efficient ships.

To the extent that the earlier purpose and need statement was misunderstood, the Final EIS (Section 3.0) is precise. Although the goal of the GRR was to identify the best way to improve the efficiency of moving containers through the harbor, the initial investigations found that the primary problems relate to the inefficient operation of container ships in the Federal navigation channel at Savannah. Those inefficiencies affect the Nation's international trade and transportation costs. The following statements of existing "problems" describe these inefficiencies:

1. Existing shippers are experiencing increased/inflated operations costs due to light loading and tidal delays;
2. Light loading and tidal delays will increase as present harbor users increase their annual tonnage and as larger, more efficient ships replace older, smaller ones;
3. Existing ships are experiencing problems associated with turning and overall maneuverability in certain reaches of the inner harbor;
4. The severity of problems associated with turning capabilities and overall maneuverability will increase as vessel size increases.

In summary, the statements of purpose provided in previous/current NEPA documents are, in fact, consistent and it should not be construed otherwise. The project purpose remains addressing navigation efficiencies for existing vessel traffic and future fleets expected to call on Savannah Harbor once the Panama Canal expansion is completed. Conversely, attracting growth [market redistribution] is essentially a non-issue since forecasts confirm container traffic expected at South Atlantic ports will exceed the collective capacity of their current and planned facilities (GRR-Appendix A, Regional Port Analysis.

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765-DC-149-EC05, 765-DC-149-EV07

Comment: *Here, the Corps must "consider and express th[e] activity's underlying purpose and need from a public interest perspective . . . ." Id. By concluding that this Project is needed for the "[c]ontinued growth of the Port," Tier I EIS at 14, the Corps would be artificially restricting its analysis to alternatives that benefit GPA to the exclusion of other reasonable alternatives beyond the Garden City Terminal for accommodating the larger class of container ships. Such an approach would violate NEPA and would frustrate a true alternatives analysis, which must include an evaluation of whether another port or ports in the Southeast could accommodate the larger class of container ships with a higher cost benefit ratio and fewer impacts on the environment. In other words, a general objective of the Project might be to accommodate the larger class of Post-Panamax vessels in the Southeast as opposed to simply evaluating alternative depths of deepening the Savannah Harbor. Without a clear purpose and need statement and a true " Multiport Analysis" that evaluates the relative costs and benefits of achieving the general objective of the Project from a public interest perspective, the Corps, as further discussed below, will be unable to comply with NEPA.*

Response: This and other related comments advocate a broader purpose and need for the project than the Corps and stakeholders have identified. However, the proponent's purpose and need can and should be taken into account, as long as it does not unduly restrict consideration of a reasonable range of alternatives. The purpose and need of addressing inefficiencies in moving goods through Savannah Harbor is a valid one and did not restrict the alternatives analysis. As discussed previously, the SHEP NEPA analysis considered a wide range of alternatives based on this purpose and need, including alternative ports in the South Atlantic region, alternative terminal locations along the Savannah River,

alternative non-structural measures, and the no-action alternative. See EIS, Appendix H, 4040(b)(1) Evaluation (Practicable Alternatives) which provides a complete list of the different sections or parts of the EIS/GRR that address alternatives; see also responses to comments 765-DC-149-EV05-EV06 above.

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765-DC-149-EC06, 765-DC-149-EV08

Comment: *Taken as a whole this discussion reveals that the Corps did not feel it had the time, resources, or desire to develop the most likely or reasonably foreseeable future with-project and without-project assumptions; instead, it decided to take a short cut and use the "conservative" assumption that container traffic levels would stay the same whether the harbor was deepened or not.*

Response: The GRR/EIS without project condition is not based on assumption but rather recognizes that GPA is presently implementing a capital improvement plan that will expand the Garden City Terminal [GCT] to its maximum throughput capacity (6.5 million TEUs) and such expanded capacity is needed to meet projected container growth for the southeastern United States regardless of whether the Savannah Harbor navigation channel is deepened. Under both without and with project conditions, the District expects the GCT to reach its build-out capacity around 2030 [at 6.5 million TEUs]. That is the maximum number of containers that can reasonably be processed through the GCT. This determination of the maximum capacity at GCT is based on factors other than the depth of the navigation channel. These factors include the size of the terminal, the number of gates that provide access to the property, the number and size of the berths, the number and size of the container cranes, the number of jockey trucks that move the containers within the terminal, how the containers are stacked within the terminal, and the number of railroads that service the terminal and the return frequency of their trains. The Corps anticipates that without deepening, more vessels will be required to transport the cargo expected to move through the port. With deepening, the total number of vessels would decrease (when compared to the 42-foot channel depth), as vessels would be able to load/unload closer to capacity without the present draft constraints.

765-DC-149-OC03

Comment: *The Corps' Position That Container Traffic Growth is Unrelated to the Proposed Project is at Odds with Virtually all Non-Corps Stakeholders.*

Response: Although GPA provided its views on future growth at the Garden City Terminal, the Corps made its own determinations and conclusions and is not responsible for statements or positions made by other stakeholders concerning traffic growth with or without the deepening project. The Corps believes that its determination and conclusions relative to traffic growth are supported by the studies, projections and information in the administrative record.

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765-DC-149-EC07, 765-DC-149-EV09

Comment: *Even Corps Statements in the GRR and DEIS Belie the Corps' Assumption that the Proposed Harbor Deepening and the Container Traffic Are Unrelated.*

Response: The statements in the FEIS more accurately reflect economic conditions that those in the Tier I EIS. GPA is planning to expand the Garden City Terminal to 6.5 million TEUs regardless of whether the Savannah Harbor navigation channel is deepened. Under both without and with project conditions,

the GCT will reach this build-out capacity by 2020. The 6.5 million TEU value is the maximum number of containers that can reasonably be processed through the facility based on factors previously identified.

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765-DC-149-EC08

Comment: *Since the Corps's Positive Benefit-Cost Ratio Is Based Solely on Greater Port Efficiencies, the Corps Should Discuss Who the Likely Beneficiaries of These Cost Savings Will Be…Will these cost savings be passed on to the American consumer in the form of lower consumer prices or will they be pocketed by foreign manufacturers or foreign shipping lines?*

Response: The District followed the Corps' regulations and policies in evaluating the economic effects and justification for the proposed harbor deepening. A major source of that guidance is ER 1105-2-100, Planning Guidance Notebook. Chapter 3-2 discusses navigation projects. Appendix D [Economic and Social Considerations] provides more detail on certain aspects of these evaluations.

Section 3-2 states the following while discussing National Economic Benefits:

"The base economic benefit of a navigation project is the reduction in the value of resources required to transport commodities. Navigation benefits can be categorized as follows:

(a) Cost reduction benefits for commodities for the same origin and destination and the same mode of transit thus increasing the efficiency of current users. This reduction represents a NED gain because resources will be released for productive use elsewhere in the economy. Examples for inland navigation are reductions in costs incurred from trip delays (e.g. reduction in lock congestions), reduction in costs associated with the use of larger or longer tows, and reduction in costs due to more efficient use of barges. Examples for deep draft navigation are reductions in costs associated with the use of larger vessels, with more efficient use of existing vessels, with more efficient use of larger vessels, with reductions in transit time, with lower cargo handling and tug assistance costs, and with reduced interest and storage costs.

A key in that discussion is the statement of the underlying economic theory that "This reduction represents a NED gain because resources will be released for productive use elsewhere in the economy." The economic theory is that savings received by an entity would be used elsewhere for another purpose. The lower transportation costs may be passed on to the consumer, who would use those savings to purchase more goods. The lower transportation costs might be used by the producer to modernize their equipment or hire more staff so they could produce goods more cost effectively in the future.

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765-DC-149-EC09

Comment: *As the Corps contends throughout the GRR and DEIS, shipping lines are building larger and larger ships, because these vessels can transport cargo more efficiently. Yet the design ship for the SHEP is a Post-Panamax Generation Two ship that was built in 1997. GRR at 121. Already ships that are significantly larger than the design ship are being built, yet the Corps does little to explain why it does not anticipate that these Post-Panamax Generation Three ships will call on Savannah Harbor.*

Response: This comment and the next two comments criticize the Corps' use of a Post-Panamax Generation Two ship (the Susan Maersk, a Super Post-Panamax vessel with a beam of 140 feet) as the design ship for SHEP and the related determination that Post-Panamax Generation Three ships will not call at Savannah Harbor. The Corps contracted with a respected independent company, Maritime Strategies International, Ltd. (MSI), to forecast the future world fleet of container ship vessels. MSI's forecasted capacity for Gen 1, Gen 2, and Gen 3 Post-Panamax vessels calling at Savannah through 2030 was provided in GRR Table 28. Gen 3 ships were defined as capacity 12,000 TEU or higher. MSI determined that, even by 2030, Gen 3 ships would not call at Savannah while by then Gen 2 ships would constitute more than 50% of the ship traffic. Given the infrequency of Gen 3 ships [less than 1% of the container vessel capacity], their consideration in the channel design process was not warranted.

The MSI conclusions regarding Gen 3 ships are reasonable because the Trans Atlantic and Asia trade routes account for the majority of expected growth at Savannah and Gen 3 vessels are unlikely to be deployed there. Vessels of the Emma Maersk class or the new 18,000 TEU size vessels are too large to fit through the expanded Panama Canal. Their economies of scale are only realized on long service hauls; therefore, they would not be used on the shorter Trans Atlantic trade routes. For these reasons Gen 3 ships are not expected to call at South Atlantic ports in large numbers/regular frequency.

Gen 2 vessels are defined as 7,600 to 12,000 TEUs, and are further broken down into Super Post-Panamax and Ultra Post-Panamax based on vessel width and draft (GRR Table 29). Based on this data, the Corps further determined that Ultra Post-Panamax vessels would not be expected to call at Savannah due to size limitations (144-158 feet width when Savannah channel modification would be designed for 144 foot width maximum). The vessel class defined as Super Post-Panamax best fit the design limitations of the channel and the air draft limitations of the Talmadge Bridge. Therefore, this type of vessel was selected as the design vessel for the proposed harbor improvements.

Careful consideration was given to the height constraint imposed by the Talmadge Bridge. The fleet forecast used for economic justification in the SHEP included only vessels that could traverse under the bridge. Further, as stated there is no expectation that "Generation Three" [Gen 3/Emma Maersk] ships would call at Savannah on any regular basis even if the Talmadge Bridge were raised.

765-DC-149-EN02

Comment: *While the GRR does contain information that states there are no air draft issues for the design ship, it acknowledges that it will be very difficult for Post-Panamax Generation Three ships to pass under the Talmadge Bridge. GRR, Econ. App'x at 51. Although the GRR does explain that two ships in the design-ship class will be able to pass at certain areas within the channel, it does not explain whether two Post-Panamax Generation Three ships would be able to pass in the channel. The Corps avoids these questions by simply stating that Generation Three ships will probably not call on Savannah Harbor, which is a counterintuitive position. If bigger ships mean greater efficiencies for Savannah Harbor, why does that principle not extend to Generation Three ships? As the GPA's Curtis Foltz has remarked, "Ships aren't getting any smaller. They're only getting bigger."*

Response: The design vessel for SHEP is the Susan Maersk, which has a 140-foot beam and represents the largest class vessel expected to call regularly on the port. Vessels larger than 153-feet in width are not included in the forecast and in the unlikely event they did call at Savannah would require a 1-way traffic restriction for their transit. See also previous response at 765-DC-149-EC09.

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765-DC-149-EC10

Comment: *If a major bridge alteration were part of SHEP, there is a real possibility that the high cost of this related work would mean that SHEP would not generate any net economic benefits as traditionally defined by the Corps. The analytical assumption that Generation Three ships will not call at Savannah Harbor is a convenient way to dismiss this potential problem. If the Corps' baseline vessel forecast is right, there is a strong probability that the largest ships would be calling at some ports on the Southeast Atlantic Coast. Given the shipping lines' business practice of multiple ports of call, GPA may soon want to accommodate these larger ships at Savannah Harbor. The height of the Talmadge Bridge will become an increasingly contentious issue.*

Response: See previous response at 765-DC-149-EC09.

765-DC-149-EN03

Comment: *According to the SRMC, the proposed channel is shallower than applicable design standards for fully loaded Post-Panamax ships, resulting in lower margins of safety. For example, the Navigation Study for Savannah Harbor Channel Improvements (Sept. 2004) determined that ships with a draft of 47.5 feet would hit the bottom in normal conditions in a channel with a depth of 52 feet. See Navigation Study at 34, Table 1. Since the currently proposed offshore channel is shallower, the SRMC predicts that a ship drawing 43 feet would be perilously close to running aground.*

Response: Savannah Harbor pilots move vessels through the harbor with a 4-foot underkeel clearance throughout the length of the transit [a common requirement for US ports]. Depending on the draft of the vessel, use of tides may be required to maintain a 4-foot underkeel clearance throughout the channel passage. Corps guidance recommends conducting laboratory models, field measurements, numerical model simulations, and/or probabilistic models to refine the required channel depths. The Corps used the CADET program (a numerical model simulation) as part of the vertical ship motion study to evaluate the factors listed above. This 2011 Vertical Motion Study determined the number of days of accessibility, the vertical motion allowances, and net underkeel clearance based on vertical ship motion components (wave-induced heave, pitch, and roll) to provide a risk-based method of evaluating different channel depths. For the selected alternative, the depth for the Entrance Channel will be 49 feet. Based on the CADET tidal analysis, to accommodate the fully-loaded design vessel (47.5 foot draft) on any given day of the year, an additional 3 feet of water below the 49 foot proposed project depth (i.e., *h*=52 feet). That depth is expected to occur for six hours in a 24-hour period. The Corps does not expect fully-loaded design vessels to commonly transit the harbor. The economic analysis (upon which the benefits are estimated) expects a design vessel calling fully-loaded to move through the port 3 percent of the time. Since the Harbor Pilots typically ride the tide when moving larger vessels, this occurrence would not constitute a change from present practice and is expected to be very manageable. That occurrence would also represent a greatly improved situation over what would occur in the Without Project condition.

765-DC-149-EN04

Comment: *Of further concern as it relates to draft is the SRMC's suggestion that the GRR misstates the applicable tide. Although it is true that there is a seven to eight foot tidal range at GCT, tidal range is closer to six feet at Fort Pulaski and four feet in the offshore channel. Overstating the extent of the tidal ranges raises additional concerns regarding the designed channel's capacity for handling fully loaded Post-Panamax ships, even on high tide.*

Response: According to NOAA, the tide range at Ft. Pulaski averages 6.92 feet whereas the tidal range at the ocean entrance of the channel extension is from 6.30 to 6.51 feet.

765-DC-149-EN05

Comment: *The offshore channel, as designed, would be about 570 feet wide. Post-Panamax ships have a beam of 160 feet (or, 28 percent of the offshore channel), and these ships can begin to veer off course due to wind and currents. If such a ship turns 10 degrees, the ship will take up to 56 percent of the channel width. In light of the proposed channel design and the increasing size of ships expected, this presents a safety issue that needs to be studied more closely. Further, the designed proposed channel width will be even narrower than the current width, limiting further the size of ship that can utilize the post-project harbor*.

Response: All Post-Panamax vessels do not have widths of 160 feet. For example, Post-Panamax Generation 2 vessels have widths ranging from 139 to 144 feet. Ship simulation was conducted for the SHEP entrance channel and results are documented in a report titled *Savannah Harbor Entrance Channel Simulations 2010 Report*, which is included in Attachment 3 of GRR Appendix C. That work included input from the harbor pilots. Based on the simulation results, crabbing is not a significant issue and was not encountered during the simulations. As stated previously, the economic analysis indicates that Post-Panamax Generation 3 ships (with a beam of 160 feet) are not expected to call at Savannah Harbor. Therefore, a channel design to accommodate that class of vessel is not warranted. Since that class of vessels is not expected to call at the port, it does not contribute to the economic benefits expected from the proposed harbor deepening.

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765-DC-149-EC11

Comment: *The GRR predicts that the GCT will ultimately have a demand of over 6,000 ships per year (or, 16 per day) however, SRMC's analysis suggests that the Port can only accommodate 12 ships per day due to the fact that as designed SHEP is essentially a one-way channel. The Corps or the local sponsor should conduct a traffic study to support its claim that GCT will be able to handle 6,000 ships per year.*

Response: Harbor deepening will not result in a [de facto] one-way channel. The Corps design studies (including ship simulation that used actual pilots who operate in the harbor on a daily basis) confirm that the entrance channel would allow two-way traffic by two meeting vessels [design]. Those analyses also confirm that the inner harbor channel would allow two-way traffic for a design vessel (PPX2) and a PPX1 containership. Two-way traffic within the inner harbor channel for two design vessels is also possible, but would have to be limited to the meeting lane reaches [2] that would be constructed as part of the project.

The port will not be capacity limited by its navigation channel; rather, the District's studies reveal it will be constrained by its landside capacity which, as noted is 6.5 million TEUs. The deepened channel is designed to accommodate all vessel sizes expected to call regularly at the port over the project's economic life. The HarborSym model evaluates the delays that the fleet would experience on a daily basis. The total waiting time for the fleet is projected to grow over time as more vessels call at the port, i.e., many would be depth- and therefore tidally-constrained. The HarborSym model identifies a reduction in total waiting time for the fleet with each of the channel deepening alternatives.

765-DC-149-EN06

Comment: *The Vertical Ship Motion Study for Savannah, GA, GRR, App'x 1.1.16, indicates that there will only be 120 days per year when wave conditions would be calm enough for a ship travelling at a speed of 6 knots and at a draft of 46 feet to transit the expanded channel without grounding. However, given the configuration of the proposed ocean channel, which is narrow and involves a sharp curve, consultants for SRMC have raised concerns that 6 knots is a dangerously slow speed for a container vessel to pass through the proposed ocean channel. In fact, consultants for SRMC have indicated that ships off the southeast coast often have to travel at 14 knots to stay in a narrow channel, such as the proposed SHEP channel; however a ship with a draft of 46 feet in the proposed channel will clearly hit the bottom at that speed. Further study is necessary to determine whether Post-Panamax ships can successfully navigate the ocean channel.*

Response: The Vertical Ship Motion Study report was revised after receipt of additional proprietary data from Maersk on ship parameters/lines. Errors were also corrected regarding how codes for the CADET program were compiled. The final report, dated June 28, 2011, contains the updated/corrected information. A vertical motion study defines the adequacy of a channel in terms of days of accessibility. For the recommended entrance channel extension, the revised report indicates that an inbound (more restrictive than outbound) 46-foot draft vessel traveling at 10 knots would have 360 days per year accessibility given 50-feet of water with no tidal restriction. It would have 364 days of accessibility a year given 52-feet of water [available for 6 hours of the 12.5 hour tidal cycle]. A 47.5-foot draft vessel traveling at 10 knots would have 360 days of accessibility at 52-feet of water [available for durations of up to 6 hours of the tidal cycle]. Faster speeds and increased days of accessibility are possible if the transit is coordinated with the tide cycle to use the higher water level. These durations are sufficient to allow safe transit through the entrance channel.

765-DC-149-EN07

Comment: *Moreover, if the narrow design of the ocean channel requires ships to navigate at 14 knots, we are concerned that such a rate of speed would be in excess of NOAA's ship speed rule. See 73 Fed. Reg. 60,173 (Oct. 10, 2008) (requiring all vessels 65 feet or longer travel at 10 knots or less in certain locations (SMAs), including off Savannah, along the east coast of the U.S. Atlantic seaboard at certain times of the year to reduce the threat of ship collisions with critically endangered North Atlantic right whales).*

Response: There is no safety-related requirement for vessels to transit the ocean channel at 14 knots. Savannah Harbor pilots routinely travel at speeds of ten knots [or less] -- in adherence of NOAA's speed restriction -- during seasons when the North Atlantic Right Whales may be present. Ship simulations verified that the current restriction on speed would not pose a significant problem after the deepened channel extension is in place.

765-DC-149-EV10

Comment: *For these reasons, the concerns raised by the SRMC relating to the navigational capacity of the proposed expanded channel deserve serious consideration by the Corps. Accordingly, we recommend that the Corps require the additional studies recommended by the SRMC. If these studies find that additional dredging must be performed to make the channel larger, then it will be necessary for the Corps to incorporate these costs into the NED analysis and to incorporate any additional environmental impacts into the DEIS.*

Response: See responses to previous comments. TheCorps reviewed the studies contained in the Draft GRR and revised some analyses. The updated analyses confirm the previous findings and are included in the Final GRR.

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765-DC-149-EV11

Comment: *As courts have recognized "[i]naccurate economic information may defeat the purpose of an EIS by 'impairing the agency's consideration of adverse environmental effects' and by 'skewing the public's evaluation' of the proposed agency action." NRDC v. U.S. Forest Serv., 421 F.3d 797, 811 (9th Cir. 2005) (quoting Hughes River Watershed Conservancy v. Glickman, 81 F.3d 437, 446 (4th Cir. 1996). The Corps' DEIS is a prime example. Despite NEPA's requirement that the Corps assess SHEP's indirect effects, the Corps in the GRR states: "It is important to note that the total cargo handled at Garden City Terminal is not projected to change due to implementation of the project. Therefore, secondary impacts associated with additional cargo traffic are not anticipated." GRR at 141. The Corps relied on this arbitrary and unreasonable assumption throughout the DEIS, thereby avoiding analysis and disclosure of many significant environmental impacts resulting from the Project.*

Response: The economic information is the best information available and is the type of information the Corps routinely uses when analyzing water resource development projects, including proposals to deepen navigation channels. The economic models are based on sound science and are of the type the Corps routinely uses for these types of projects. In considering the best available economic information and using sound forecasting models, the District considered future cargo traffic and has concluded that harbor deepening will not affect the current rate of increase [without project]. Further, the GPA would expand the GCT to its 6.5 million TEU throughput capacity regardless of whether the Savannah Harbor navigation channel is deepened. Under both without and with project conditions, the GCT will reach its build-out capacity by 2020 [at 6.5 million TEUs]. This is the maximum number of containers that could reasonably be processed through the Garden City Terminal. This determination is based on factors such as the size of the terminal, the number of gates that provide access to the property, the number and size of the berths, the number and size of the container cranes, the number of jockey trucks that move the containers within the terminal, how the containers are stacked within the terminal, and the number of railroads that service the terminal and the frequency of their trains. It is anticipated that without deepening, more vessels will be required to transport the cargo expected to move through the port. With deepening, the total number of vessels decreases as vessels will be able to load/unload without the present constraint of draft. See also other responses addressing this issue.

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765-DC-149-EV12

Comment: *In other instances the Corps is even more ambitious in its optimism, claiming that the Project will improve air quality by changing the behavior of shippers who, instead of making more trips with smaller ships, would upgrade to larger vessels and make fewer calls on Savannah. See, e.g., DEIS at 5-107 (stating that "[i]t is apparent from the Corps' Fleet Forecast . . . that the numbers of vessels calling on the Port of Savannah for years 2015, 2020, 2025, 2030, 2032 and 2065 will be significantly greater for the existing depth of -42 feet than the maximum proposed depth of -48 feet"); id. at 5-108 (asserting that reductions in air emissions would result "if larger container vessels were allowed to regularly call at the port"). The Corps does not include any supporting studies or analysis to even attempt to substantiate either of its conflicting conclusions. For the same reasons previously discussed in Sections I.C.2., I.D.,*

supra, NEPA requires the Corps to complete a realistic analysis of the Project's impacts on the Port's growth and to incorporate the results into a full and complete analysis of the Project's impacts to air quality.

Response: The District did not avoid analysis and/or disclosure of environmental impacts, including air quality. As explained previously, the economic analysis predicts both without project and with project fleets of container vessels. The air analysis (EIS, Section 5.06 and Appendix K) is based on the forecasted fleet mix and its methodology uses the procedures [data collection and computational protocols] recommended by EPA. As reflected in the EIS, the total air emissions from the fleet would decrease if the number of vessels decreases as forecasted (comparing without project and with project fleets). The District has confidence in these findings and that the conclusions drawn there from are appropriate. The EIS reflects a realistic and reasonable analysis of the Port's air quality impacts on the environment and contains a complete air emission inventory/analysis.

765-DC-149-EV13

Comment: *The DEIS further misleads the public concerning the Project's likely air pollution impacts by asserting that "maritime industries are not major air emitters" and "[t]he air quality in the harbor area is generally good." DEIS at 5-105. In fact, marine shipping operations constitute a major source of harmful air pollutants. Ocean-going vessels, land-side equipment, and secondary emissions from port development have significant impacts to air quality. For that reason, EPA recently produced an Evaluation Report, addressing these emissions. See EPA Needs to Improve Its Efforts to Reduce Air Emissions at U.S. Ports, Report No. 09-P-0125 (Mar. 23, 2009), available at http://www.epa.gov/oig/reports/2009/20090323-09-P-0125.pdf (last visited Jan. 25, 2011). The report explains that air pollution from port activities "impact[s] communities surrounding port areas" and has "significant environmental and human health impacts, such as cancer and asthma." Id. at 1-2. Emissions of greatest concern include nitrogen oxides (NOx), particulate matter (PM), sulfur oxide (SOx), carbon monoxide (CO), hydrocarbons (HC), and air toxics, especially diesel exhaust. Id. at 2.*

Response: The air quality in the harbor area is generally good (see EIS-Sections 4.03 and 5.6 and EIS-Appendix K). According to US EPA Region 4, both Chatham County, GA and Jasper County, SC are considered attainment areas for the 8-hour ozone standard. The Savannah area is under no federal or state restrictions for the purpose of improving air quality or to meet any air quality standard.

According to the 2002 and 2005 EPA National Emission Inventory (NEI) data for Chatham County Georgia, the Port of Savannah is a small subset of the County's total air emissions. The 2002 and 2005 NEI data for Chatham County was provided by the Emissions Inventory & Analysis Group, AQAD/OAQPS, US EPA Research Triangle Park, NC. When EPA prepared those evaluations, it included both landside and water-side (ocean-going vessels) components of the port in the values reported as being for the "Port of Savannah". EPA data demonstrate that Savannah's marine shipping operations are not a major contributor of harmful air quality pollutants.

765-DC-149-EV14, 765-DC-149-EV15

Comment: *In addition, the DEIS acknowledges that the Air Emission Inventory prepared for the Project "does not include a detailed dispersion modeling assessment" of air toxics or a "risk based assessment of the health impacts" attributable to the Project. DEIS at 5-106. The DEIS must include detailed dispersion modeling to accurately assess and disclose impacts to local communities and to account for the fact that those nearest the source face the greatest threat from air toxics, as well as the potential for "hot spots" of aggravated effects to occur. Similarly, given the wide and growing recognition of the significant harm port-generated air pollution can do to human health, the Corps must include a risk-based health impact*

study. A legally sound EIS cannot ignore these impacts on the environment and surrounding communities, much less downplay their significance, as the DEIS has done here. Moreover, NEPA requires the Corps to consider environmental justice in its EIS. The Corps appears to have ignored this obligation in declining to consider which communities will be most impacted by air pollution.

Response: Harbor deepening is not the causal factor that would lead to growth in container volume through the port on any given time line. The District's analysis forecasts emissions over time, with or without a harbor deepening. Since the air emissions would not increase as a result of the project, detailed modeling of those emissions is not needed to conclude the project would not produce significant adverse impacts on air quality.

With harbor deepening, total air emissions generated by port operations would decrease when compared to the without project condition. Since the air emissions would not increase as a result of the project, a risk-based health impact study of the effects of those (ongoing) emissions is not warranted.

The District did not ignore any substantial source of air emissions associated with the port. An examination of the Air Emission Inventory [EIS, Appendix K] reveals all of the major emitters at Garden City, as well as those at the other 21 terminals in the harbor, were included. Section 5.20 [Protection of Children and Environmental Justice] describes impacts of the proposed action in the context of both Executive Order 12898 and Executive Order 13045.

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765-DC-149-EV16

Comment: *Finally, the DEIS does not assess the Project's impacts to the affected areas' status under the Clean Air Act ("CAA"), 42 U.S.C. §§ 7401-7671q (2010). The DEIS states only that the affected areas are presently in attainment for the all National Ambient Air Quality Standards ("NAAQS") and claims the Project is therefore compliant with the CAA because this present status means the Corps need not prepare a conformity determination pursuant to CAA Section 176. The DEIS fails, however, to analyze and disclose whether the Project would push the impacted areas into non-attainment or maintenance status and what the Project's incremental impacts on compliance, or lack thereof, with applicable NAAQS will be. This omission is significant because the Project might have the potential to bring the affected area into nonattainment with the applicable standards for PM. The DEIS references an earlier EPA report indicating increases in PM 2.5 concentrations from 2000 to 2006, resulting in measurements exceeding the allowable daily range in 14% of the measurements taken for the study. DEIS, App'x K at 100. Similarly, EPA has proposed more stringent standards for ground-level ozone and has also predicted counties with ports might have difficulty meeting the standard. Report No. 09-P-0125, at 5. Failure to meet PM and ozone standards threatens not only regional public health, but could also lead to far-reaching planning requirements, emissions controls, and potential penalties under the CAA.*

Response: The EIS determined that over the life of the project (from 2016 to 2066) the proposed deepening of the harbor will not interfere with the area remaining in attainment of the NAAQS under Section 110 of the Clean Air Act. The EIS explains that because the proposed harbor deepening is not expected to increase the number of vessels or total cargo moving through the port, no changes to air quality or incremental impacts on compliance with the NAAQS would occur as a result of the project. Increases in air emissions at the port are expected over time as a result of growth in demand for goods that move through the port. Those increases would occur independent of a harbor deepening. Since the deepened port's total emissions would be less than those of the status quo, the proposed action

would not cause air quality degradation in Chatham or Jasper County or be the cause of either of those areas being considered as a non-attainment or maintenance area.

765-DC-149-EV17
Comment: *The DEIS and GRR should include a section explaining how Engineering Circular 1165-2-211 was applied to this Project and what were the results of its application.*

Response: The proposed action is in full compliance with Engineering Circular 1165-2-211. The GRR-Engineering Appendix explains how Engineering Circular 1165- 2-211 was applied to this project and the results of its application. The District also used a state-of-the-art hydrodynamic model to identify impacts to wetlands and floodplains from the proposed project alternatives. The sensitivity analyses for this model included low river flows [2001 conditions] and sea level rise of 25 and 50 cm [see EIS-Section 5.1.2 Indirect Impacts to Wetlands].

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765-DC-149-EV18
Comment: *It is unclear from the DEIS and GRR to what extent the Corps has considered issues related to climate change in evaluating the dissolved oxygen injection system. In exchange for exacerbating already present, unnaturally low levels of dissolved oxygen in the water column, the Corps is proposing, as mitigation, to inject dissolved oxygen into the Savannah River. Pursuant to the proposal, this system would have to be run continuously during the summer months in perpetuity. As discussed previously, we question the soundness of a decision to place a river on a permanent respirator of sorts. We are further troubled by a decision to implement a mitigation strategy that requires such a significant source of energy in perpetuity in light of climate change considerations. Perhaps the Corps should evaluate ways in which to mitigate for the new energy consumption created by its mitigation proposal.*

Response: Section 5.20 (C) of the FEIS clarified how climate change was considered in evaluating the mitigation plan, and Section 5.25.6 addresses the energy requirement for the oxygen injection system.

765-DC-149-EN08
Comment: *The DEIS and GRR should address the extent to which the Corps factored different sea level rise scenarios into its analysis with respect to air draft issues. To the extent the Corps did consider this issue, how did sea level rise inform the Corps' air draft analysis?*

Response: Section 7.5.2.2 of the Engineering Appendix references evaluated sea level rise over the life of the project. If the current historic rate of sea level rise continues, sea level will rise approximately 0.5 feet over the 50-year life of the project. At the highest predicted rate, sea level would rise 2.3 feet over the life of the project. The air draft of the design vessel with minimum water draft is 170 feet, with the antenna up. With an additional 2.3 feet of water elevation, the air draft would be 172.3 feet. The vertical clearance of the bridge is a minimum of 185 feet above mean higher high water. The air draft of the vessel fleet is not a concern for SHEP, even at the highest rate of sea level rise.

765-DC-149-EV19
Comment: *In the GRR, the Corps explains some of the ways in which the agency expects sea level rise to impact the Savannah River estuary. For example, the Corps suggests that sea level rise could reduce tidal freshwater marshes by approximately 370 acres in light of the historic rate of rise and also acknowledges that impacts could be far more extensive under other scenarios. GRR at 93. The Corps anticipates sea level rise would also affect other natural resources due to increased salinity levels. Anticipated impacts*

include those to fisheries and increased chlorides at the City of Savannah's water intake. GRR at 93. Under NEPA, the Corps cannot take the position that it need not provide full mitigation for impacts resulting from SHEP because some of these same resources will be affected as a result of climate change. The Corps must fully mitigate for the earlier impacts from SHEP now, especially since impacts from the SHEP will occur in the short-term whereas climate change related impacts will occur gradually over many years.

Response: The Corps did not take the position alleged that full mitigation of impacts from SHEP would not be required because those impacts are predicted to occur naturally over the life of the project. The mitigation for SHEP's impacts is based on those occurring when the project is implemented. The District obtained approval of a policy waiver request to mitigate for the impacts at the Base Year, rather than an average annual approach over the 50-year period analysis as is normal Corps practice. This provides a substantial benefit by ensuring the mitigation plan will be implemented before or concurrently with construction, as required by SHEP's authorizing legislation.

765-DC-149-OC04

Comment: *The Corps did not consider the significance of growth induced development that would be caused by the project even though the Corps stated in Appendix L that harbor deepening would increase the amount of goods brought into the Savannah port, which could trigger the need for additional distribution centers and other support facilities or expansion of existing ones.*

Response: The referenced statement in Appendix L was in error and has been removed. As explained in other responses, the project would not increase the amount of cargo transiting the port nor cause secondary growth; those effects would occur in the without project condition because of demand and GPA's capital improvement plan to expand the Garden City Terminal to accommodate 6.5 million TEUs annually regardless of harbor deepening.

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765-DC-149-EV20

Comment: *The Corps' assumption that the Project is unrelated to GPA's business skews the DEIS in other ways too. For example, the DEIS, on the one hand, acknowledges that the introduction of non-native or invasive species can have "detrimental affects on an ecosystem." DEIS at 5-156. "Invasive species have been introduced into new areas through the discharge of ballast water from deep-draft vessels. Increasing the amount of ballast water exchange within the port is the primary avenue through which the proposed harbor deepening could have an adverse effect on this issue." DEIS at 5-156.*

Response: As explained in the previous response, cargo growth through the harbor would not be affected by the proposed harbor deepening. As a result, the project does not need to evaluate (or mitigate) for the environmental impacts that may occur as a result of growth independent of the proposed action.

765-DC-149-EV21, 765-DC-149-EV22

Comment: *Under NEPA, the Corps is required to thoroughly assess the cumulative effects of the proposed SHEP. 40 C.F.R. § 1508.7 & 1508.25. NEPA's implementing regulations define cumulative effects as "impacts on the environment which result from the incremental impact of the action when added to other past, present, and reasonably foreseeable future actions regardless of what agency (federal or non-federal) or person undertakes such other actions." 40 C.F.R. § 1508.7. The cumulative*

impact analysis "must be more than perfunctory; it must provide a useful analysis of the cumulative impacts of past, present, and future projects. . . . [A] cumulative impact analysis must be timely. It is not appropriate to defer consideration of cumulative impacts to a future date when meaningful consideration can be given now." Kern v. U.S. BLM, 284 F.3d 1062, 1075 (9th Cir. 2002) (citation and internal quotation marks omitted). The Corps has failed to consider adequately SHEP's cumulative impacts.

Response: In this and the next two comments, the commenter criticizes the SHEP EIS cumulative impacts analysis, alleging that it does not consider the cumulative impacts of past, present, and reasonably foreseeable future actions. One of the arguments is that the cumulative impacts analysis does not consider future projects to deepen the Savannah River to accommodate Generation 3 ships (larger vessels). The commenter contends that future deepening would, among other things, require raising the Talmadge Bridge and additional widening.

The District's analysis of cumulative impacts is described in EIS Section 5.15 and Appendix L -- Cumulative Impact Analysis. Following CEQ regulations and guidance, the District has adequately considered the relevant cumulative impacts of past, present, and reasonably foreseeable future actions. As recommended by CEQ, the cumulative impact analysis is focused on the most meaningful issues, including potential cumulative impacts to wetlands, fisheries, dissolved oxygen, groundwater, and endangered species. For each key resource, the analysis addresses geographic scope, historical basis (baseline condition), past actions / stresses, present condition, present actions / stresses, capacity to withstand stress, future actions / stresses, incremental impact, and alternatives to avoid, minimize, or mitigate cumulative effects.

The cumulative impact analysis fully recognizes and assesses the impact of past actions, such as previous deepenings of the Savannah Harbor and dam and reservoir construction upstream. The cumulative impact analysis also thoroughly evaluates the present condition, discussing recent and continuing work or programs such as maintenance of the existing Savannah Harbor Navigation Project, repairs to the SNWR freshwater control system, and stocking of Striped bass. For each key issue or resource, the cumulative impact analysis then considers reasonably foreseeable future actions, including the completion of GPA's capital improvement plan, the proposed project (SHEP), drought, sea level rise, and a proposed Jasper County container terminal.

The cumulative impact analysis does not consider additional deepening after SHEP to be a reasonably foreseeable future action. The period of analysis of the SHEP is 50 years, which is a long time horizon. During those 50 years, there will be annual maintenance dredging, which is fully considered in the cumulative impact analysis. However, additional deepening post-SHEP is not reasonably foreseeable, and in fact would be speculative, especially considering SHEP's 50-year period of analysis. As previously discussed, Generation 3 ships are not expected to call at Savannah Harbor between now and the year 2030 at any frequency requiring additional deepening, and there are constraints such as the Talmadge Bridge and the Floridan Aquifer that would limit any potential future deepening. Thus, the SHEP cumulative impact analysis considers the appropriate reasonably foreseeable future actions.

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765-DC-149-EV23

Comment: *A cumulative impact analysis must not examine a project in isolation, "without considering the 'net' impact that all projects in the area may have on the environment." LaFlamme v. FERC, 852 F.2d 389, 402 (9th Cir. 1988). The Corps' analysis of cumulative impacts is flawed — focusing narrowly on the "short-term" nature of the potential adverse environmental impacts and ignoring cumulative impacts that "can result from individually minor but collectively significant actions taking place over a period of time," 40 C.F.R. § 1508.07, as well as the potential for other individually significant actions. The DEIS fails to include in its cumulative impacts analysis reasonably foreseeable alterations to the Savannah River.*

Response: See response to previous comment [765-DC-149-EV21-22].

765-DC-149-EV24

Comment: *Similarly, as discussed in detail in Section I.D.4., supra, the widening of the harbor and the raising of the Talmadge Bridge are "reasonably foreseeable" projects that will allow the harbor to accommodate the Generation Three ships and other larger vessels. Pilots familiar with the harbor have expressed that SHEP would not support two-way traffic. In the interests of safety and in order to accommodate the world's largest ships in the future, it is likely that the GPA will widen the harbor. Also, the DEIS does not consider the potential elevation of the Talmadge Bridge so that the harbor may accommodate Generation Three ships. Given the continuing enlargement of container ships and GPA's strong desire to remain competitive, the raising of Talmadge Bridge is reasonably foreseeable under NEPA. The DEIS's failure to examine foreseeable future harbor projects does not satisfy NEPA's requirement that the Corps examine "past, present and reasonably foreseeable future actions." 40 C.F.R. § 1508.7.*

Response: See response to previous comment [765-DC-149-EV21-22].

765-DC-149-OC05

Comment: *The cumulative impacts analysis in the DEIS fails to examine the proposed Jasper Terminal in combination with SHEP. The construction of both projects would occur in close vicinity on the Savannah River and would impact the same coastal resources.*

Response: The cumulative impact analysis in the Final EIS evaluates a proposed Jasper County terminal as a potential future action with regard to each key issue/resource, to the extent practical at this time using available information. A proposed Jasper County terminal has not reached the feasibility level design stage yet, so information/data about its siting, design, and infrastructure is conceptual at this point.

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765-DC-149-EV25

Comment: *In Assessing the Project's Impacts for Both NEPA and CWA Purposes, the Corps Cannot Ignore EPA's Proposed Revisions to the Total Maximum Daily Load ("TMDL") for DO in the Estuary.*

Response: The NEPA documents do not ignore EPA's 2010 Draft TMDL. The FEIS discusses EPA's TMDL and its relationship to the SHEP in Section 4.02 and dissolved oxygen mitigation measures in Section 5.02. The dissolved oxygen injection system is designed to offset adverse project impacts [at all alternative depths] thereby addressing the primary concern in regards to the Savannah Harbor Draft

TMDL. In addition, because of their spacing, the Speece Cones are expected to increase oxygen concentrations in the Savannah Harbor environs. Specifically, the harbor's dissolved oxygen regime should be incidentally improved in over 90 percent of the project effects' area compared to existing conditions.

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765-DC-149-EV26

Comment: *To Comply with NEPA, the Corps Must Prepare a Programmatic EIS. The Corps states that the "expected future growth of container cargo along the East Coast [will] require expansion in the capacity of several deepwater container terminals" and "expansion of any existing container terminal or creation of a new terminal would cause environmental impacts." DEIS at 3-6. In the south Atlantic region, at least four port projects are planned or proposed—including Savannah, Jacksonville, Charleston, and Norfolk. GRR at 70. Each deepening project includes the expenditure of substantial federal funds, each project requires numerous federal permits, and each project presents significant environmental impacts on federally controlled coastal resources. Each project, when combined with others, could cause cumulative and synergistic impacts on the nation's environment, including its major rivers and estuarine and marine systems. The Corps "must give a realistic evaluation of the total impacts and cannot isolate a proposed project, viewing it in a vacuum." Grand Canyon Trust v. Federal Aviation Admin, 290 F.3d 339, 342 (D.C. Cir. 2002). . The Corps' review of these projects in isolation undermines two of NEPA's keystone objectives: informed public participation and informed agency decision-making. See Citizens for a Better Henderson v. Hodel, 768 F.2d 1051, 1056 (9th Cir. 1985).*

Response: The DEIS and Final EIS fully meet the District's responsibilities under NEPA. The District has evaluated alternatives outside the Savannah River estuary, as well as alternatives within the estuary. The District disagrees that a programmatic EIS is required. A programmatic EIS is not required or appropriate with regard to the SHEP for a variety of reasons including but not limited to the following. First, port expansion projects that are only conceptual or proposed are speculative. The cited projects are at varying stages of concept or development. Second, the cited projects are not all pending concurrently before the Corps. For example, a proposed deepening of the Norfolk harbor is not under study by the Corps at this time. Third, to date no one has seriously contended that the potential environmental impacts of SHEP and its mitigation would have any effect on the environment at Jacksonville, Charleston, or Norfolk harbors. Fourth, and perhaps most importantly from a legal standpoint, Congress authorized the SHEP in 1999 as a specific stand-alone project, mandated it be studied in a particular way, and required that it be approved by four federal agencies. Such Congressional action preempts any arguable NEPA programmatic EIS requirement.

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765-DC-149-EV27, 765-DC-149-EC12

Comment: *Although the Corps does examine other ports in the Southeast to determine whether their container throughputs would be impacted if Savannah Harbor were deepened, the Corps does not examine whether the Corps should undertake harbor expansion projects at one or more of these other ports instead of at Savannah Harbor. The DEIS does not explain whether or not, for example, the Jacksonville or Charleston harbors could be deepened and improved to the same extent as Savannah Harbor for a lesser amount of money and fewer environmental impacts.*

This is critical in determining whether the DEIS is sufficient, because, as the Ninth Circuit Court of Appeals held in Citizens for a Better Henderson, a "viable but unexamined alternative renders [the] environmental impact statement inadequate." 768 F.2d at 1057.

Response: This is another comment regarding the SHEP alternatives analysis. As explained in a previous response (765-DC-149-EN01), the SHEP NEPA alternatives analysis ranged from considering other potential options or sites for the project, including other South Atlantic ports, to evaluating potential specific locations for disposal of dredged or fill material along Savannah Harbor and in the Atlantic Ocean along the entrance channel. The SHEP NEPA alternatives analysis is found in various places in the EIS/GRR, including EIS Section 2.0, Purpose and Need for Action; EIS Section 3.0, Alternatives; EIS Appendix H, Section 404(b)(1) Evaluation (Practicable Alternatives); EIS Appendix O, Formulation of Alternatives; GRR Section 6, Formulation of Alternatives; various other sections in the GRR; GRR Appendix A, Economics; GRR Appendix A, Attachment 6 (Regional Port Analysis); GRR Appendix A, Attachment 4 (Multiport Analysis); and GRR Appendix D, Plan Formulation Appendix.

As explained above and in several places in the GRR/EIS, including EIS Appendix H, Section 404(b)(1) Evaluation (Practicable Alternatives), among the conclusions reached as a result of the Regional Port Analysis, the Multiport Analysis, and the analysis of eight alternative sites for the project along the Savannah River were the following: (1) there is no feasible alternative to improving Savannah Harbor because the major South Atlantic ports will experience so much cargo growth from 2005 to 2050 they will all need deepening or improvement currently planned, (2) no one South Atlantic port has the ability to expand to accommodate all the growth in container volume expected in the region, and (3) the proposed deepening of Savannah Harbor would not divert container traffic from other ports because the shipping cost efficiencies would not outweigh the additional landside transportation costs.

765-DC-149-EV28

Comment: *The DEIS's consideration of the Jasper Terminal falls far short of NEPA's requirement that the DEIS "rigorously explore and objectively evaluate" alternatives to the proposed action. 40 C.F.R. § 1502.14(a). Unlike all other alternatives considered by the Corps, the Jasper Terminal will likely be constructed. Even GPA's executive director, Curtis Foltz, recognizes the future Jasper Terminal, recently stating that the "Jasper port is a very solid project" and that the project is "moving forward, as it was expected to, on its current timeline."23 Thus, the Jasper Terminal is not simply a Corps-defined hypothetical alternative, but a viable alternative that could have dramatically less environmental impacts than deepening to the Garden City Terminal. The Corps' failure to conduct a fair and balanced consideration of the Jasper Terminal renders its alternatives analysis inadequate under NEPA.*

Response: The SHEP NEPA alternatives analysis fully considered a proposed Jasper County terminal. Among other things, the Regional Port Analysis specifically evaluated current and projected port capacity, demand, and growth, and environmental impacts and constraints for other South Atlantic ports (Norfolk, VA; Wilmington, NC; Charleston, SC; Savannah, GA; and Jacksonville, FL) and a proposed Jasper County Marine Terminal (GRR, Appendix A, Attachment 6). In addition, the information regarding a Jasper County terminal was analyzed in a study of the potential costs and environmental impacts of locating the project at one of eight different sites along the Savannah River (four on the South Carolina side, four on the Georgia side) As discussed in the EIS Section 3.0 and Appendix O. Among the conclusions reached as a result of the Regional Port Analysis, the Multiport Analysis, and the

analysis of eight alternative sites for the project along the Savannah River were the following: a Jasper County terminal would not be cost effective when compared to improving Savannah Harbor based on the high cost involved (now estimated at $4 billion including the cost of constructing the new transportation infrastructure that would have to be built), and the timing (a Jasper County terminal does not exist at present and cannot be constructed in time to meet the growth in demand occurring through Savannah Harbor)**.**

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765-DC-149-EV29

Comment: *As described above, in order for an alternatives analysis to be lawful, the agency conducting the analysis must include all aspects of each alternative and do so in a consistent manner. The Corps did not accomplish this with its analysis of the Project. Specifically, the Corps' preferred alternative does not include the landside improvements to the Garden City Terminal that have been performed and will be performed to ready the terminal for Post-Panamax ships. See DEIS, App. O at 36. It goes on to explain that GPA has planned these improvements "to coincide with the Panama Canal Expansion Project." GRR at 14. In the DEIS, however, the costs of upgrades at the Garden City Terminal are entirely disconnected from the Project and therefore are not included in the project costs. In contrast, the Corps does include these costs in the "without project alternative," as well as all of the other alternatives to deepening to the Garden City Terminal. DEIS, App. O at 35-36. This, of course, skews the entire alternatives analysis. If the GPA landside improvements were undertaken with a deeper port in mind, they should be factored into the alternatives analysis in a consistent manner. The Corps should not be permitted to ignore these costs for some alternatives, while considering them for others.*

Response: The alternatives analysis was properly conducted. The alternatives analysis considers all components of the various options in a consistent manner. The landside improvement costs at the GCT are not included in Table 6 of Appendix O because the GCT does not require modification to accommodate Post-Panamax vessels. This is not the case for any other terminal alternative. Table 7 shows the costs of modifying the GCT to achieve **additional** throughput capacity and accompanying text clearly explains that the GPA plans to expand the GCT regardless of whether or not the Savannah Harbor navigation channel is deepened (Without Project Condition). See also other responses on alternatives issues.

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765-DC-149-EV30

Comment*: Although the Corps, as a matter of policy, does not issue itself permits for its own activities, it "authorizes" its own discharges, applying all applicable substantive requirements, including the Section 404 Guidelines found at 40 C.F.R. § 230.10. 33 C.F.R. § 336.1(a) (2011);33 C.F.R. § 337.6 (2011); 40 C.F.R. § 230.2(a)(2) (2011); see also Regulatory Guidance Letter ("RGL") 88-09 (July 21, 1998, expired Dec. 31, 1990); RGL 05-06 (Dec. 7, 2005). As explained below, this proposal violates the CWA in the following respects.*

Response: The SHEP, including the mitigation plan, would not violate the Clean Water Act or the Section 404(b)(1) Guidelines. The EIS describes how the project will avoid, minimize, and compensate (mitigate) for potentially significant adverse environmental impacts to ensure compliance with the Clean Water Act. The States of Georgia and South Carolina have issued Section 401 water quality certifications with conditions to ensure the project will comply with state water quality standards established under

the Clean Water Act. EIS Appendix H, Section 404(b)(1) Evaluation, analyzes and demonstrates compliance with the Section 404(b)(1) Guidelines.

765-DC-149-EV31

Comment: *Section 404(b)(1) of the CWA, 33 U.S.C. § 1344(b)(1) (2010), directs the EPA to issue Guidelines that define the circumstances under which dredged or fill material may be discharged into wetlands or other waters. Importantly, the Guidelines provide that the Corps shall not grant a Section 404 permit "if there is a practicable alternative to the proposed discharge which would have less adverse impact on the aquatic ecosystem, so long as the alternative does not have other significant adverse environmental consequences." 40 C.F.R. § 230.10(a) (2011). An alternative to discharge to a wetland "is practicable if it is available and capable of being done after taking into consideration cost, existing technology, and logistics in light of overall project purposes." 40 C.F.R. § 230.10(a)(2). Where a discharge is proposed for a wetland or other special aquatic site, all practicable alternatives to the proposed discharge that do not involve a discharge to the wetland "are presumed to have less adverse impact on the aquatic ecosystem, unless clearly demonstrated otherwise." 40 C.F.R. § 230.10(a)(3). In addition, if the activity associated with a discharge to a wetland does not require access or proximity to or siting in a wetland (i.e., is not "water dependent"), practicable alternatives that do not involve wetland sites "are presumed to be available, unless clearly demonstrated otherwise." 40 C.F.R. § 230.10(a)(3).*

Response: DEIS Section 2.0 clearly defines the project's purpose and need. As Appendix O and other parts of the EIS/GRR describe in detail, numerous potential methods [structural/nonstructural] were considered. All measures that had the potential to reach the project's objective were evaluated based on their technical, economic, and environmental effects. EIS Appendix H, 404(b)(1) Evaluation, contains a full discussion of practicable alternatives, demonstrating there is no practicable alternative to the SHEP, taking into account cost, existing technology, and logistics in light of overall project purposes.

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765-DC-149-EV32

Comment: *The Section 404(b)(1) Guidelines prohibit authorization of a discharge of dredged or fill material that "[c]auses or contributes . . . to violations of any applicable State water quality standard." 40 C.F.R. § 230.10(b)(1). The DEIS shows that the Project would contribute to existing violations of numeric water-quality standards in the Savannah Harbor, which is already impaired by inadequate dissolved oxygen DO levels. The DEIS further shows that the Project would cause or contribute to violations of narrative water quality and antidegradation standards by damaging the aquatic ecosystem and eliminating or impairing existing uses. In addition, the DEIS fails to adequately analyze and disclose impacts to water quality and the level of uncertainty in the analysis conducted, suggesting that additional or greater violations may also result.*

Response: With its mitigation plan, the SHEP would not violate the Clean Water Act or the Section 404(b)(1) Guidelines. The EIS describes how the project will avoid, minimize, and compensate (mitigate) for potentially significant adverse environmental impacts to ensure compliance with the Clean Water Act. The States of Georgia and South Carolina have issued Section 401 water quality certifications with conditions to ensure the project will comply with state water quality standards established under the Clean Water Act. EIS Appendix H, Section 404(b)(1) Evaluation, analyzes and demonstrates compliance with the Section 404(b)(1) Guidelines.

As to the level of uncertainty, in EIS-Section 5.1.2.1 Procedures, the following is stated: *The Water Quality Interagency Coordination Team assisted in the application of EPA's model on this project. EPA, USFWS, NMFS, USGS, SC DHEC, GA DNR-EPD and the Corps agreed in 2006 that the enhanced model was suitable for use in evaluating potential impacts from this proposed harbor deepening project. The Corps had an Independent Technical Review performed of the model by ERDC. Their review focused on the model grid representation, input parameters, and existing conditions calibration. The reviewer stated that the model was acceptable for impact evaluation purposes on this project. The ERDC ITR did not include analysis of the model programming, but rather the application of the model to Savannah Harbor. The EFDC and WASP models are on a Corps' "allowed for use" list of approved engineering models.*

The District's use of these state-of-the-art hydrodynamic models does not discount the risk and uncertainty associated with water quality and mitigation. In fact, few organizations have more experience/expertise in addressing the complexities of landscape water resource projects.

Throughout the EIS, the District detailed how model uncertainties were realized and considered. Section 8 and Appendix Q of the EIS are examples of risk/uncertainty being discussed in detail. Section 12 in the GRR considered the following uncertainties: Economic Analysis Uncertainty, Jasper County Terminal Sensitivity Analysis, Alternative Sensitivity Analyses Cost Risk Analysis, Chloride Mitigation Costs, Environmental Impact and Mitigation Uncertainty, Uncertainty in Salinity Predictions, Risk with Salinity Predictions, Uncertainty in Dissolved Oxygen Predictions, Risk with Dissolved Oxygen Predictions, Uncertainty in Biological Responses, Risk in Biological Responses, Risk in Sea Level Change Assumptions. Section 15 in the Engineering Appendix of the GRR also speaks to the risk and uncertainties associated with a project of this magnitude.

765-DC-149-EV33

Comment: *The DEIS admits that the Project will contribute to the existing violations of DO standards by exacerbating this impairment. Specifically, the DEIS admits that the proposed Project will have additional adverse impacts to DO levels. See, e.g., DEIS at 5-48 (stating that "[d]eepening the navigation channel would adversely impact dissolved oxygen levels in the harbor"); id. at App'x S p. 51 (same). And, in Table 5-19, it sets forth modeling results and a narrative that describes the Table as showing "a substantial decrease in dissolved oxygen levels" in "critical cells." DEIS at 5-43; see also App'x S p. 48 (same).26 Moreover, the DEIS predicts 1-2 percent increases in the percentage of the harbor's waters violating DO standards. DEIS at 5-42. Because the Project will admittedly contribute to and cause further violations of DO standards in an already impaired waterway, approval of this Project is prohibited by Section 404(b)(1) of the CWA.*

Response: The referenced sections of the DEIS [in this comment] describe adverse conditions resulting from reduced dissolved oxygen occurring in the absence of mitigation. The District recognizes that SHEP would impact dissolved oxygen levels unless mitigation is provided. The comment, however, overlooks the fact that a vital component of the proposed project is its mitigation plan, which includes oxygen injection system to address those specific adverse consequences. In fact, although the system is designed to remove the project's impacts on the harbor's dissolved oxygen regime, it would also provide some incremental improvements to the status quo.

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765-DC-149-EV34

Comment: *The Project would violate these standards by impairing existing and classified uses and eliminating conditions necessary for the survival of a balanced indigenous aquatic community. In particular, the Project will cause deterioration of DO levels and saltwater intrusion. The decline in DO concentrations represents "a major concern for all fish and aquatic organisms." See Expert Report of Shawn P. Young, Ph.D. at 6 (attached hereto as Ex. E) (hereinafter referred to as the "Young Report"). Increased salinity impacts "the aquatic community as a whole, including freshwater marshes," and affects shortnose-sturgeon and striped-bass habitat. Id. at 9. It may also change the presence and abundance of benthic invertebrate and forage fish species. Id. at 4-5, 7, and 9. The Project's adverse impacts, especially with respect to DO and salinity, threaten to violate water quality standards by precluding the survival and propagation of the "natural, diverse biotic community" indigenous to these waters. S.C. Code Ann Regs § 61-68(B)(11), (G)(10)-(12). Most notably, the Project could "preclude" striped bass restoration in the Savannah River and possibly destroy the fishery, which has been described as a nationally important resource. Tier I FEIS at H-62 & H-205 (comments of U.S. Fish and Wildlife Service and Georgia Department of Natural Resources on Tier I DEIS); SELC, Comments on Tier I FEIS (Oct. 19, 1998). "[H]istorically, the Savannah River was Georgia's most important striped bass fishery," DEIS at 4-21, but it suffered a dramatic decline after the Corps grossly underestimated impacts of its previous activities, Young Report at 3, 15. And, while the Corps proposes a striped-bass stocking program as mitigation, even assuming the program were fully funded and implemented, under the CWA and applicable water quality standards, such a program could not adequately compensate for the adverse impacts and resulting violations. The CWA and state standards require preservation of the chemical, physical, and biological integrity necessary to support a "self sustaining" indigenous aquatic community; S.C. Code Ann Regs § 61-68(B)(11); 33 U.S.C. § 1313(d) (requiring states implement additional measures where existing discharge restrictions do not adequately protect the "protection and propagation" of a "balanced, indigenous population of shellfish, fish, and wildlife" (emphasis added)).*

Response: The quoted sections of the EIS discuss potential project impacts if **no** mitigation occurs. In fact, a vital component of the proposed project is its mitigation plan, which includes an oxygen injection system to address those specific adverse consequences. Studies by independent engineering firms identified the use of an injection system [Speece Cones] as the most cost-effective method to address decreased dissolved oxygen levels in the post-project harbor. Another consultant [Tetra Tech] used the various hydrodynamic and water quality models to design the specifics of the noted dissolved oxygen system. The systems that the District has proposed would result in a minor net improvement to the estuary's DO levels. EIS Table 5-28 titled, *Percent of Cells with Improvement in D.O. Levels Over Existing Conditions* demonstrates the extent of improvement to the harbor's DO levels.

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765-DC-149-EV35

Comment: *EPA regulations require state water quality standards to incorporate an "antidegradation policy" sufficiently protective to ensure that, at a bare minimum, "[e]xisting instream water uses and the level of water quality necessary to protect the existing uses shall be maintained and protected" in all waters. 40 C.F.R. § 131.12(a)(1) (2011); see also 33 U.S.C. § 1313 (dictating required content of state water quality standards). "EPA has explained that under its antidegradation regulation, 'no activity is allowable . . . which could partially or completely eliminate any existing use.'" PUD No. 1 of Jefferson County, 511 U.S. at 718 (alteration in original) (citing EPA, Questions and Answers on Antidegradation 3*

(Aug. 1985)). EPA has further explained that "[w]ater quality should be such that it results in no mortality and no significant growth or reproductive impairment of resident species," and "[a]ny lowering of water quality beyond this full level is not allowed." EPA, Questions and Answers on Antidegradation 7 (Aug. 1985), available at http://www.epa.gov/waterscience/standards/library/antidegqa.pdf (last visited Jan. 24, 2011).

Response: With the proposed mitigation in operation (see EIS Section 5.0 andAppendix C Mitigation Planning), SHEP will not degrade the water quality in either Georgia or South Carolina. The States of Georgia and South Carolina have issued Section 401 water quality certifications for the SHEP with conditions to ensure the project will comply with state water quality standards established under the Clean Water Act.

Section 5 in Appendix C Mitigation Planning discusses water quality issues and states: *The Corps used the hydrodynamic and water quality models to identify many of the impacts to natural resources from the proposed project alternatives. These included impacts to salinity, water quality, wetlands, and fisheries. Impacts to other resources were evaluated using separate analyses. Those evaluations included potential impacts to the drinking water aquifer, adjacent ocean beaches, river shorelines, and air quality. After the expected impacts to the aforementioned resources were identified, the Corps used the hydrodynamic and water quality models to evaluate ways to reduce impacts.*

Section 6 in Appendix C also discusses the various mitigation plans that would avoid, reduce, and compensate for water quality impacts.

Table 5-28 in the EIS shows the incidental improvements to DO that would result if the proposed DO systems are implemented along with harbor deepening.

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765-DC-149-EV36

Comment: *Both the DEIS and GRR state that mitigation, through the use of Speece Cones to artificially inject oxygen into the water, will fully offset decreases in DO with incidental benefits. GRR at 192; DEIS at 5-51. More specifically, to mitigate the ways in which the deepening proposal will further exacerbate DO problems in the River, the Corps has "identified use of Speece cones as the specific technique to inject oxygen into the water . . . ." GRR, App'x B at 30. These systems would be land based, with water being withdrawn from the river through pipes, then treated and returned to the river. GRR, App'x B at 30. The water intake structure would include screens to reduce the intake of trash and other suspended solids. GRR, App'x B at 30. The intake and discharge would be located along the side of the river and not extend out into the navigation channel. GRR, App'x B at 30. For a number of reasons, the Corps cannot lawfully rely on this uncertain, unproven, and potentially unfunded mitigation plan in assessing the impact of the Project on DO levels.*

Response: The District, in partnership with Georgia Ports Authority, conducted extensive analyses regarding water quality issues. The studies concluded that SHEP, without mitigation, would impact dissolved oxygen levels. The District and Georgia Ports Authority then analyzed potential strategies for mitigating impacts to dissolved oxygen levels. The District concluded that dissolved oxygen impacts can be mitigated through dissolved oxygen systems. Dissolved oxygen injection systems have been used successfully at Corps reservoir projects in the Savannah District and elsewhere around the world. The District analyzed different oxygen injection systems. Most germane in this regard would be the demonstration project that established the capability of the Speece Cones to add oxygen to the estuary

without causing other adverse effects. The results of that effort are described in the MACTECH Engineering report titled "Savannah Harbor Reoxygenation Demonstration Project", dated January 2008 [and subsequent reports].

Tetra Tech developed the design of the oxygen injection systems. The report titled, *Oxygen Injection Design Report Savannah Harbor Expansion Project*, dated October 2010, describes this effort. The report is included as part of the Engineering Appendix supplemental materials in the GRR. Both the design analyses and the demonstration project indicate that Speece Cones are an effective means to restore [and improve] DO post-deepening.

Moreover, the Georgia and South Carolina water quality certifications ensure Savannah Harbor dredging operations are conducted in a manner to maintain specified water quality standards. No dredging may occur if the dissolved oxygen levels fall below the specified dissolved oxygen levels. These conditions add protection to the Savannah River estuary so that dredging will not result in unacceptable dissolved oxygen levels.

765-DC-149-EV37

Comment: *According to the GRR, currently, the Savannah District annually receives approximately $13 million for operation and maintenance ("O&M") dredging and maintenance of the upland disposal areas. This does not include funds for dike raising, dike maintenance, and mosquito control. GRR at 220. The proposed sill to be constructed at the eastern edge of the sediment basin as part of the SHEP proposal will cause the basin to fill, resulting in an increase of O&M dredging and maintenance costs to over $24 million. GRR at 220. Against this backdrop, the "Dissolved Oxygen facilities will be constructed and maintained by the Corps." GRR, App'x B at 5. The costs for operating the dissolved oxygen injection systems are based on their continued operation for a period of 180 days per year. Included in the annual O&M costs are the replacement costs for the Speece cone and intake and discharge lines at 40 year intervals; and replacement of the oxygen flow control, oxygen generator and side stream pump at 20 year intervals." GRR at 220. In sum, the annual operating costs for the Speece Cones are anticipated to be more than $1.3 million, and the Corps – and not GPA – will be responsible for this cost. It also does not appear that the Corps has provided any financial assurances that it will have the funding to operate and maintain the DO injection system for the length of the Project. Instead, it appears as if the Corps will have to rely on the annual appropriations process to fund this significant annual cost.*

Response: The Corps will document in the project Record of Decision its binding commitment to install, operate, and maintain the dissolved oxygen injection system in accordance with the project mitigation plan subject to Congressional appropriation of funds for the project, and will make the dissolved oxygen injection system a top priority for annual operation and maintenance (O&M) funds appropriated and received for the project, above normal maintenance requirements. See also response to next comment.

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765-DC-149-EV38

Comment: *This feature of the mitigation plan conflicts with the new mitigation rules promulgated under the CWA.27 Among other things, the Mitigation Rule was intended by the EPA and Corps to "improve[] the planning, implementation and management of compensatory mitigation projects by . . . requiring . . . assurances of long-term protection of compensation sites, financial assurances, and identification of the parties responsible for specific project tasks." 73 Fed. Reg. at 19,594. Under the Rule, mitigation plans must contain a long-term management plan, adaptive management plan, and financial assurances. Specifically, the Rule states that the "district engineer shall require sufficient financial assurances to*

ensure a high level of confidence that the compensatory mitigation project will be successfully completed, in accordance with applicable performance standards." Id. at 19,638 to 19,639; codified at 33 C.F.R. § 332.1(n)(1) (2011). Here, despite the importance of mitigating for further exacerbating the River's already severe dissolved oxygen problems and the exorbitant and ongoing cost of the technology selected to perform the mitigation, there is no reasonable assurance provided that the Corps will be able to successfully operate and maintain this element of the mitigation plan since it appears that it has been made subject to the annual appropriations process. As such, this mitigation measure fails to provide reasonable assurance (and similarly fails to comply with the Mitigation Rule).

Response: The District prepared a long-term management plan with an adaptive management element specific to the mitigation of impacts on dissolved oxygen. Appendix D (Monitoring and Adaptive Management Plan) describes the cost estimates for adaptive management to modify the project's mitigation features [as necessary]. To date, these estimates are supported by the facts. It should be noted that the costs for mitigation and adaptive management requirements exceed (on a percentage basis) the normal allocation for a more routine Corps of Engineers water resource development project. SHEP would remain in a construction status (Construction Funding) until all construction is complete, the post-construction monitoring is complete, and any required adaptive management measures are implemented and confirmed to be effective. If more funds are required to conduct additional monitoring or modify any of the mitigation features associated with the project, these funds would be requested through the annual construction budget process. Funding requests for mitigation measures receive high priority because they must be secured before project construction can be completed. Following completion of these activities, the project would enter the operation and maintenance phase, which becomes responsible for costs associated with maintaining the mitigation features of the project, e. g., an oxygen injection system. Funding requests for mitigation features for projects (either in the construction or operation/maintenance) phases receive the Corps' highest priority.

Adaptive management funds would be requested as part of the construction funds for the project. These funds could be supplemented during annual budget requests for construction general funds. The project is cost-shared and the local sponsor (Georgia Department of Transportation) would also be responsible for providing its annual share of funding.

The concerns about financial assurances, as defined in the 2008 Final Mitigation Rule, and its application toward civil works projects like the SHEP are unjustified. Regulation 33 CFR 332.3 (n)(1) states, *"The district engineer shall require sufficient financial assurances to ensure a high level of confidence that the compensatory mitigation project will be successfully completed, in accordance with applicable performance standards. In cases where an alternate mechanism is available to ensure a high level of confidence that the compensatory mitigation will be provided and maintained (e.g., a formal, documented commitment from a government agency or public authority) the district engineer may determine that financial assurances are not necessary for that compensatory mitigation project."* The SHEP is a civil works project that will receive funding from the federal government. Authorization of this project by the Assistant Secretary of the Army in conjunction with annual Congressional appropriations for its operation/maintenance provides sufficient documentation that the compensatory mitigation will be maintained. Similarly, the Georgia Department of Transportation (another government agency within the State of Georgia) would be committed to providing its share of project costs. Thus, there is little risk that mitigation features like the D.O. injection system will be eliminated during the project's life.

Of note, the 2008 Final Mitigation Rule has significant application within the USACE's Regulatory Program. The Rule was used as the principal document for updating the USACE's mitigation banking program in the State of Georgia. Both commercial and county-managed mitigation banks exist within the state. Financial assurances are required for commercial, private-based mitigation banks where the responsible party (i.e., banker) could abandon a mitigation bank before it achieves success. However, county-owned mitigation banks use credits exclusively for the purpose of mitigating public projects (i.e., road improvement, utility lines, etc.) and are not required to provide financial assurances. Likewise, the Georgia Department of Transportation (state agency) is not required to provide financial assurances for its mitigation banks. The reason for this difference in policy is based on 33 CFR 332 (n)(1) of the Final Mitigation Rule, i.e., government entities are neither transient nor fleeting. Similarly, the federal government and the Georgia Department of Transportation are not required to provide financial assurances for the same reasons.

The Corps will document in the project Record of Decision its binding commitment to install, operate, and maintain the dissolved oxygen injection system in accordance with the project mitigation plan subject to Congressional appropriation of funds for the project, and will make the dissolved oxygen injection system a top priority for annual operation and maintenance (O&M) funds appropriated and received for the project, above normal maintenance requirements.

There would be 12 Speece Cones total at three different locations. The proposed Speece Cone technology has been used in other applications worldwide for 30 years and underwent on-site testing in Savannah Harbor during 2007. The DO system design for Savannah Harbor already includes reserve capacity and an operational back-up unit at each of two installation locations. The estimated life of the cones and lines is 40 years and the estimated life of the controls, oxygen generator, and pumps is 20 years. During construction, there would be a Transfer Efficiency Study to optimize the DO system operation. During the project's 10-year post-construction monitoring period, needed adjustments and modifications to the DO system would be funded through the project's $18 million Adaptive Management plan. Successful installation, operation, and maintenance of the DO system is a requirement of several approvals for the project, including Georgia and South Carolina's water quality certifications.

765-DC-149-EV39

Comment: *In addition to the inadequacy of the purported mitigation, the Corps has not undertaken a sufficient analysis of the Project's impacts to DO. The Corps has not accounted for the full scope of the dredging required by the Project. In particular, it does not appear that the Corps considered the "[t]wo feet of allowable overdepth and up to 6 feet of advance maintenance in selected areas" that "would also be included for the proposed action." DEIS at 3-22. This added excavation and the potential for erosion in the loosened channel would further reduce DO. See DEIS at 5-37 (saying "as the channel depth increases, the ability of oxygen to reach the river bottom decreases, causing lower average levels of dissolved oxygen at the bottom . . . ."). It apparently means that the actual channel depth resulting from the proposed Project could be as much as 56 feet. But, the DEIS and DO modeling appear to ignore what this might mean in terms of further deterioration in DO levels. As a result, the modeling conducted could not actually predict impacts to DO and salinity, nor could the Corps accurately assess impacts to aquatic resources. Cite report. If the Corps ignored the full scope of the dredging and attendant impacts to DO, it necessarily underestimated the negative impacts and the amount of mitigation that would be necessary to compensate for the impacts. And, it is not entitled to rely on inaccurate models to support its conclusions. Cf. Native Ecosystems Council v. U.S. Forest Serv., 418 F.3d 953, 964 (9th Cir. 2005) ("An agency may not rely on incorrect assumptions or data in an EIS.").*

Response: The District's hydrodynamic/water quality studies and resultant models included each alternative's authorized channel depth, including over-depth and advance maintenance. To evaluate each of the depth alternatives, the model grid within the channel was lowered by the appropriate amount, i. e., the 48' project depth (deepen by 6') model grid bathymetry depths were increased by 6'. The original model grid was based on actual annual surveys which included advance maintenance and over-depth. Therefore, the alternative project depths also accounted for any currently authorized advance maintenance and over-depth.

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765-DC-149-EV40

Comment: *Moreover, it also appears that although the locations of the injection cones are now different than previously identified, the Corps has not studied mixing or dispersion of the injected oxygen at these locations. The DEIS neither analyzes nor frankly discloses this change of plans. The Corps must explain the basis for this deviation from its plans and assess impacts of the altered location. It likewise must account for the altered costs associated with the move. The DEIS recognizes that operational expense increases with distance from the areas needing increased DO. DEIS App'x C p. 43. In redoing its fundamentally flawed economic analysis, the Corps will need to factor in this cost.*

Response: The details of the oxygen system locations and costs are presented in the *Oxygen Injection Design Report Savannah Harbor Expansion Project*, dated October 2010. This report, prepared by Tetra Tech, is included as part of the Engineering Appendix supplemental materials in the GRR. That report describes the mixing and dispersion analyses that were performed. Section IV (D) of EIS Appendix C describes the changes that occurred in the DO system designs through time.

765-DC-149-EV41

Comment: *More generally, the DEIS understates the uncertainty of and risks associated with both the projections of water quality impacts and the proposed mitigation. While the DEIS relies on a demonstration project in support of its conclusions, the results of that study were inconclusive. In fact, FWS has explained that, "There is a great deal of risk and uncertainty regarding impacts and the channel and flow modifications and dissolved oxygen mitigation plans. Based on the available information, there is a high degree of uncertainty as to how effective oxygen injection would be. See DEIS, App'x E (letter from Timothy N. Hall (FWS) to Colonel Edward J. Kertis, Jr. (Corps) dated Nov. 4, 2008). The Corps' failure to adequately analyze the Project's impacts to DO and the efficacy of the purported DO mitigation precludes reliance on the DO injection system as a mitigation technique.*

Response: The risks and uncertainties of the proposed dissolved oxygen system for Savannah Harbor are fully discussed in the Risk and Uncertainty Analysis EIS Appendix Q]. In summary, it was concluded that the model's errors in predicting dissolved oxygen levels present little risk for decision-makers. Moreover, the results of the oxygen demonstration project together with intensive post-construction monitoring further reduce the risks associated with project implementation. The adaptive management plan provides the means to modify the oxygen injection systems or their operation. These alterations could range from adjusting the amount of injected oxygen, modifying the oxygen injection equipment, or adding to the number of sites where oxygen is injected. See also responses to other comments, including explanations that dissolved oxygen injection systems have been used successfully at Corps reservoir projects in the Savannah District and elsewhere around the world, and that Georgia and South Carolina water quality certifications require Savannah Harbor dredging operations are conducted in a manner to maintain specified water quality standards.

765-DC-149-EV42

Comment: *Moreover, as with the mitigation proposed for striped bass, the mitigation proposed for DO, even if assumed to be fully funded and effective, could not replace what was lost. As the DEIS explains, the Project would adversely affect DO levels in three ways. First, the increased depth would decrease the ability of oxygen to reach the river bottom and thereby cause lower DO levels at the bottom of the river. DEIS at 5-37. Second, by enlarging the channel prism, the Project would move additional saltwater into the upper part of the harbor and into the estuary, which decreases those waters' capacity to accept oxygen from the air. Id. Third, as the channel prism enlarges, velocity decrease, reducing mixing through the water column. Id. Thus, the Project's effects reduce DO levels by reducing its "reaeration capacity." SEG DO/TMDL Issue Summary, at 2, available at http://sav-harbor.com/WP/DO_WP.pdf (last visited Jan. 24, 2011). Injecting air into the water from land-based Speece cones cannot restore the aeration capacity of the waterway. And, as discussed above, the CWA requires that the functions and values necessary to support a "self-sustaining," aquatic ecosystem, i.e. one not dependent on anthropogenic intervention.*

Response: The oxygen injection systems have been designed to remove the incremental impacts of the SHEP on the dissolved oxygen regime in the harbor and will effectively mitigate for its construction. The design and feasibility of the systems are detailed in the report titled *Oxygen Injection Design Report Savannah Harbor Expansion Project*, dated October 2010. This report was prepared by Tetra Tech and is included as part of the Engineering Appendix supplemental materials in the GRR. Both the design analyses and the demonstration project indicate that the Speece Cones would be an effective measure to elevate D.O. in the deepened harbor. Due to the spacing of the systems, the dissolved oxygen regime would be improved in over 90 percent of the estuary, compared to existing conditions. See also responses to other comments regarding dissolved oxygen.

765-DC-149-EV43

Comment: *Finally, the Corps must also take into account that the proposed mitigation would not be entirely benign. The DEIS recognizes that fish would become entrained in the oxygen injection system. And, although it states that approach velocities will be adjusted to "minimize" such impacts, it does not analyze or discuss what the impacts will be. DEIS at 5-48. The oxygeninjection system will also have noise impacts to the surrounding areas and greenhouse gas emissions, which the Corps must take into fully consider.*

Response: The District considered potential adverse impacts of the design during the development process. The potential for fish entrainment would be minimized by keeping intake flow velocities at less than 0.5 feet per second, a rate that natural resource agencies identified as being adequate to protect fishery resources. The intake velocity and intake screens would minimize significant entrainment of adult/juvenile fish and many other aquatics. Project designers are also aware of other potential issues related to operating the Speece cones, e.g., noise abatement measures will be included in the final project design, if necessary. However, the District conducted a noise evaluation and found that noise from operating the D.O. systems would be indistinguishable from background noise levels.

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765-DC-149-EV44

Comment: *The CWA requires the Corps to seek state water quality certification for discharges of dredged or fill material into waters of the U.S." 33 C.F.R. § 336.1(a)(1); see also 33 C.F.R. § 337.10 (2011); 33 C.F.R. § 338.2(c) (2011). To certify a project as consistent with its water quality standards, South Carolina must have "reasonable assurance" that the Project will not violate those standards. S.C. Code*

Ann. Regs. § 61-101(A)(4). "The water quality standards include the uses of the waters, the numeric and narrative criteria, and the antidegradation rules contained in [Regulation 61-68]." Id. § 61-68(A)(1). As explained above, the proposed Project would violate a number of these standards. See infra at Section II.A.2. And, more specific regulatory provisions addressing the state's review under Section 401 require that South Carolina deny the requested certification.

Response: In this and other comments, it is contended that the project does not qualify for a Section 401 water quality certification from South Carolina or Georgia. However, with its mitigation plan (see EIS Section 5.0 and Appendix C, Mitigation Planning), the SHEP will not degrade water quality in either Georgia or South Carolina. The States of Georgia and South Carolina have issued Section 401 water quality certifications for the SHEP with conditions to ensure the project will comply with state water quality standards established under the Clean Water Act. See also response to comment 765-DC-149-EV35.

765-DC-149-EV45

Comment: *Consistent with the CWA's mandate, South Carolina's water quality standards emphasize a "preventative approach" that recognizes the difficulty of restoring water quality once degraded. S.C. Code Ann. Regs. § 61-68(A)(3). To that end, Section 401 certification must be denied if the "the proposed activity permanently alters the aquatic ecosystem in the vicinity of the project such that its functions and values are eliminated or impaired." S.C. Code Ann. Regs. § 61- 101(F)(5)(a). As explained above, here, the proposed Project would result in severe and permanent adverse impacts to the affected waters. See infra at II.A.2.(d).*

Response: With the proposed mitigation in operation (see EIS Section 5.0 and Appendix C, Mitigation Planning), the SHEP will not degrade water quality in either Georgia or South Carolina. The States of Georgia and South Carolina have issued Section 401 water quality certifications for the SHEP with conditions to ensure the project will comply with state water quality standards established under the Clean Water Act. See also response to previous comment 765-DC-149-EV35.

765-DC-149-EV46

Comment: *Similarly, if "there is a feasible alternative to the activity, which reduces adverse consequences on water quality and classified uses," the proposed activity cannot receive certification. Id. 61-101(F)(5)(b). The availability of feasible alternatives to the proposed Project, discussed in detail in Section I.H. above, precludes issuance of a Section 401 water quality certification.*

Response: The SHEP NEPA alternatives analysis, discussed and explained above in response to comment 765-DC-149-EN01, demonstrates there is no feasible alternative to SHEP. In South Carolina, a feasible alternative must be reasonable, taking into account the likelihood that it will achieve the project purpose, the cost of the alternative, and other factors – and it must reduce adverse consequences on water quality. A proper feasible alternatives analysis includes analysis of alternative locations and sites, analysis of methods of design or construction, and analysis of the no-action alternative. The Corps' alternatives analysis for SHEP fully complied with these principles.

Originally, the local sponsor proposed the project with the purpose of improving navigation in Savannah Harbor. The Corps had a duty to take that project purpose into account. In addition, the US Congress then authorized the specific project (subject to further study and approval by other federal agencies). 1999 Water Resources Development Act, Pub. L. No. 106-53, sec. 101(b)(9). As part of the studies authorized by Congress, the Corps conducted a wide-ranging, multi-level alternatives analysis that included (1) the Regional Port Analysis (GRR, Appendix A, Attachment 6), (2) a Multiport Analysis (GRR,

Appendix A, Attachment 4), (3) an analysis of a reasonable range of alternative locations or sites along the Savannah River (EIS, sec 3.0 and Appendix O; GRR Section 6 and Appendix D), (4) an analysis of six different depths of harbor deepening along the Savannah River (DEIS, sec. 3.0 and Appendix O; GRR, various sections)(methods of design or construction), and (5) the no-action alternative (EIS, at 3.01.1 and Appendix O; GRR Section 6.12).

The pertinent conclusions relative to the wide range of alternatives studied for SHEP are: (1) there is no feasible alternative to improving Savannah Harbor because the major South Atlantic ports will experience so much cargo growth from 2005 to 2050 they will all need deepening or improvement, (2) no one South Atlantic port has the ability to expand to could accommodate all the growth in container volume expected in the region, (3) the proposed deepening of Savannah Harbor would not divert container traffic from other ports because the shipping cost efficiencies would not outweigh the additional landside transportation costs, and (4) at this time a proposed Jasper County terminal is not an alternative in lieu of improving Savannah Harbor for various reasons including the tremendous cost involved (at least $4 billion), the environmental impacts, and the timing (a Jasper terminal does not exist at present and cannot be constructed in time to meet the growth in demand Savannah and other South Atlantic ports are currently facing).

Moreover, South Carolina's Coastal Management Plan (SCCMP) specifically establishes a strong preference for developing ports in industrialized areas that have existing infrastructure. See SCCMP, Part III, Transportation Facilities, at III-19 – III-20. This preference plus the high cost associated with developing a Jasper terminal and the approximately twenty years required to study, permit, and construct that project, weigh heavily against finding a Jasper terminal alternative to be a feasible alternative to improving Savannah Harbor.

The SHEP and a Jasper terminal are not viewed by the Jasper Ocean Terminal project office as alternatives. Rather, the project office believes both ports are needed. A March 11, 2011 "Update" from the Jasper Ocean Terminal project office contains numerous statements that SHEP is necessary and beneficial for the Jasper Ocean Terminal project ("The development of the Jasper site is predicated on the success of ports in Savannah and Charleston. A completed SHEP and the planned expansion of Charleston are the first steps . . . ."). The Update states that the Jasper Ocean Terminal will handle container volumes in excess of what an improved (deepened) Savannah Harbor or Charleston Harbor could handle. The Update also confirms that a Jasper terminal will cost $4 billion (a more recent estimate by the SCSPA is $5 billion).

In light of the information provided in the Update, combined with the fact that a Jasper terminal would have its own environmental impacts requiring mitigation (Regional Port Analysis, DGRR, Appendix C, Attachment 6, Final Report, at 14-20, and associated Interim Reports), a Jasper terminal is not presently a feasible alternative to SHEP. After extensive study, no other specific feasible alternative was identified or found.

765-DC-149-EV47

Comment: *In addition, certification must be denied if "the proposed activity adversely impacts waters containing State or Federally recognized rare, threatened, or endangered species." S.C. Code Ann. Regs. § 61-101(F)(5)(c). Here, the DEIS and GRR acknowledge that the proposed Project will have significant adverse impacts on the federally endangered shortnose sturgeon. Indeed, the DEIS admits that "substantial adverse impacts" remain to shortnose sturgeon habitat even in the seemingly unlikely event that the proposed flow alterations and oxygen-injection system function as hoped and, in fact, benefit*

sturgeon. DEIS at 5-68; but see NRDC v. Kempthorne, 506 F. Supp. 2d 322, 355 (E.D. Cal. 2007) (stating, in ESA context, that "at a minimum, a mitigation strategy must have some form of measurable goals, action measures, and a certain implementation schedule"); Nat'l Wildlife Fed'n v. Nat'l Marine Fisheries Serv., 254 F. Supp. 2d 1196, 1211-12 (D. Or. 2003) (finding agency's reliance on mitigation measures that were not reasonably certain to occur to be arbitrary and capricious).

Response: The project includes mitigation to compensate for the loss of Shortnose sturgeon habitat in the estuary by providing access to historic and additional upriver spawning areas. The National Marine Fisheries Service – which administers the Endangered Species Act for this species – has stated that the proposed mitigation effectively balances the impacts to the Savannah River population of SNS. NMFS has issued a Biological Opinion for the project which includes terms and conditions protecting the Shortnose sturgeon, including construction of a fish passage structure at New Savannah Bluff Lock and Dam. The project's compliance with the ESA regarding Shortnose sturgeon, Atlantic sturgeon, and other threatened and endangered species is fully documented in Sections 4.09, 5.11 EIS-Appendix B (BATES), and EIS Appendix Z (BO). Also, the Georgia and South Carolina water quality certifications require implementation of fish passage approved by NMFS as a condition, which provides additional assurance adequate mitigation will be implemented.

765-DC-149-EV48

Comment: *Finally, certification must be denied if: "the proposed activity adversely impacts special or unique habitats, such as National Wild and Scenic Rivers, National Estuarine Research Reserves, or National Ecological Preserves, or designated State Scenic Rivers." S.C. Code Ann. Regs. § 61-101(F)(5)(d). Here, the DEIS acknowledges that the proposed Project will severely impact the Savannah National Wildlife Refuge, most significantly through the destruction of tidal freshwater marshes. See infra Section VIII.C.; DEIS at 5-117. For that reason as well, certification must be denied.*

Response: Section 5.01 and Appendix C-Mitigation Planning discuss the plan to mitigate impacts that would occur to wetlands on the Savannah National Wildlife Refuge. With the proposed mitigation, the USFWS concluded that the impacts of the proposed project on the Refuge are acceptable. No National Wild and Scenic Rivers, National Estuarine Research Reserves, National Ecological Preserves, or designated State Scenic Rivers are located within the project's potential impact area.

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765-DC-149-EV49

Comment: *The proposed Project would violate the Georgia Water Quality Control Act, O.C.G.A. §§ 12-5-20 et seq. ("GWQCA"), and therefore the Georgia Environmental Protection Division ("Georgia EPD" or "EPD") should not issue a CWA Section 401 Water Quality Certification ("WQC") in connection with this Proposal.*

Response: On February 16, 2011, the Georgia Department of Natural Resources, Environmental Protection Division issued the Corps of Engineers a Section 401 Clean water certification for the project, with conditions to protect state water quality standards.

765-DC-149-EV50

Comment: *As a threshold matter, we are concerned with Georgia's approach to granting a WQC for the Project. Given the size and scope of the Project and the Project's significant environmental impacts, the South Carolina Health and Environmental Control Department has determined its review may require the*

statutorily-provided time period of one year to consider the Corps' request for a WQC. In contrast, Georgia EPD has already assured the Corps that it will receive certification in the coming months while, at the same time, acknowledging the agency has not had time to complete its review.29 EPD is apparently operating under the mistaken assumption that the Corps is entitled to a WQC. To the contrary, the currently proposed Project would violate water quality standards under Georgia law. Considering the Project's degradation on water quality, it is imperative that EPD approach its obligations under the CWA in a cautious and critical manner. Consistent with this approach, and in compliance with 33 U.S.C. § 1341(a)(1), EPD should afford the citizens of Georgia an opportunity to review and comment on a draft WQC prior to reaching a final decision in this matter.

Response: With the mitigation plan in place, the proposed action would not degrade or violate any Georgia water quality standard. On February 16, 2011, Georgia issued a Section 401 water quality certification for the project with conditions to protect state water quality standards.

765-DC-149-EV51

Comment: *The GWQCA's primary objective is to "enhance water quality and prevent pollution." See Ga. Comp. R. & Regs. r. 391-3-6-.03(2)(a). SHEP's expected water quality degradation flies in the face of Georgia's Anti-Degradation Policy, which states that "[e]xisting instream water uses and the level of water quality necessary to protect the existing uses shall be maintained and protected." Id. at 391-3-6-.03(2)(b)(i) (emphasis added). The lower Savannah River that would be affected by the Project is already listed as impaired for dissolved oxygen under CWA Section 303(d). The Corps expressly recognizes that the Project "would adversely affect DO, a critical resource," DEIS at 5-37 and, thus, as discussed in detail in Section II.A.2(d), the Project would exacerbate DO problems.*

Response: Studies by independent engineering firms identified oxygen injection as the most cost-effective method to address [elevate] DO levels in the deepened harbor. Another consultant [Tetra Tech] used the approved hydrodynamic and water quality models to design a dissolved oxygen system that would effectively eliminate adverse impacts on DO [all depths]. In fact, the proposed injection system will result in a minor net improvement to DO levels in the estuary. Table 5-28 titled, *Percent of Cells with Improvement in D.O. Levels Over Existing Conditions* shows the extent of this improvement. Additionally, the District would perform post-construction monitoring to ensure the DO systems provide their intended benefits. With the proposed mitigation in place, the harbor deepening would not degrade water quality [classified uses] in either Georgia or South Carolina.

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765-DC-149-EV52

Comment:

The Project Would Needlessly Thwart the Policies of South Carolina's Coastal Zone Management Program ("CMP"), in Violation of the Coastal Zone Management Act ("CZMA") and South Carolina Law. The DEIS and GRR set forth a fundamentally flawed and incomplete analysis of the Project's impacts and therefore fail to supply the "[c]omprehensive data and information," S.C. CMP at V-20, DHEC needs to properly review the Corps' consistency determination. See supra at I.E. For that reason alone, DHEC should object to the Corps' consistency determination. Moreover, even the limited analysis provided shows that the proposed Project would not be carried out in a manner consistent with South Carolina's CMP and will cause serious and unnecessary damage to critical areas of the State's coastal zone. Accordingly, DHEC should deny the Corps' certification request and insist that the Corps explore practicable and less damaging alternatives.

Response: As described in EIS Section 5.13, the Corps performed an analysis of the proposed project with respect to resources under South Carolina's program concerning Coastal Zone Management Consistency. The analysis of Coastal Zone Management Consistency for South Carolina can be found in Appendix J of the EIS. The Federal Consistency Determination found that construction of the SHEP in conjunction with implementation of the various mitigation features was fully consistent with the Coastal Zone Management Program of South Carolina. The Federal Consistency Determination was provided to the State for review during the comment period on the DEIS.

SC DHEC-OCRM provided the results of their initial review of the Federal Consistency Determination for South Carolina on January 25, 2011. At that time, SC DHEC-OCRM did not concur that the SHEP was consistent with the South Carolina Coastal Management Plan (SCCMP). Subsequently, the Corps met with SC DHEC staff and provided additional information to address their concerns. As a result of these meetings and the additional information the Corps provided, the SC DHEC Board determined on November 15, 2011 that they had been provided reasonable assurance that the SHEP is consistent with enforceable provisions of the SCCMP. The SC DHEC-OCRM removed their objection to the Corps' finding of Consistency for the SHEP. That approval for the South Carolina Federal Consistency Determination is included in EIS Appendix Z.

With the proposed mitigation, SHEP is fully consistent with South Carolina's Coastal Management Program (SCCMP). The Federal Consistency Determination for South Carolina has been updated in the Final EIS (Appendix J).

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765-DC-149-EV53

Comment: *As an initial matter, DHEC must deny certification under the CZMA for the same reason it must do so under Section 401 of the CWA. CZMA Section 307(f) "requires States to incorporate all requirements established pursuant to the Federal Clean Water Act and Clean Air Act into their management programs." S.C. CMP at V-11; see also id. at III-20(7) (mandating that "[p]roposed port development or expansion and operation must meet existing air and water quality standards"). Because the Project would violate water quality standards and the Corps' 404 Guidelines, and thus the CWA, see supra at II.A.2., it is inconsistent with the CWA requirements incorporated into the CMP. And, the Corps' failure to properly analyze and disclose air pollution impacts, see supra at I.E.1., precludes it from certifying consistency, as DHEC lacks reasonable assurance that the Project will not violate any CAA requirements. South Carolina's CMP requires that all port expansion projects meet air and water quality standards. CMP at III-20(7). And, the Project fails to comport with that mandate.*

Response: The project would not violate the Clean Water Act or any water quality standards and would not violate the Clean Air Act or any air quality standards. See other responses to comments regarding Clean Water Act and Clean Air Act compliance. South Carolina issued a Section 401 water quality certification for the SHEP contemporaneous with South Carolina's approval of the Federal Coastal Management Program Consistency Determination for South Carolina, as required by South Carolina regulation.

765-DC-149-EV54

Comment: *The CMP requires further that projects affecting navigation, such as this one, be coordinated with the South Carolina State Ports Authority ("SCSPA"). CMP III-21; see also. S.C. Code Ann. Regs. § 30-11(B)(2) (requiring DHEC to obtain "a certificate from the South Carolina State Ports Authority declaring*

that the proposed project or activity would not unreasonably interfere with commercial navigation and shipping" before issuing a critical area permit for projects in waterways used for commercial navigation and shipping or in areas set aside for port development in an approved management plan); id. § 30-1(A)(3) (stating that DHEC's critical area permitting regulations "are to be read as part of, and to be construed with, the policies set forth in the South Carolina Coastal Management Program"). The SCPSA has expressed concern that the Project, as currently proposed, would adversely impact its interest in and the potential for the Jasper Ocean Terminal. Letter to Dean Moss (Savannah River Maritime Commission) from Colden R. Battey, Jr. (SCPSA) dated Dec. 17, 2010. In particular, the disposal cells slated for use by the SHEP proposal could preclude construction of the Jasper terminal. Id. The Corps and GPA must address these issues in the FEIS and must coordinate with the SCPSA to ensure that the Project does not adversely affect South Carolina's overall interests in port development and navigation, as well as to ensure that all reasonable alternatives to and reasonably foreseeable impacts of the Project receive the legally mandated consideration.

Response: The District has coordinated with the SC DHEC-OCRM concerning its review of the project for consistency with the SC CMP. The process included issuing a Joint Public Notice advertisement in South Carolina newspapers, submitting a copy of the report, and providing the District's Consistency Determination. In 2010, the SCSPA did voice concerns that the proposed action would adversely impact its interest in eventually constructing the Jasper Ocean Terminal. However, this position directly conflicts with statements made in 2011 by the consultant employed by the JPO, of which SCSPA is a participating member. Specifically, the JPO consultant noted that placing new work sediments from the SHEP on Disposal Areas 14A and 14B would be very beneficial to a Jasper Ocean Terminal. That is, it would save the terminal's sponsors up to as much as $300 million by raising the site to a workable elevation. Therefore, if SHEP is constructed, it would benefit the development of a terminal in Jasper County by significantly reducing its initial construction costs. It should also be noted that in December 2011, the SC SPA announced it would suspend funding related to the estimated $5 billion Jasper terminal project. As explained in responses to other comments, the SHEP NEPA alternatives analysis fully considered a proposed Jasper terminal.

765-DC-149-EV55

Comment: *Finally, for the reasons discussed in Sections II.B. and V, infra, the proposed Project does not satisfy South Carolina's regulatory requirements pertaining to the "critical areas" of the coastal zone impacted by the Project. "The critical areas are of vital importance to the State." S.C. Code Ann. Regs. § 30-11(A). The CMP therefore prohibits dredging and excavation that would "contribute to water quality degradation" or result in "lethal fish entrapments." S.C. CMP at III-56. It likewise prohibits dredging for public projects in wetland areas unless the activity is water dependant and there are no feasible alternatives. Id. And, recognizing that the "creation and maintenance of navigational channels" is a "specialized form of dredging activity" with "a potential for severe environmental impacts," the CMP provides that such activity "should meet a demonstrated public need." Id. The Corps' proposal cannot be squared with these policies.*

Response: With the mitigation in place, the proposed action would not degrade water quality or include dredging/excavation that results in lethal fish entrapments. The proposed action of deepening the existing Federal navigation channel is a "water dependent" activity which will benefit international shipping, which the US Congress has identified as both a public and national interest. As explained in a previous response, the Corps properly determined there is no feasible alternative to SHEP.

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765-DC-149-EV56

Comment: *The Project is inconsistent with Georgia's Coastal Management Program ("GCMP") and therefore the Georgia Coastal Resources Division ("CRD") should not concur with the Corps' etermination of consistency. Under the Georgia Coastal Management Act, to attain consistency with GCMP, Georgia must determine that a project is consistent with state law regulating the state's coastal resources. See O.C.G.A. § 12-5-322(3), (12). For the following reasons, the Project does not comply with various state laws governing coastal resources and is inconsistent with the objectives of the GCMP.*

Response: As required by the Coastal Zone Management Act, the District prepared a Federal Consistency Determination based on the requirements of Georgia's Coastal Zone Act (Appendix I). That determination concluded that the SHEP is fully consistent with the enforceable policies of the Georgia Coastal Zone Act. The Coastal Resources Division of the Georgia Department of Natural Resources has generally approved that finding, subject to the District making some revisions to the dredged material disposal plan and providing some additional information. The dredged material disposal plan has been revised to meet the Coastal Resources Division's request, viz., the nearshore dredged material disposal sites at Tybee Island and the two offshore fish habitat enhancement areas have been eliminated. The District has also provided additional information to the Coastal Resources Division.

765-DC-149-EV57

Comment: *The GCMP's missions is to "balance economic development in Georgia's coastal area with preservation of natural, environmental, historic, archaeological, and recreational resources for the benefit of Georgia's present and future generations." GCMP at 25. One of the primary laws furthering this mission is Georgia's Coastal Marshlands Protection Act (CMPA), O.C.G.A. §§ 12-5-280 et seq. The CMPA regulates activities and structures in the state's marshlands, intertidal areas, mudflats, waters bottoms, and tidal wetlands. The DEIS states that the Project "would affect wetlands within the jurisdiction of the [CMPA]." DEIS, App'x I at 29. Specifically, the Project would convert at least 337 acres of tidal freshwater wetlands in the Savannah National Wildlife Refuge to brackish marsh and would destroy 15.68 acres of salt marsh on the Black River. Id. at 29. Despite the significant impacts to these unique resources, the DEIS concludes that with mitigation in the form of preservation and restoration the project is consistent with the GCMP and CMPA. See id. at 30. Notably, however, the CMPA does not include or contemplate mitigation as means of offsetting destruction of marsh or wetlands under CMPA's jurisdiction. Setting aside the proposed mitigation, the Corps should conclude that the destruction of 337 acres of freshwater wetlands included in the Refuge is not consistent with the GCMP's objective of providing a "coastal zone in which the area and functional integrity of wetlands that impact the coastal region of Georgia are maintained." GCMP at 29. The destruction of hundreds of acres of coastal wetlands and marshlands renders the Project inconsistent with the GCMP.*

Response: Contrary to the stated comment, the project would not destroy hundreds of acres of coastal wetlands and marshlands. The SHEP project would result in the loss of 15.68 acres of brackish marsh, for which it would restore approximately 28.8 acres of uplands to their previous marsh condition. The SHEP would indirectly impact additional wetlands by increasing salinity in upstream areas of tidal freshwater marsh, likely resulting in their conversion to brackish marsh. However, it is also likely that many of the emergent plant species associated with this impacted marsh would still flourish on those sites after project implementation. This statement is based on the fact that many plant species associated with freshwater systems are readily observed in environments that have been defined as brackish marsh (Latham et. al., 1994). Although some characteristics of the tidal freshwater marsh

would change as brackish marsh species increase in dominance, basic wetland functions associated with these systems would not change. A comparison of potential changes in wetland function between the two community types reveals only negligible differences. Water purification, flood protection, shoreline stabilization, groundwater recharge, stream low maintenance, retention of particles, surface water storage, subsurface storage, nutrient cycling, and values to society are effectively the same. While some reduction in the fish and wildlife element may take place, it would be minor when considering the total wetland function [along with the continued existence of freshwater species in wetland areas now characterized as brackish marsh].

As mitigation for this impact to tidal freshwater marsh, the SHEP mitigation plan includes a provision to purchase lands of ecological significance in the Savannah River Basin. These lands are properties already identified in the Savannah National Wildlife Refuge's Acquisition Plan. They would consist of bottomland hardwoods, maritime forest, and uplands dominated by deciduous forest and re-growth. The bottomland hardwoods are classified as palustrine forested, broad-leaved deciduous systems that are both temporarily and/or seasonally flooded. Preserving these areas would ensure their present wildlife habitat values are protected in perpetuity. Thus, the acquisition and preservation of these lands would replace the SHEP's minor species alterations to tidal freshwater marsh.

The District prepared a Federal Consistency Determination to address the enforceable policies of the Georgia Coastal Zone Program. The District determined that the SHEP is fully consistent with the enforceable provisions of the Georgia Coastal Marshlands Protection Act because the harbor deepening provides adequate mitigation for wetland losses. The Coastal Resources Division of the Georgia Department has concurred with this determination.

765-DC-149-EV58

Comment: *Among its coastal objectives, the GCMP aims to "[p]rovide a coastal zone in which wildlife species listed as special concern, threatened, or endangered are recovered to healthy, viable populations." GCMP at 28. To effectuate this goal, the Project must be in compliance with Georgia's Endangered Wildlife Act ("EWA"), O.C.G.A. §§ 27-3-130 et seq. Under the EWA, the "destruction of the habitat of any protected animal species on public lands is prohibited." Ga. Comp. R. & Regs. r. 391-4-10-.06(a)(3). Appendix I's discussion of consistency with the EWA recognizes that the Project's dredging of the Savannah River will result in loss of habitat for the endangered shortnose sturgeon. DEIS, App. I at 33. Yet, Appendix I states that "[w]ith the proposed mitigation in place for the Shortnose sturgeon, the proposed Project is fully consistent with this policy." DEIS, App. I at 33. To the contrary, the language of the Georgia EWA is unequivocal, stating "the destruction of the habitat of any protected animal species on public lands is prohibited." Ga. Comp. R. & Regs. r. 391-4-10-06(a)(3). The DEIS's conclusion that the Project is consistent with the GCMP is flat wrong because the Project violates the Georgia EWA.*

Response: The comment misapplies the Georgia Endangered Wildlife Act, which provides: "The board shall issue such rules and regulations as it may deem necessary for the protection of protected species and for the enforcement of this of this article. Such rules and regulations shall not affect rights in private property or in public or private streams (underlined for emphasis), nor shall such rules and regulations impede construction of any nature (underlined for emphasis). Such rules and regulations shall be limited to the regulation of the capture, killing, or selling of protected species and protection of the habitat of the species on public lands".

The District prepared a Biological Assessment of Threatened and Endangered Species (BATES) which included an assessment of SHEP impacts on the Shortnose sturgeon and its habitat. Even with the flow diversion measures in place, there would still be some residual impacts on winter Shortnose sturgeon

habitat. Consequently, the SHEP mitigation plan provides for the construction of a fish bypass at the New Savannah Bluff Lock and Dam to provide opportunity for migrating Shortnose sturgeon to move past the dam and access additional historic spawning grounds at the Augusta Shoals. Construction of this bypass would also provide the Shortnose sturgeon, as well as other anadromous fish species, access to approximately 20 miles of river above the dam. NMFS has issued a Biological Opinion for the project which includes terms and conditions protecting the Shortnose sturgeon, including construction of a fish passage upriver. The project's compliance with the ESA regarding Shortnose sturgeon, Atlantic sturgeon, and other threatened and endangered species is fully documented in EIS Section 4.09, 5.11, Appendix B (Biological Assessment for Threatened and Endangered Species, and Appendix Z (NMFS Biological Opinion). The Consistency Determination also determined that the SHEP and associated mitigation plan is fully consistent with the Georgia Endangered Wildlife Act.

765-DC-149-EV59

Comment: *An additional program objective is to "[p]rovide a coastal zone in which the integrity and functioning of the sand-sharing system is maintained." GCMP at 29. Georgia's Shoreline Protection Act (SPA), O.C.G.A. §§ 12-5-231 et seq, is the state's primary legal authority on the protection and management of Georgia's sand-sharing system—including sand dudes, beaches, sandbars and shoals. Also, Georgia law addresses erosion caused by dredging for navigation purposes in tidal inlets, rivers, and harbors. O.C.G.A. §§ 52-9-1 et seq. It is state policy that there should be no net loss of sand from the island beaches because of dredging. O.C.G.A. § 52-9-1. The Corps' recent study concluded that existing dredging Project at the port has contributed to nearly eighty percent of Tybee Island's beach erosion. DEIS, App. I at 17. Yet, the Corps concludes that because the Project would "result in only minor changes in nearshore wave patterns" the Project "would be expected to have very little impact on the Tybee Island shoreline." Id. However, the Corps erroneously examines the Project's potential impacts in isolation, and fails to consider the cumulative impact of the Project and existing beach erosion. For these reasons, the Project is not consistent with the GCMP.*

Response: The cumulative impacts relating to the SHEPare fully addressed in the EIS analysis [Appendix L]. Studies conducted during the SHEP indicate that the existing entrance channel (including the entrance channel jetties) results in a deflation [ebb shoal] on the Tybee Shelf and that the existing Savannah Harbor Navigation Project is a sediment sink for almost all littoral drift sediments that move from north to south along the Tybee shelf. These studies estimated that the combined shelf/shoreline impact at Tybee Island is 78.5%. The remainder of the erosion is attributed to natural processes. Any mitigation for this effect on the Island's sand budget would be the responsibility of the existing Savannah Harbor Navigation Project.

Additional studies conducted as part of SHEP indicate that further deepening would have negligible additional effects on the Tybee island shelf or to its shoreline. This would include the magnitude of sand being transported or the transport pathways. That is, deepening the existing entrance channel would just provide a deeper hole for the same amount of sand to be sequestered. Consequently, no mitigation for additional erosion of the Tybee Island Beach is warranted under SHEP.

Cumulative impacts relating to Tybee Island beach erosion are fully addressed in EIS Section 5.13 and Appendix L. The dredged material disposal plan has been revised to meet the GA DNR Coastal Resources Division's request, viz., the nearshore dredged material disposal sites at Tybee Island and the two offshore fish habitat enhancement areas have been eliminated.

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765-DC-149-EV60

Comment: *The Project is inconsistent with the objectives of the GCMP and Georgia law protecting water quality on the coast. The GCMP seeks to ensure "that permits approved for coastal area activities are designed to minimize negative impacts on water quality . . . ." GCMP at 26. As described in Section II.C., the GWQCA states "[e]xisting instream water uses and the level of water quality necessary to protect the existing uses shall be maintained and protected." Id. 391-3-6-.03(2)(b)(i) (emphasis added). The DEIS recognizes that the Project will have significant impacts on the dissolved oxygen DO levels in the Savannah River, a water body already listed as impaired for DO. The lowering of DO would have deleterious effect on the fish populations in the Savannah River, especially the endangered shortnose sturgeon. However, Appendix I's discussion of water quality is devoid of any discussion of lowering DO levels. See DEIS, App'x I at 64-65.*

Response: The District submitted its Federal Consistency Determination to GA DNR-CRD as part of the Draft EIS. This compilation fully addresses the impacts of the SHEP on the dissolved oxygen regime in Savannah Harbor along with the mitigation for those impacts. However, additional information has been added to Paragraph 6.35.3 of Appendix I describing the SHEP's potential impact on dissolved oxygen in Savannah Harbor and the mitigation (injection of oxygen) for that impact. The project is fully consistent with the Georgia Water Quality Control Act because oxygen injection would remove the project's incremental impact on the dissolved oxygen regime in Savannah Harbor.

765-DC-149-EV61

Comment: *The GCMP requires that the port expansion be consistent with the Georgia Air Quality Control Act, O.C.G.A. §§ 12-9-1 et seq. It is undetermined whether Project is consistent with the air quality policy of the GCMP because, as described in Section I.E.1., the DEIS fails to adequately assess the Project's air quality impacts. The DEIS states that the Project would "improve ambient air quality in Savannah Harbor" because the "total number of container ships would decrease . . . ." DEIS, App'x I at 26. However, this bold assertion is based on a flawed economic assumption, is contradicted by other DEIS statements, and lacks supporting data (described in Section I.D.). A determination of consistency cannot be attained without requiring the Corps to further assess the effects of the Project on air quality.*

Response: This comment raises the same issues regarding air quality as previous comments. See response to comments 765-DC-149-EV12 through 765-DC-149-EV15.

765-DC-149-EV62

Comment: *The South Carolina Coastal Zone Management Act ("South Carolina CZMA") "was passed by the 1977 General Assembly of South Carolina to provide for the protection and enhancement of the State's coastal resources." S.C. Code Ann. Regs. § 30-1(A)(1) (2009). Pursuant to the South Carolina CZMA, "[e]xcept for those exemptions as specified in the 1977 Coastal Zone Management Act, as amended, any person wishing to alter a critical area must receive a permit from [DHEC]." S.C. Code Ann. Regs. § 30-2(B) (2009). The statute's enumerated exemptions exclude "[d]redge and fill performed by the United States Corps of Engineers for the maintenance of the harbor channels and the collection and disposal of the materials so dredged." S.C. Code Ann. § 48-39-130(D)(4) (2009); S.C. Code Ann. Reg. § 30-5(A)(4) (2009). But, they do not similarly exclude a Project such as this one, which consists of "improvements to" and "expansion of" an existing navigation project. Corps, GPA, & DHEC, Joint Public Notice, at 1, 2 (Nov. 15, 2010). And, under the CWA, the Project must comply with the state's permitting requirements. See 33 U.S.C. § 1344(t).*

Response: Under the Coastal Zone Management Act, 16 U.S.C. § 1451, et. seq., and the South Carolina Coastal Management Plan (SC CMP, Ch. V), federal activities and projects are not required to obtain a critical area permit but are required to be approved by the state as consistent with the SC CMP to the maximum extent practicable. As described in EIS Section 5.13 and Appendix J, the SHEP including its mitigation plan was determined to be fully consistent with the SC CMP and the State does not object to that determination.

765-DC-149-OC06

Comment: *The Biological Assessment prepared under the Endangered Species Act is deeply flawed.*

Response: This and following comments allege the Corps' Biological Assessment for Threatened and Endangered Species (BATES) is seriously flawed. However, the BATES was coordinated with the USFWS (jurisdiction over the West Indian manatee, piping plover, wood stork and nesting sea turtles) and NMFS (jurisdiction over whales, sea turtles, Atlantic sturgeon and Shortnose sturgeon) pursuant to Section 7 of the Endangered Species Act.

Based on their review of the project, the DEIS and the GRR, the USFWS concurred with the findings in the BATES that the SHEP may affect but is not likely to adversely affect the piping plover, wood stork, West Indian manatee, and nesting sea turtles. The USFWS concurrence letter is included in Appendix Z.

The NMFS submitted their Biological Opinion (BO) for the SHEP by letter dated November 4, 2011. The BO concurred with the findings of the BATES that the SHEP may affect but would not likely adversely affect leatherback sea turtles, green sea turtles, hawksbill sea turtles, North Atlantic right whales, and humpback whales.

However, the BO determined that construction of the SHEP would likely adversely affect Kemp's ridley sea turtles, loggerhead sea turtles, Shortnose sturgeon and Atlantic sturgeon. With implementation of Reasonable and Prudent Measures NMFS identified to protect sea turtles, NMFS concluded that the overall effect on these species would be acceptable. NMFS concluded that construction of the SHEP is not likely to jeopardize the survival and recovery of the Shortnose sturgeon or Atlantic sturgeon in the Savannah River. With implementation of Reasonable and Prudent Measures NMFS identified to protect these species, NMFS concluded that the overall effect on the Shortnose and Atlantic sturgeon would be acceptable. The BO submitted by the NMFS is included in this document as Appendix Z.

The USFWS concurrence and the NMFS BO indicate that those agencies have determined that the proposed project complies with the Endangered Species Act.

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765-DC-149-EV63

Comment: *This Project will result in a reduction in available habitat and require SNS to seek and select new home ranges of lesser quality. Young Report at 4-6. Sturgeon are bottom-feeders, and the proposed deepening Project will eliminate the benthic community in dredged areas. Young Report at 5-6. It will take years for this community to reestablish itself, and if it does, the benthic community may not be comprised of the same quality and quantity of prey items. Young Report at 5-6. The loss of feeding opportunities will require shortnose sturgeon to find and move to other areas that may or may not provide suitable prey items, and the increased expenditure of energy resulting from this increased*

movement would be detrimental to the population, resulting in poor health and lower reproductive potential. Young Report at 6.

Response: Impacts on benthic resources due to dredging are discussed in the EIS [Section 5.07.1.1] and Appendix B. Current maintenance dredging in the existing navigation channel temporarily eliminates its benthic resources and deepening will primarily be limited to the existing channel prism. Other than the normal (sometime heavy) sedimentation that occurs, the channel bottom is relatively undisturbed between the subsequent maintenance dredging events, allowing the excavated area to re-colonize. The opportunistic populations that reestablish should be similar to those eliminated during the channel deepening. Species which live in these high stress habitats are substrate dependent and the sediments involved will remain unchanged. Further, the density and diversity of the benthic community that becomes reestablished in the incrementally deepened channel will approximate that which currently exists. Therefore, from a benthic resource perspective, the sturgeon population using the navigation channel should not be impacted by deepening any more than by current maintenance dredging operations.

765-DC-149-EV64

Comment: *The deepening Project will also lower DO levels in the harbor, which is a major concern for all fish and aquatic organisms. Young Report at 6. Low dissolved oxygen will affect recolonization of benthic organisms after substrate dredging and may alter species presence and abundance after re-establishment. Young Report at 7. This will in turn affect sturgeon and other benthic fish feeding and nutrition. In light of the importance of the estuary to juvenile and adult sturgeon; the current low levels of dissolved oxygen; and the questions involving the effectiveness of the oxygenation system, Dr. Young believes the Corps has underestimated the threat of this proposal to sturgeon. Young Report at 7.*

Response: There are no adverse impacts to SNS predicted during the summer months, when D.O. is a concern. The D.O. systems would minimally improve D.O. levels on the bottom, where sturgeon and their benthic prey are found. The analyses indicate that summer SNS habitat would increase with the proposed project (as a result of the D.O. systems).

765-DC-149-EV65

Comment: *Another concern for SNS is the turbidity caused by re-suspension of sediments and the pollutants that may re-enter the water column after sediment exposure. Young Report at 7-8. Although the DEIS states that a sediment study was conducted to determine chemicals present in solid sediments, it does not appear as if the Corps conducted actual exposure toxicity tests to determine how the deepening Project would impact sensitive species, such as SNS. Young Report at 7-8. These studies should be undertaken and will likely reveal that the SHEP will have substantial negative effects on species such as SNS beyond the level described in the DEIS. Young Report at 8.*

Response: A sediment quality evaluation assessing potential contaminant impacts associated with the proposed SHEP was conducted. The evaluation used a tiered approach jointly developed by the Corps of Engineers and the Environmental Protection Agency.

Aquatic bioaccumulation studies were performed by EA Engineering, Science, and Technology and are found in the EIS [Appendix M]. Sand worms (*Nereis virens*) and the blunt-nosed clam (*Macoma nasuta*) [both borrowing animals] were the species recommended by the EPA protocols. At the end of these bioaccumulation studies, tissue samples [after preparation-freezing/grinding] were analyzed for contaminant uptake. The conclusions of the aquatic bioaccumulation study are found in Tables 36 and 37 as well as in Sections 4.2.4, 4.2.5, and 5.4. In summary, they are, "***bioaccumulation in high cadmium***

sediments appears to be well below potential levels of effect. Therefore, potential environmental impacts through bioaccumulation of cadmium by benthic organisms are expected to be minimal". Hence, the Shortnose and Atlantic sturgeon are omnivorous benthic feeders that are not likely to experience any substantive adverse impacts from exposure to sediments or constituents thereof in the water column during or after the harbor is deepened.

The Shortnose and Atlantic sturgeon are endangered species protected under Section 7 of the Endangered Species Act of 1973, as amended. A permit would be required from NMFS to catch, freeze, and grind up individuals of this species for chemical evaluation. Whether a permit could be obtained in this regard is conjectural. However, the issue is no longer moot since consultation with EPA determined that the Shortnose Sturgeon is not a species recommended for use in bioaccumulation studies.

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765-DC-149-EV66

Comment: *As the DEIS and the GRR acknowledge, the deepening Project will also exacerbate problems related to saltwater intrusion. Young Report at 9. Juveniles prefer low levels of salinity, and juveniles experience decreased energy and aerobic capacity, resulting in decreased growth and survival as salinity levels rise. Changes in prey species abundance due to increased salinity, on top of dredging and low dissolved oxygen, "will likely have profound impacts on the entire estuarine fish community, including shortnose sturgeon, Atlantic sturgeon, and striped bass." Young Report at 9.*

Response: The project will not have "profound impacts on the entire estuarine community" as speculated in the comment. The noted salinity changes will reduce the amount of winter Shortnose Sturgeon habitat in the estuary [up to 11% depending on depth and life stage], as summarized in Table 5-35, Summary of Project-Related Fishery Impacts with Mitigation. The habitat volume during the critical summer months (when SNS are stressed by salinity, temperature, and low D.O) would increase from 3 to 19% depending on depth. The fish bypass would adequately compensate for the remaining unavoidable impacts. NMFS concurred with this conclusion in its Biological Opinion.

765-DC-149-EV67

Comment: *As noted previously, the DEIS that: "Neither the Corps nor the [resource] agencies could identify any measures that could be implemented in the estuary that would restore sturgeon habitat or enhance existing habitats." DEIS at 5-91. Instead, the Corps suggested a method of allowing fish to move by the lowest dam on the river, the New Savannah Bluff Lock & Dam (NSBL&D) at Augusta, Georgia, which is operated by the Corps. DEIS at 5-91. The theory behind this proposal is that a "fishway around the structure would allow migrating fish to move past the dam" and "would open up an additional 20 miles of habitat upstream of the dam to Shortnose sturgeon, reaches that they had used in the past." DEIS at 5-91. Although the concept of fish passage offers some potential benefits to fisheries more generally, the Corps' proposal is deeply flawed because, as explained below, sturgeon species are unlikely to use the fish passage facility proposed in this case. Young Report at 11-16.*

Response: The Lake sturgeon has been observed passing constructed/natural rapids [entire river width] in the upper mid-west [US]. Passages at more shallow water depths than those proposed [3.5 to 5.5 feet] at the New Savannah Bluff Lock and Dam were frequently observed (Aadland 2010). The Lake sturgeon is larger than their Shortnose sturgeon counterparts, so the latter should not experience difficulty [depth-wise] in moving through the proposed fish bypass.

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765-DC-149-EV68

Comment: *As pointed out by Dr. Young, the DEIS lacks baseline information and an impact assessment on the Savannah River Atlantic sturgeon. Young Report at 9. The omission of discussion and impact assessment of a species proposed for listing as Endangered needs to be rectified, especially where it has been determined that the proposed activity under review – in this case, dredging – is an obstacle to the species' recovery. Young Report at 9. In addition to lacking baseline information, the main focus of impact evaluation, mitigation, and funded research has been placed on the shortnose sturgeon; however, the Atlantic sturgeon has been neglected. Young Report at 10.*

Response: The Atlantic sturgeon was included in the BATES prepared for the project. The NMFS Biological Opinion, EIS Appendix Z, contains a thorough assessment of the Atlantic sturgeon, including its characteristics, habitat, environmental baseline, and likely impacts of the project on this species and its habitat. NMFS concluded that construction of the SHEP is not likely to jeopardize the survival and recovery of Atlantic sturgeon in the Savannah River. With implementation of Reasonable and Prudent Measures NMFS identified to protect this species, NMFS concluded that the overall effect on the Atlantic sturgeon would be acceptable.

765-DC-149-EV69

Comment: *As with shortnose sturgeon, the proposed deepening will have significant negative effects on the health and survival of Atlantic sturgeon. The proposal will likely adversely affect the continued existence of the species by (1) causing a reduction in available habitat and causing changes in summer and winter habitat selection with negative consequences likely; (2) requiring these species to find new foraging habitats if they avoid the project altogether or leaving these species without a source of food due to the elimination of benthic prey from the large-scale dredging; and (3) causing these species to suffer physiologically from potential changes in water quality, including lower dissolved oxygen, increased turbidity and pollutants, caused by resuspension of sediments, and increased salinity. Young Report at 4.*

Response: Impacts on benthic resources due to dredging are discussed in the EIS [Section 5.07.1.1] and Appendix B. Current maintenance dredging in the existing navigation channel temporarily eliminates its benthic resources and deepening will primarily be limited to the existing channel prism. Other than the normal (sometime heavy) sedimentation that occurs, the channel bottom is relatively undisturbed between the subsequent maintenance dredging events, allowing the excavated area to re-colonize. The opportunistic populations that reestablish should be similar to those eliminated during the channel deepening. Species which live in these high stress habitats are substrate dependent and the sediments involved will remain unchanged. Further, the density and diversity of the benthic community that becomes reestablished in the incrementally deepened channel will approximate that which currently exists. Therefore, from a benthic resource perspective, the sturgeon population should not be impacted by deepening any more than by current maintenance dredging operations.

The Atlantic sturgeon was included in the BATES prepared for the project. The NMFS Biological Opinion, EIS Appendix Z, contains a thorough assessment of the Atlantic sturgeon, including its characteristics, habitat, environmental baseline, and likely impacts of the project on this species and its habitat. Among other things, the Biological Opinion found that habitat loss would have insignificant effects on Atlantic sturgeon because they mainly forage in the ocean. In addition, NMFS does not believe the proposed action will result in a reduction in reproduction or numbers of Atlantic sturgeon in the Savannah River,

nor will it result in a decrease in the species distribution. NMFS concluded that SHEP will not appreciably reduce the likelihood of the Atlantic sturgeon's survival in the Savannah River.

765-DC-149-EV70

Comment: *Although shortnose and Atlantic sturgeon share common traits, the DEIS assumes that the life history and behavior of Atlantic sturgeon and shortnose sturgeon is so similar that the SHEP impacts and the mitigation package will have the same outcome for both species. Young Report at 10. Such an assumption is erroneous. Young Report at 10. For example, a recent study of juvenile sturgeon abundance on in the Hudson River Estuary, has found that juvenile shortnose sturgeon prefer habitats upstream of the saltwedge (low salinity), while juvenile Atlantic sturgeon prefer habitats downstream of the saltwedge (higher salinity). Young Report at 10. Other scientists have documented differences in life history, including temperature selection and spawning habitat preferences. Young Report at 10. As previously noted, there will be some similar impacts, but there is a strong likelihood that the two species will also suffer differently in other ways. Young Report at 10. Greater analysis, therefore, is required to determine the impacts to Atlantic sturgeon and what mitigation is needed to address the harm from this Project. Young Report at 10-11.*

Response: The NMFS Biological Opinion, EIS Appendix Z, analyzes the environmental baseline and potential impacts to the Shortnose sturgeon and the Atlantic sturgeon separately and in great detail. NMFS determined appropriate mitigation for both species based on the fact that the Shortnose and Atlantic sturgeon can be grouped together based on similarity in habitat use, distribution throughout the proposed action area, foraging behavior/prey base, and subsequent risk of take relative to dredging and trawling operations. NMFS concluded that construction of the SHEP is not likely to jeopardize the survival and recovery of the Shortnose sturgeon or Atlantic sturgeon in the Savannah River. With implementation of Reasonable and Prudent Measures NMFS identified to protect these species, NMFS concluded that the overall effect on the Shortnose and Atlantic sturgeon would be acceptable. Please see previous responses concerning project impacts on sturgeon.

765-DC-149-EV71

Comment: *As part of the SHEP mitigation package, the Corps has proposed a fishway at the New Savannah Bluff Lock & Dam ("NSBLD") near Augusta, Georgia, 150 miles upriver of Savannah Harbor, as mitigation for damages to shortnose sturgeon habitat in the estuary. Young Report at 11. The Corps was unable to identify any forms of mitigation within the estuary to offset the loss of critical juvenile rearing habitat. Id. Accordingly, the fishway is a trade-off intended to alleviate impacts to important juvenile habitat by allowing passage to upstream habitat. The problem is that although a fishway might provide some benefits to other species, this proposal is highly unlikely to benefit sturgeon. According to Dr. Young, the DEIS fails to demonstrate that the proposed fish passage design – the Horseshoe Rock Ramp – will have success at passing either species of sturgeon. Id. The proposal also lacks a detailed fish passage plan listing objectives and goals for the species that would purportedly benefit from the facility. Moreover, for a fish passage facility to be effective, a suitable environment must be present above the dam to support spawning and the development of eggs, larvae, and juveniles. Id. at 11. Should sturgeon select the Augusta Shoals for spawning habitat, it will be important to ensure that proper flows and water temperature are provided. At present time, the release schedules from J. Strom Thurmond Dam (JST) do not provide adequate flows during certain times of year. Young Report at 13. The City of Augusta also diverts a significant portion of flow into the Augusta Canal, substantially reducing flow for fish and aquatic organisms. Id.*

Response: An interagency workshop was held [April 2011] which was attended by the National Marine Fisheries Service [the agency with statutory responsibility for the Shortnose sturgeon], the US Fish and Wildlife Service, and the state natural resource agencies. The main focus of the workshop was to address agency concerns over the effectiveness of the proposed fish bypass [horse shoe] which would be located at the New Savannah River Bluff Lock and Dam. Based on input from the workshop attendees and a follow-on site visit with Dr. Luther Aadland (fish passage expert with Minnesota Department of Natural Resources) that was arranged by NMFSthe District revised its proposed fish bypass design and the FEIS proposes an Off-Channel Rock Ramp to provide access to traditional spawning areas at the Augusta Shoals. As stated in the BO, the goal for the fish passage is to achieve t a 75% success rate in upstream passage coupled with 85% effectiveness for downstream passage. A detailed design, would be prepared if the project proceeds to construction.

The NMFS Biological Opinion, EIS Appendix Z, thoroughly evaluated the proposed fish passage. The Biological Opinion requires the proposed fish passage as a term and condition to implement reasonable and prudent measures. In reliance on this mitigation and other required terms and conditions NMFS issued a no jeopardy opinion regarding the Shortnose and Atlantic sturgeon for this project

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765-DC-149-EV72

Comment: *Even if it could be demonstrated that the Horseshoe Rock Ramp could be constructed at the NSBLD, modifications would likely be necessary to specifically accommodate sturgeon. Id. at 11. It is likely these changes would substantially increase the cost of the fish passage facility, and additional funding would be needed up front to ensure proper maintenance of the structure in perpetuity. The fish passage proposal would certainly require far greater levels of committed funding than currently proposed, and even then, it is uncertain that the proposed design will work here to address impacts to sturgeon. The most effective mitigation action would be the complete removal of NSBLD along with all other dams/obstructions upstream to the JST and those in the Stevens Creek Basin, a major tributary of the Savannah River between JST and the City of Augusta, in combination with a flow schedule designed to promote biological integrity. Id. at 12.*

Response: The NMFS Biological Opinion, EIS Appendix Z, thoroughly evaluated the proposed fish passage. The Biological Opinion requires the proposed fish passage as a term and condition to implement reasonable and prudent measures. In reliance on this mitigation and other required terms and conditions NMFS issued a no jeopardy opinion regarding the Shortnose and Atlantic sturgeon for this project.

Adaptive management, attraction flow commitments, and monitoring are parts of the fish passage plan detailed in EIS-Appendix D. To ensure that the passage design is the best one possible for the New Savannah Bluff Lock/Dam, the Corps will coordinate the detailed designs with the natural resource agencies prior to finalization of plans/specifications. The District also committed to monitoring/reporting the success of sturgeon using the structure to ensure it performs as intended (Appendix D). The findings and conclusions would include any recommendation to modify the bypass structure to improve SNS passage.

There is consensus that removal of the lock and dam is the preferred method to allow sturgeon and other anadromous fish access to upstream habitat. Its removal would also provide an overall benefit to the larger ecosystem. However, removal of the New Savannah Bluff Lock and Dam is not a feasible mitigation alternative for the following reasons:

1) The lock and dam is a Congressionally-authorized project; therefore, the District is obligated to maintain the project as Congress provides funding for such actions;

2) The latest Congressional authorization language for the NSBL&D (WRDA 2000, amended in Omnibus Act 2001), calls for repair and rehabilitation of the lock and dam structure, construction of a fish passage, and conveyance of the structure to the City of North Augusta;

3) Removal of the structure would adversely impact the freshwater supply of eight major users.

765-DC-149-EV73

Comment: *In light of these concerns and the others expressed in Dr. Young's report, we believe the Corps' conclusion that the "the proposed project may affect, but is not likely to adversely affect Shortnose or Atlantic sturgeon or their critical habitat" completely misses the mark. DEIS, App'x B at 182. To the contrary, Dr. Young believes that this Proposal "will directly reduce the likelihood of both the survival and recovery of shortnose and Atlantic sturgeon by reducing the reproductive fitness, numbers and distribution of each species." Young Report at 16. For these reasons, this Proposal weighs heavily in favor of the preparation of a biological opinion by NMFS to determine if the proposal will jeopardize shortnose sturgeon. We also believe that conference consultation is required for Atlantic sturgeon pursuant to 16 U.S.C. § 1536(a)(4).*

Response: NMFS has prepared a Biological Opinion, which is found at EIS Appendix Z. The BO comprehensively addresses the Shortnose and Atlantic sturgeon and determines that neither species will be jeopardized by SHEP provided the project complies with required terms and conditions implementing reasonable and prudent measures.

NMFS' "likely to adversely affect" determination for Shortnose sturgeon is primarily based on adverse effects (increase in salinity) to important estuarine winter foraging habitats for both juvenile and adult fish. While the NMFS expects these effects to be sub-lethal for individual sturgeon, these effects could reduce the Savannah River's overall carrying capacity and ability to provide optimal habitat for the Shortnose sturgeon to forage. The NMFS believes that both adults and juveniles will move to suitable habitats further upriver once the SHEP is constructed. NMFS expects that construction of the fish passage facility at the NSBL&D will result in access to historic spawning habitat upstream of the dam that is expected to increase spawning activity over the long-term. Based on these determinations, the NMFS concluded that construction of the SHEP is not likely to jeopardize the survival and recovery of the Shortnose sturgeon in the Savannah River. With implementation of the Reasonable and Prudent Measures NMFS identified to protect this species, NMFS concluded that the overall effect on the species would be acceptable.

NMFS' "likely to adversely affect" determination for Atlantic sturgeon is primarily based on NOAA's estimated incidental take of four Atlantic sturgeon during hopper dredging operations necessary to construct the SHEP and adverse effects (increase in salinity) to important estuarine foraging habitat for juveniles and adults. The estimated incidental take of four Atlantic sturgeon during entrance channel construction would not decrease the overall population of this species in the South Atlantic DPS (Distinct Population Segment) as there are significant numbers of fish found in the rivers comprising the South Atlantic DPS range of Atlantic sturgeon. The effects of SHEP on foraging habitat and spawning success of Atlantic sturgeon are similar to those for the Shortnose sturgeon.

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765-DC-149-EV74

Comment: *The Corps contends that fewer whales will be struck by vessels if the Project is completed because fewer ships will be calling on the harbor. As explained above, this position is based on an assumption that is not shared by the shipping community. The shipping community, including GPA, believes that the growth of the container traffic at the harbor will accelerate if the harbor is deepened. If GPA and the shipping community is correct, then there will be greater numbers of ships calling on the harbor. Reliance on this flawed assumption here undermines the evaluation of the Project's potential impact on right whales. Further, as discussed in Section I.D.4., the channel appears to be designed in such a manner as will require ships to travel at a speed in excess of the 10 knot speed restrictions.*

Response: The NMFS Biological Opinion determined that SHEP is not likely to adversely impact North Atlantic right whales and affirmed the District's existing whale conservation measures, which will continued to be followed. Among other things, large container vessels would continue to comply with the present NMFS's requirements on vessel speeds to protect whales. As to the claimed assumption and alleged growth of container traffic as a result of deepening, please see other responses to comments on these issues.

765-DC-149-EV75

Comment: *Four federally listed, endangered sea turtle species, the Kemp's ridley (Lepidochelys kempii), leatherback (Dermochelys coriacea), loggerhead (Caretta caretta) and the hawksbill (Eretmochelys imbricata), and one threatened species, the green (Chelonia mydas), feed in and migrate through the waters affected by the SHEP. GPA's proposal threatens harm to sea turtles due to the proposed dredging activities. Specifically, channelization of inshore and nearshore habitat and the disposal of dredged material in the marine environment can destroy or disrupt resting or foraging grounds and may affect nesting distribution through alteration of physical features in the marine environment. In addition, the associated lighting can negatively affect nesting activities. Moreover, the BA ignores the threat to turtles of ship strikes despite the fact that boat strikes have been identified as a significant and growing threat to sea turtles. Boat collisions can cause immediate death to turtles or severely debilitate them, leading to infection and decreased reproductive fitness. The frequency of injury from propellers and collisions is higher in areas where recreational boating and vessel traffic are intense. Recovery Plan for U.S. Population of Atlantic Green Turtle (1991) at 9 and Recovery Plan for U.S. Population of Loggerhead Turtle, Second Revision (2008) at I-56. Presumably, the BA ignores the threat of boat strikes, as it does with right whales, due to its conclusion that the Project will result in fewer, not more, ships over time.*

Response:

After coordination with GA DNR-CRD, the dredged material placement plan has been revised; it now calls for placement of all new work entrance channel sediments in previously-approved areas, viz., in the Ocean Dredged Material Disposal Site or an existing upland confined disposal facility. Therefore, no nearshore placement of new work sediments would occur and concerns about adverse impacts on sea turtles are greatly lessened.

Appendix B of the EIS has been revised to indicate: With deepening, the total number of vessels in the Harbor will decrease (compared to the without project condition) as vessels would be able to load more completely without the present constraints of draft. Therefore, fewer ships would transit the estuary with incrementally lesser impact on sea turtles than under the without project condition.

USFWS concurred with the findings in the BATES that the SHEP is not likely to adversely affect nesting sea turtles. NMFS determined in the Biological Opinion that the SHEP may affect but is not likely to adversely affect the Hawksbill, Leatherback and Green sea turtles, and is not likely to jeopardize Kemp's ridley and Loggerhead sea turtles.

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765-DC-149-EV76

Comment: *The West Indian manatee inhabits coastal, estuarine, and riverine systems in the southeastern United States, the Greater Antilles, eastern Mexico and Central America, and south to northeastern Brazil. About 3,000 West Indian manatees remain in the United States. The Florida subspecies (T. manatus latirostris) occupies the northern end of the species' range. These manatees occur primarily in Florida and southeastern Georgia. According to the Florida Manatee Recovery Plan, the most significant problem presently facing manatees is death or serious injury from boat strikes. U.S Fish and Wildlife Service, Florida Manatee Recovery Plan (Trichechus manatus latirostris), Third Revision, at 23. The BA states that in 2008 the Georgia Department of Natural Resources indicated it had recovered three male carcasses in the Savannah River and that "[a]ll three were located at the downtown Savannah waterfront and apparently died from ship propeller lacerations (e.g. one was cut in half)." DEIS, App'x B at 83. Again, the BA does not even mention or assess potential impacts due to increased shipping activity as a result of the Project.*

Response: Appendix B of the EIS has been revised to indicate that with deepening the total number of vessels would decrease (compared to the without project condition) as vessels would be able to load/unload without the present constraints of draft. Therefore, fewer ships would call on the port (compared to the without project condition). Manatees are generally found in shallow water (<20 feet deep) and large ships are confined to the deep navigation channel. For these reasons, ship traffic is not expected to impact manatees any more [and intuitively less] than under existing conditions. The USFWS concurred with the findings in the BATES that the SHEP is not likely to adversely affect the West Indian manatee.

765-DC-149-EV77

Comment: *For these reasons and others, the DEIS and GRR fail to adequately assess or accurately disclose the effects of the Proposal on federally endangered and threatened species such as Shortnose sturgeon, North Atlantic right whales, sea turtles, manatees, and other wildlife. For these reasons, the Corps' determination that the Proposal may affect, but is not likely to adversely affect these species, is erroneous, and we believe formal consultation with NMFS and FWS is required.*

Response: The Corps followed all applicable requirements to consult with USFWS and NMFS. The BATES was coordinated with the USFWS (jurisdiction over the West Indian manatee, piping plover, wood stork and nesting sea turtles) and NMFS (jurisdiction over whales, sea turtles, Atlantic sturgeon, and Shortnose sturgeon) pursuant to Section 7 of the Endangered Species Act.

Based on their review of the project, the DEIS and the GRR, the USFWS concurred with the findings in the BATES that the SHEP may affect but is not likely to adversely affect the piping plover, wood stork, West Indian manatee, and nesting sea turtles. The USFWS concurrence letter is included in Appendix Z.

The NMFS submitted their Biological Opinion (BO) for the SHEP by letter dated November 4, 2011. The BO concurred with the findings of the BATES that the SHEP may affect but would not likely adversely

affect leatherback sea turtles, green sea turtles, hawksbill sea turtles, North Atlantic right whales, and humpback whales.

However, the BO determined that construction of the SHEP would likely adversely affect Kemp's ridley sea turtles, loggerhead sea turtles, Shortnose sturgeon, and Atlantic sturgeon. With implementation of Reasonable and Prudent Measures NMFS identified to protect sea turtles, NMFS concluded that the overall effect on these species would be acceptable. NMFS further concluded that construction of the SHEP is not likely to jeopardize the survival and recovery of the Shortnose sturgeon in the Savannah River. With implementation of Reasonable and Prudent Measures NMFS identified to protect this species, NMFS concluded that the overall effect on the Shortnose and Atlantic sturgeon would be acceptable. The BO submitted by the NMFS is included in this document as Appendix Z.

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765-DC-149-EV78

Comment: *Although the DEIS includes an Essential Fish Habitat Evaluation, DEIS, App'x S, it is or understanding that EFH consultation has not yet commenced.*

Response: The comment is incorrect. The EFH process was initiated on November 15, 2010 with a letter to NMFS providing the District's DEIS and its EFH determination (Appendix S). The Corps has coordinated with NMFS since that time and has revised the project to address concerns expressed by NMFS and others. The Corps' understanding is that these revisions satisfy NMFS' EFH issues.

765-DC-149-EV79

Comment: *Finally, coordination between the Corp and FWS is required pursuant to the Fish and Wildlife Coordination Act, 16 U.S.C. § 661 et seq. That law provides that "whenever the waters of any stream . . . are proposed or authorized to be . . . deepened . . . or modified for any purpose whatsoever, including navigation," the agency proposing, authorizing or permitting the action "shall first consult" with the FWS and with the "head of the agency exercising administration over the wildlife resources of the particular State wherein the . . . facility is to be constructed, with a view to the conservation of wildlife resources by preventing loss of and damage to such resources . . . ." 16 U.S.C. § 662 (emphasis added). The DEIS includes a draft Fish and Wildlife Coordination Report, in which FWS expresses substantial concerns about the Proposal, including the dissolved oxygen injection system and the impacts to fisheries. DEIS, App'x E. Coordination pursuant to the Fish and Wildlife Coordination Act must be completed before the Project can proceed.*

Response: As stated in Section 6 of the EIS, the SHEP is in compliance with the Fish and Wildlife Coordination Act. The project has been fully coordinated with the US Fish and Wildlife Service which submitted a Draft Section 2(b) Fish and Wildlife Coordination Act Report used in the DEIS preparation. The Service submitted a final report after its review of the DEIS. That final report is included in the FEIS.

765-DC-149-EV80

Comment: *Overall, it does not appear as if the Corps has made much of an effort to comply with the new rules for compensatory mitigation under the CWA. On April 10, 2008, EPA and the Corps issued a Final Rule on Compensatory Mitigation for Losses of Aquatic Resources under section 404 of the Clean Water Act. See 73 Fed. Reg. 19,594-19,687 (Apr. 10, 2008) (codified at 40 C.F.R. § 230.91 and 33 C.F.R. §§ 325 and 332) (hereinafter referred to as the "Mitigation Rule" or the "Rule"). A central feature of the new Rule is the use of a watershed approach for purposes of all forms of mitigation. See 33 C.F.R. § 332.3(c)(1) ("The ultimate goal of a watershed approach is to maintain and improve the quality and*

quantity of aquatic resources within watersheds through strategic selection of compensatory mitigation sites."). The Rule states that:

Response: From a strict legal standpoint, the 2008 Mitigation Rule applies to Clean Water Act Section 404 permit applications, not Corps civil works projects such as SHEP. In addition, SHEP wetland mitigation study and planning began in 2002. The agencies devoted substantial time, effort, and expense to development of the wetland mitigation and associated flow-rerouting plan before the Mitigation Rule was promulgated in 2008. The preamble to the 2008 Mitigation Rule states : "the new requirements should not be applied retroactively to permit applicants who have invested substantial effort in developing data and plans under the previous rules and guidance." 73 Fed. Reg. 19594, at 19608 (Apr. 10, 2008). Nevertheless, the Corps has attempted in good faith to follow the 2008 Mitigation Rule to the extent practicable.

As discussed below and in a detailed analysis found in EIS Appendix C, entitled "VII Consideration of the USEPA/USACE Mitigation Rule," the SHEP wetland mitigation plan does in fact comply with the 2008 Mitigation Rule. Among other things, the detailed analysis explains the important functional assessment that was conducted to evaluate indirect impacts to wetlands expected to result from SHEP. This functional assessment was integrated with findings of a comprehensive watershed assessment that was conducted in the Lower Savannah River Watershed and Savannah Harbor during the process of evaluating potential mitigation opportunities.

One of the primary objections raised by opponents regarding SHEP wetland mitigation is that the plan reduces salinity in 740 acres of marsh without sufficient compensatory mitigation. The premise for this objection is that wetlands that were classified in the project as salt marsh (for purposes of impact evaluation) have a higher ecological function than lower salinity wetlands (classified as brackish marsh). However, this premise does not hold true in the Savannah River Basin, based on scientific investigations and guidance provided by the project's Wetland Interagency Coordination Team (Wetland ICT), which included representatives of SC DHEC, SC DNR, GA DNR, USEPA, USFWS, and NOAA Fisheries.

The issue raised is a consequence of the project's goal of minimizing impacts to freshwater tidal marsh as much as possible. The Wetland ICT determined in 2003 that freshwater tidal marsh is the highest priority wetland natural resource in the Savannah River Basin. That priority is primarily based on the wetland losses that have occurred since the 1800s in the Savannah River Basin. Tidal freshwater marsh is rare and its acreage in the Savannah River Basin has been particularly reduced over the years. Although ecologically important in their own right, salt marsh and brackish marsh are more available in other basins – over 408,000 acres in South Carolina and another 405,000 acres in Georgia based on National Wetland Inventory maps of Estuarine and Marine Wetlands. See, e.g., EIS, Appendix E, Fish and Wildlife Coordination Act Report, at 19; GRR, at Appendix C, Engineering Investigations, at 127.

The flow re-routing plan essentially directs more freshwater into the Back River area on the South Carolina side of the Savannah River Basin, as requested by USFWS and agreed to by the Wetland ICT, in part to respond to the Wetland ICT's concerns that further salinity increases in that area should be prevented and reversed if possible to avoid further reduction in diversity of the estuary. In addition to preventing further loss of tidal freshwater wetlands, the flow re-routing will restore some wetlands classified as brackish to freshwater marsh. One of the other expected effects is to reduce salinity in another 740 acres.

Without the flow re-routing plan, the -47 foot selected plan would increase salinity in 1,177 acres of freshwater tidal wetland, converting it to brackish marsh. All agencies agree this would be a measurable

loss in wetland value. With flow re-routing, the project will affect (increase) salinity in only 223 acres of freshwater wetland (located in Georgia waters), a far lesser number of acres than without flow re-routing. In part to compensate for the increased salinity in those 223 acres, the mitigation plan includes preservation of 2,245 acres of wetlands (primarily bottomland hardwood) and upland buffer that would be acquired and deeded to the Savannah National Wildlife Refuge.

Some of the wetland preservation acreage identified above would compensate for the salinity changes in 740 acres of wetland referred to as saltmarsh. The mitigation SOP calculation sheets included in EIS Appendix C document the mitigation required to compensate for impacts to freshwater march and saltmarsh.

For this project, the Wetland ICT agreed to use four parts per thousand (4 ppt) salinity as the dividing line between classification of marsh as salt marsh or brackish marsh. To illustrate, a wetland with 3 ppt salinity would be classified as brackish marsh for this project and a wetland with 5 ppt salinity would be classified as salt marsh. Establishing a dividing line at 4 ppt was necessary to enable numeric computer modeling to provide estimates of quantities and locations of salinity changes in the estuary.

However, the dividing line of 4 ppt between salt and brackish marsh used for this project is a very conservative one. In the scientific literature, there is research that supports setting the dividing line between salt and brackish marsh at 10 or even 17 ppt (the salinity of seawater is 30 ppt). If the dividing line had been set higher for SHEP, many concerns would be eliminated because the 740 acres at issue would have been classified as brackish marsh. Thus, there is a continuum, rather than a sharp distinction, between brackish and salt marsh. The real question is whether there is any functional difference between the two levels of salinity in the marsh, regardless of what salinity level is used to classify or label them. This only makes sense because once a wetland is no longer dominated by freshwater, the effect of salinity levels between, for example, 4 and 7 ppt is one of degree, not kind.

The Corps performed a scientific investigation to determine whether reduction of the salinity in the 740 acres of the marsh at issue would impair the wetland functions of this area. EIS, Appendix C, at 51 and Appendix A to Appendix C, Worksheets. Again, it is important to understand that the project would decrease salinity in the 740 acres at issue.

As set out in a key functional assessment table that is part of the Corps's detailed analysis of compliance with the 2008 Mitigation Rule, there are 11 commonly accepted functions of wetlands, ranging from water purification to fish and wildlife habitat. Wetland functions such as flood protection, streamflow maintenance, retention of particles, and surface water storage would not be affected by conversion of salt marsh to brackish marsh. EIS, Appendix B, VII, Table 1, 7-22 (negligible difference in these functions between salt marsh and brackish marsh). The amount of water and the water levels in the marsh will remain the same regardless of whether the water is saline or brackish – it is only the level of salinity that changes (decreases).

In addition, decreased salinity would not measurably change the type of vegetation found in the 740 acres at issue. The most common form of salt marsh vegetation – a plant known as Spartina alterniflora – would continue to grow and flourish in a brackish marsh setting. Similarly, fish and wildlife habitat would experience only minor change. The same large number of generalist species of fish and wildlife that use the 740 acres of salt marsh would continue to live in and use the same 740 acres after re-classification to brackish marsh.

Because the functional assessment shows the restoration of brackish marsh would cause negligible change in the 11 key wetland functions, the Corps could reasonably conclude that it is appropriate to

view the change from the salt marsh to brackish marsh classification as resulting in "no net loss of wetlands," which is the ultimate goal of the 2008 Mitigation Rule and previous wetland mitigation guidance.

In addition to the detailed technical analysis, the following observations regarding the 2008 Mitigation Rule apply to this project. First, the Rule is flexible based on what is practicable. 33 CFR 332.3(a) ("The district engineer must determine the compensatory mitigation to be required in a DA permit, based on what is practicable and capable of compensating for the aquatic resource functions that will be lost as a result of the permitted activity.") For this project, what is practicable is heavily influenced by the basic direction established by the Wetland ICT, which is to preserve as much freshwater tidal marsh as possible, and the constraint that no salt marsh mitigation banks or in-lieu fee programs are available in the Savannah River Basin.

Second, while the 2008 Mitigation Rule prefers "in-kind" mitigation, the definition of in-kind is also flexible. In-kind is broadly defined to mean "a resource of a similar structural and functional type to the impacted resource." 33 CFR 332.2 (emphasis added). The conversion to brackish marsh of 740 acres classified as salt marsh using the conservative salinity levels adopted for this project could be viewed as restoration in-kind because those particular 740 acres will be a resource of similar structural and functional type before and after. Indeed, the Rule itself draws no distinction between different types of tidal wetland. See, e.g., 33 CFR 332.3(e)(1)(" In general, in-kind mitigation is preferable to out-of-kind mitigation because it is most likely to compensate for the functions and services lost at the impact site. For example, tidal wetland compensatory mitigation projects are most likely to compensate for unavoidable impacts to tidal wetlands").

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765-DC-149-EV81

Comment: *Moreover, the mitigation package as a whole includes a great degree of uncertainty. As explained in greater detail in Section II.A.2.(d), the funding required for the elements of the proposed mitigation package is not assured by either the Corps or GPA. In fact, as explained above in Section II.A.2.(d), it is our understanding the funding needed to ensure that the dissolved oxygen injection system, for example, is maintained and operated in perpetuity will be subject to the precarious federal appropriations process. Without assurance that the proposed mitigation measures will be adequately funded, there can be no confidence in the success or effectiveness of the package as a whole. This approach again runs counter to the Mitigation Rule, which as explained above in Section II.A.2.(d), specifically provides that the "district engineer shall require sufficient financial assurances to ensure a high level of confidence that the compensatory mitigation project will be successfully completed, in accordance with applicable performance standards." 33 C.F.R. § 332.3(n)(1) (emphasis added).*

Response: See response to comment 765-DC-149-EV38.

765-DC-149-EV82

Comment: *The proposed location for the mitigation for the 14.08 acres of direct impacts to wetlands is "a previously used sediment placement area (CDF 1S) within Savannah Harbor." DEIS at 5-6. According to the Corps, this area, which is located adjacent to the confluence of the Front River and the Middle River and is within the Refuge, was identified as having the "greatest opportunity to support the long term success of a restored salt and brackish marsh system." DEIS 5-6. The proposed restoration includes grading it down to an elevation that would allow the growth of Spartina alterniflora. DEIS at 5-6. If the site does not naturally revegetate as expected, the Corps would plant Spartina to provide the basis for*

subsequent growth across the site. DEIS at 5-7. It is not clear why the Corps does not simply re-plant Spartina from the outset. Moreover, it also unclear at what point the Corps will decide to re-plant the site and how extensive the replanting will be. For example, Table 5-2 presents the "Revegetation Rate for Created Marsh," but it does explain whether, for example, the Corps will initiate planting activities if 15 percent vegetative cover is not attained in year one. Finally, if the Corps does decide to re-plant, the DEIS does not specify how extensive such planting will be.

Response: Prior to starting any restoration activities at the 1S site, the District would conduct a detailed site survey to document where wetland vegetation presently occurs. Brackish marsh that exists on the fringe of the site would be identified and not be subject to grading. The early site investigations revealed an interior parcel [approximately 40+ acres] that can easily be graded/contoured to restore 28.8 acres of saltmarsh habitat - an amount satisfying the compensatory mitigation needs for direct impacts to the 15.68 acres lost to excavation. The development of the restored marsh also includes a stipulation [part of the adaptive management plan] which would require planting juvenile *Spartina alterniflora* plants if the site does not revegetate naturally at the rate of colonization indicated in Table 5-2 of the FEIS. Natural revegetation is preferred because the plants colonizing at the site would then come from seed stock of adjacent vegetation that is well-suited to that location (salinity regime). Annual monitoring reports would be generated and provided to a Wetland Interagency Coordination Team (ICT). If the restored marsh does not meet the success criteria illustrated in Table 5-2, then the ICT would identify and/or recommend corrective actions. These would include regrading, sediment deposition, sprigging, modifying planting techniques, equipment requirements, sprig densities, or other tested measures to achieve compliance with the mandated percentages [Table 5-2]. If the restored marsh still does not meet the success criteria [within 10% of the reference site] after 7 years, then the ICT would continue to identify and/or make recommend corrective actions. The need for corrective action(s) would be determined and/or implemented annually with agency involvement and concurrence.

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765-DC-149-EV83

Comment: *Part of the mitigation package relating to impacts to tidal freshwater marshes is to implement several flow-altering modifications of the river. As discussed above in Section I.A., it was not possible at this time to perform a rigorous review of the Corps' modeling completed in connection with the Project, and we remain concerned about the significant uncertainty regarding the ability of the flow-altering modifications to limit indirect impacts to 337 acres. Moreover, we are further concerned that proposed changes to the hydrology of the river may have unintended consequences. For example, while limiting damage to the tidal freshwater wetlands, the changes in hydrodynamics may have unintended effects to fisheries, including shortnose sturgeon, Atlantic sturgeon, and striped bass.*

Response: The FEIS describes the rationale behind selection of the EFDC model in Section 5.01.2.1 of the FEIS. A comparison of impact prediction tools determined that wetland impacts identified by using the EFDC hydrodynamic model are higher (i.e., of greater magnitude) than those identified by the Marsh Succession Model at all proposed project depths. These results validated the District's use of the EFDC-derived algorithm since it provides a more inclusive/conservative estimate of project impacts than other models presently available.

Appendix C describes the process through which the flow rerouting features were identified and evaluated.

The District performed a functional assessment to address the likelihood of vegetative conversion based on changes in salinity. That assessment concluded that the differentiation between salt marsh and brackish marsh recommended by the Wetland Interagency Coordination Team and used in the DEIS was narrowly defined. The salinity range used in the SHEP model to differentiate between brackish marsh (0.6-4 ppt) and salt marsh (> 4ppt) was overly restrictive given that brackish marsh salinities have been reported with a range from 0.5-10 ppt (NOAA, 2010) and in other estuarine systems from 0.5-17 ppt (Judd and Lonard, 2004). Thus, the salinity range used to quantify salt marsh in the area of potential effect (i.e., > 4 ppt) over estimated the amount of saltmarsh in the system and under estimated the amount of brackish marsh. As such, the described conversion of salt marsh to brackish marsh, which would occur as a result of harbor deepening, could be negligible when taking into account vegetative characteristics for wetland environments with associated salinities commonly associated with a brackish marsh (i.e., range between 5 and 10 ppt).

Given the wide range of salinity reported in literature for brackish marsh systems, the inherent variability in salinity that exists for all estuarine systems, and the modeling results that report post-deepening salinity concentrations consistent with the aforementioned range, it was concluded the 740-acre calculated conversion of saltmarsh to brackish marsh if the harbor is deepened to 47-feet, is a conservative value, with actual vegetative shifts unlikely to be identifiable *in situ* in the project effect's area. That said, the District elected to use an inclusive approach in its assessment of project-related effects and incorporated the salt- and brackish marsh conversion in its calculation of minor impacts.

The conversion of 223 acres of freshwater wetland to brackish marsh represents the only significant wetland conversion that is likely to be noticeable if the harbor is deepened to 47-feet. Again, it is important to reiterate that the ecological values of the impacted freshwater wetlands would not be completely lost. Instead, in the worst-case scenario, those acres would convert to brackish marsh. The District's calculation of the number of acres of freshwater wetland that have the potential to convert to brackish marsh is based on a shift of the location of 0.5 ppt salinity, a traditional rule-of-thumb for differentiating between freshwater marsh and brackish marsh. However, data reported in the literature for Savannah Harbor suggest that a shift in vegetation (from freshwater marsh to brackish marsh) in this estuary does not occur until salinity concentrations approach 2.5 ppt (Latham et al., 1994). Even at oligohaline marsh sites with average salinity concentration of 2.1 ppt, a discriminant function (DF) analysis revealed that only in 47% of cases was there a correct pairing of environmental variables with vegetative species composition and dominance. At those same oligohaline sites, 37% of the vegetative species composition and dominance were more closely aligned with a freshwater classification (Latham et al., 1994).

The District's salinity value that denotes a defined shift from freshwater to brackish marsh (i.e., 0.5 ppt) is approximately five times lower than traditionally seen with 100% vegetative shifts *in situ* within the Lower Savannah Watershed (Latham et al., 1994) and other coastal marsh systems in the southeastern United States (NOAA, 2010). Thus, many of the existing freshwater emergent plant species, and associated ecological parameters, would likely be sustained in areas predicted to experience salinity concentrations in the range of 2.5 ppt. For those areas that transition to more brackish characteristics, traditional ecological functions associated with all emergent wetland systems would continue (see functional assessment response).

To ensure the indirect impacts are well characterized and understood, the District would implement post-construction monitoring to evaluate/quantify the degree of wetland conversion that actually occurs. In its Adaptive Management Program, the District also included acquisition/preservation of additional wetlands if monitoring demonstrates that wetland impacts are under-predicted.

In regard to the comment concerning impacts to fisheries, the District performed extensive studies to evaluate impacts to fishery resources, including the Shortnose Sturgeon. The hydrodynamic and water quality models were developed over a number of years, and their use employed approaches/assumptions that were agreed upon by all the Cooperating Agencies. The District conducted studies and worked in conjunction with a Fishery Interagency Coordination Team (of which NOAA Fisheries was a member) to identify critical species and acceptable habitat criteria for each life stage. The analyses included quantification of expected impacts to fishery resources with and without the proposed flow rerouting features. The results of the extensive analyses and mitigation planning, including fish passage at New Savannah Bluff Lock and Dam, flow re-routing, and addition of dissolved oxygen, have minimized impacts to Shortnose Sturgeon habitat. The District carried out all fisheries studies and analyses identified by the Fishery Interagency Coordination Team as being necessary to adequately evaluate the impacts of the various project alternatives.

765-DC-149-EV84

Comment: *We are concerned about the Corps' decision to rely on the Savannah District's Standard Operating Procedure for Compensatory Mitigation (March 2004) (the "SOP") since the SOP was designed to provide guidance for projects involving ten acres of impact or less. The SOP states that it "is applicable to regulatory actions requiring compensatory mitigation for adverse impacts to 10 acres or less of wetland or other open waters" and that the "SOP may be used as a guide in determining compensatory mitigation requirements for projects with impacts greater than the above wetland and stream limits, or for enforcement actions, however, higher than calculated credit requirements would likely be applicable to larger impacts." SOP at 1 (emphasis added). In light of the extent of impacts from this Proposal to resources of national importance, we recommend that the Corps adopt a far greater ratio for preserving wetlands.*

Response: In the summer of 2003, a Wetland Interagency Coordination Team (ICT) was assembled to assist in the analysis of potential impacts from the SHEP. The team consisted of agency wetland experts from US EPA, USFWS, NMFS, GA DNR, SC DNR, and SC DHEC. After deliberation, the team identified an acceptable technical approach to determine wetland impacts, as well as the information needs necessary to effectively review the DEIS. Since creation of the Wetland ICT team, the District hosted seven meetings. During those meetings, methods for evaluating functional losses and mitigation alternatives for wetland impacts were proposed and discussed at length. After the seven meetings, the District prepared a Memorandum for Record (MFR), which was provided to all members of the ICT. Additional coordination was conducted by email.

Use of the Regulatory SOP was the suggestion of one of the Wetland ICT members as a way of quantifying the mitigation required after the flow rerouting minimized the expected impacts to freshwater marshes. Although not specifically designed for large projects, the natural resource agencies have applied the SOP to several projects in Georgia with wetland impacts exceeding 10 acres.

The Corps conducted an Agency Technical Review (ATR) to assess use of the District's Regulatory SOP in developing a mitigation plan for SHEP. The ATR was lead by the National Deep-Draft Navigation Planning Center of Expertise, with the assessment performed by Corps experts at the Engineering Research and Development Center in Vicksburg, MS. The ATR's main purpose was to determine if the SOP was an appropriate method to quantify the preservation acreage needed to compensate for SHEP's impacts. The ATR evaluated the assumptions and calculations that the District used in applying the SOP for the SHEP. It is important to note that the SOP was only used to determine the amount of preservation acreage necessary to offset losses after avoidance, minimization, and restoration measures

had been applied. After deliberation, the ATR concurred with using the SOP to determine the needed preservation acreage, as well as quantifying project impacts and the associated mitigation which would be required.

The USFWS provided a Draft Fish and Wildlife Coordination Act Report, dated August 2010. In the report, the Service concurred with SOP's use together with its calculation that preservation of the subject 2,245 acres [adjacent to the SNWR] would be sufficient to compensate for the losses attendant to the 47-foot deepening alternative. The Service provided updates to the SOP worksheets [Report-Appendix A] and adopted their overall calculations [results] for use in the DEIS. In its Adaptive Management Program, the District also proposed acquisition of additional wetlands if monitoring demonstrates that wetland impacts were under-predicted. The USFWS provided a Final Fish and Wildlife Coordination Act Report in March 2011.

765-DC-149-EV85

Comment: *The Mitigation Rule underscores the importance of providing in-kind mitigation for unavoidable impacts to "difficult-to-replace" aquatic features, such as freshwater tidal wetlands: "For difficult-to-replace resources (e.g., bogs, fens, springs, streams, Atlantic white cedar swamps) if further avoidance and minimization is not practicable, the required compensation should be provided, if practicable, through in-kind rehabilitation, enhancement, or preservation since there is greater certainty that these methods of compensation will successfully offset permitted impacts." 33 C.F.R. § 332.3(e)(3) (emphasis added). We understand the Corps' position that it was difficult to identify preservation opportunities involving freshwater tidal wetlands; however, if in-kind mitigation cannot be undertaken here, we believe that strongly counsels in favor of far more preservation mitigation as provided for in EPA Region 4's Mitigation Policy.*

Response: See response to comment 765-DC-149-EV80, which points out that while the 2008 Mitigation Rule prefers "in-kind" mitigation, the definition of in-kind is also flexible. In-kind is broadly defined to mean "a resource of a similar structural and functional type to the impacted resource." 33 CFR 332.2 (emphasis added). The conversion to brackish marsh of 740 acres classified as salt marsh using the conservative salinity levels adopted for this project could be viewed as restoration in-kind because those particular 740 acres will be a resource of similar structural and functional type before and after. Indeed, the Rule itself draws no distinction between different types of tidal wetland. See, e.g., 33 CFR 332.3(e)(1)(" In general, in-kind mitigation is preferable to out-of-kind mitigation because it is most likely to compensate for the functions and services lost at the impact site. For example, tidal wetland compensatory mitigation projects are most likely to compensate for unavoidable impacts to tidal wetlands . . . .").

In addition, the District disagrees that more preservation mitigation is required. EPA's 2001 Region 4 Compensatory Mitigation Policy provides examples of preservation projects that were used to offset impacts to aquatic resources. EPA describes these examples as, *"preservation projects that have accomplished the goals of the Clean Water Act while meeting the specific goal of the management agencies that accepted or will accept the preserved wetlands."* A project known as Walker Ranch in Osceola and Polk Counties, Florida, is included as an example. In brief, Walker Ranch [8,500 acres] was purchased and preserved by the Disney Development Company as mitigation for filling approximately 600 acres of wetlands [Stutzman, 1992]. The Orlando Sentinel newspaper reported this action as the "one of the largest wetlands losses ever requested in Florida at one time" (Regan, 1991). Although the mitigation-to-impacts ratio is 14:1, the preservation mitigation was provided in exchange for the

irretrievable *and complete loss* of 600 acres of swamp and pristine wetland. All elements of wetland function were lost as a result of filling and/or draining those 600 acres.

In contrast, the wetland impacts derived from SHEP would result in conversion of 223 acres of freshwater marsh to brackish marsh and 740 acres of saltmarsh to brackish marsh. The District's salinity value that denotes a defined shift from freshwater to brackish marsh (i.e., 0.5 ppt) is approximately five times lower than what has traditionally been observed with 100% vegetative shifts *in situ* within the Lower Savannah Watershed (Latham et al., 1994) and other coastal marsh systems in the southeastern United States (NOAA, 2010). Thus, many of the existing freshwater emergent plant species, and associated ecological parameters, will be sustained in areas predicted to experience salinity concentrations in the range of 2.5 ppt. For those areas that do transition to more brackish characteristics, they would still continue to provide the traditional ecological functions associated with emergent wetland systems (see functional assessment response). Thus, the preservation of 2,245 acres (consisting of bottomland hardwoods and upland buffer) is more than sufficient to offset any conversion in freshwater wetland vegetation that might occur. Using the higher salinity value observed in the Savannah basin for conversion to brackish marsh (2.5 ppt), less conversion would be expected, resulting in a mitigation-to-impacts ratio of roughly 10:1, which is consistent with ratios recommended in the 2001 EPA Region 4 Compensatory Mitigation Policy concerning wetland preservation. Using the DF analysis reported by Latham et al (1994) which aligned 37% of freshwater species with oligohaline sites, the 223 acres of freshwater to brackish marsh conversion is reduced further such that the mitigation-to-impacts ratio is to 16:1. It is important to reiterate that the SHEP impact would be a shift in vegetation, and that these wetlands would still provide the ecological functions associated with emergent wetland systems. This is significantly different from other example projects identified in EPA Region 4 Mitigation Policy where preservation was used for the irretrievable *and complete loss* of wetlands.

These SHEP impacts associated with indirect effects to wetlands would be mitigated by preserving 2,245 acres of bottomland hardwood wetlands and adjacent upland buffer (an area highly sought by USFWS for the purpose of protecting lands within the SNWR). Considering the previous information, the District concluded that the proposed preservation mitigation for SHEP is more than sufficient when comparing the SHEP-derived, wetland conversion to the magnitude of wetland loss afforded the Disney Development Company, which was mitigated with the preservation of the Walker Ranch Property (a project highly regarded in the 2001 Compensatory Mitigation Policy developed by USEPA Region 4).

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765-DC-149-EV86

Comment: *As discussed previously above in Section II.A.2.(d), we have serious doubts relating to the proposal to utilize the oxygenation system for purposes of mitigating the impacts associated with the lowering of already low levels of DO in the water column. In addition to not being able to verify the Corps' modeling results at this time, we are already skeptical of the proposal given the results of the demonstration project, which indicated that any reported benefits were within the natural ranges of variability. Moreover, it is highly dubious that such a system can be maintained and run effectively in perpetuity, especially in light of the fact that funding for its maintenance and operation is not even assured.*

Response: See responses to comments 765-DC-149-EV34 through 765-DC-149-38.

765-DC-149-EV87

Comment: *As explained above, in Section VI.C., the Corps has proposed a fishway at NSBLD as mitigation for damages to shortnose sturgeon habitat in the estuary. The DEIS fails to demonstrate that the proposed fish passage design – the Horseshoe Rock Ramp – will have success at passing SNS. The proposal also lacks a detailed fish passage plan listing objectives and goals for the species expected to benefit from the facility. Moreover, for a fish passage facility to be effective, a suitable environment must be present above the dam to support spawning and the development of eggs, larvae, and juveniles. Even if it could be demonstrated that the Horseshoe Rock Ramp could be constructed at the NSBLD, modifications would likely be necessary to specifically accommodate sturgeon. It is likely that these changes would substantially increase the cost of the fish passage facility, and additional funding would be needed up front to ensure proper maintenance of the structure in perpetuity. The fish passage proposal would certainly require far greater levels of committed funding than currently proposed, and even then, it is uncertain that the proposed design will work here to address impacts to sturgeon. The most effective mitigation action would involve the complete removal of NSBLD along with upstream modifications to promote a flow schedule designed to promote biological integrity.*

Response: See response to comment 765-DC-149-EV71. The fish bypass will definitely benefit the Shortnose sturgeon. There is consensus that removal of the lock and dam is the best way to allow sturgeon and other anadromous fish access to upstream habitat. However, that is not a feasible mitigation alternative for the following reasons:

1) The lock and dam is a Congressionally-authorized project; therefore, the Corps is obligated to maintain the project as Congress provides funding for such actions;
2) The current authorization language for the NSBL&D (WRDA 2000, amended in Omnibus Act 2001) call for repair and rehabilitation of the lock and dam structure, construction of a fish passage, and conveyance of Lock and Dam to the City of North Augusta;
3) Removal of the structure would adversely impact the freshwater supply of eight major users.
The following habitat information was not available when the Draft EIS was published. However this information will be added to Appendix B and C.:
In the 20-mile study area [Augusta Shoals/Savannah Rapids upstream of the New Savannah Bluff Lock and Dam] substrate data were collected at 57 sites. Forty percent of the sites had a substrate type[s] considered suitable for sturgeon spawning (NMFS 2007), whereas the combined frequency of marginally suitable sites was 37%. The remaining sites [33%] had unsuitable substrates.

Benthic substrate frequency in Augusta Shoals study area

Class	Benthic substrate	SI[1]	Number of Sites	Frequency (%)
1	Mud, soft clay/fines	0.0	0	0
2	Silt, sand (diameter < 2.0 mm)	0.0	7	12
3	Sand, gravel (diameter > 2.0 mm to < 64 mm)	0.5	0	0
4	Cobble/gravel (diameter > 64 mm to < 250 mm)	1.0	3	5
5	Boulder (diameter 250 mm to 4,000 mm)	0.8	20	35
6	Bedrock w/ fissures w/ gravel/cobble mixtures	0.6	21	37
7	Bedrock smooth w/ few fissures or gravel	0.2	6	11

[1]1.0 indicates highest suitability; 0.0 the lowest.

The following link contains the full report of the investigation of Shortnose sturgeon spawning habitat in the Savannah River [Georgia and South Carolina]: http://www.sas.usace.army.mil/plnew.html

765-DC-149-EV88

Comment: *We are troubled about the proposal to provide a lump sum payment in exchange for significant impacts to the striped bass fishery. Such a proposal should only be considered as a measure of last resort. If no alternative measures can be identified to protect the existing fishery, this proposal must be significantly expanded as impacts to spawning habitat will likely be greater than predicted. Young Report at 3. The Corps has proposed to fund at a 20 percent spawning habitat loss level, but this amount falls well short of what would be needed. Young Report 15. In fact, the Corps has previously underestimated impacts from estuary modifications to the striped bass population in the 1970s and 1980s. Id. The Tide Gate and Diversion Canal installed in the late 1970s and operated through the 1980s caused a 96 percent decline in striped bass reproduction, prompting a moratorium on striped bass fishing and harvest for an extended period of time. Id. The losses were a result of saltwater intrusion and hydrodynamic changes negatively impacting spawning and the survival of early life stages, and a major restocking effort was needed to rebuild the population. Id. To avoid repeating the mistakes of the past, the Corps should anticipate funding at a 100 percent loss level with funding made available prior to initiation of the Project.*

Response: The Striped bass mitigation proposal was thoughtfully developed. Budgeting for a 100% loss in the Striped bass population [due to SHEP] would be unreasonable, since that degree of impacts well exceeds the expected project effects. Nonetheless, the Adaptive Management Plan (Appendix D) has been modified to include funding for additional Striped bass stocking if the expected impacts are exceeded. As indicated in DEIS -Section 5.3.2, a lump sum payment would be made to the Wildlife Resources Division (WRD) of the Georgia Department of Natural Resources to expand its stocking program. All Cooperating Agencies and the Fisheries Interagency Coordination Team members agreed to this approach. Since WRD has long-term expertise in stocking operations, the Team was confident that appropriate techniques and genetic stock would be employed.

Section 4.04 of the EIS and Appendix C have been modified to indicate there may be two populations of striped bass in Savannah Harbor, viz., one spawning near the estuary and the other near the fall line.

According to Martin and Paller 2007 (http://sti.srs.gov/fulltext/WSRC-MS-2007-00076.pdf), "Historically striped bass (*Morone saxatilis*) spawning occurred as far up the Savannah River as the Fall Line (also known as the Augusta Shoals) at about 7 river kilometer (RK) 326; however, currently striped bass have difficulty migrating in any numbers past the New Savannah Bluff Lock and Dam." If this is the case, fish passage at New Savannah Bluff Lock and Dam should help mitigate for impacts to this population of Striped bass.

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765-DC-149-EV89

Comment: *As the Corps explains in its adaptive management plan, there are five components to a adaptive management – predicting impacts, developing appropriate mitigation for those impacts, implementing the mitigation, monitoring the mitigation, and adapting the mitigation as necessary. DEIS, App'x D at 3. The Corps has not made adequate provisions in its adaptive management plan to ensure that the fifth element – adapting the mitigation – will be completed. If, for instance, the chloride levels in the tidal freshwater wetlands reach levels higher than expected and many more of these rare wetlands are degraded as a result, then more wetlands mitigation would be required than is provided for under the adaptive management plan. And under the Corps' plan there is no guarantee that money will be available for such mitigation because the necessary funds will have to be approved by the Administration and appropriated by Congress on a yearly basis. In the current of climate of fiscal restraint, there is no assurance that Congress would appropriate money for additional mitigation for a civil works project that would, by that time, be completed.*

Response: The Adaptive Management Plan has been thoughtfully developed. The State of Georgia has indicated it is willing to place its share of the Adaptive Management costs in an escrow account so they would be available if/when needed. The District intends to obtain Adaptive Management funds during the dredging portion of the project so they would be available if/when needed. Development of the SHEP Mitigation Plan, Monitoring Plan, and Adaptive Management Plan, together with their funding, complies with Corps of Engineers policy, regulations, and procedures. See also response to comment 765-DC-149-EV38 regarding funding commitments.

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765-DC-149-EV90

Comment: *On top of the uncertainty surrounding the funding of the monitoring and adaptive management components of the Project, there is a significant question as to whether the adaptive management sums incorporated in the plan are sufficient. For example, the adaptive management plan allows $1,341,500 for the purchase of additional wetlands if the wetlands mitigation incorporated in the project mitigation plan proves insufficient. Id. at 34. This figure represents only 5 percent of the mitigation costs the Corps included in the wetlands mitigation plan. The Corps does not explain why it chose this amount. Without more, this calculation is arbitrary and capricious.*

Response: The Adaptive Management Plan has been thoughtfully developed. There are no specific criteria regarding the development of adaptive management costs for Corps of Engineers water resource development projects. Although developed separately, the costs for project modifications identified for the Adaptive Management Plan are to be viewed as a whole, rather than as individual components. The total amount identified for Adaptive Management may be expended on whatever project modification is identified as being warranted. The amounts that may be spent on individual

features would not be limited by the amount identified in the FEIS, but would be whatever is needed to fix the problem, up to the total amount identified for Adaptive Management. If additional funds are required for project modifications, funding would be sought through the Corps' normal budget process.

765-DC-149-EV91

Comment: *Furthermore, the Corps does not explain what happens if the harbor deepening destroys far more wetlands than the Corps has predicted. If, for instance, the Project destroys 15 percent more wetlands than the Corps predicts, will the Corps mitigate for those wetlands destroyed that are above the Corps' 5 percent "cap"? This is especially important because there is such a disparity in the amount of wetlands that are at risk as a result of the Project. If the "replumbing" of the estuary works correctly, the Corps predicts that 337 acres of freshwater wetlands will be destroyed. DEIS, App'x C at 54. But if the re-plumbing does not work according to plan this number could be significantly higher.*

Response: See previous response.

765-DC-149-EV92

Comment: *In a similar vein, the Project calls for the use of three "Speece cones" to increase dissolved oxygen levels in the harbor. Id. at 95. If more Speece cones are needed to raise dissolved oxygen levels to acceptable levels, the adaptive management cost schedule only authorizes the Corps to spend an additional 10 percent for more Speece cones. DEIS, App'x D at 34. It would seem, based on the Corps' numbers, that this amount would not even cover one additional Speece cone. This is alarming when one takes into account that it was not that long ago that the Corps was suggesting that as many as twenty-nine Speece cones would be needed for the Project.34 As the FWS has pointed out, it is inappropriate to use the performance goals for the Project as the thresholds for remedial action under the adaptive management plan 35. Because of the uncertainty of the models, the actual impacts of the proposed Project could differ substantially from the predicted impacts.36 Consequently, the amount of funding set aside for adaptive management should be increased to 10 or 15 percent of the initial cost of construction of the various mitigation components. And this additional amount should be included in the cost of the Project.*

Response: See EIS-Section 5.02.2 for details. The District is proposing oxygen injection at two locations and three injection sites, not by using three cones. There would be 13 Speece Cones total at three different locations. The proposed Speece Cone technology has been used in other applications worldwide for 30 years and underwent on-site testing in Savannah Harbor during 2007. The DO system design for Savannah Harbor already includes reserve capacity and an operational back-up unit at each of two installation locations. The estimated life of the cones and lines is 40 years and the estimated life of the controls, oxygen generator, and pumps is 20 years. During construction, there will be a Transfer Efficiency Study to optimize the DO system operation. During the project's 10-year post-construction monitoring period, needed adjustments and modifications to the DO system will be funded through the project's $18 million Adaptive Management plan. Successful installation, operation, and maintenance of the DO system is already or will be a requirement of several approvals for the project, including Georgia and South Carolina's water quality certifications. See also response to comment 765-DC-149-EV38.

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765-DC-149-EV93

Comment: *The Federal Modeling Performance Goals do not seem to recognize that other pollution control efforts are ongoing on the Savannah River upstream of the harbor. For example, to come into compliance with the TMDL for dissolved oxygen, upstream dischargers will be undertaking projects to reduce their contributions of biological oxygen demand to the River. These efforts could have a significant impact on dissolved oxygen levels in the harbor. If the Corps fails to take this into account in its monitoring, then it will not get a true reading of whether or not certain components of the adaptive management plan should be triggered. In other words, the Project should not be able to escape its obligations to increase dissolved oxygen levels because upstream dischargers are acting responsibly.*

Response: The EIS addressed the Draft 2010 TMDL. Further, the proposed mitigation is not intended to bring DO levels in the harbor into compliance with State standards or the TMDL. Congress did not include environmental restoration or enhancement in its authorization of the Savannah Harbor Expansion Project. Congress has established procedures for such Federal actions, but it did not include those project purposes in this proposal.

District consultants used the approved hydrodynamic and water quality models to design a dissolved oxygen system that would eliminate a deepening alternative's adverse impacts on DO. Fortunately, the injection system will also result in a minor net improvement to the estuary's DO levels. EIS -Table 5-28 *Percent of Cells with Improvement in D.O. Levels Over Existing Conditions* shows the extent of this improvement. The project would meet its mitigation responsibilities independent/irrespective of actions by upstream dischargers.

765-DC-149-EV94

Comment: *The preconstruction monitoring for physical characteristics and biological resources should be extended to three lunar cycles to ensure an accurate baseline is established. In addition to wetlands and shortnose sturgeon, the Atlantic sturgeon and stripped bass should be monitored. Also, a monitoring plan should be developed to cover the planting of vegetation at the brackish marsh creation site. Furthermore, if additional mitigation is required under the adaptive management plan, the current plan only allows for one year of additional monitoring. This period should be increased to three years. Finally, the proposed long-term monitoring plan appears to be funded for only one year past the initial 5-year post-construction monitoring period. If this long-term monitoring is dependent on future Congressional appropriations, it is unlikely that this monitoring will ever take place. The Corps needs to find a way to better assure that this monitoring will be funded.*

Response: The full year of pre-construction monitoring would include the three lunar cycles requested – assuming the commenter refers to the 28-day lunar cycle that most directly affects the tides. The pre-construction monitoring also includes monitoring of wetlands and Shortnose sturgeon, as requested.

Analysis of SHEP's effects on Striped bass habitat has been added to the Monitoring and Adaptive Management Plan. The field data that are collected will be used in the updated water quality models to evaluate impact on Striped bass habitat. The Atlantic sturgeon has been listed as an endangered species. The NMFS BO concluded that SHEP would not jeopardize the existence of that species in the Savannah River. Project monitoring would include activities to assess actual impacts to this species.

The Monitoring Plan and Adaptive Management Plan outline the success criteria for the re-vegetation of Disposal Area 1S and the use of sprigging brackish marsh vegetation, if necessary. Additional discussion

concerning the monitoring of Disposal Area 1S has been added to the document including monitoring for invasive species and actions that would be taken to control these species, if required.

The monitoring period[s] that would occur after implementation of an adaptive management measure has been expanded. If any of the mitigation features have to be modified, site-specific monitoring would be conducted for two years after implementation to ensure it performs as intended.

After the SHEP is considered a "completed" project, it would leave "Construction" and enter the "Operation and Maintenance" (O&M) phase. O&M funds would be required to maintain the entire project, including its mitigation features. Funds needed for mitigation for operating projects receive the Corps' highest priority because the project is dependent on maintaining/honoring mitigation requirements.

765-DC-149-EV95

Comment: *We appreciate the opportunity to submit these comments on the proposal to deepen the Savannah Harbor. For the reasons described herein, we believe the Proposal raises serious concerns under the National Environmental Policy Act, the Clean Water Act, the Endangered Species Act, and other state and federal laws and regulations. Our review of the DEIS and Draft GRR reveal that the Corps has failed to provide the public with a meaningful opportunity to review a major, publicly-funded infrastructure project by not providing timely access to the numerous models relied upon by the Corps in rendering its analysis. Until the public is afforded the ability to rigorously review the Corps' analysis, the Corps has frustrated the goals of NEPA by severely limiting public input.*

Response: The District provided ample opportunities for the public to review the proposed project. The GRR and EIS taken together describe the analyses that were performed, including specific details on model development and application. A number of comments were received requesting additional time to review the documents because they were so voluminous and [in part] contained relatively complicated information. In general, these requests were granted.

The NEPA process provided the framework for compliance with other environmental statutory requirements, including the Clean Water Act, Endangered Species Act, and other state and federal laws and regulations and was effectively used in this instance.

The EIS was modified and revised as appropriate to resolve the comments received during the iterative public review. The end result is the FEIS document. The Record of Decision is the final step in the NEPA process and is only issued after the FEIS has been approved and is in full compliance with all applicable laws and regulations. In summary, the DEIS is just a step in the iterative NEPA process and its full compliance with all other applicable laws and regulations will only be achieved when the FEIS is completed and the ROD is signed.

See also responses to comments 765-DC-149-EV02 and 765-DC-149-EV03.

Note: Comments are taken from Exhibit D: Report of Robert Stearns. Most of the comments in this report were made and addressed previously. To the extent any additional responses are provided here they shall be deemed to include any other previous responses on these topics whether or not expressly identified.

Page Exhibit D-2

765-DC-149-EC13

Comment: *Statements by the Georgia Ports Authority (GPA) and other business and community leaders indicate their belief that this project is needed for the port's underlying business, thereby contradicting the Corps' contention that the port's growth rate will be the same with or without the project. The GRR and the DEIS fail to rectify these divergent views;*

Response: The GPA, the Corps, and independent economic forecasting firms predict that significant cargo growth will continue at Savannah Harbor. The same volume of cargo would move through Savannah with or without a harbor deepening project. A Multiport analysis of alternate ports and networks indicated that most of the cargo imported and exported out of Savannah serves a distinct hinterland with little cargo being rerouted from other ports. A deepening project would allow the same volume of cargo to be moved more efficiency via larger or more fully-loaded vessels. This basic position is supported by the fact that PPX 1 vessels are calling Savannah in increasing numbers and are anticipated to call in greater numbers once the Panama Canal is enlarged. The Corps is aware that GPA does not agree with everything contained in the GRR and EIS. For example, GPA stated in its comments on the draft reports that it believes the District is too conservative in its economic analysis of the proposed deepening.

765-DC-149-EC14

Comment: "*the Corps' so-called "multi-port analysis" and "regional port analysis" are based on inconsistent assumptions and fail to address the most important question of which port (or ports) in the southeast could be enlarged to accommodate the Post-Panamax ships with the least cost and fewest environment impacts;*

Response: The regional port analysis concluded that no single port could be sufficiently enlarged to accommodate the growth that is expected for the region. All ports (existing and proposed) have location, operational, and environmental constraints. The 1999 Congressional authorization for the project does not include a system-wide analysis of deep-draft harbors on the east coast. As explained in several places in the GRR/EIS, including EIS Appendix H, Section 404(b)(1) Evaluation (Practicable Alternatives), among the conclusions reached as a result of the Regional Port Analysis, the Multiport Analysis, and the analysis of eight alternative sites for the project along the Savannah River were the following: (1) there is no feasible alternative to improving Savannah Harbor because the major South Atlantic ports will experience so much cargo growth from 2005 to 2050 they will all need deepening or improvement currently planned, (2) no one South Atlantic port has the ability to expand to accommodate all the growth in container volume expected in the region, (3) the proposed deepening of Savannah Harbor would not divert container traffic from other ports because the shipping cost efficiencies would not outweigh the additional landside transportation costs (largely due to the longer distances from each port to and from population centers that are outside its primary service area).

See also responses to comments 765-DC-149-EN01, 765-DC-149-EV27, and 765-DC-149-EC12.

765-DC-149-EC15
Comment: *the Corps' forecasts made in 2004 did not anticipate the 2008-09 international economic downturn and therefore are overly optimistic in predicting future container traffic levels. Less container traffic reduces project benefits. The Corps' attempts to account for this downturn are inadequate;*

Response: The updated economic analysis uses actual TEU traffic volumes through 2010. Using those volumes, the analysis forecasts TEU volumes at the base year of 2015 until 2030. In 2008, just before the start of the national economic downturn, the Garden City Terminal handled 2.6M TEU. The volumes decreased to 2.4M TEU in 2009, but have recovered to 2.9M TEU in 2010, the latest full year reported by GPA. The updated analysis is included in the GRR-Economics Appendix. Container traffic continues to grow at the Garden City Terminal in line with or ahead of pre-recession forecasts.

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765-DC-149-EC16
Comment: *the trend in larger ships calling at Savannah, induced in part by the deeper channel, may create new incentives to raise the Talmadge Bridge to accommodate even larger ships, leading to significant additional costs that taxpayers will have to bear;*

Response: See previous responses on this matter. See other responses on this matter [e.g., 765-DC-149-EC09].

765-DC-149-EC17
Comment: *the Corps fails to acknowledge that many of the so-called "national" economic benefits from the cost savings associated with the proposed improvements to the port may actually accrue to foreign manufacturers and shipping lines rather than U.S. consumers and industries, and consequently the Corps fails to raise important national policy issues that should have been considered;*

Response: See response to 765-DC-149-EC08.

765-DC-149-EC18
Comment: *the benefits of deepening U.S. ports such as Savannah to reduce the cost of imports must be seriously weighed against the impact this has on the competitive position of U.S. manufacturers in international commerce; and*

Response: Savannah Harbor is one of the rare US ports that has a relative balance between import and exports. The economic analysis includes both imports and exports and projected benefits would be split accordingly [i.e., not accrue solely to imports as stated].

765-DC-149-EC19
Comment: *the Corps provides no evidence that any permanent jobs will result from the Port expansion, especially in light of the analytical assumption that the Port of Savannah's market share will not change because of the expansion.*

Response: The Corps' analysis did not reveal that additional permanent jobs would be created as a result of the harbor deepening. The jobs that are identified would be associated with [and generally limited to] the construction phase of this project.

765-DC-149-EC20

Comment: *The Corps' Planning Guidance Notebook states that in conducting a "National Economic Development" analysis, the Corps must base its analysis on the most likely with- and without-project scenarios.1 In analyzing this project, the Corps assumed that the growth rate of the port as measured by tonnage received and shipped would be the same regardless of whether the port was deepened or not:*

Response: See, e.g., response to comments 765-DC-149-EC06 and 765-DC-149-EV08.

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765-DC-149-EC21

Comment: *In light of the divergent views between the Corps' economic models and the shipping community's assessment of the effect the project would have on container traffic, the Corps has not adequately explained why its assumption is valid and the shipping community's assessment is invalid. The answer to this question is paramount because:*

Response: The economic benefits that the Corps predicts would occur as a result of harbor deepening would be the result of reductions in transportation costs rather than changes in cargo volume. The Corps' position is reasonable/valid and is supported by the analyses contained in the project documents. See also other responses to comments on this issue.

Page Exhibit D-6

765-DC-149-EC22

Comment: *If GPA and other members of the shipping community are correct, the failure to deepen the harbor may lead the shipper to look for a deeper port that can accept the bigger ship. This will most likely be a cost-based decision. It may mean, for example, that instead of using Savannah at 42 feet, the shipper might choose Norfolk as the port of entry. The savings associated with switching ports could be as much as $19,999.18 But for purposes of this example, if the savings associated with switching to Norfolk are only $9,000, then the benefits attributable to a deeper Savannah Harbor would only be $11,000 instead of the full $20,000 that results from the Corps' assumption of no-diversion. This hypothetical shows that project benefits could be smaller if the shipping community is right about Savannah Harbor losing traffic if the channel is not deepened. And, if the project benefits are smaller than calculated by the Corps, then net benefits (benefits minus costs), which drive the decision for a deeper channel, will also be less than reported in the NED analysis.*

Response: The Corps' analyses indicate that the volume of cargo likely to move through the port would be the same, i.e., the with and without project conditions. The economic benefits that the District predicts would occur as a result of harbor deepening would be the result of reductions in transportation costs rather than changes [increases] in cargo volume. This position remains reasonable/valid and is supported by the analyses contained in the project documents. See also other responses to comments on this issue.

Page Exhibit D-7

765-DC-149-EC23

Comment: *For purposes of the multiport analysis, the Corps has failed to adequately consider the interplay between different ports and competing port expansions. Economic principles dictate that to be complete, a comprehensive multiport analysis for SHEP should include each of the following study elements (i)-(iv):*

Response: The District adequately considered other ports. The multiport and regional port analyses considered most of the elements in this comment; however, the last item identified is outside the authorization Congress provided to the Corps for implementing this project. See also other responses to comments on these issues.

Page Exhibit D-8

765-DC-149-EC24

Comment: *As an initial matter, it is interesting to note that for purposes of this report, the Corps has concluded that deepening can affect market shares, an assumption clearly at odds with the NED analysis. In addition to this inconsistency, the Regional Port Analysis is flawed because the authors failed to at least consider the possibility that ports would still be able to compete successfully for at least some of the projected growth traffic even if they were in competition with a single "super port." If the authors had considered this possibility, they might have come to a significantly different conclusion. For example, with the construction of a so-called "super port," it is possible (consistent with the assumption of the Corps Regional Port Study) that as the overall level of traffic grows, most of the incremental containers shipped to the East Coast would arrive on Post Panamax ships and that those ships would almost always call on the super port.*

Response: The regional port analysis is not flawed. The savings per TEU for the ocean voyage costs range from about $10 to $60 depending on the trade route distance, percentage of Savannah cargo, and other technical factors. This is derived by dividing the "benefiting tonnes" on each trade route by the ocean voyage transportation costs for the respective routes. At these levels of savings, there is not a sufficient differential to divert large amounts of cargo from or to other ports. Landside trucking costs [$100-150/round trip locally or $1.50-2.00/mile regionally] are also an important determinant in precluding significant amount of traffic from other venues. There are numerous other factors [involved in port economics] that would have a greater affect on cargo diversions such as new container yard developments, location of distribution centers, and landside transportation improvements.

The best estimates [available without more detailed research] are that thirty percent of imports are delivered within 30 miles of Garden City and another thirty percent have a destination along the I-16/75 Corridor to and including Atlanta. Export origins for pulp paper and poultry [200 miles] account for 45 percent, clay [200 miles] about 20 percent, and grain stuffing [30 miles] accounts for about 5 percent.

At these levels of savings, there is not a sufficient differential to support the additional handling cost involved in any "Super Port" concept.

See also other responses to comments relating to the Regional Port Analysis and Multiport Analysis.

765-DC-149-EC25

Comment: *By focusing on terminal capacity constraints, the Corps' Regional Port Study missed a major opportunity to develop a strategic plan for federal spending on port improvements throughout the Southeast Atlantic Coast region. This question, clearly one of the stakeholder concerns as acknowledged by the Corps (see above) is equivalent to my Study Element (iv). It was apparently not considered even though it is a critical issue of national importance. With limited federal resources available for port development projects, it is essential to determine where incremental port development funding can be most efficiently spent.*

Response: The savings per TEU for the ocean voyage costs range from about $10 to $60 depending on the trade route distance, percentage of Savannah cargo, and other technical factors. This is derived by dividing the "benefiting tonnes" on each trade route by the ocean voyage transportation costs for the respective routes. At these levels of savings, there is not a sufficient differential to divert large amounts of cargo from or to other ports. Landside trucking costs [$100-150/round trip locally or $1.50-2.00/mile regionally] are also an important determinant in precluding significant amount of traffic from other venues. There are numerous other factors [involved in port economics] that would have a greater affect on cargo diversions such as new container yard developments, location of distribution centers, and landside transportation improvements.

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At these levels of savings, there is not a sufficient differential to support the additional handling cost involved in any "Super Port" concept.

See also other responses to comments on these issues.

765-DC-149-EC26

Comment: *By failing to determine where incremental port development funding can be most efficiently spent, the Corps has not completed a rational and complete assessment of the benefits and costs of this project. If, for example, there is only sufficient funding to deepen one harbor in the southeast at this time and another already-existing port in the region could be deepened to 48 feet for $200 million and cause limited environmental impacts, whereas the Savannah Harbor project will cost over $500 million dollars and will cause greater environmental impacts, it would make little sense to move forward with SHEP. Without this type of comparison, the NED analysis is flawed.*

Response: See other responses to comments on these issues .

Page Exhibit D-9

765-DC-149-EC27

Comment: *By using baseline commodity forecasts completed in 2004, the Corps could not have anticipated these recent events. Since lower traffic levels mean fewer project benefits, changes in the world economy could seriously alter the basic benefit/cost equation. The Corps "considered" the dip in trade in one of its sensitivity scenarios and concluded that it would reduce project benefits by only one percent.24 The recent economic downturn appears to have affected the Corps' forecasts, but only slightly.*

Response: As stated in previous response above, a commodity forecast has been developed that incorporates historical data through 2010 and updated South Atlantic/Savannah long term growth. As noted in the response, this data includes the impact of the recent economic downturn. In 2008, just before the start of the national economic downturn, the Garden City Terminal handled 2.6M TEU. The volumes decreased to 2.4M TEU in 2009, but have recovered to 2.9M TEU in 2010, the latest full year reported by GPA.

765-DC-149-EC28

Comment: *This conclusion raises two important questions. First and most obviously: is it based on sound economic analysis? While the Corps "used" 2009 data in its sensitivity scenario, it did not simply use 2009 traffic as its new forecasting baseline. Instead, it calculated a baseline by taking the average for trade-route specific data from 2005 through 2009.25 Thus, the downturn was given only a 20 percent weight in a revised baseline. This procedure is arbitrary and raises serious questions about the projected totals for future years, especially in the next decade. As a consequence of the procedure chosen, the Corps' forecast for 2010 is significantly higher than actual tonnage. The forecasts predicted that container traffic (combined exports and imports) would be 10.1 percent higher in 2010 in comparison to 2008.26 Using Census data that is now available through November 2010, the actual tonnage (while rebounding from the extraordinary losses in 2009), is only 0.1 percent above the 2008 levels.*

Response: As stated in response to comment 765-DC-149-EC02, a commodity forecast has been developed that incorporates historical data through 2010 and includes updated South Atlantic/Savannah long term growth. As noted in the response, these data include the impact of the recent economic downturn.

Page Exhibit D-10

765-DC-149-EC29

Comment: *Even if the Corps' conclusion that such scenarios are not likely, with actual traffic failing to meet the Corps' short term forecasts, consideration should be given to delaying the start of the project. Because net benefits are calculated by discounting future years, the project's net benefits and benefit-to-cost ratio may actually be higher with a later startup date. Postponing construction may not only be better from a benefit/cost (NED) perspective, but it would also support the broader federal objective of deficit reduction that has become a critical national priority. In light of these concerns, the Corps should include a sensitivity scenario that gives greater weight to recent trade data and show what happens to project economics if the trade developments are significantly below the baseline forecasts. A full evaluation of this scenario would include consideration of timing alternatives for the project and disclose*

the comparative benefits and costs of differing construction schedules. Failure to conduct this analysis would be unreasonable.

Response: The expansion of the Panama Canal [scheduled to be completed in 2014] has been a primary motivation for the SHEP. Delaying construction only makes sense under unlikely scenarios, e.g., where worldwide economic and trade growths are near zero. Given more probable growth rates, a construction delay would result in higher transportation cost and missed opportunity.

The GRR Economic Appendix will be modified to discuss construction timing more completely.

See also other responses to comments on growth/traffic issues.

Page Exhibit D-12

765-DC-149-EC30

Comment: *The Corps contends that the larger Generation Three ships will not call on Savannah Harbor, but will instead be used elsewhere in the world, where ports are bigger and deeper. Therefore, a Generation Three ship was not used as the "design" vessel for this project.*

Response: Careful consideration was given to the height constraint imposed by the Talmadge Bridge. The fleet forecast used for economic justification in the SHEP included only vessel that could traverse under the bridge. Excluding consideration of raising the bridge was not a convenient analytical assumption, but rather an analytical requirement. Raising the bridge would be a separable increment of the project and its cost would have to be incrementally justified by the reduction in transportation cost. There is no expectation that "Generation Three" ships will call at Savannah on any regular bases even if the Talmadge Bridge were raised.

The Trans Atlantic and Asia trade routes account for the majority of expected growth at Savannah. The larger vessels will not be deployed on these routes. Vessels of the Emma Maersk class or the new 18,000 TEU size vessels are too large to fit through the expanded Panama Canal. The economies of scale they enjoy are only realized on long service hauls. In fact, they are not economical on the Trans Atlantic trade route. These are the major reasons they are not expected to call at US east coast ports in any large quantity or regular frequency. See also other responses to comments on this issue.

765-DC-149-EC31

Comment: *If a major bridge alteration were part of SHEP, there is a real possibility that the high cost of this related work would mean that SHEP would not generate any net economic benefits as traditionally defined by the Corps. The analytical assumption that Generation Three ships will not call at Savannah Harbor is a convenient way to dismiss this potential problem. If the Corps' baseline vessel forecast is right, there is a strong probability that the largest ships would be calling at some ports on the Southeast Atlantic Coast. Given the shipping lines' business practice of multiple ports of call, GPA may soon want to accommodate these larger ships at Savannah Harbor. The height of the Talmadge Bridge will become an increasingly contentious issue.*

Response: As stated in response to comment 765-DC-149-EC02, a commodity forecast has been developed that incorporates historical data through 2010 and includes updated South Atlantic/Savannah long term growth. As noted in the response, these data include the impact of the recent economic downturn.

Page Exhibit D-14

765-DC-149-EC32

Comment: *A primary source of benefits attributed to this project by the Corps is derived from the fact that a deeper harbor leads to lower transportation costs of goods imported into this country, mostly from the Far East. Such savings, assuming that they occur, will be distributed among various entities. The savings may be absorbed by the exporting company or by shipping companies (thereby generating what economists define as "producer surplus"), or passed on to the consumer ("consumer surplus"). Determining how the savings would be distributed would depend on a number of factors, including the elasticities of supply and demand. The Principles and Guidelines clearly state that the Corps' analysis should be focusing on benefits to the planning area and the rest of the nation. The analysis for Savannah Harbor Expansion is therefore incomplete unless the Corps attempts to determine where SHEP benefits are likely to accrue.*

Response: All economic benefits are based on willingness to pay. This is the standard determinant in any benefit-cost analysis. In the case of navigation improvement projects, the proxy for willingness to pay is "transportation savings". All economic benefits from navigation improvements ultimately accrue to individual entities. No attempt is made to distribute these benefits in accordance with their geographic location or the extent of their participation in the economic cycle. Production, transportation, distribution, wholesale and retail selling, and consumption are all elements in this cycle.

NED benefits have been measured in accordance with the Economic and Environmental Principles and Guidelines for Water and Related Land Resources Implementation Studies (P&G). The commenter's reference to the Planning Guidance Notebook is citing language also found in the P&G, in Chapter II - National Economic Development (NED) Procedures, Section VII-NED Benefit Evaluation Procedures: Transportation (Deep Draft Navigation).

See also other response to comment 765-DC-149-EC08.

Page Exhibit D-15

765-DC-149-EC33

Comment: *The Corps may argue that once NED benefits are calculated, any subsequent breakdowns of the data, such as those presented here, are "out of scope." But there is a critical difference between measuring "benefits to the nation" (as described in the Principles and Guidelines), and "measuring NED benefits" (as described in the Corps' own Planning Guidance Notebook). Projects of the SHEP's magnitude must be analyzed using both perspectives, something the Corps has not done.*

Response: See response to comment 765-DC-149-EC32.

Page Exhibit D-17

765-DC-149-EC34

Comment: *These tables tell many stories (such as the degree to which U.S. imports come from China). My purpose here is to point out perhaps the most important difference between the tables. The imports through Savannah are generally manufactured products and not "raw materials," while the exports are generally the opposite. So while deepening the harbor may make it less expensive to export stone, clay,*

and glass to Japan, it also makes it less expensive to import furniture and fixtures from China. From the perspective of the U.S. manufacturing base, this seems like a poor trade-off.

Response: See response to comment 765-DC-149-EC32.

765-DC-149-EC35

Comment: *As I stated earlier in Section IV, the Corps assumes the Savannah Harbor Expansion Project will not induce any additional port traffic. This assumption severely limits the project's ability to create new jobs for Georgia and South Carolina beyond the work associated with the actual deepening itself. Clearly, there will be no induced jobs created by changing market share if the Corps is correct that this project is unrelated to increasing the port's business. Increased business (i.e., more imports and exports using the port) is no doubt the main source of job creation that might be anticipated by the local sponsor.*

Response: Estimated local jobs associated with the channel deepening result from construction spending and are expected to be relatively short-term [4 years]. As noted previously, there is no reason to suppose employment will change significantly as the forecasted traffic through the port is expected to be the same with or without harbor deepening. The transportation cost savings attributed to harbor deepening would not exceed the additional trucking costs that would result if cargo were diverted from another port. Therefore, no shifts in origins, destinations, or routes are expected. However, the net transportation savings expected from the proposed harbor deepening would be substantial, more than $177 million per year.

Page Exhibit D-18

765-DC-149-EC36

Comment: *According to the Corps' recently released draft General Reevaluation Report,50 the Corps is asking the American tax payer and the project's local sponsor to pay over $600 million to deepen the Savannah Harbor to 48 feet. If the Corps is correct that the project is unrelated to the port's underlying business, then there is no need to deepen the channel to keep Savannah Harbor functional and competitive. Even if the deepening would produce efficiencies that would in turn reduce shipping costs, the Corps has failed to determine that these efficiency savings will accrue to U.S. citizens. On the other hand, if the Georgia Port Authority is correct that the deepening is needed to maintain or increase its business, then the Corps' economics analysis is fundamentally flawed. Moreover, the Corps has failed to perform a true multiport analysis to determine, in light of the limited availability of federal funds, if the federal government could deepen a different port in the southeast more cost effectively and with fewer impacts on the environment. In evaluating port expansion projects, it is especially important that the Corps' analytical basis for its recommendation to proceed be objective, rigorous and comprehensive. For the Savannah Harbor Expansion Project, the Corps has not met these standards.*

Response: This comment is a restatement of previous comments. See other responses to comments on these issues, including comments 765-DC-149-EC01 through EC35..

Note: Comments are taken from Exhibit E, Report of Shawn Young. Most of the comments in this report were made and addressed previously. To the extent any additional responses are provided here they shall be deemed to include any other previous responses on these topics whether or not expressly identified.

Page Exhibit E-2

765-DC-149-EV96

Comment: *Even with this caveat, having reviewed the relevant materials that have been made available, it is my professional opinion that deepening Savannah Harbor to -45 or -48 feet will have a significant impact on the shortnose sturgeon (Acipenser brevirostrum), Atlantic sturgeon (Acipenser oxyrincus oxyrincus), and striped bass (Morone saxatilis) populations in the Savannah Harbor and that the impacts will be substantially higher than the level of impacts predicted by the United States Army Corps of Engineers (USACE) in the GRR and DEIS. The DEIS does acknowledge that the project will have impacts, but underestimates the potential environmental degradation of such a project and the associated adverse impacts on aquatic organisms. Fisheries experts with knowledge of shortnose and Atlantic sturgeon ecology have identified dredging as a contributor to their declining numbers and distribution, and future dredging of their habitat as an obstacle to recovery (NMFS 1998, ASSRT 2007, Federal Register Volume 75 61904-61929 Oct 6, 2010).*

Response: See other responses to comments regarding Striped bass, Shortnose sturgeon, and Atlantic sturgeon. Impacts to these species have been reasonably assessed in the final EIS and, with regard to sturgeon, in the NMFS Biological Opinion. Mitigation for impacts to these species was developed in consultation with the Fisheries Interagency Coordination Team, which included members from resource agencies. Mitigation for Striped bass impacts is required by the Georgia and South Carolina water quality certifications, and mitigation for sturgeon impacts is required by the NMFS Biological Opinion. The Monitoring and Adaptive Management Plan would be used to determine if additional mitigation for impacts to Striped bass or Shortnose sturgeon is warranted and adaptive management funds would be available to provide further mitigation should assessments show that is warranted.

Page Exhibit E-3

765-DC-149-EV97

Comment: *The estuary in the vicinity of Savannah Harbor is an important habitat for the Savannah River shortnose sturgeon and Atlantic sturgeon populations and is essential to their continued existence. The DEIS acknowledges this importance; yet, does not accurately estimate the effects of such a large-scale disruption to the estuarine habitat with a projected duration of up to six years. Researchers have concluded that Savannah River shortnose and Atlantic sturgeon have not been successfully reproducing, and most of the current population originates from stockings intended to boost the population to offset this lack of reproduction. The harbor deepening project will have significant negative effects on the health and survival of already endangered shortnose sturgeon and Atlantic sturgeon populations and will reduce their potential recovery by (1) causing a reduction in available habitat and causing changes in summer and winter habitat selection with negative consequences likely; (2) requiring these species to find new foraging habitats if they avoid the project altogether or leaving these species without a source of food due to the elimination of benthic prey from the large-scale dredging; (3) causing these species to suffer physiologically from potential changes in water quality, including lower dissolved oxygen, increased turbidity and pollutants, caused by re-suspension of sediments, and increased salinity.*

Response: See other responses to comments regarding Shortnose sturgeon and Atlantic sturgeon, including response to comment 765-DC-149-EV96. Impacts to these species have been reasonably assessed in the final EIS and in the NMFS Biological Opinion. Mitigation for impacts to these species was developed in consultation with the Fisheries Interagency Coordination Team, which included members from resource agencies. Mitigation for sturgeon impacts is required by the NMFS Biological Opinion. The Monitoring and Adaptive Management Plan would be used to determine if additional mitigation for impacts to Shortnose sturgeon is warranted and adaptive management funds would be available to provide further mitigation should assessments show that is warranted.

The proposed deepening will occur within the footprint of the existing channel. Moreover, although excavation would occur over a four year time frame, only one to two dredges are expected to be working simultaneously, so the estuarine waters would not experience continual widespread dredging impacts. Once a portion of the channel is excavated, it will remain undisturbed until maintenance is needed, in most locations that would be 12 months. This hiatus will allow for re-colonization by opportunistic benthic organisms. Since these species are substrate dependent, their populations should be similar to those initially eliminated. There is no reason to believe that maintenance of the deepened channel will alter/limit the density and diversity of the reestablished benthic community any more than existing maintenance activities. Therefore, from a benthic resource perspective, the impacts to the sturgeon population should not be materially different from those of current operations. Modeling studies indicate that adult summer habitat for SNS would improve as result of the project (due to the oxygen injection systems).

Page Exhibit E-4

765-DC-149-EV98

Comment: *In sum, the Biological Assessment, included as an appendix to the DEIS, concludes that "the proposed project may affect, but is not likely to adversely affect shortnose or Atlantic sturgeon or their critical habitat." Biological Assessment at 182. For the reasons described in my report, I strongly disagree with this conclusion. Accordingly, I recommend that the Corps and National Marine Fisheries Service (NMFS) engage in formal consultation and that the NMFS prepare a Biological Opinion.*

Response: See other responses to comments regarding Shortnose sturgeon and Atlantic sturgeon, including response to comment 765-DC-149-EV96. NMFS has prepared a Biological Opinion regarding the Shortnose sturgeon and Atlantic sturgeon. Impacts to these species have been reasonably assessed in the final EIS and in the NMFS Biological Opinion. Mitigation for impacts to these species was developed in consultation with the Fisheries Interagency Coordination Team, which included members from resource agencies. Mitigation for sturgeon impacts is required by the NMFS Biological Opinion. The Monitoring and Adaptive Management Plan would be used to determine if additional mitigation for impacts to Shortnose sturgeon is warranted and adaptive management funds would be available to provide further mitigation should assessments show that is warranted.

Page Exhibit E-5

765-DC-149-EV99

Comment: *The proposed ruling to list the Atlantic sturgeon as federally endangered and the shortnose sturgeon recovery plan specifically discuss dredging as a cause for endangerment and an obstacle to recovery for both species. The project will cause long-term habitat modifications that will likely change sturgeon distribution with potentially negative consequences. Collins et al. (2000) found shortnose sturgeon juveniles exhibited a switch in home ranges during the 1990's and attributed the distribution and behavioral changes to harbor modifications.*

Response: See other responses to comments regarding Shortnose sturgeon and Atlantic sturgeon.

765-DC-149-EV100

Comment: *The effects of large-scale dredging over a 3-6 year period will likely have a profound negative effect on the foraging behavior of shortnose and Atlantic sturgeon. Sturgeon are known to be benthic (bottom) feeders. Thus, dredging has a major impact on sturgeon feeding behavior because dredging causes the elimination of the benthic organism community when the benthic substrate is removed. The DEIS acknowledges the immediate and complete loss of the benthic community in dredged areas. The benthic community will re-establish after some period of time, but the benthic community will not likely be comprised of the same quantity and quality of prey items as the pre-dredging community (Kenny and Rees 1996, Boyd et al. 2005). Re-colonization of dredged areas is dependent on several factors, intensity and extent of deepening and maintenance dredging, benthic species' life history and resiliency to disturbance, hydrodynamics and water quality of affected area, and substrate type (Kenny and Rees 1996, Boyd et al. 2005, Szymelfenig et al. 2006). Re-colonization will likely take years considering 38 million cubic yards of material will be dredged across several years in order to deepen the harbor to -48 feet, and maintenance dredging will occur annually.*

Response: See other responses to comments regarding Shortnose sturgeon and Atlantic sturgeon.

Page Exhibit E-6

765-DC-149-EV101

Comment: *The large-scale dredging is expected to cause a decline in dissolved oxygen concentrations. This is a major concern for all fish and aquatic organisms. The estuary is already impaired by low dissolved oxygen concentrations, as low as ~ 3 ppm during the summer. Most fish species require > 2.0 – 3.0 ppm dissolved oxygen levels for survival, and physiological impairment such as reduced growth and condition for many fish begins at < 5.0 ppm (Neill and Bryan 1991). This includes shortnose sturgeon (Jenkins et al. 1993, NMFS 1998, Campbell and Goodman 2004), Atlantic sturgeon (Secor and Gunderson 1998, Federal Register 2010), and striped bass (Bain and Bain 1982, Coutant 1990). Dissolved oxygen needs are dependent on water temperature and life history stage of the organism. Increased temperature requires increased oxygen consumption by fish, and typically early life stages have higher oxygen requirements to support accelerated metabolism during these periods of rapid development.*

Response: The SHEP's impacts on the dissolved oxygen regime in the Savannah Harbor estuary are discussed in detail in the EIS/GRR-Engineering Appendix. A mitigation plan [oxygen injection system] is included in the project to remove the project's incremental impacts on D.O. levels. The spacing of the Speece Cones will improve the estuary's dissolved oxygen regime in over 90 percent of the project

effects area compared to existing conditions. See also other responses to comments regarding dissolved oxygen issues.

Page Exhibit E-7

765-DC-149-EV102

Comment: *For fish and aquatic organism populations, a major concern for any dredging operation is the turbidity caused by re-suspension of sediments and the pollutants that may re-enter the water column after sediment exposure (Wilber and Clark 2001). The DEIS states that a sediment study was conducted to determine chemicals present in solid sediments. The study concluded that the only pollutant of concern is cadmium. The study measured levels of common organic, inorganic, and metals found in the Savannah Harbor sediments, but did not conduct actual exposure trials to pore-water where sensitive organisms such as shortnose sturgeon are exposed to waters containing the re-suspended pollutants. Pore-water tests better reflect the toxicity levels organisms will encounter in the water than just solid sample surveys.*

Response: Exposure trials were conducted, i.e., sensitive organisms were exposed to pore-water from sediments containing elevated concentrations of naturally-occurring cadmium.

Sediment quality issues are discussed within the EIS - Sections 5.04, 6.03, and in Appendix M. Section 6.02 of Appendix M states: *Samples of maintenance sediments from the entrance channel were tested to evaluate the toxicity and bioaccumulation potential of chemical contaminants which may be associated with those maintenance sediment materials (Ward et al 1993). These site-specific test results indicate that the maintenance sediments meet the testing criteria of the EPA Ocean Dumping Regulations and Criteria and are, therefore, acceptable for transportation for ocean dumping under Section 103 of the Marine Protection, Research, and Sanctuaries Act of 1972, as amended. USEPA, Region IV, concurred with this determination by letter dated December 21, 1993.*

Additional sampling and testing (bioaccumulation studies) are in progress to update and renew site designation approval for the Savannah ODMDS. The ODMDS would receive both new work and maintenance sediments from the entrance channel.

Section 6.02 also states: *Samples of bottom sediments from the excavation area in the entrance channel were tested to evaluate contaminants which may be present in new work sediment materials. No contaminants were detected at levels of concern. Those evaluations are described fully in Appendix M - Sediment Quality Evaluation.*

Appendix M, Sections 3.10.7, 3.10.8, 3.10.9, and 3.10.10 describe the results of the sediment pore-water and bioaccumulation studies that were performed. Section 4.2.2 also discusses the potential for movement of cadmium from sediment into the water column and then to aquatic biota within the river.

As stated previously, EPA did not approve use of Shortnose sturgeon for the sediment exposure trials. NOAA Fisheries approval would also have been required given the species status.

See also previous response to comment 765-DC-149-EV65.

Page Exhibit E-9

765-DC-149-EV103

Comment: *Savannah Harbor deepening will allow the saltwedge to move upriver. Thus, saltwater intrusion will increase. This will increase the salinity of important habitats for juvenile and adult shortnose and Atlantic sturgeon, for striped bass spawning and early life stages, and the aquatic community as a whole, including freshwater marshes. Salinity affects ion/water balance in fish and aquatic organisms. Salinity preference and tolerance varies by species and between life history stages of a species, and determines habitat selection and ultimately organism community structure in an estuarine environment. Shortnose sturgeon juveniles prefer low salinity, and salinity tolerance increases with body size. Juvenile shortnose sturgeon salinity can tolerate up to 20 ppt, but suffer decreased energy and aerobic capacity, resulting in decreased growth and survival, as salinity increases (Jarvis et al. 2001, Jarvis and Ballantyne 2003, Zeigeweid et al. 2008). Atlantic sturgeon preference and tolerance is not well defined. Juveniles select lower salinity habitat, and adults are known to inhabit marine environments. Savannah River striped bass eggs and larvae are negatively impacted and experience mortality as salinity increases toward 15-18 ppt (Winger and Lasier 1994).*

Response: The proposed project will not have "profound impacts on the entire estuarine fish community". Modeling indicates that changes in salinity would reduce the amount of winter Shortnose Sturgeon habitat in the estuary as summarized in Table 5-29, Summary of Hydrodynamic-Related Fishery Impacts with Mitigation and previous responses. The modeling also indicates the summer habitats [when SNS are highly stressed] would improve as a result of the project. The Cooperating Agencies agreed that constructing a fish bypass around the New Savannah Bluff Lock and Dam [along with the other proposed features] would increase the overall amount of SNS spawning habitat and adequately mitigate for habitat losses associated with the deepening. If the Atlantic Sturgeon is formally listed, then the District would evaluate project effects on this species. For Striped bass, the agency representatives concluded that the only practical means of addressing habitat loss would be through a stocking program. The District included funding for expansion of that program in the mitigation plan.

Since dredging would primarily occur within the footprint of the existing navigation channel, direct impacts to benthic invertebrates would be minimal in comparison [annual basis] to the status quo [maintenance dredging].

The District performed the investigations and analyses [identified by the Fishery Interagency Coordination Team] needed to identify potential project impacts on the harbor's fisheries. The Team selected specific species to evaluate in detail as representatives of guilds of fish species that reside in or pass through the project's potential impact area. The studies/analyses identified by the Fisheries Interagency Coordination Team were sufficient to evaluate the impacts of the various project alternatives. In addition, the proposed mitigation features would more than mitigate for the predicted impacts.

See also other responses to comments on these issues.

765-DC-149-EV104

Comment: *The SHEP DEIS has no mitigation directly targeting Atlantic sturgeon. The DEIS also lacks baseline information and an impact assessment on the Savannah River Atlantic sturgeon. The National Oceanic and Atmospheric Administration (NOAA) recently proposed to list the South Atlantic distinct population segment (DPS) of Atlantic sturgeon, under which the Savannah River population is included, as endangered under the Endangered Species Act (ESA) (Federal Register Volume 75 61904-61929 Oct 6,*

2010). Within the proposed ruling, dredging is listed as a contributor to their declining populations and an obstacle to recovery. The omission of discussion and impact assessment of a species proposed for listing as Endangered needs to be rectified. Even if there is a general lack of knowledge concerning the Savannah River Atlantic sturgeon population, the DEIS should state so in order to prompt research efforts to fill in the information gaps concerning population size and structure, spawning habitat selection, habitat selection of early life stages, and estuary use in the SHEP vicinity. The main focus of impact evaluation, mitigation, and funded research has been placed on the shortnose sturgeon for good reason; however, the Atlantic sturgeon has been neglected.

Response: See other responses to comments on Atlantic sturgeon issues, including 765-DC-149-EV-69-73.

Page Exhibit E-16

765-DC-149-EV105

Comment: *SHEP will result in adverse modification of critically important habitat for Savannah River shortnose and Atlantic sturgeon.*

Response: See other responses to comments on Shortnose and Atlantic sturgeon issues, including 765-DC-149-EV69-73. Also, it should be noted that the Savannah River is not designated critical habitat under the Endangered Species Act for the Shortnose sturgeon or the Atlantic sturgeon. Nevertheless, the SHEP will provide mitigation required by the NFMS Biological Opinion for impacts to Shortnose sturgeon habitat.

From:	kristen mielhe
To:	CESAS-PD, SAS
Subject:	Savannah Harbor expansion plan
Date:	Tuesday, January 25, 2011 11:36:53 PM

Dear Mr. Bailey,

As a property owner on Tybee Island, I am concerned about the proposed Savannah Harbor Expansion Project and the study undertaken by the Army Corps of Engineers. I believe that the study does not adequately address the following issues:

-Preservation of wildlife habitats of the surrounding areas - which is home to endangered species including sea turtles.
-Preservation of the Tybee Island Beach which is a primary economic engine for the people of Tybee Island.
-Mitigation of additional beach erosion that will occur if the Savannah Harbor is dredged an additional 6' feet.
-Reduction in Savannah tourism as a result of increased industrialization of Savannah.
-Preservation of a safe, swimmable beach (my husband and I have a young son whose safety in the water is, obviously, extremely important to us).

I urge you to conduct further studies to address these areas of concern. It is my understanding that the current port is a viable economic engine for the region and that expanding the port service would degrade existing economies and jeopardize a fragile eco-system and further harm endangered species. I have not seen enough in the existing studies that adequately addresses these concerns. It would be wrong to proceed with the deepening of the Savannah Harbor without further study and a proven plan to mitigate these negative consequences.

Thank you for your consideration in this matter.

Sincerely,
Kristen Mielhe
14 Logan Street
Tybee Island, GA 31328

From: Jeffrey Petrou
To: CESAS-PD, SAS
Subject: Savannah Harbor Expansion Project:
Date: Tuesday, January 25, 2011 11:11:02 PM

Dear Mr. William Bailey:

I am a property owner on Tybee Island and an entrepreneur. I am greatly concerned by the proposed Savannah Harbor Expansion Project and the study undertaken by the Army Corps of Engineers. I believe that the study does not adequately address the following issues:

Preservation of wildlife habitats of the surrounding areas - which is home to endangered species including sea turtles.
Preservation of the Tybee Island Beach which is a primary economic engine for the people of Tybee Island.
Mitigation of additional beach erosion that will occur if the Savannah Harbor is dredged an additional 6' feet.
Reduction in Savannah tourism as a result of increased industrialization of Savannah.

Please conduct further studies to address these areas of concern. It is my understanding that the current port is a viable economic engine for the region and that expanding the port service would degrade existing economies and jeopardize a fragile eco-system and further harm endangered species. I have not seen enough in the existing studies that adequately addresses these concerns. It would be wrong to proceed with the deepening of the Savannah Harbor without further study and a proven plan to mitigate these negative consequences.

Thank you for your consideration in this matter.

Sincerely,
Jeffrey Petrou

Kristen Mielhe, Jeffrey Petrou

779-JK-07-EV01, 779-JK-07-EN01, 779-JK-07-EN02, 779-JK-07-EN03, 779-JK-07-EC01

Comment: *-Preservation of wildlife habitats of the surrounding areas - which is home to endangered species including sea turtles.*
-Preservation of the Tybee Island Beach which is a primary economic engine for the people of Tybee Island.
-Mitigation of additional beach erosion that will occur if the Savannah Harbor is dredged an additional 6' feet.
-Reduction in Savannah tourism as a result of increased industrialization of Savannah.
-Preservation of a safe, swimmable beach (my husband and I have a young son whose safety in the water is, obviously, extremely important to us).

Response: An updated and expanded socioeconomic resources section is included in the final document. Output from the *Impact Forecasting System Model* is also included to describe the potential economic impacts to the local economy.

The District evaluated and designed SHEP such that impacts are avoided and minimized to the maximum extent practicable while still achieving the project's basic purpose and need. For remaining impacts, compensatory mitigation has been provided as a means to ensure no net functional loss to aquatic resources and/or wildlife habitat. The Corps has revised its plans for placement of sediments excavated from the entrance channel. In response to concerns expressed by the State and local governments, those sediments would be placed in existing sediment disposal sites: either the Ocean Dredged Material Disposal Site or an existing upland confined sediment containment area. The Corps prepared a Biological Assessment of Threatened and Endangered Species and coordinated this document with the USFWS and NMFS. The NMFS has provided their Biological Opinion (BO) which includes reasonable and prudent measures to be taken to protect endangered sea turtles. The BO can be found in Appendix Z.

The report, "Impacts of Savannah Harbor Expansion Project", concluded that channel deepening would have only a negligible effect on the Tybee Island system.

Public safety is always considered during project design. No public safety concerns were predicted as a result of placing sediment in the nearshore area. That project element has been removed at the request of the Georgia Department of Natural Resources and the City of Tybee Island.

779-JK-07-EC02, 478-JK-07-EV02

Comment: *I urge you to conduct further studies to address these areas of concern. It is my understanding that the current port is a viable economic engine for the region and that expanding the port service would degrade existing economies and jeopardize a fragile eco-system and further harm endangered species. I have not seen enough in the existing studies that adequately addresses these concerns. It would be wrong to proceed with the deepening of the Savannah Harbor without further study and a proven plan to mitigate these negative consequences.*

Response: An updated and expanded socioeconomic resources section is included in the final document. Output from the *Impact Forecasting System Model* is also included to describe the potential economic impacts to the local economy.

The District has evaluated and designed SHEP such that impacts are avoided and minimized to the maximum extent practicable while still achieving the project's basic purpose and need. For the remaining impacts, compensatory mitigation has been provided as a means to ensure no net functional loss to aquatic resources. Potential impacts to threatened and endangered species have also been examined with the finding that SHEP is not likely to adversely affect the majority of state or federally listed species. For the Shortnose sturgeon, Atlantic sturgeon, Loggerhead sea turtle, and Kemp's ridley sea turtle, NMFS has concluded in their final Biological Opinion that the overall effect on these species would be acceptable with implementation of the Reasonable and Prudent Measures. Savannah District believes that it has evaluated potential adverse impacts from harbor deepening and presented the findings of those evaluations in the project reports in a manner that provides sufficient basis on which to reach decisions on the feasibility and environmental acceptability of the proposed action.

From:	stephen willis
To:	CESAS-PD, SAS
Subject:	Harbor Deepening Response
Date:	Tuesday, January 25, 2011 10:29:36 PM

January 25, 2011

Colonel Jeffrey M. Hall
District Commander
US Army Engineer District, Savannah

Mr. William Bailey
ATTN: PD Post Office Box 889
100 West Oglethorpe Avenue
Savannah, GA 31402-0889

Phone No. (912) 652-5781

Submitted via e-mail to CESAS-PD@usace.army.mil

Subject: **DRAFT - TIER II ENVIRONMENTAL IMPACT STATEMENT (EIS) FOR SAVANNAH HARBOR EXPANSION PROJECT, CHATHAM COUNTY, GEORGIA AND JASPER COUNTY, SOUTH CAROLINA, RELEASED 15 NOVEMBER 2010**

Dear Mr. Bailey:

These comments are submitted concerning the Draft Tier II EIS for the Savannah Harbor Expansion Project (SHEP).

I am Steve Willis, a resident of Savannah, a Vietnam veteran, and US Citizen. I care deeply about the future of Savannah and the Low Country region. I hope you do too.

Anyone who has examined the facts knows that Savannah is already at the tipping point. Our unequaled historical and cultural center is at the tipping point. The region is already at the tipping point, ready to break under the weight of ever increasing industrial blight. The natural environment, so beautiful we found it, is sick and dying.

Please, do not destroy the Lower Savannah and the Low Country for some egotistical game or the profit of the Corps of Engineers. This is no threat, but if you do you will regret it, not because you personally will be hurt, but because you will forevermore have to live with what you have done. You know what I am talking about.

Please post this comment.

Steve
Willis

Public Comment- Steve Willis

778-JK-01-EV01

Comment: *Anyone who has examined the facts knows that Savannah is already at the tipping point. Our unequaled historical and cultural center is at the tipping point. The region is already at the tipping point, ready to break under the weight of ever increasing industrial blight. The natural environment, so beautiful we found it, is sick and dying.*

Response: Your comments are noted. Savannah District evaluated the proposed harbor deepening to determine whether it is both economically justified and environmentally sustainable. The Corps' civil works projects must meet both of those criteria. The Corps believes the proposed action meets those criteria.

From: Glenda Brown
To: CESAS-PD, SAS
Subject: RE: Savannah Harbor Expansion Project
Date: Tuesday, January 25, 2011 1:10:57 PM
Importance: High

This is written in support of The Savannah Harbor Expansion Project. It is the belief of our association this deepening to 48 feet is crucial to the future of our port and the state of Georgia. As you know, The Savannah River provides and supports numerous companies, manufacturers, transportation and thousands of jobs. This improvement will assure that the port of Savannah remains competitive in the future.

We also feel these improvements will provide a safer transit, with less restrictions, for the larger and deeper vessels to come. The post Panamax vessels have been coming to Savannah for several years, operating with limited drafts. The improvements will allow vessels to carry deeper drafts with less restrictions and also provide channel improvements for passing.

The Savannah Pilots have maintained one of the safest records in the country and it is our intention to maintain this safety record.

This will supplement our earlier comments in support of the Savannah Harbor Expansion Project

- **The members of the Savannah Pilots Association regularly handle 8500 TEU vesssels and 48′ will allow for safe and adequate movement of these vessels.**
- **A depth of 48′ will allow for improved maneuverability of vessels in the harbor.**
- **The Project will support 2 way traffic.**
- **Passing lanes are important to permit proper queuing of vessels.**
- **The entrance relocation is adequate; it supports 2 way traffic; and the entrance relocation was made with input from members of our Association.**

Thank you for your favorable consideration of our comments.

Tommy Browne

Master Pilot

Savannah Pilots Association
P.O. Box 9267
Savannah, Georgia 31412
(912) 236-0226
(912) 236-6571 fax

Glenda Brown

795

Comment: *We also feel these improvements will provide a safer transit, with less restrictions, for the larger deeper vessels to come. The post Panamax vessels have been coming to Savannah for several years, operating with limited drafts. The improvements will allow vessels to carry deeper drafts with less restrictions and also provide channel improvements for passing.*

Response: Concur. The project design was coordinated [extensively/iteratively] with the Savannah Harbor Pilots' Association. The District appreciates the Pilot Association's concurrence that the proposed channel design would allow safe and adequate movement of 8,500 TEU vessels and improve their maneuverability in the harbor.

From:	seawheels2000@aol.com
To:	CESAS-PD, SAS
Subject:	ATTN: PD, US Army Corps of Engineers, Savannah District,
Date:	Wednesday, January 26, 2011 12:03:04 AM

Mr. William Bailey,

First of all I want to apologize for sending this at the last minute to be on record with my comments on this matter of utmost importance. I didn't realize until this past week the deepening would effect the plans of a new port facility on the South Carolina side as I have just learned. I also wanted to make a few other comments and add some late thoughts.

I am one of several thousand small independent business truckers who haul ocean shipping containers arriving or departing at the port of Savannah,GA. Although I live across the river in SC. I have hauled out of Savannah,GA ports since the seventies. Speaking on behalf of truckers who operate at the port of Savannah I first applauded the idea of deepening the Savannah river to make way for bigger ships expanding the port. Yes we are certainly all for the new jobs it would create however I don't approve of any project that will delay the construction of a much needed new deep water port in Jasper county, SC.

If this project to deepen the river channel cannot be accomplished in any other way other than to dump the spoils in the same area as the new port facility I think this work should be delayed until further investigation can be done. A more suitable alternative spoil location should be explored or at least additional time for more open discussion should be provided to the general public for comment of how citizens feel after now learning the Jasper county port may be sacrificed for expansion of the Georgia ports facility. I feel many SC citizens have been hoodwinked at the final hour.

The importance of a Jasper county deep water facility for future growth in this area totally out-ways any short term gains of expanding the Georgia port authority at present location. The infrastructure outside the Garden City port terminal is fast becoming impassable due to the tremendous increase of commercial traffic flow over the past ten years. The potential risk of even worse highway bottle necks after harbor deepening will skyrocket due to the additional container volume which soon will surely choke off the roadways that make passage to I-95 & I-16 connectors possible.

The planned Jimmie Deloach parkway extension into highway 25 will not handle the amount of new truck traffic this port deepening project will generate. Within the next few years the commercial traffic flow on the Georgia side of the river will max out the new infrastructure leaving this area without the ability to build a larger SC port because the prime area in Jasper county has once again been reserved for dredge spoil. SC already has the land availability and tremendous potential for a simpler less intrusive transportation infrastructure system which when completed would be a much more direct/safer route connecting major interstates from a new deep water port.

The potential for major run off pollution into the river because of outpaced insufficient highway infrastructure to handle the thousands of future loads from this deepening should also be cause for major concern. I see no study has been done on this subject or the fact that there is a critical shortage of safe parking areas around the Garden City port that already have hundreds of dangerous loads hazardous to the fragile marine environment parked in locations that directly drain into the Savannah river.

The port of Savannah has fought aggressively in the past to stop any construction of a new Jasper county port that would compete against their ability to attract all South Georgia ocean shipping customers. This attitude has not been good for business or low-country workers on either side of the river. This deepening project as it stands now would be a blessing to the GPA in halting any deep water port on the Carolina side but a travesty to those of us who would like to see this be a joint southeastern mega area for shipping on both sides of the harbor. I don't think at this time without consideration for a long term shipping plan for both states along the Savannah river this project will

equally benefit the citizens of both states or the environment.

Thank you for your time,
Jim Stewart
Hardeeville, SC
202-360-2632

Jim Stewart

804-MM-03-EV01

Comment: *I am one of several thousand small independent business truckers who haul ocean shipping containers arriving or departing at the port of Savannah,GA. Although I live across the river in SC. I have hauled out of Savannah,GA ports since the seventies. Speaking on behalf of truckers who operate at the port of Savannah I first applauded the idea of deepening the Savannah river to make way for bigger ships expanding the port. Yes we are certainly all for the new jobs it would create however I don't approve of any project that will delay the construction of a much needed new deep water port in Jasper county,SC.*

Response: Justification of the Jasper Ocean Terminal is outside the scope (as defined by Congress) of the proposed project. However, economic studies presented in the GRR and EIS indicate that under both scenarios: without and with project conditions, the Garden City Terminal would reach its capacity at 6.5 million TEUs [around 2030]. Upon reaching this build-out capacity, another terminal would have to accommodate any additional container traffic moving through the Port of Savannah. The environmental impacts resulting from SHEP have been minimized to such an extent that its construction/operation would not preclude other future harbor developments in the region. However, a significant future action [such as a new terminal] would be dependent on multiple economic considerations and the outcome of a host of very detailed environmental studies [to include replacing affected confined sediment disposal areas in a very sensitive estuary].

Specifically, construction of the proposed project [SHEP] will in no substantive way delay/preclude the construction of a terminal in Jasper County. Deposition of excavated material at Areas 14A/14B could have a positive effect on this notional facility. The consultant working for the Joint Project Office [proponent for that development] has publically stated that the proposed placement of new work sediments from SHEP on Areas 14A and 14B would save the terminal development project over $200 million by raising its elevation to a workable height. Therefore, if SHEP is constructed, it is likely to benefit the development of the Jasper Ocean Terminal by significantly reducing initial construction costs. Based on considerations which occur at this time, the District concludes that continued deposition of dredged sediment in the subject sites is the least-cost environmentally acceptable alternative for the deepening project. The District is open to changes in those long term plans if the Federal Government is made whole by a project proponent that ensures that the Government's O&M costs would not increase because it no longer had use of those sites.

804-MM-03-EV02

Comment: *The planned Jimmie Deloach parkway extension into highway 25 will not handle the amount of new truck traffic this port deepening project will generate. Within the next few years the commercial traffic flow on the Georgia side of the river will max out the new infrastructure leaving this area without the ability to build a larger SC port because the prime area in Jasper county has once again been reserved for dredge spoil. SC already has the land availability and tremendous potential for a simpler less intrusive transportation infrastructure system which when completed would be a much more direct/safer route connecting major interstates from a new deep water port.*

Response: Section 5.19 in the EIS states: *GPA continues to work closely with the State of Georgia to develop more improvements to the highway system outside the terminal. GPA has developed a plan that would provide expressway connection of Interstate highways directly to the Terminal. In 2010, the State of Georgia approved $120 million in bond revenue for use toward completing the Jimmy DeLoach*

Highway from Interstate 95 to the Garden City Terminal. That work is scheduled to begin in 2011 and be complete by the base year of the project. Additionally, the Georgia Department of Transportation's long-term highway plan includes construction of the Brampton Road Connector which will provide direct access from the Garden City Terminal to Interstate 516 and connections to Interstate 16. No other terminal in the US has such an expressway of highways directly to the terminal. Those road improvements are shown in Figure 5-63. The completion of those roads will remove terminal traffic from neighborhoods and lessen congestion and the accompanying air quality impacts.

Appendix D [Plan Formulation] of the GRR describes the process the District used to address the navigation problems being experienced in the harbor and winnow those measures to the alternatives receiving detailed considerations. Structural and non-structural methods of reducing the navigation problems were examined. Further, potential alternate terminal locations were investigated. The proximity to major north-south and east-west highways and existing rail support are major factors that favor the Garden City Terminal over other locations along the Savannah River navigation channel. From an environmental perspective, other potential locations would require significant infrastructure projects to access the site, with all the attendant mitigation this would entail.

804-MM-03-EV03

Comment: *The potential for major run off pollution into the river because of outpaced insufficient highway infrastructure to handle the thousands of future loads from this deepening should also be cause for major concern. I see no study has been done on this subject or the fact that there is a critical shortage of safe parking areas around the Garden City port that already have hundreds of dangerous loads hazardous to the fragile marine environment parked in locations that directly drain into the Savannah river.*

Response: The Corps considered potential adverse effects that could result from implementation of the SHEP. The Congressional authorization of the project did not include a broad authority to restore or improve environmental conditions in the harbor. The Georgia Ports Authority was issued a stormwater runoff permit that addresses runoff from its terminal facilities, including on-terminal parking areas. The Corps expects them to continue to operate their facilities in a manner that complies with that permit, thereby protecting the environment from potential adverse impacts from stormwater runoff and the pollutants that it can carry. Permits that Georgia DOT obtains for construction of new roads or improvements to existing roads include assessments of potential stormwater runoff and features to address the runoff if regulators deem it necessary.

#812

Gmail

William Cliett Jr. <wocliett@gmail.com>

Harbor Deepening

1 message

William Cliett Jr. <wocliett@gmail.com> **Tue, Jan 25, 2011 at 9:47 AM**
Draft To: cesas-pd@usace.army.mil.
Cc: Eprc@aol.com, mmcliett@cornerstonephilanthropy.com

As a life long resident of Savannah and deeply involved in the maritime industry I wanted to share a few observations about the harbor deepening project.
PRO,
1.) Everyone has to remember that Savannah is one of the three most western ports on the east coast.
2.) It has the most area to be developed (I.E. additional terminals, long and short term warehousing space) than the other two nearest ports being Charleston and Jacksonville.
3.) It provides good services pilotage and tug or the LNG facility would not be here.
4.) Dredging wise Savannah still has the available spoil area to facilitate a large scale deepening project such as this, reducing the cubic yard cost.
5.) If this is not approved then a port such as Norfolk which has the avaiable water depth now will dominate the container industry along with Newark.

Concerns:
1.) I am concerned that with the advent deeper draft vessels with a greater beam that this will create a one way traffic scheme for navigational safety. Is this just deepening with no widening.
2.) This would be addressed to the port management, in my opinion GA 21 is a train wreck waiting to happen, what does management plan to upgrade, beside cranes that would be have the available reach to work these newer vessels. Does the GPA have any plans to create dedicated fly overs, thorough fares, rail lines, that would serve to move this expected increase in volumn of freight. Why deepen if there is not going to be a commitment to invest and better what is presently in place.
3.) Has all interest especially environmental concern both from any impact to the water supply, material placed in the disposal areas, any endangered species issues been addressed and satisfied so this project does not get halted once all equipment is in place.

Thanks for giving me the opportunity to speak on this issue

Sincerely

William Cliett

William Cliett

812-MM-03-EN01

Comment: *I am concerned that with the advent deeper draft vessels with a greater beam that this will create a one way traffic scheme for navigational safety. Is this just deepening with no widening.*

Response: Ship simulation verified that the deepened channel design can accommodate a design vessel (post-panamax Generation 2; 140' beam) meeting a smaller vessel. The ship simulator study verified that widening at 3 bends in the channel would maintain this two-way traffic capability. The addition of two meeting areas to the inner harbor channel would provide the capability to have two design vessels meet in these areas. The two meeting areas would also provide additional flexibility in channel operations and reduce delays for two design vessels meeting. The fact that two design vessels could not meet at all times in all channel segments was taken into consideration in economic analyses for the project.

812-MM-03-EV01

Comment: *This would be addressed to tt1e port management, in my opinion GA 21 is a train wreck waiting to happen, what does management plan to upgrade, beside cranes that would be have the available reach to work these newer vessels. Does the GPA have any plans to create dedicated fly overs, thorough fares, rail lines, that would serve to move this expected increase in volumn of freight. Why deepen if there is not going to be a commitment to invest and better what is presently in place.*

Response: As noted in EIS-Section 5.19, GPA and the State have made substantial investments [time/money] to increase the efficiency of cargo movement within the terminal and its immediate environs. Moreover, GPA continues to work closely with the State to improve the highway system that connects the port its hinterland markets. For example, GPA has developed a plan that would provide direct expressway connections from the terminal to interstate highways. The State of Georgia approved $120 million in bond revenues in 2010 to complete the Jimmy DeLoach Highway from Interstate 95 to the GCT. Construction is scheduled to begin in 2011 and should be completed by the project's base year [2015]. Additionally, the Georgia Department of Transportation's long-term highway plan includes construction of the Brampton Road Connector which will provide direct access from the GCT to Interstate 516 along with connections to Interstate 16. Upon completion, no other port terminal in the US will have a comparable ground transport system. The subject road improvements are detailed in EIS-Figure 5-63. Their completion will remove much of the terminal traffic from adjacent neighborhoods, which will lessen congestion and adverse air quality impacts.

Further, the GCT is the only US port terminal with two Class 1 rail service providers [Norfolk Southern and CSX] located on site. While only 18% of the cargo currently transits the terminal by rail, GPA's intends to increase the percentage of containers transported via this mode.

The GCT has a total of 33 on-road truck container interchange lanes divided between two locations on the terminal; this system can processed over 8,200 gate transactions on a single day. GPA's facility master plan includes construction of a third set of gates. Collectively, this would provide access to the terminal from the east, west and south, thereby spreading out traffic and reducing waiting times at the gates. This dispersal of truck traffic will reduce congestion and lessen noise issue, air emissions, adverse impacts on adjacent neighborhoods, etc. GPA expects to implement this improvement within the next 10 years.

812-MM-03-EV02

Comment: *Has all interest especially environmental concern both from any impact to the water supply, material placed in the disposal areas, any endangered species issues been addressed and satisfied so this project does not get halted once all equipment is in place.*

Response: Since 2000, Savannah District has coordinated all aspects of the SHEP with the Cooperating Agencies, state natural resource agencies, and the public in an attempt to resolve all relevant issues prior to completing the Record of Decision. That is the final step in the NEPA process and is only accomplished after the FEIS has been approved and full compliance on all applicable laws and regulations has been achieved.

From: Bernetta Anderson
To: CESAS-PD, SAS
Subject: Hudson Hill Community Concerns
Date: Tuesday, January 25, 2011 11:43:40 PM

Dear Sir,

Hudson Hill is the only residential community that lies North of Bay Street in Savannah. Our community is adjacent to the Savannah River and the ports and we too have concerns regarding the environmental impact of the Savannah Harbor Expansion Project. This community has existed here for over 100 years. Some have lived here for generations and can trace our roots back thru segregation days, Jim Crow days, Share Cropping days and back to the days of slavery, in this very same area, on these very same grounds, North and South of the Savannah River.

We have a high incidence of asthma, bronchitis, cancer and other respiratory diseases in our people. We are concerned about the impact on our air and water quality. We need a community outreach with information and/or a q&a for residents to settle their fears/concerns. We seek resources for community awareness, health reassurances and community capacity building. We have not been represented at the table and we are probably the most affected stakeholders in regards to proximity to the ports.

Because many of our residents work at the ports, we support the expansion project, however, we do have these legitimate concerns.

Along with our sister communities of West Savannah and Woodville, both lying adjacent to Hudson Hill just South of Bay Street, there resides approximately 10,000 people in this area of greater West Savannah.

I anticipate your response.

Bernetta B. Anderson
Outgoing President, Hudson Hill Community Organization
President, Ivory Bay Community Development Corporation

Hudson Hill Community

1111-MR-01-EV01

Comment: *We have a high incidence of asthma, bronchitis, cancer and other respiratory diseases in our people. We are concerned about the impact on our air and water quality. We need a community outreach with information and/or a q&a for residents to settle their fears/concerns. We seek resources for community awareness, health reassurances and community capacity building. We have not been represented at the table and we are probably the most affected stakeholders in regards to proximity to the ports.*

Response: EIS Section 5, especially Section 5.02, Water Quality, Section 5.05, Air Quality, and Section 5.19, Protection of Children and Environmental Justice, thoroughly addresses the concerns about impacts to air and water quality raised in this comment.

In general, although the Corps expects the harbor to continue to grow in the future, no additional increases in cargo are expected as a result of the proposed harbor deepening. As a result, the project would not affect the number of containers that move through the areas that surround the port. The economic benefits of the project would result from the use of larger, more cost-effective container ships, not an increase in the number of containers. Therefore, noise, air emissions (including air toxics), and traffic would not increase as a result of the proposed deepening, and the proposed harbor deepening would have no adverse landside impacts outside the Garden City Terminal.

As indicated in Section 5.20 in the EIS, GPA established a Stakeholders Evaluation Group (SEG) in the late 1990's. The SEG had as its mission, purpose and function the providing of advice to the Georgia Ports Authority (GPA) pertaining to the Savannah Harbor Expansion Project to help insure that all issues pertaining to the project are addressed to the fullest extent practicable. To accomplish this mission, purpose, and function, the SEG shall operate with the following Operating Guidelines: The SEG shall provide the following: **A public forum to permit members of the general public to voice their support or concerns, to become acquainted with the project, and to provide whatever input they wish (emphasis added by the writer)**.

The SEG met about every other month. The meetings were announced on the web site of the Georgia Ports Authority, the local sponsor for the project, and extensive reports and findings were posted to the site as well. The website is located at: http://sav-harbor.com/ . The date, time and location of the next SEG meeting are shown on that web page. The *Savannah Morning News*, the local newspaper, regularly published information about upcoming SEG meetings, and later wrote about the discussions that took place at those meetings. GPA funded nearly every study that the Stakeholder Evaluation Group recommended as a body. The Corps regularly participated in the SEG meetings and obtained insights from the group on the views and concerns of the public.

From: dimarian21@aol.com
To: CESAS-PD, SAS
Subject: Savannah Harbor Federal Navigation Project
Date: Tuesday, January 25, 2011 10:33:54 PM

Dear Mr. Bailey,

I have several questions and concerns regarding the Savannah Harbor Project. Some are listed below:

1. What assurances can the Corps provide as to the accuracy of its predictions regarding the impact on the aquifer and on the City of Savannah's Abercorn Creek I & D water inlet upstream? The availability of fresh water from the aquifer is vital to our local economy, and indeed, to our ability to live and work in Chatham County. The Abercorn Creek inlet provides our only currently available alternative source of drinking water. If there is even a remote risk of salt-water contamination of the aquifer, I could not support it.

2. With regard to the Project's anticipated impact on the salt water wedge and the infiltration of salt water into freshwater and tidal marshlands, what is the statistical confidence interval for the modeling program? Has the modeling program been used to calculate the impact of similar projects, and if so, is there empirical evidence regarding the accuracy of the model? I am very concerned that the Corps may be underestimating the impact of the Project on the salt water wedge and on freshwater and tidal marshlands. The history of the tide gate project does not help to instill my confidence.

3. With regard to the Project's anticipated impact on the dissolved oxygen levels in the Savannah River, I have the same questions and concerns as noted in paragraph 2, above.

4. Presuming the project goes forward, what are the expected annual costs of dredging and maintenance, and who will pay the costs? Will ships entering and leaving the Port pay a harbor maintenance fee or other fees that will be dedicated exclusively to the Project and its maintenance?

5. Will the Corps guarantee that the Project will not cause erosion problems along the Savannah River or the many interconnected rivers and creeks? If the Project does cause erosion, who will pay for the damage to property?

6. Will the Corps guarantee that the Project will not cause interconnected rivers and creeks to become filled in with sediment? In particular, I am concerned about St. Augustine Creek, Turner's Creek, the Back River, and the South Channel.

7. The Corps' report indicates that the Project will result in improvement to air quality due to the fact that larger ships entering the harbor will result in fewer total ships entering and leaving. It seems obvious that the report did not consider the impact on air quality that will result from the increased number of containers that will be moved through the Port by rail and truck as a result of the Project.

8. It also seems that your report does not address the impact of increased truck traffic on the costs of road maintenance, on the quality of life in West Chatham County, or on the tourism industry, which according to your report, makes up a larger segment of our local economy than the transportation sector. In my opinion, any report that does not include these costs and impacts is incomplete. I have the same comments and concerns regarding the impact of increased rail traffic that will result from the Project.

9. Your report indicates that mitigation of the loss of fish spawning areas will be addressed by lump sum payment. To whom will the payments be made? Certainly the fish will not be cashing a check. How will a lump sum payment enable my children and grandchildren to catch striped bass in the river? Will they receive a check?

10. If the Corps cannot guarantee the accuracy of its models with regard to the impact of the Project on the aquifer and the movement upstream of the salt water wedge, wouldn't it make sense to deepen the Harbor in graduated phases of 1 to 2 feet per phase?

11. Has the data provided by GPA been independently reviewed by auditors or other qualified experts to ensure its accuracy? In particular, has GPA been required to produce underlying records and documentation supporting its conclusions regarding the need for the Project?

12. Page 102 of the Corps' report indicates that ships approaching the Port of Savannah are queued based on factors including draft restrictions, canal appointments, and "tide jobs/labor costs." Isn't it true that ships wait to enter the Harbor in order to avoid overtime charges in the loading and unloading of ships? If so, please quantify how many ships waited to enter the harbor, and for how long, in order to avoid labor costs, as opposed to how many ships waited, and for how long, due to draft restrictions.

13. What is the required bridge clearance of empty or partially loaded post-Panamax ships? Will the existing bridge from downtown Savannah to South Carolina need to be replaced to accommodate these ships?

14. If the Project is approved, can GPA provide assurances that post-Panamax ships will choose to serve the Savannah Port instead of other ports that provide more direct access to the ocean, such as Charleston?

15. Has GPA or any other entity quantified the positive (or negative) impact of the Project on other segments of the economy? I have already inquired in Paragraph 2 regarding the impact of increased truck traffic to and from the Port on tourism. Has any study been done to determine whether the combined effects of Port expansion and increased truck and rail traffic will result in the loss of opportunities to attract other types of development? For example, is warehousing the highest and best use of industrial property in Chatham County and the surrounding counties? Are the jobs that will be created by the Project and its long-term impacts quality jobs, or jobs that will be filled by temporary workers at minimum or near-minimum wage?

I appreciate your consideration of my comments, questions, and concerns. Thank you.

Eric Gotwalt
Chatham County Resident and Property Owner

Eric Gotwalt

1112-MR-17-EN01

Comment: *What assurances can the Corps provide as to the accuracy of its predictions regarding the impact on the aquifer and on the City of Savannah's Abercorn Creek I&D water inlet upstream? The availability of fresh water from the aquifer is vital to our local economy, and indeed, to our ability to live and work in Chatham County. The Abercorn Creek inlet provides our only currently available alternative source of drinking water. If there is even a remote risk of salt-water contamination of the aquifer, I could not support it.*

Response: The information provided in the GRR- Appendix C: Potential Ground-Water Impacts to the Upper Floridan Aquifer [2007] has been reviewed by multiple groundwater experts and represents an accurate depiction of the project area's geologic framework and its hydrological regime. The groundwater flow and transport model predictions based on these studies agree with field data.

For the municipal intake chloride studies, the Corps has revised the analysis described in the DEIS to incorporate additional data. It used that new data to update the model used to predict chloride levels at the City's water intake. During that update, two different methodologies [EFDC model and Artificial Neural Network] were used. The results obtained from each one were comparable [mutually supporting], which provides confidence in their conclusions. Both analyses concluded that chloride levels would increase with harbor deepening during spring tide events and times when freshwater flows down the Savannah River are low from their roughly present average level of 12 mg/l. However, this would require the City of Savannah to increase its treatment (chlorine) of the water they obtain from the intake, which in turn could increase lead corrosion in pipes and disinfectant byproducts. Consequently, the mitigation plan in the FEIS includes construction of a raw water storage impoundment which the City could use during high chloride spikes (these occur during low flows and high tides).

1112-MR-17-EN02

Comment: *With regard to the Project's anticipated impact on the salt water wedge and the infiltration of salt water into freshwater and tidal marshlands, what is the statistical confidence interval for the modeling program? Has the modeling program been used to calculate the impact of similar projects, and if so, is there empirical evidence regarding the accuracy of the model? I am very concerned that the Corps may be underestimating the impact of the Project on the salt water wedge and on freshwater and tidal marshlands. The history of the tide gate project does not help to instill my confidence.*

Response: Details regarding the hydrodynamic and water quality model development process, extensive reviews, and uncertainty analysis can be found in the report , "Development of the Hydrodynamic and Water Quality Models for the Savannah Harbor Expansion Project" [January 2006]; which is included in the Supplemental Materials to the Engineering Appendix. That report includes a discussion detailing the model's accuracy for various parameters [including salinity and dissolved oxygen] throughout the Savannah River estuary [including Middle and Back Rivers]. The hydrodynamic and water quality models employed for SHEP were developed through an iterative process closely coordinated with the SHEP Water Quality Interagency Coordination Team, which followed in the footsteps of the Modeling Technical Review Group that was established in the late 1990s to review the model that would be developed for the deepening project and determine its viability for use with SHEP impact evaluations and mitigation development. The group consisted of technical modelers from the Corps, US EPA Region 4, USGS, Georgia DNR-EPD, South Carolina DHEC, and technical modeling experts

[under contract to develop and refine the SHEP model]. The group ultimately decided to adopt a model [originally developed for the TMDL] for evaluating the effects of harbor deepening because it allowed simulation of the harbor's salinity stratification and was state-of-the-art with its 3-dimensional capabilities. After three years of intense work, the original TMDL model was sufficiently enhanced/modified [specifically as regards the calibration of the existing harbor conditions] to receive final acceptance letters from federal, state, and industry reviewers. These letters of acceptance can be found in the Supplemental Materials to the Engineering Appendix (Correspondence Regarding Hydrodynamic & Water Quality Model Acceptability).

1112-MR-17-EN03

Comment: *With regard to the Project's anticipated impact on the dissolved oxygen levels in the Savannah River, I have the same questions and concerns as noted in paragraph 2, above.*

Response: The hydrodynamic (salinity) and dissolved oxygen models were developed simultaneously through the process described in the response to the previous comment.

1112-MR-17-EV01

Comment: *Presuming the project goes forward, what are the expected annual costs of dredging and maintenance, and who will pay the costs? Will ships entering and leaving the Port pay a harbor maintenance fee or other fees that will be dedicated exclusively to the Project and its maintenance?*

Response: As discussed in Section 10.3.6 of the GRR, the cost for maintaining the Savannah Harbor Navigation Project would incrementally increase after construction of the deepened channel. Funding for current maintenance comes from yearly appropriations authorized by Congress and this practice would continue after SHEP. In accordance with requirements of the Water Resources Development Act of 1986, "the non-federal Interest shall be responsible for an amount equal to 50 percent of the excess of the cost of the operation and maintenance of such project over the cost which the Secretary determines would be incurred for operation and maintenance of such project if such project had a depth of 45 feet." In other words, the local sponsor would share in the cost of maintaining the Navigation Project if it's depth is greater than 45 feet. The Water Resources Development Act of 1986 also established the Harbor Maintenance Trust Fund, but it is not dedicated specifically to the Savannah Harbor Navigation Project. No harbor-specific maintenance fee is envisioned.

1112-MR-17-EV02

Comment: *Will the Corps guarantee that the Project will not cause erosion problems along the Savannah River or the many interconnected rivers and creeks? If the Project does cause erosion, who will pay for the damage to property?*

Response: As part of the evaluation studies, the District performed several shoreline erosion studies. Their findings indicate that construction of SHEP [including the proposed navigation and mitigation features] will not materially change the location or amount of erosion that presently occurs within the harbor. See the GRR, Appendix C, Section 9.0 (Shoreline Effects) for further information.

1112-MR-17-EV03

Comment: *Will the Corps guarantee that the Project will not cause interconnected rivers and creeks to become filled in with sediment? In particular, I am concerned about St. Augustine Creek, Turner's Creek, the Back River, and the South Channel.*

Response: As part of the overall evaluation studies, a sedimentation investigation was performed. Its findings indicate that construction of SHEP [including the proposed navigation and mitigation features] will not materially change the location, rate, or ultimate amount of shoaling in area creeks [compared to the status quo]. Please see the GRR, Appendix C, Section 10.0 (Sedimentation Analyses) for further information.

1112-MR-17-EV04

Comment: *The Corps' report indicates that the Project will result in improvement to air quality due to the fact that larger ships entering the harbor will result in fewer total ships entering and leaving. It seems obvious that the report did not consider the impact on air quality that will result from the increased number of containers that will be moved through the Port by rail and truck as a result of the Project.*

Response: Under both the without and with project conditions, the Garden City Terminal will reach its build-out capacity in 2030 when the total number of TEUs processed [annually] reaches 6.5 million. This determination is based on factors such as the size of the terminal, the number of gates that provide access to the property, the number and size of the berths, the number and size of the container cranes, the number of jockey trucks that move the containers within the terminal, how the containers are stacked within the terminal, and the number of railroads that service the terminal and the frequency of their trains. It is projected that without deepening, more vessels will be required to transport the cargo that is expected to transit the port. With deepening, the total number of vessels decreases, as vessels would be able to load/unload without the current constraints of draft.

No incremental increases in cargo are expected to occur as a result of the proposed harbor deepening. As a result, the project would not affect the number of containers that move through the areas that surround the port. The economic benefits of the project would result from the use of larger, more cost-effective container ships, not an increase in the number of containers. Hence, noise, air emissions (including air toxics), and traffic would not be increased [over the status quo] as a result of the proposed deepening. Therefore, the proposed harbor deepening will have no adverse landside impacts beyond the Garden City Terminal boundaries.

1112-MR-17-EV05

Comment: *It also seems that your report does not address the impact of increased truck traffic on the costs of road maintenance, on the quality of life in West Chatham County, or on the tourism industry, which according to your report, makes up a larger segment of our local economy than the transportation sector. In my opinion, any report that does not include these costs and impacts is incomplete. I have the same comments and concerns regarding the impact of increased rail traffic that will result from the Project.*

Response: No incremental increases in cargo are expected to occur as a result of the proposed harbor deepening. As a result, the project would not affect the number of containers that transit the areas that surround the port. The economic benefits of the project would result from the use of larger, more cost-effective container ships, not an increase in the number of containers. Noise, air emissions (including air toxics), and traffic would not be increased [compared to the status quo] as a result of the proposed deepening. Therefore, the proposed harbor deepening will have no adverse landside impacts outside the Garden City Terminal.

Section 5.19 in the EIS states: *GPA continues to work closely with the State of Georgia to develop more improvements to the highway system outside the terminal. GPA has developed a plan that would provide expressway connection of Interstate highways directly to the Terminal. In 2010, the State of Georgia approved $120 million in bond revenue for use toward completing the Jimmy DeLoach Highway from Interstate 95 to the Garden City Terminal. That work is scheduled to begin in 2011 and be complete by the base year of the project. Additionally, the Georgia Department of Transportation's long-term highway plan includes construction of the Brampton Road Connector which will provide direct access from the Garden City Terminal to Interstate 516 and connections to Interstate 16. No other terminal in the US has such an expressway of highways directly to the terminal. Those road improvements are shown in Figure 5-63. The completion of those roads will remove terminal traffic from neighborhoods and lessen congestion and the accompanying air quality impacts.*

Currently, the Garden City Terminal [GCT] is the only US facility with two intermodal rail yards for Class I carriers (Norfolk Southern and CSX) located onsite. Approximately 18% of its cargo moves through the terminal by rail. Since rail is able to move an equal amount of cargo [actually much more] with less fuel than trucks, total diesel emissions from the port's operations will be reduced. Further, GPA's future plans call for an increase in the percentage of containers that will be handled by rail [lessening emissions even more]. GPA will also continue to work with its carriers to ensure that trains leaving or entering the port will not cause excessive delays at West Bay Street, GA 17, and GA 21.

As you indicate, tourism is a large segment of the local economy. However, the impacts of SHEP on the tourism industry are projected to be nominal [both in the short- and long-term]. In fact, by letter dated, 19 January 2011, the Savannah Area Chamber of Commerce states: *On behalf of our 2,100 business members representing over 77,000 employees in our area, we strongly encourage the U.S. Army Corps of Engineers to proceed with the Savannah Harbor Expansion Project.*

1112-MR-17-EV06

Comment: *Your report indicates that mitigation of the loss of fish spawning areas will be addressed by lump sum payment. To whom will the payments be made? Certainly the fish will not be cashing a check. How will a lump sum payment enable my children and grandchildren to catch striped bass in the river? Will they receive a check?*

Response: As indicated in Section 5.03.2 of EIS, the lump sum payment would be made to the Wildlife Resources Division of the Georgia Department of Natural Resources to fund a Striped bass stocking program.

1112-MR-17-EN04

Comment: *If the Corps cannot guarantee the accuracy of its models with regard to the impact of the Project on the aquifer and the movement upstream of the salt water wedge, wouldn't it make sense to deepen the Harbor in graduated phases of 1 to 2 feet per phase?*

Response: Incremental deepening the harbor would be manifestly inefficient and would not meet project needs since the cost of construction would be significantly higher and the time to realize economic benefits more protracted.

The information provided in the GRR- Appendix C: Potential Ground-Water Impacts to the Upper Floridan Aquifer [2007] has been reviewed by multiple groundwater experts and represents an accurate depiction of the project area's geologic framework and its hydrological regime. The groundwater flow and transport model predictions based on these studies are also comports with field data. For the

municipal intake chloride studies, two different methodologies [EFDC model and Artificial Neural Network] were used. The data from each were close approximation of one another [mutually supporting] which provides confidence in their conclusions. Therefore, dredging the harbor in phases to address the noted chloride concerns is neither necessary nor economically feasible.

1112-MR-17-EV07

Comment: *Has the data provided by GPA been independently reviewed by auditors or other qualified experts to ensure its accuracy? In particular, has GPA been required to produce underlying records and documentation supporting its conclusions regarding the need for the Project?*

Response: The data provided by GPA has not been independently verified, but has been examined by the Corps of Engineers' Deep Draft Center of Expertise in Mobile, AL for internal consistency. An independent external peer review [conducted by experts outside the Corps of Engineers] has been completed. The review concluded that the growth projections cited by GPA appear valid.

1112-MR-17-EV08

Comment: *Page 102 of the Corps' report indicates that ships approaching the Port of Savannah are queued based on factors including draft restrictions, canal appointments, and "tide jobs/labor costs." Isn't it true that ships wait to enter the Harbor in order to avoid overtime charges in the loading and unloading of ships? If so, please quantify how many ships waited to enter the harbor, and for how long, in order to avoid labor costs, as opposed to how many ships waited, and for how long, due to draft restrictions.*

Response: Ships approaching the Port of Savannah are queued based on the following ranking factors: (1) draft restrictions [tide], (2) jobs/labor costs, and (3) Panama Canal appointments. Figure 4-3 and Table 4-8 of the GRR indicate that carriers are responding to existing operating draft restrictions by loading vessels so as to maintain unrestricted access to the channel, viz., using operating drafts no deeper than -38 feet. The loading limitations noted in the recent historical data continue through the present. In the first half of 2010, 80% of vessels that called at Garden City Terminal were considered depth constrained, and 20% of transits relied on tidal assistance. Waiting for the tide is a costly operational inefficiency for schedule-driven service carriers. For inbound vessels, this waiting adds to the operational cost of a voyage by increasing the vessel's time at sea. Outbound vessels waiting for the tide must spend more time at the dock and, in turn, may delay the arrival of a vessel scheduled to use the same berth. Further, carriers are averse to waiting for the tide because it disrupts the vessel's scheduled arrival time at the next and following ports. Vessels may increase speed between ports to make up time lost waiting for the tide, but this also adds to the cost of the voyage via increased fuel consumption/equipment maintenance. Vessels may be subject to penalty fees for missing their scheduled time slot at the Panama Canal or may need to pay overtime fees due to a late port arrival. In addition, with deeper vessel drafts [beyond -38.00 feet] the tidal window becomes relatively narrow, e.g., vessels loaded to the channel's maximum operating draft of 42 feet have only one hour before and after each high tide. This narrow window increases the risk that the vessel may miss the opportunity for transit due to LNG vessel operations or cargo related delays.

1112-MR-17-EN05

Comment: *What is the required bridge clearance of empty or partially loaded post-Panamax ships? Will the existing bridge from downtown Savannah to South Carolina need to be replaced to accommodate these ships?*

Response: The conservative air draft [measured from the lower edge of the span] of the Talmadge (Savannah River) Bridge is 185 ft MHHW. The air draft of the Susan Maersk [with its antenna up and a minimum light load draft] is 170 ft; therefore, there would be no need to replace the bridge in this regard. Moreover, all the vessels forecasted to call at Savannah during the project life will be able to pass [uneventfully] under the Talmadge Bridge.

1112-MR-17-EV09

Comment: *If the Project is approved, can GPA provide assurances that post-Panamax ships will choose to serve the Savannah Port instead of other ports that provide more direct access to the ocean, such as Charleston?*

Response: GPA plans to expand the GCT to 6.5 million TEUs regardless of whether or not the Savannah Harbor navigation channel is deepened. Under both without and with project conditions, the Garden City Terminal will reach its build-out capacity in about 2030 [6.5 M]. This is the maximum number of containers that could reasonably be processed based on the size of the terminal, the number of gates that provide access to the property, the number and size of the berths, the number and size of the container cranes, the number of jockey trucks that move the containers within the terminal, how the containers are stacked within the terminal, and the number of railroads that service the terminal and the frequency of their trains.

As discussed in detail in Section 5 of the GRR, the future projected uses of the Savannah Port are based on detailed analysis of US East Coast /Gulf Coast Port configurations/capacities, GCT infrastructure/ capacity, international trade projections, commodity forecasts, etc.

1112-MR-17-EV10, 1112-MR-17-EV11, 1112-MR-17-EV12

Comment: *Has GPA or any other entity quantified the positive (or negative) impact of the Project on other segments of the economy? I have already inquired in Paragraph 2 regarding the impact of increased truck traffic to and from the Port on tourism. Has any study been done to determine whether the combined effects of Port expansion and increased truck and rail traffic will result in the loss of opportunities to attract other types of development? For example, is warehousing the highest and best use of industrial property in Chatham County and the surrounding counties? Are the jobs that will be created by the Project and its long-term impacts quality jobs, or jobs that will be filled by temporary workers at minimum or near-minimum wage?*

Response: GPA plans to expand the GCT to 6.5 million TEUs [maximum capacity] whether or not the Savannah Harbor navigation channel is deepened. Under both without and with project conditions, the District expects the Garden City Terminal to reach its build-out capacity in about 2030. No incremental increases in cargo are expected to occur as a result of the proposed harbor deepening. As a result, the project would not affect the number of containers that transit the areas that surround the port. The economic benefits of the project result from the use of larger, more cost-effective container ships, not an increase in the number of containers. Likewise, no adverse effects on employment, taxes, and property values are expected from implementation of the proposed harbor deepening. Some additional temporary jobs may be available during SHEP's major construction phases. A determination of the highest and best use for industrial lands in the region is beyond the scope of this project.

From: Jody Lane
To: CESAS-PD, SAS
Subject: Savannah Harbor Deepening
Date: Tuesday, January 25, 2011 8:03:28 PM

Although like many citizens of Savannah, I am interested in the economic health of our city and state, I do not support the proposed harbor deepening at this time.

I understand there continue to be very serious questions about negative inpacts upon the environment. I'd also like to know any risks associated with the LNG facilities and pipelines. No economic interest should trump serious environmental issues and the risks of a busier port. There has been a great push to convince the populace that we must have this harbor deepening in order to protect our econonomic interests, but I am not convinced of the economic necessity nor that the environment could be adequately protected.

Sincerely,
Jody Lane
110 Stonewall Drive
Savannah, Ga 31419

Jody Lane

1113-MR-01-EV01

Comment: *I understand there continue to be very serious questions about negative impacts upon the environment. I'd also like to know any risks associated with the LNG facilities and pipelines. No economic interest should trump serious environmental issues and the risks of a busier port. There has been a great push to convince the populace that we must have this harbor deepening in order to protect our economic interests, but I am not convinced of the economic necessity nor that the environment could be adequately protected.*

Response: Your concern about the potential adverse environmental impacts of the proposed harbor deepening is noted. Savannah District has evaluated the proposed deepening for over 10 years. It performed many scientific investigations and analyses to identify potential adverse environmental impacts and then minimize the ones that were identified. It used Corps experts from other parts of the country when they were more qualified than local staff. It consulted with the natural resource agencies across the region to ensure their concerns were considered. It sought the views of the public, organizations, and government agencies through several means, including review of the DEIS. After that extensive process, Savannah District has concluded that the harbor can be deepened in a cost-effective and environmentally-sustainable manner. Adverse environmental impacts would be adequately mitigated.

LNG vessels were included in the District's analysis of the fleet that calls at Savannah and the potential effects on that fleet from a potential harbor deepening. However, a broader consideration of risks associated with the LNG facilities and pipelines is outside the scope of this project.

From:	Theresa Wexel
To:	CESAS-PD, SAS
Subject:	SAVANNAH Harbor Deepening
Date:	Tuesday, January 25, 2011 7:33:24 PM

Please advise what is the link between the proposed harbor deepening and the El Paso LNG facility application for permit to truck LNG across the City of Savannah?

Will the existing double 30" pipes from Elba Island, under the Savannah River, be lowered or abandoned? This needs to be addressed publicly. If there is no problem, that needs to be clearly shown.

Sincerely,
Theresa Wexel
238-4540

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Theresa Wexel

1114-MR-02-EV01

Comment: *Please advise what is the link between the proposed harbor deepening and the El Paso LNG facility application for permit to truck LNG across the City of Savannah?*

Response: There is no direct link between the SHEP and the LNG facility. As stated in Section 4.4 of the GRR, the Federal Energy Regulatory Commission issued an order [2003] authorizing the expansion of the Elba Island facility. The order included adding a second and third docking berth, a fourth cryogenic storage tank, and associated facilities. The proposed expansion will increase the Elba Island facilities' working gas capacity from 4.0 to 7.7 billion cubic feet of gas equivalent (Bcfe). The Corps is unaware of any link between the SLNG application for a permit to truck LNG across the City and either the SHEP or the plant expansion authorized in2003.

1114-MR-02-EV02

Comment: *Will the existing double 30" pipes from Elba Island, under the Savannah River, be lowered or abandoned? This needs to be addressed publicly. If there is no problem, that needs to be clearly shown.*

Response: The Corps consulted with SLNG in its evaluation of potential impacts from harbor deepening on those pipelines. The determination is that a 48-foot channel could be constructed without requiring the existing 30” pipes from Elba Island to be relocated. Language will be added to Section 4.4 of the GRR to that clarify that point.

From: Robbie Harrison
To: CESAS-PD, SAS
Cc: andrew cobb; Catherine Harrison; Margaret Harrison; fife220@aol.com
Subject: Savannah Harbor Expansion Project
Date: Tuesday, January 25, 2011 3:16:52 PM

Mr. William Bailey
USACE
Savannah District
Savannah, GA 31401

Dear Mr. Bailey: Fife Plantation
SC side of Back River

Reference requests for last minute comments, please let this go on record to advise that we have yet to be contacted about our concerns with the new harbor deepening project. We were advised several years ago by the GPA that our concerns would be addressed at a later time and only recently did Mr. Schaller advise that we should contact the Corps direct.

Fife Plantation, which is now in a charitable land trust, for the protection wetlands, historic preservation and education, has been threatened by the insurgence of salt water ever since the tide gate was installed in 1976. This was further exacerbated by the harbor deepening in the late 80s and now the advent of further deepening will no doubt further increase the salinity of our marshes and in our canals exposed to Back River. It was proved by your own studies in the late 90s that the removal of the tide gates did not return fresh water to our marshes and that the river is still brackish at best.

Besides losing close to 300 acres of fresh water marsh to almost a purely salt water marsh, our tide gates(trunks) have deteriorated rapidly to where our two main structures have been riddled with salt water toreadors to the point where they will have to be replaced soon. Much repair work has had to be done in the last 25 years just to keep them partially operating. I am certain that the USFWS has proven to the Corps that they have had similar problems which you are addressing right now with the project on the diversion canal which serves both them and us.

We have a simple plan we would like to discuss with your which I think will help solve this problem for years to come. We would like to meet with you at your earliest convenience to discuss this. I have been in touch briefly with the GPA and Allen Garrett, both of whom have expressed their willingness to meet. I hope you can respond very soon.

With thanks, I am

Very truly yours,

Harrison Family Charitable Trust

R. L. Harrison, Managing Trustee

Fife Plantation SC side of Back River

1115-MR-01-EV01

Comment: *Besides losing close to 300 acres of fresh water marsh to almost a purely salt water marsh, our tide gates(trunks) have deteriorated rapidly to where our two main structures have been riddled with salt water toreadors to the point where they will have to be replaced soon. Much repair work has had to be done in the last 25 years just to keep them partially operating. I am certain that the USFWS has proven to the Corps that they have had similar problems which you are addressing right now with the project on the diversion canal which serves both them and us.*

Response: The Freshwater Control System in the Savannah National Wildlife Refuge has been repaired. The District will soon begin rehabilitation of a portion of the system located on private lands.

CENTER FOR A SUSTAINABLE COAST

Conserving Coastal Georgia's Natural Heritage, Investing in Our Children's Future

www.sustainablecoast.org

January 25, 2011

VIA E-MAIL AND U.S. MAIL

Jeffrey M. Hall, Colonel, US Army, Commanding
US Army Corps of Engineers, Savannah District
100 West Oglethorpe Avenue
Savannah, Georgia, 31401

Re: ***Notice of Availability of a Draft Tier II Environmental Impact Statement and Draft General Reevaluation Report for Savannah Harbor Federal Navigation Project, Chatham County, GA and Jasper County, SC***

Dear Colonel Hall:

Following are comments on the above documents being submitted on behalf of the Center for a Sustainable Coast. These augment and support other statements made on our behalf by the Southern Environmental Law Center (SELC), submitted separately. Note that we may file additional, supplemental comments at a later date as accommodated by the schedule for project review under NEPA. We would appreciate a written response to our comments and ask that both our comments and your response be posted on the Corps website for this project.

Unreliable Projection of Benefits

Claimed economic benefits from the project derive solely from improved efficiencies gained by accommodating mega-ships. The alleged benefit from such efficiency suffers from at least two critical sources of doubt: (1) only cargo transported by mega-ship can be associated with such benefits, yet for the foreseeable future much cargo, including most exports, will be shipped using smaller vessels, and (2) the cumulative benefits are directly dependent on the accuracy of projected port commerce to be transported using mega-ships. If projections are high, efficiency benefits will be correspondingly inflated. Consider the accuracy of projections made prior to the global economic plummet that began several years ago. Projected commerce made on the basis of past growth was significantly higher than the actual cargo volume at Savannah once the recession took hold, since no one doing such projections anticipated the severe downturn in business activity that began in late 2007, continues to the present, and is now predicted to persist.

Although the commerce forecast has, at last, been adjusted downward to reflect this dismal global economic outlook, this major revision casts doubt on general methodologies that cannot anticipate such threshold events. It is our understanding that the Corps is now forecasting a three-fold increase in commerce over the 50-year project period, half of the preceding projection used in earlier assessment of this project. While it is encouraging that such an adjustment has been made, it raises questions about the Corps' ability to realistically project future trade volumes and types. Since the alleged project benefits are based entirely on growing volume of mega-shipped commerce over the project period, forecasting error is a very critical flaw in the EIS findings.

Sensitivity Analysis Insufficient

To a certain extent, deviations between forecasted and actual commerce (among many variables relevant to the EIS assessment) may be compensated by so-called sensitivity analysis, but the reliability of that methodology is in doubt for various reasons. The most likely reason is that significant changes, such as extreme tide conditions caused by coincident lunar cycle phasing in combination with wind conditions, can cause both navigation constraints and adverse environmental project impacts that are beyond the range of modeling assessment. The extent to which these extremes, as well as other variables like trends and patterns in waterborne commerce, can be accommodated by sensitivity analysis depends on factors that remain unexplained and unexamined. Another example, evidently overlooked in the EIS, is the rather remarkable trend in river flow, which has drastically dropped during certain periods in recent years (see attached table of USGS data taken at Thurman Dam). If similar trends continue, salinity conditions could go above, and dissolved oxygen below, any levels assumed in applied sensitivity analysis. There is insufficient assurance that limits of analysis are adequate if future conditions are subject to similar variability and volatility demonstrated by actual occurrences.

Opportunity & Distributional Costs Not Adequately Considered

Public resources that are compromised or lost due to this project are proposed to be fully compensated by mitigation steps completed at approximately their corresponding estimated costs. Not only does this assume successful mitigation within reasonable range of cost, but alternative uses for these resources that may have greater value to the public are not considered. For example, air quality limitations under federal law implicitly require the allocation of air emissions among existing and future sources of air pollution. By allocating any given portion of air quality to a particular project, activity, or permit-holder, alternative uses for that increment of compromised air are inescapably precluded. To reach a rational decision that serves the public, supporting analysis must include some reasonable exploration of what those alternatives are and how they rank in relation to the project being immediately considered. In the case of air quality, the project may impose future constraints on vehicular (highway) traffic, industrial development, or, due to perceived reductions in quality of life, markets for tourism and second-homes and/or retirement-homes.

Similarly, environmental costs and economic benefits are seldom, if ever, uniformly distributed. This means that people living closer to the sources of project impact are likely to suffer more than those living further away. In this project, it is probable that noise and pollution caused by trucks carrying commodities to and from the port and related facilities, such as distribution centers, will harm low-income communities more than others. Yet, in the EIS there is no corresponding assessment of such impacts or alternatives for avoiding or reducing them. If larger

ships are used as a result of this project, on average there will be higher peak inventories of commodities moving through the port. This could translate into higher volumes of transshipment with corresponding higher elevations of air pollution at peak periods.

Modeling Deficiencies

Misjudgments in the development of highly complex mathematical models are not merely academic arguments. If misjudgments exist and are allowed to stand as SHEP moves forward, they will become risk-inducing linchpins prone to causing gross environmental damage and the misuse and/or loss of hundreds of millions of tax dollars through misguided mitigation efforts.

Because of the timing of the decisions to use the enhanced EFDC, there is reason to believe that political considerations could have been playing an inappropriate role in decisions about modeling choices. At the time, EPA was facing a federal court-ordered deadline to set TMDLs in the Savannah River Harbor and they urgently needed a predictive tool. Time was important to EPA and the agencies which had concurrence responsibilities on TMDLs. Also, participation in SEG and SEG-related meetings leads us to believe that Corps leadership during the time of modeling development might have been more focused on complying with a tight schedule than scientific accuracy. While it is fiscally responsible to use similar tools for somewhat similar uses when they have been adequately evaluated for all tasks, results can be disastrous when time and politics become greater drivers than science, supported by diligent use of empirical observation.

A primary concern is whether or not the models are able to deal with the twice-daily tidal cycles in our valuable wetlands and whether or not the model was ever adequately evaluated to be predictive. An error in either or both could render the work in the SHEP DEIS and GRR virtually worthless. Expert opinion given in testimony by hired consultants gives us concern on that basis.

> From the Oct 2005 SEG meeting transcript, in a statement made by Joe Hoke:
>
> "So just to review the basic problem, this is from the Kinetic Analysis Corporation, which is Chuck Watson, the executive summary from his report that's in the -- it's the appendix for the May 2005 Tetra Tech modeling report. It says, even with stability problems, the enhanced grid model appears to present a significant improvement over the TMDL model, has the potential to become an extremely useful tool in studying the Lower Savannah River. However, the inability to conduct seven year test runs is a source of serious concern, with respect to the suitability of the models for predictive purposes. Therefore, Kinetic Analysis Corporation does not recommend the operational use of the enhanced grid model for predictive modeling of bathymetric changes, means deepening, until the stability issues can be resolved."
>
> Chuck Watson: "The problem was when we tried some of the other runs, one of the things we do is called a perturbation analysis, where we take the grid and randomly make very small changes to the bathymetry to see how that changes the model. We were unable to successfully complete a lot of those runs. Those crashed or aborted at times other than December 2000."

And from comments submitted by Chuck Watson (January 2011), " Peak daily salinity levels are often used for evaluating impacts to wetlands and are explicitly used for mitigation estimates

such as water intakes for industrial and other uses. It should be noted that the model severely under predicts peak daily salinity levels in key locations, especially during low flow conditions which is when infrastructure and wetlands are most vulnerable."

Adaptive Management Problems

Inadequate Performance Criteria

To be effective in achieving management goals and consistent with the term's use, "adaptive management" (AM) must include specific criteria that apply to relevant field conditions in the impact area of the referenced project. As proposed in Appendix D, the only criteria for management success are the "goals" adopted for development and approval of the hydrologic and salinity modeling. According to experts describing the approach, AM should include reconsideration of goals, building, revamping and refining applicable models, and setting and calibrating performance standards unique to the project. [*See excerpt below.*]

We believe there is overwhelming expert opinion that the goals used in modeling alone do not provide sufficient performance criteria for reliable and effective use of AM in this project. Furthermore, in Appendix D there is no process proposed for calibrating or refining performance standards as needed and thus no basis for determining when and how these functions would be executed.

> *In contrast, the adaptive management framework is more evolutionary and interdisciplinary, relying on iterative cycles of goal determination, model building, performance standard setting, outcome monitoring, and standard recalibration. Indeed, advanced versions of adaptive management incorporate an experimental research element, in which management actions deliberately probe for information to evaluate testable hypotheses about the effects of active intervention in ecological processes, such as evaluating the effects a chosen habitat management action and its alternatives might have on invasive species by running small-scale test plot experiments.*
>
> Source: "Adaptive Management in the Courts" by J.B. Ruhl and Robert L. Fischman, published in Minnesota Law Review, © 2010

Further justification for detailed performance criteria are provided in the memo adopted by the Stakeholder Evaluation Group (SEG) advising Georgia Ports Authority in reviewing the project and its impacts, cites as follows.

These methods must specify in detail the protocol for gathering and assessing information, and the criteria to be used to trigger enactment of contingency plans for controlling adverse effects if and when they arise. Contingency procedures should include the use of more rigorous monitoring and assessment methods to assist in determining the causes of undesired impacts and the alternatives for reducing or eliminating them. Such procedures must also include the option of stopping project implementation activities for an indeterminate period to prevent unacceptable impacts from occurring. In any case, project analysis and recommendations must specify the threshold of conditions that must be ensured to enable the project to remain feasible in the public interest. If these conditions cannot be maintained, procedures must be clearly outlined for intervening to prevent the project or its mitigation from causing further damage to public resources.

[Source: ***Recommendation for SEG position on Corps use of study committee reports and other information in preparing the General Reevaluation Report (GRR), Mitigation Plan, and draft EIS for the Savannah Harbor Expansion Project***, adopted by the SEG and recommended to Georgia Ports Authority, May 2008.]

No Standards for Determining Major Project Modifications

Under NEPA, when a project must be modified to a substantive extent, a Supplemental EIS (SEIS) must be prepared, circulated, and approved. An acknowledged potential benefit of AM is that it offers the possibility of preventing a project or its mitigation from having such unacceptable impacts that a major modification would be necessary because – *if the AM program is properly designed and administered* – pre-emptive corrective action could be taken soon enough to prevent significant deviations from project goals. To help ensure this advantage is attainable, it would be useful, if not imperative, to predetermine in the AM procedures what level of field conditions and/or what extent of project modification would serve as the threshold for invoking the need for preparing a Supplemental EIS. Predetermining this threshold would provide the project managers a means for understanding in advance when corrective action is essential to avert the cost and delay of engaging in the SEIS process.

Inadequate Administrative Structure

In Appendix D, the decision-making approach requires that, for any modification in the project – including mitigation methods – agreement must be reached by all state and federal agencies sharing responsibility for approving the project. While we agree that significant modification of the project should require approval of all these parties (as well as the public), it is impractical to conduct effective adaptive management, which is intended to make incremental adjustments in project implementation and mitigation on a real-time basis. Such quick, timely response would be prohibited by the complexity and delay of reaching formal consensus among all these participating agencies. It is therefore essential that the AM process is structured to distinguish between major and minor modifications and to articulate corresponding management devices to provide the dual benefits of timely intervention for minor project modifications and the assurance of damage control and public accountability for major ones.

Inadequate Budget and Inconsistent Budgeting Estimates

The estimates of cost for implementing AM, presented on page 34 of Appendix D, are arbitrarily based on certain percentages of the mitigation cost estimates for corresponding proposed mitigation steps. For several reasons, this is an unacceptable means for pre-determining a budget to support responsible adaptive management.

- If mitigation costs prove to be inaccurately estimated, AM budgets will be changed unexpectedly.
- There is no inherent, fixed proportional relationship between the cost of implementing a particular type of mitigation and conducting a legitimate AM process applicable to related impacts and resources.
- The very reasoning that is the basis for justifying an AM approach suggests that not all impacts that may occur can be effectively mitigated by advanced planning, and thus not only may the costs be erroneous, but there may be mitigation steps required that have not even been anticipated.

- Budget shortfalls for unanticipated mitigation needs, and/or the actual costs of valid AM functions, must be covered by a predictable and reliable source of funds. If this source is the local sponsor, Georgia Ports Authority (GPA), the amount of contingencies must be determined and provisions for ensuring their timely availability must be specified as part of the adaptive management plan. This AM plan and an acceptable, enforceable means for governing it must be set forth in the EIS for the EIS to be eligible for approval.
- It is our understanding that the Corps originally proposed a budget for AM that was based on the entire project cost, not just mitigation. At some point, the basis for AM budgeting became only the mitigation budget, which is a small fraction of total project cost. To our knowledge, an explanation for this major revision in AM budgeting methodology was never provided.

While we enthusiastically support attempts to apply the principles of adaptive management in such major projects, primarily due to the complexity and uncertainty of how natural systems may respond to project activities, including mitigation efforts, in combination with a host of other systemic impacts on these systems caused by human activities, the approach outlined in Appendix D is substantively deficient and thus cannot ensure protection of the public interest.

Regional Port Analysis is Incomplete

An alternative to the project with realistic possibilities is the creation of a single mega-port in the Southeast rather than accommodating multiple ports competing for the limited single-call traffic of mega-ships. Such multi-port competition will be inclined toward building overcapacity that cumulatively causes unnecessary environmental disruption at wasteful expense to the taxpayers. In spite of the crucial, policy-setting implications of the decision on this project and the requirement under NEPA for all reasonable alternatives to be considered, there has been no substantive assessment of the practical advantages of a single mega-port serving the entire Southeast, or any exploration of various criteria to be applied in locating such a facility. It appears that the assessment under this EIS was driven by an unsubstantiated assumption, if not a foregone conclusion, that continuing a trend of serially deepening every major commercial port is in the nation's best interest. Such an assumption is not explained or justified in the EIS and, given current shipping trends, seems extremely difficult to reconcile with reality.

This concludes our initial remarks on the referenced documents. We trust you will carefully consider them and respond thoroughly. Thanks for your prudent attention.

Respectfully,

David C. Kyler
Executive Director

Center for a Sustainable Coast

Page 1

1117-MM-21-EV01

Comment: *Following are comments on the above documents being submitted on behalf of the Center for a Sustainable Coast. These augment and support other statements made on our behalf by the Southern Environmental Law Center (SELC), submitted separately. Note that we may file additional, supplemental comments at a later date as accommodated by the schedule for project review under NEPA. We would appreciate a written response to our comments and ask that both our comments and your response be posted on the Corps website for this project.*

Response: A written response to all comments is included asAppendix A in the FEIS, and the document will be posted on the Savannah District's website.

1117-MM-21-EC01, 1117-MM-21-EC02

Comment: *Claimed economic benefits from the project derive solely from improved efficiencies gained by accommodating mega-ships. The alleged benefit from such efficiency suffers from at least two critical sources of doubt: (1) only cargo transported by mega-ship can be associated with such benefits, yet for the foreseeable future much cargo, including most exports, will be shipped using smaller vessels, and (2) the cumulative benefits are directly dependent on the accuracy of projected port commerce to be transported using mega-ships. If projections are high, efficiency benefits will be correspondingly inflated. Consider the accuracy of projections made prior to the global economic plummet that began several years ago. Projected commerce made on the basis of past growth was significantly higher than the actual cargo volume at Savannah once the recession took hold, since no one doing such projections anticipated the severe downturn in business activity that began in late 2007, continues to the present, and is now predicted to persist.*

Response: See response to comment 765-DC-149-EC02, which, among other things, explains that the trade forecast has been updated and that post-recession container traffic data confirms shipping growth has resumed its upward trend.

The *HarborSym* analysis considers benefits to all vessels by estimating their efficiency gains from reduced congestion; whereas the Transportation Cost Savings Model estimates the efficiency gains from vessels being able to load/unload without the current constraints of draft. Conversion of the operating fleet to larger vessels would also substantially reduce transportation costs after implementation of SHEP. The largest vessels would experience the most benefit from a deeper channel, but there will also be some incremental gains in efficiency to smaller vessels as a result of reduced harbor/channel congestion.

Global Insight's commodity forecasts are based on a large number of economic factors and were vetted several times by economists for its applicability [reasonable assumptions] to the Savannah Harbor study. Corps guidance on deep-draft navigation projects emphasizes using empirical data whenever possible and forecasting over a 50-year period of analysis. Data on the past and present problems help shape the future without-project condition scenario. This, in turn, serves as a baseline for project formulation and evaluation. As would be expected, a 50-year forecast contains uncertainty; therefore, several sensitivity analyses were performed using lower growth rates, no growth, and increased packaging

densities. The project was found to be economically justified under most of the scenarios that were considered.

Page 2

1117-MM-21-EC03

Comment: *Although the commerce forecast has, at last, been adjusted downward to reflect this dismal global economic outlook, this major revision casts doubt on general methodologies that cannot anticipate such threshold events. It is our understanding that the Corps is now forecasting a three-fold increase in commerce over the 50-year project period, half of the preceding projection used in earlier assessment of this project. While it is encouraging that such an adjustment has been made, it raises questions about the Corps' ability to realistically project future trade volumes and types. Since the alleged project benefits are based entirely on growing volume of mega-shipped commerce over the project period, forecasting error is a very critical flaw in the EIS findings.*

Response: See response to comment 765-DC-149-EC02, which, among other things, explains that the trade forecast has been updated and that post-recession container traffic data confirms shipping growth has resumed its upward trend. As noted in response to another comment, *Global Insight's* commodity forecasts are based on a large number of economic factors and were carefully examined multiple times by economists for its applicability to the Savannah Harbor study. Corps guidance on deep-draft navigation projects emphasizes using empirical data whenever possible and to making forecasts over a 50-year period of analysis. Data on the past and present economic problems help shape the future without project condition scenario. This, in turn, serves as a baseline for project formulation and evaluation. As would expected, a 50-year forecast contains uncertainty; therefore, several sensitivity analyses were performed using lower growth rates, no growth, and increased packaging densities. The project was found to be economically justified under most of the scenarios that were considered.

1117-MM-21-EC04, 1117-MM-21-EV02

Comment: *To a certain extent, deviations between forecasted and actual commerce (among many variables relevant to the EIS assessment) may be compensated by so-called sensitivity analysis, but the reliability of that methodology is in doubt for various reasons. The most likely reason is that significant changes, such as extreme tide conditions caused by coincident lunar cycle phasing in combination with wind conditions, can cause both navigation constraints and adverse environmental project impacts that are beyond the range of modeling assessment. The extent to which these extremes, as well as other variables like trends and patterns in waterborne commerce, can be accommodated by sensitivity analysis depends on factors that remain unexplained and unexamined. Another example, evidently overlooked in the EIS, is the rather remarkable trend in river flow, which has drastically dropped during certain periods in recent years (see attached table of USGS data taken at Thurman Dam). If similar trends continue, salinity conditions could go above, and dissolved oxygen below, any levels assumed in applied sensitivity analysis. There is insufficient assurance that limits of analysis are adequate if future conditions are subject to similar variability and volatility demonstrated by actual occurrences.*

Response: Potential environmental impacts were evaluated under the conditions and scenarios recommended by the Interagency Coordination Teams. Those teams discussed the use of both normal and extreme events. For some resources, a Team may have suggested evaluating the impacts using normal conditions, while in others (dissolved oxygen), critical conditions were identified for analysis.

The analysis of extreme events must also be weighed against the expected frequency of their occurrence.

The sensitivity analyses applied to the water quality and dissolved oxygen modeling are sufficiently comprehensive to capture reasonable estuarine events. Moreover, low-flow conditions were not "overlooked" in the model design. With regard to river flows, the basic evaluation condition for the water quality and dissolved oxygen modeling was conducted using low-flow (critical) conditions, not average flow conditions as indicated in the comment. Instead, sensitivity analyses were run to evaluate model response to average flows, as indicated in Section 7.4.3 of the Engineering Appendix of the GRR. Furthermore, as indicated in the GRR, the models employed and the criteria established were developed by the interagency team using an iterative process. Please see Section 7.4 of the Engineering Appendix of the GRR for a more detailed description on model development and selection. All water quality and dissolved oxygen analyses were run as identified by the Water Quality Interagency Coordination Team and adequately evaluate the impacts of the various project [depth] alternatives.

1117-MM-21-EV03

Comment: *Public resources that are compromised or lost due to this project are proposed to be fully compensated by mitigation steps completed at approximately their corresponding estimated costs. Not only does this assume successful mitigation within reasonable range of cost, but alternative uses for these resources that may have greater value to the public are not considered. For example, air quality limitations under federal law implicitly require the allocation of air emissions among existing and future sources of air pollution. By allocating any given portion of air quality to a particular project, activity, or permit-holder, alternative uses for that increment of compromised air are inescapably precluded. To reach a rational decision that serves the public, supporting analysis must include some reasonable exploration of what those alternatives are and how they rank in relation to the project being immediately considered. In the case of air quality, the project may impose future constraints on vehicular (highway) traffic, industrial development, or, due to perceived reductions in quality of life, markets for tourism and second-homes and/or retirement-homes.*

Response: This comment is unclear and/or misstates applicable NEPA requirements. The analysis requested exceeds the scope of the evaluation required under NEPA. Section 4 of the EIS and Appendix C (Mitigation Planning) includes an assessment of the environmental resources in the project area. Section 5 of the EIS evaluates the environmental consequences of the proposed action. Section 3 of the EIS and other parts of the EIS/GRR properly address alternatives under NEPA. The without-project condition (no-action alternative) evaluates potential future changes in the harbor's environmental resources [which are expected to remain essentially unchanged as regards the existing navigation project].

The air quality analysis in Section 5 of the EIS and Appendix K was properly conducted under NEPA. As reflected in the EIS, the total air emissions from the fleet would decrease if the number of vessels decreases as forecasted (comparing without project and with project fleets). As explained previously, harbor deepening is not the causal factor that would lead to growth in container volume through the port on any given time line. The District's analysis forecasts emissions over time, with or without a harbor deepening. Since air emissions would not increase as a result of the project, the project would not impose future constraints on traffic, development, etc. See also other responses to comments regarding air quality. In addition, air quality in the project area is actually expected to improve over time as recent US EPA regulations are implemented that reduce Sulfur, NOx, and PM emissions from both

marine and land-based diesel engines. Property adjacent to the USFWS Refuge is expected to undergo increasing likelihood of development in the future without regard to the project..

1117-MM-21-EV04

Comment: *Similarly, environmental costs and economic benefits are seldom, if ever, uniformly distributed. This means that people living closer to the sources of project impact are likely to suffer more than those living further away. In this project, it is probable that noise and pollution caused by trucks carrying commodities to and from the port and related facilities, such as distribution centers, will harm low-income communities more than others. Yet, in the EIS there is no corresponding assessment of such impacts or alternatives for avoiding or reducing them. If larger ships are used as a result of this project, on average there will be higher peak inventories of commodities moving through the port. This could translate into higher volumes of transshipment with corresponding higher elevations of air pollution at peak periods.*

Response: This comment raises concerns about environmental justice and impacts to people living near the Garden City Terminal. These issues are fully addressed in EIS Section 5.0, including Section 5.06, Air Quality, and Section 5.19, Protection of Children and Environmental Justice. .

As explained in Section 5.0, the proposed harbor deepening will have no adverse landside impacts beyond the Garden City Terminal or cause air pollution problems. See also other responses to similar comments.

Page 3

1117-MM-21-EV05, 1117-MM-21-EV06

Comment: *Because of the timing of the decisions to use the enhanced EFDC, there is reason to believe that political considerations could have been playing an inappropriate role in decisions about modeling choices. At the time, EPA was facing a federal court-ordered deadline to set TMDLs in the Savannah River Harbor and they urgently needed a predictive tool. Time was important to EPA and the agencies which had concurrence responsibilities on TMDLs. Also, participation in SEG and SEG-related meetings leads us to believe that Corps leadership during the time of modeling development might have been more focused on complying with a tight schedule than scientific accuracy. While it is fiscally responsible to use similar tools for somewhat similar uses when they have been adequately evaluated for all tasks, results can be disastrous when time and politics become greater drivers than science, supported by diligent use of empirical observation.*

Response: Political considerations did not play an inappropriate role in decisions about modeling choices, nor was technical accuracy sacrificed to meet schedule requirements.

The hydrodynamic and water quality models employed for SHEP were developed through an iterative process closely coordinated with the SHEP Water Quality Interagency Coordination Team, which followed in the footstep of the Modeling Technical Review Group which was established in the late 1990s to review the model developed for the deepening project and determine its viability for use with SHEP impact evaluations and mitigation development. The group consisted of technical modelers from the District, US EPA Region 4, USGS, Georgia DNR-EPD, South Carolina DHEC, as well as modeling experts under contract to develop and refine the SHEP model.

After deliberation, the group decided to adopt a model [for SHEP] that was originally developed by EPA for the harbor's TMDL evaluation. This model was chosen because it simulated the harbor's salinity

stratification and was state-of-the-art in its 3-dimensional capabilities. After three years of intense effort to calibrate the existing condition[s] component, the enhanced TMDL model for SHEP received formal acceptance from federal, state, and industry reviewers. The letters of acceptance can be found in the Supplemental Materials to the Engineering Appendix (Correspondence Regarding Hydrodynamic & Water Quality Model Acceptability).

The models employed and the criteria established were developed through an iterative process with the model review team and the water quality interagency coordination team. The model selection, development, and refinement process occurred from 1999 to 2005. Use of the WASP and enhanced EFDC models were both certified for use in accordance with EC 1105-2-407. The manifest changes that were made over the course of the seven-year period together with the elaborate certification process are an indication of the thorough and deliberative process employed to ensure the model met all performance criteria. Further, this was all accomplished prior to conducting any model runs that would predict impacts associated with the proposed project.

Although the schedule for the SHEP is important, making good, science-based decisions is a higher District priority. As the 12-year study process shows, scientific accuracy was not compromised to comply with the project schedule.

1117-MM-21-EN01

Comment: *A primary concern is whether or not the models are able to deal with the twice-daily tidal cycles in our valuable wetlands and whether or not the model was ever adequately evaluated to be predictive. An error in either or both could render the work in the SHEP DEIS and GRR virtually worthless. Expert opinion given in testimony by hired consultants gives us concern on that basis.*

Response: This is a valid concern; however, the models are able to deal with the twice-daily tidal cycles and are useful tools to identify the impacts and develop mitigation plans. Together the hydrodynamic and water quality models simulate the complex estuarine dynamics, including hourly, daily and monthly tidal variations, salinity and dissolved oxygen dynamics, and spatial distribution within the system. The models are applicable over a wide range of conditions, including low and high river flows. The model grid incorporates surveyed bathymetry, extends from Clyo, Georgia (river mile 61, USGS stream gage 02198500) downstream through the harbor to Fort Pulaski (river mile 0), and out to 17 miles offshore in the Atlantic Ocean. It includes point and non-point pollution sources in the watershed. The model was calibrated and validated using observed data from 1997 to 2006 and has been designed to meet the expectations of the modeling technical review group that was established in the late 1990s with the goal of developing a valid, acceptable model for use with SHEP impact determination and mitigation development. Members of this group included representatives from the Corps, US EPA Region 4, USGS, Georgia DNR-EPD, South Carolina DHEC, and technical modeling experts tasked with developing the SHEP models. An independent technical review and uncertainty analysis have been conducted on the models and resulting comments and concerns were incorporated into the final version. Details regarding the hydrodynamic and water quality model development process, extensive reviews and uncertainty analysis can be found in the report titled "Development of the Hydrodynamic and Water Quality Models for the Savannah Harbor Expansion Project" dated January 2006, which is included in the Supplemental Materials to the Engineering Appendix. Letters of acceptance from agencies involved in the modeling technical review group can be found in the document titled “Correspondence Regarding Hydrodynamic & Water Quality Model Acceptability” which is included the Supplemental Materials to the Engineering Appendix.

1117-MM-21-EN02

Comment: *And from comments submitted by Chuck Watson (January 2011), " Peak daily salinity levels are often used for evaluating impacts to wetlands and are explicitly used for mitigation estimates such as water intakes for industrial and other uses. It should be noted that the model severely under predicts peak daily salinity levels in key locations, especially during low flow conditions which is when infrastructure and wetlands are most vulnerable.*

Response: The hydrodynamic and water quality models simulate the complex estuarine dynamics including hourly, daily and monthly tidal variations, salinity and dissolved oxygen dynamics, and spatial distribution within the system. The models are applicable over a wide range of conditions including low and high freshwater flow. The model grid incorporates surveyed bathymetry, extends from Clyo, Georgia (river mile 61, USGS stream gage 02198500), downstream through the harbor to Fort Pulaski (river mile 0), and out to 17 miles offshore in the Atlantic Ocean. It includes point and non-point pollution sources in the watershed. The model was calibrated and validated using observed data from 1997 to 2006 and has been designed to meet the expectations of the modeling technical review group which was established in the late 1990s with the goal of developing a valid, acceptable model for use with SHEP impact determination and mitigation development. Members of this group included representatives from the Corps, US EPA Region 4, USGS, Georgia DNR-EPD, South Carolina DHEC, and technical modeling experts tasked with developing the SHEP models. An independent technical review and uncertainty analysis have been conducted on the models and resulting comments and concerns were incorporated into the final version. Details regarding the hydrodynamic and water quality model development process, extensive reviews and uncertainty analysis can be found in the report titled "Development of the Hydrodynamic and Water Quality Models for the Savannah Harbor Expansion Project" dated January 2006, which is included in the Supplemental Materials to the Engineering Appendix. Letters of acceptance from agencies involved in the modeling technical review group can be found in the document titled "Correspondence Regarding Hydrodynamic & Water Quality Model Acceptability" which is included the Supplemental Materials to the Engineering Appendix.

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1117-MM-21-EV07

Comment: *To be effective in achieving management goals and consistent with the term's use, "adaptive management" (AM) must include specific criteria that apply to relevant field conditions in the impact area of the referenced project. As proposed in Appendix D, the only criteria for management success are the "goals" adopted for development and approval of the hydrologic and salinity modeling. According to experts describing the approach, AM should include reconsideration of goals, building, revamping and refining applicable models, and setting and calibrating performance standards unique to the project. [See excerpt below.]*

Response: The Monitoring Plan and Adaptive Management Plan would initially involve revamping and refining applicable models, and thereafter setting and calibrating performance standards. As discussed in Appendix D, the District, Cooperating Agencies, and the state natural resource agencies will review post-construction monitoring data to determine whether impacts are generally as expected or whether changes to the project and/or mitigation plan should be implemented.

The hydrodynamic and water quality models would be used in conjunction with actual field data to evaluate how the project is performing and the adequacy of the mitigation features. Even though the potential impacts of the project were evaluated under a range of circumstances, the conditions that are

experienced after construction will be somewhat different from those documented during its feasibility phase. Consequently, the hydrodynamic and water quality models will allow an evaluation of actual project performance under post-construction conditions [high, low, drought, or a combination thereof]. The performance of the hydrodynamic and water quality models [per se] would be assessed and the models recalibrated, if necessary. This would occur once during pre-construction monitoring and twice during post-construction monitoring. The objective of this model assessment is to improve the accuracy of the models to the maximum extent possible for impact evaluation purposes. Since post-construction field data would be available, use of the additional data points should increase the models' accuracy. At the end of this model assessment, the range of the models' uncertainty limits would be established.

The natural resource agencies will use the models after the post-construction assessment/calibration to evaluate the performance of the project and its mitigation features. Model runs would be conducted using conditions measured in the field and the results compared to monitoring data for the parameter being evaluated. If the model results are within the range of their established uncertainty limits, the project would be deemed to be performing as expected and no modifications would be implemented.

1117-MM-21-EV08

Comment: *We believe there is overwhelming expert opinion that the goals used in modeling alone do not provide sufficient performance criteria for reliable and effective use of AM in this project. Furthermore, in Appendix D there is no process proposed for calibrating or refining performance standards as needed and thus no basis for determining when and how these functions would be executed.*

Response: The Monitoring Plan and Adaptive Management Plan would initially involve revamping and refining applicable models, and thereafter setting and calibrating performance standards. As discussed in Appendix D, the District, Cooperating Agencies, and the state natural resource agencies will review post-construction monitoring data to determine whether impacts are generally as expected or whether changes to the project and/or mitigation plan should be implemented.

The hydrodynamic and water quality models would be used in conjunction with actual field data to evaluate how the project is performing and the adequacy of the mitigation features. Even though the potential impacts of the project were evaluated under a range of circumstances, the conditions that are experienced after construction will be somewhat different from those documented during its feasibility phase. Consequently, the hydrodynamic and water quality models will allow an evaluation of actual project performance under post-construction conditions [high, low, drought, or a combination thereof]. The performance of the hydrodynamic and water quality models [per se] would be assessed and the models recalibrated, if necessary. This would occur once during pre-construction monitoring and twice during post-construction monitoring. The objective of this model assessment is to improve the accuracy of the models to the maximum extent possible for impact evaluation purposes. Since post-construction field data would be available, use of the additional data points should increase the models' accuracy. At the end of this model assessment, the range of the models' uncertainty limits would be established.

The natural resource agencies will use the models after the post-construction assessment/calibration to evaluate the performance of the project and its mitigation features. Model runs would be conducted using conditions measured in the field and the results compared to monitoring data for the parameter being evaluated. If the model results are within the range of their established uncertainty limits, the project would be deemed to be performing as expected and no modifications would be implemented.

1117-MM-21-EV09

Comment: *Further justification for detailed performance criteria are provided in the memo adopted by the Stakeholder Evaluation Group (SEG) advising Georgia Ports Authority in reviewing the project and its impacts, cites as follows.*

Response: The Monitoring and Adaptive Management Plan provides a discussion of post-construction monitoring and the decision-making process that would determine if additional monitoring and/or mitigation measures are warranted. Purposely, the plan does not identify specific acceptability criteria for water quality or biological parameters that would trigger the need for additional monitoring or modifications to mitigation measures. The District believes it is preferable to defer to the judgment of agency technical experts rather than just use a specific parameter in determining when changes are necessary. Based on their experience, some resource experts may see a need to modify the monitoring and/or a mitigation measure, even though a specific [parameter] threshold has not been reached. Further, there is a concern about the potential cumulative/synergistic impacts of multiple parameters, even though the threshold limits had not been exceeded for any one parameter. If thresholds had been established for individual parameters, this flexibility would have been lessened. Appendix D in the FEIS contains some thresholds for specific parameters, which will be used to assess the project's performance.

Decisions about changes in the monitoring plan or mitigation features can be reached at any time during the post-construction monitoring effort. Monitoring data and reports would be made available to the resource agencies as soon as possible. Data from fixed water quality monitoring stations will be available on a near real-time basis [on-line]. The plan provides for an annual meeting [end of monitoring year] between the District and the natural resource agencies to discuss the data and any necessary changes. However, the schedule is sufficiently flexible to convene a meeting any time that concerns dictate. If the monitoring identifies impacts that are well outside of those predicted, consultation with the resource agencies will begin immediately. Corrective actions could range from a change in the monitoring plan to a cessation of construction activities until a problem is rectified.

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1117-MM-21-EV10

Comment: *Under NEPA, when a project must be modified to a substantive extent, a Supplemental EIS (SEIS) must be prepared, circulated, and approved. An acknowledged potential benefit of AM is that it offers the possibility of preventing a project or its mitigation from having such unacceptable impacts that a major modification would be necessary because – if the AM program is properly designed and administered – pre-emptive corrective action could be taken soon enough to prevent significant deviations from project goals. To help ensure this advantage is attainable, it would be useful, if not imperative, to predetermine in the AM procedures what level of field conditions and/or what extent of project modification would serve as the threshold for invoking the need for preparing a Supplemental EIS. Predetermining this threshold would provide the project managers a means for understanding in advance when corrective action is essential to avert the cost and delay of engaging in the SEIS process.*

Response: As directed in 40 CFR 1502.9 , agencies shall prepare and file a Supplement to the Final EIS if substantial changes are made in the proposed action that are relevant to environmental concerns or significant new circumstances or information develop relevant to environmental concerns which have bearing on the proposed action or impacts. No specific criteria (numerical) have been established for parameters (salinity, dissolved oxygen, etc.) that would trigger the need to prepare a Supplement to the

Final EIS. The District in coordination with its Cooperating Agency partners and the state resource agencies will assess the impacts of the SHEP and the effectiveness of the mitigation measures based on data developed during the various monitoring activities. A Supplement to the Final EIS could be required if impacts occur that are significantly beyond those predicted to occur and modifications to the mitigation feature cannot address those impacts. The Corps could implement the list of actions identified in Section 10.B of the Monitoring and Adaptive Management Plan without further NEPA coordination.

1117-MM-21-EV10

Comment: *In Appendix D, the decision-making approach requires that, for any modification in the project – including mitigation methods – agreement must be reached by all state and federal agencies sharing responsibility for approving the project. While we agree that significant modification of the project should require approval of all these parties (as well as the public), it is impractical to conduct effective adaptive management, which is intended to make incremental adjustments in project implementation and mitigation on a real-time basis. Such quick, timely response would be prohibited by the complexity and delay of reaching formal consensus among all these participating agencies. It is therefore essential that the AM process is structured to distinguish between major and minor modifications and to articulate corresponding management devices to provide the dual benefits of timely intervention for minor project modifications and the assurance of damage control and public accountability for major ones.*

Response: The Monitoring and Adaptive Management Plan would likely be refined as its implementation approaches. Extensive collaboration and timely decision-making is often a difficult combination to achieve. Your suggestion of differentiating between major and minor modifications may be one that could help the process.

1117-MM-21-EV11

Comment: *The estimates of cost for implementing AM, presented on page 34 of Appendix D, are arbitrarily based on certain percentages of the mitigation cost estimates for corresponding proposed mitigation steps. For several reasons, this is an unacceptable means for pre-determining a budget to support responsible adaptive management.*

Response: The cost estimates for possible adaptive measures presented in Appendix D were not developed in an arbitrary manner. These estimates are based on current information [price, equipment, and labor lists] of what modification[s] to a particular mitigation feature would cost [if changes become necessary]. There are no set criteria or standards for developing cost estimates for adaptive management of Corps civil works mitigation features. The cost estimates are to be viewed as a group. The total amount of money identified would be requested and made available for use on whatever modifications are identified as being warranted. The funding available for a given modification would not be limited to the amount identified in the FEIS.

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1117-MM-21-EV12

Comment: *Budget shortfalls for unanticipated mitigation needs, and/or the actual costs of valid AM functions, must be covered by a predictable and reliable source of funds. If this source is the local sponsor, Georgia Ports Authority (GPA), the amount of contingencies must be determined and provisions for ensuring their timely availability must be specified as part of the adaptive management plan. This AM plan and an acceptable, enforceable means for governing it must be set forth in the EIS for the EIS to be eligible for approval.*

Response: The State of Georgia has offered to place its share of the Adaptive Management Plan costs in an escrow account so they would be available if/when needed. Savannah District intends to request its share of those expenses as the dredging construction proceeds, so --- similarly – those would also be available if/when needed. SHEP would remain in the construction program phase until all construction is complete [including all mitigation features].

1117-MM-21-EV13

Comment: *It is our understanding that the Corps originally proposed a budget for AM that was based on the entire project cost, not just mitigation. At some point, the basis for AM budgeting became only the mitigation budget, which is a small fraction of total project cost. To our knowledge, an explanation for this major revision in AM budgeting methodology was never provided.*

Response: The study evaluation period has been extended for quite a few years and the District does not remember an early proposal for Adaptive Management as you describe. When viewed together, the mitigation for the proposed project (including the monitoring and adaptive management) represent between 30 and 40 percent of the total project cost, well exceeding the normal levels seen in Corps civil works projects.

1117-MM-21-EV14

Comment: *While we enthusiastically support attempts to apply the principles of adaptive management in such major projects, primarily due to the complexity and uncertainty of how natural systems may respond to project activities, including mitigation efforts, in combination with a host of other systemic impacts on these systems caused by human activities, the approach outlined in Appendix D is substantively deficient and thus cannot ensure protection of the public interest.*

Response: The Corps disagrees that the Monitoring and Adaptive Management Plan is deficient. The Monitoring and Adaptive Management Plan took years to develop and involved extensive coordination with the Cooperating Agencies and state resource partners before consensus was reached. This plan follows a scientific, logical, measured strategy, viz., monitor project impacts [degree/kind], assess the effectiveness of the project's mitigation features, and modify mitigation measures if impacts are in excess of predictions.

1117-MM-21-EC05

Comment: *An alternative to the project with realistic possibilities is the creation of a single mega-port in the Southeast rather than accommodating multiple ports competing for the limited single-call traffic of mega-ships. Such multi-port competition will be inclined toward building overcapacity that cumulatively causes unnecessary environmental disruption at wasteful expense to the taxpayers. In spite of the crucial, policy-setting implications of the decision on this project and the requirement under NEPA for all reasonable alternatives to be considered, there has been no substantive assessment of the practical*

advantages of a single mega-port serving the entire Southeast, or any exploration of various criteria to be applied in locating such a facility. It appears that the assessment under this EIS was driven by an unsubstantiated assumption, if not a foregone conclusion, that continuing a trend of serially deepening every major commercial port is in the nation's best interest. Such an assumption is not explained or justified in the EIS and, given current shipping trends, seems extremely difficult to reconcile with reality.

Response: The EIS/GRR neither assumes nor states that the serial deepening of every major commercial port is in the Nation's best interest. Rather, the EIS/GRR is a study and reevaluation of a previously-authorized project in a manner that follows procedures established by the Congress, the Council on Environmental Quality, and the US Army Corps of Engineers. Congress has not authorized the Corps to evaluate the feasibility of improvements at deep-draft navigation projects on a system-wide basis. However, the EIS/GRR did perform a thorough alternatives analysis under NEPA, including other port locations in the South Atlantic region, as described in previous responses to comments (e.g., response to comment 765-DC-149-OC02).