

DEPARTMENT OF THE ARMY SAVANNAH DISTRICT, CORPS OF ENGINEERS 100 W. OGLETHORPE AVENUE SAVANNAH, GEORGIA 31401-3640

NOV 1 5 2010

Executive Office

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Mr. George Wickliffe Chief United Keetoowah Band of Cherokee Post Office Box 746 Tahlequah, Oklahoma 74464

Nee incians ine referenced artifacts or other d, please cease tact us at 918-456construc 6533 m F RAPOC Date

Dear Mr. Wickliffe:

The Savannah District, US Army Corps of Engineers has prepared a Draft Tier II Environmental Impact Statement (DEIS) and General Reevaluation Report (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 studies evaluated the engineering, environmental, and economic acceptability of various alternatives for the present and future harbor conditions over a 50-year analysis period. The DEIS is being circulated to agencies and the public for a 45-day comment period.

Recommended improvements as outlined in the Maximum Authorized Plan and the tentative National Economic Development (NED) Plan include: channel deepening from the sea 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.

In order to avoid, minimize, or compensate for adverse environmental impacts associated with the proposed action, the following mitigation features are proposed:

- (1) Acquire and preserve lands adjacent to the Savannah National Wildlife Refuge
- (2) Construct a diversion structure, deepen, and close the lower arm of McCoys Cut
- (3) Close Rifle Cut
- (4) Remove the Tidegate abutments and piers
- (5) Construct a rock sill at the mouth of Back River
- (6) Fill a broad berm in the Sediment Basin
- (7) Construct a sill in Middle River near Disposal Area 2A



DEPARTMENT OF THE ARMY SAVANNAH DISTRICT, CORPS OF ENGINEERS 100 W. OGLETHORPE AVENUE SAVANNAH, GEORGIA 31401-3640

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Ms. Lisa Stopp United Keetoowah Band of Cherokee Indians in Oklahoma NAGPRA Representative Post Office Box 746 Tahlequah, Oklahoma 74464

indians of Cherokee Indians and not to objection to the referenced protest Hars ver, many mains, artifacts or other tiens in many theat Zvered, piease cease Tract us at 918-456countine) ile al NAGPRA POC Date

Dear Ms. Stopp:

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- (7) Construct a sill in Middle River near Disposal Area 2A

Catawba Indian Nation Tribal Historic Preservation Office 1536 Tom Steven Road Rock Hill, South Carolina 29730

#16

Office 803-328-2427 Fax 803-328-5791



December 2, 2010

Attention: Jeffrey M. Hall Department of the Army 100 W. Oglethorpe Avenue Savannah, Georgia 31401-3640

Re. THPO # TCNS# 2011-46-1

Project Description Draft Tier II EIS and GRR to incrementally evaluate deepening of the Savannah Harbor Federal Navigation Project

Dear Mr. Hall,

The Catawba have no immediate concerns with regard to traditional cultural properties, sacred sites or Native American archaeological sites within the boundaries of the proposed project areas. However, the Catawba are to be notified if Native American artifacts and / or human remains are located during the ground disturbance phase of this project.

If you have questions please contact Caitlin Totherow at 803-328-2427 ext. 226, or email caitlinh@ccppcrafts.com.

Sincerely, otherow for U u Wenonah G. Haire

Tribal Historic Preservation Officer

#745

Catawba Indian Nation Tribal Historic Preservation Office 1536 Tom Steven Road Rock Hill, South Carolina 29730

Office 803-328-2427 Fax 803-328-5791



January 18, 2011

Attention: William G. Bailey Savannah District US Army Corps of Engineers 100 West Oglethorpe Avenue Savannah, GA 31401-3640

Re. THPO # TCNS #

Project Description Evaluate deepening the Savannah Harbor Federal Navigation Project

Dear Mr. Bailey,

The Catawba have no immediate concerns with regard to traditional cultural properties, sacred sites or Native American archaeological sites within the boundaries of the proposed project areas. However, the Catawba are to be notified if Native American artifacts and / or human remains are located during the ground disturbance phase of this project.

If you have questions please contact Caitlin Totherow at 803-328-2427 ext. 226, or e-mail caitlinh@ccppcrafts.com.

Sincerely, Caillie Jothereni Wenonah G. Haire

Tribal Historic Preservation Officer

SEMINOLE TRIBE OF FLORIDA TRIBAL HISTORIC PRESERVATION OFFICE

TRIBAL HISTORIC PRESERVATION OFFICE SEMINOLE TRIBE OF FLORIDA AH-TAH-THI-KI MUSEUM

34725 WEST BOUNDARY ROAD CLEWISTON, FL 33440

PHONE: (863) 983-6549 FAX: (863) 902-1117



TRIBAL OFFICERS CHAIRMAN MITCHELL CYPRESS VICE CHAIRMAN RICHARD BOWERS JR. SECRETARY PRISCILLA D. SAYEN TREASURER MICHAEL D. TIGER

Judy Wood Department of the Army Savannah District, Corps of Engineers 100 W. Oglethorpe Avenue Savannah, Georgia 31401-3640

December 6, 2010

Subject: Draft Tier II EIS and GRR Savannah Harbor Federal Navigation Project in Jasper County, South Carolina and Chatham County, Georgia

Dear Ms. Wood,

The Seminole Tribe of Florida's Tribal Historic Preservation Office (STOF-THPO) has received the Savannah District Corps of Engineers' correspondence concerning the aforementioned project. The STOF-THPO has no objection to your findings at this time. However, the STOF-THPO would like to be informed if cultural resources that are potentially ancestral or historically relevant to the Seminole Tribe of Florida are inadvertently discovered during the construction process. We thank you for the opportunity to review the information that has been sent to date regarding this project. Please reference *THPO-007292* for any related issues.

We look forward to working with you in the future.

Sincerely,

Direct routine inquiries to:

Willard Steele Tribal Historic Preservation Officer Seminole Tribe of Florida Anne Mullins Compliance Review Supervisor annemullins@semtribe.com

JLP:am

 From:
 McIntosh, Margarett (Mackie) SAS

 To:
 CESAS-PD_SAS

 Subject:
 FW: USACE-Notice SAS- Savannah Harbor Navigation Project (UNCLASSIFIED)

 Date:
 Monday, December 20, 2010 10:35:33 AM

Classification: UNCLASSIFIED Caveats: FOUO

Mackie McIntosh (912) 652-5320 - Office (912) 677-6080 - Cell

-----Original Message-----From: Ball, Nathaniel I SAC Sent: Tuesday, December 07, 2010 12:58 PM To: McIntosh, Margarett (Mackie) SAS Subject: FW: USACE-Notice SAS- Savannah Harbor Navigation Project (UNCLASSIFIED)

Classification: UNCLASSIFIED Caveats: FOUO

FYI- It does not appear they sent this comment to anyone at SAS.

Hope all is going well.

Nat

-----Original Message-----From: Kim Jumper [mailto:auntweezer@msn.com] Sent: Tuesday, December 07, 2010 10:18 AM To: Ball, Nathaniel I SAC Subject: RE: USACE-Notice SAS- Savannah Harbor Navigation Project

This letter is in regard to the above referenced project.

The Shawnee Tribe's Tribal Historic Preservation Department concurs that no known historic properties will be negatively impacted by this project. We have no issues or concerns at this time, but in the event that archaeological materials are encountered during construction, use, or maintenance of this location, please re-notify us at that time as we would like to resume consultation under such a circumstance.

Thank you for giving us the opportunity to comment on this project.

Sincerely,

Kim Jumper, THPO

Shawnee Tribe

> Subject: USACE-Notice SAS- Savannah Harbor Navigation Project

> Date: Mon, 15 Nov 2010 14:16:29 -0500

> From: Nathaniel.I.Ball@usace.army.mil

> To: ls-sc-publicnotice@lst.usace.army.mil

> U.S. Army Corps of Engineers

> Savannah District Public Notice

> Savannah Harbor Navigation Project

> Chatham County, Georgia and Jasper County, South Carolina Savannah

> River

> The Savannah District, US Army Corps of Engineers (USACE) announces
 > the availability to the public of a Draft Tier II Environmental Impact

> Statement (Draft EIS) and Draft General Reevaluation Report (Draft

> GRR). The proposed project includes discharge of fill into navigable

> waters of the US to construct and maintain submerged berms and

> nearshore berms, continued discharge of effluent from existing

> confined disposal facilities into waters of the US, and transportation

> of sediments dredged from the entrance channel (both new work and

> continued maintenance material) to the Savannah Ocean Dredged Material Disposal Site (ODMDS).

> The proposal also includes discharge of dredged material into

> navigable waters of the US for several mitigation features, 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,

> construction of 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 systems, a fish passage structure

> at the New Savannah Bluff Lock and Dam, a boat ramp on Hutchinson Island, and restoration of Disposal Area 1S.

> A public workshop will be held during the comment period and is

> currently scheduled to occur December 15, 2010 at the Savannah Civic

> Center in Savannah, Georgia from 4:00 to 8:00 P.M. (subject to

> change). US Army Corps of Engineers officials will be available to

> answer questions, provide information, and accept written and dictated comments.

> Electronic copies of the Draft EIS and Draft GRR can be obtained from

> the following website: www.sas.usace.army.mil, and hard copies are

> available upon email request to Mr. William Bailey at the following address:

> CESAS-PD@usace.army.mil.

> Public Notice is attached.

> ---- If you have comments regarding the document described above,

> please do not reply to this email. Your response should be provided to

> the project manager as described in the attached notice.

> ---- If you wish to be added or removed from receiving these notices,

> please visit our website:

>

>

> http://www.sac.usace.army.mil/?action=publicnotices.signup

15, 16, 17, 745

Comment: The Cherokee, Catawba, Seminole, and Shawnee Native American Tribes requested notification of any cultural resources that are historically or ancestrally relevant to their respective tribes.

Response: The Savannah District will inform Native American Nations of any cultural resources found during construction of the Savannah Harbor Expansion Project.



Choctaw Nation of Oklahoma

P.O. Box 1210 • Durant, OK 74702-1210 • (580) 924-8280

#551

Gregory E. Pyle Chief

Gary Batton Assistant Chief

December 14, 2010

Judy Wood Dept of the Army Savannah District, Corps of Engineers 100 W. Oglethorpe Ave Savannah, Georgia 31401-3640

Dear Judy Wood:

We have reviewed the following proposed project (s) as to its effect regarding religious and/or cultural significance to historic properties that may be affected by an undertaking of the projects area of potential effect.

Project Description: Draft Tier II DEIS and General Reevaluation Report for Savannah Harbor Federal Navigation Project

Comments: Thank you for seeking to consult with the Choctaw Nation of Oklahoma on this project. However, it located outside of our areas of historical interest. If we may be of any further assistance, or if you would like a list of states and counties, in which we do have a historical interest, please contact us at 1-800-522-6170 ext. 2137.

Sincerely,

Terry D. Cole Tribal Historic Preservation Officer Choctaw Nation of Oklahoma

shusa aren By: Caren A. Johnson)

Administrative Assistant

CAJ:vr

Choctaws...arowina with pride, hope and success!

551

Comment: Thank you for seeking to consult with the Choctaw Nation of Oklahoma on this project. However, it located outside of our areas of historical interest. If we may be any further assistance, or if you would like a list of states and counties, in which we do have historical interest, please contact us at 1-800-522-6170 ext. 2137.

Response: Comment noted.



UNITED STATES ENVIRONMENTAL PROTECTION AGENCY REGION 4

ATLANTA FEDERAL CENTER 61 FORSYTH STREET ATLANTA, GEORGIA 30303-8960

January 28, 2011

Colonel Jeffrey M. Hall District Engineer U.S. Army Corps of Engineers, Savannah District Attn: Mr. Bill Bailey, Chief, Planning Division 100 West Oglethorpe Avenue Savannah, Georgia 31401-3640

SUBJ: EPA Review of COE's "Savannah Harbor Expansion Project" (November 2010); Tier II DEIS; Chatham County, Georgia and Jasper County, South Carolina; CEQ No. 20100453; ERP No. COE-E32083-00

Dear Colonel Hall:

Pursuant to Section 102(2)(C) of the National Environmental Policy Act (NEPA) and Section 309 of the Clean Air Act, the U.S. Environmental Protection Agency (EPA) Region 4 has reviewed the subject U.S. Army Corps of Engineers (COE), Savannah District, Tier II Draft Environmental Impact Statement (DEIS) for the Savannah Harbor Expansion Project (SHEP). The project is proposed by the Georgia Ports Authority (GPA) of the Georgia Department of Transportation, the non-federal project sponsor (sponsor). This DEIS discloses the environmental impacts associated with deepening the inner harbor and entrance (ocean bar) navigation channel to alternative incremental depths of up to -48 feet (ft)¹, with an additional -2 ft allowable over depth dredging and -6 ft advance maintenance dredging in shoaling areas. Over the last 15 years, EPA has coordinated extensively with the Savannah District and other agencies on SHEP technical issues and draft documentation. This letter outlines and summarizes several of the issues identified and analyzed during EPA's review; however, EPA's detailed substantive conclusions, recommendations and comments on the DEIS are contained in the Enclosure to this letter (*EPA Recommendations and Additional Comments*).

The 1999 Water Resources Development Act (WRDA) authorized the COE to dredge Savannah Harbor to a maximum depth of -48 ft ("Maximum Authorized Plan"), which is a -6 ft deepening of the existing conditions. Moreover, WRDA 1999 also addressed the project review process by requiring that the EPA Administrator and Secretaries of the U.S. Departments of Commerce (DOC), the Interior (DOI) and Army approve the selected plan and determine that the associated mitigation plan adequately addresses the potential environmental impacts of the project. EPA, the National Oceanic and Atmospheric Administration (NOAA) of DOC and the U.S. Fish and Wildlife Service (FWS) of DOI are also NEPA Cooperating Agencies for this COE EIS.

The COE also issued a Chief of Engineers' Report in 1999 which provided further direction on the additional studies that needed to be conducted, including a General

¹ All referenced depths are at Mean Low Water.

Re-evaluation Report (GRR). The GRR accompanies the DEIS, and EPA understands from WRDA 1999 that taken together, these two documents are intended to completely describe the investigative work conducted and present information and analysis to satisfy the conditional authorization, NEPA, and the direction of the Chief of Engineers' Report.

Background

The historic natural depth of the Savannah River is only -12 ft. The present navigation channel for the Port of Savannah was last dredged in $1993-1994^2$ to -42 ft (inner harbor) and -44 ft (entrance channel)³. Since the City of Savannah was settled far upstream by the English in 1733 on the Savannah River's southern bluff, the navigation channel from the Atlantic Ocean to the port today totals 32.7 miles (mi) in length (21.3 mi inner harbor and 11.4 mi entrance). The channel is also 200-500 ft wide in the inner harbor and 600 ft wide in the outer entrance channel, and includes six turning basins.

The NEPA review for SHEP has an extensive and complex history. Early NEPA efforts (Tier I) consisted of the Savannah District adopting a GPA feasibility study and issuing an EIS in 1998. Because of resource agency environmental concerns with the Tier I EIS, the present Tier II NEPA was initiated in early 2002 with both a public and a NEPA scoping meeting. Approximately 10 years of technical field studies, modeling and other analyses have been conducted since Tier I, involving the study of water quality, wetlands, sediments, fisheries, air quality and other environmental factors affected by the proposed harbor deepening. EPA has been extensively involved with the interpretation of water quality modeling data, with emphasis on predicting dissolved oxygen (DO) concentrations within the riverine system augmented by direct oxygen injection as project mitigation. EPA understands that such DO and other project mitigation is estimated to cost over \$150 million, with an overall project cost approximating \$500 million.

Independent of this Tier II NEPA process, the GPA sponsor is providing ongoing efforts to reduce port air emissions by reducing the use of diesel fuel through efficiency and electrification (pg. 5-151⁴; pg. 101: App. K). These initiatives together with EPA's new ultralow sulfur diesel standards have progressively reduced port emissions for various landside diesel engines. Similarly, separate lower sulfur standards specific to marine vessels will become effective in 2015 to further reduce port emissions. In addition, EPA understands from GPA that they are in the process of independently contracting with a university to conduct air dispersion modeling to determine landside effects of port air emissions.

EPA requests participation in the design of this modeling study to ensure that it evaluates potential impacts on criteria pollutants (National Ambient Air Quality Standards: NAAQS) and air toxics relative to sensitive port landside receptors. EPA expects that the modeling will be completed and recommends that results be fully described in the Final EIS (FEIS) for public review. Importantly, the review of current and future project emissions for various containerized

² After initial navigation channel construction in 1874, channel deepenings prior to 1994 occurred in 1912, 1936 and 1945.

However, certain channel portions such as the Kings Island Turning Basin may be considerably deeper.

⁴ Referenced page numbers generally refer to the DEIS main document (Vol. 1) unless otherwise noted.

vessel sizes should use a standard unit of comparison (e.g., emissions per container unit). Further, EPA anticipates that there may be additional ways to reduce emissions from the project. Therefore, in these NEPA comments (see Enclosure), EPA is providing recommendations for additional streamlining and mitigation (e.g., shore power to reduce emissions from vessel idling) to further offset port diesel emissions and enhance the sponsor's environmental management system for the port.

COE Collaboration with Stakeholders

EPA commends the COE for its significant efforts to inform the public, the Stakeholders Evaluation Group (SEG), local communities, and numerous State and federal resource agencies regarding the many issues associated with the proposed harbor deepening. EPA understands that since its inception in January 1999, the COE has met with the SEG approximately 65 times to discuss the proposed deepening. In addition to the scoping meetings of 2002, a number of meetings with the public and agencies have been held to discuss project issues such as salinity changes, lowered DO, conversion of freshwater to brackish wetlands, benthic organisms, contaminated sediments, economics, and cumulative impacts related to the proposed harbor deepening.

Purpose and Need

The Port of Savannah consists of two publicly-owned and 20 privately-owned terminals, with GPA providing the public Garden City Terminal (GCT) and Ocean Terminal. The DEIS (pp. 2-2 & 5-149; pg. 61: App. K) describes the economic importance of the Port of Savannah to Georgia if not the southeast. Dry bulk, liquid bulk and general cargo/container commodities are shipped into the port, with GCT presently handling 2.6 million twenty-foot equivalent container units (TEUs) from containerized vessels. The COE predicts a long-term approximate 3 percent per year growth rate⁵ in TEUs and a maximum GCT operating capacity of 6.5 million TEUs. Through the proposed harbor deepening project, GPA wishes to continue to be competitive by being able to readily accommodate large post-Panamax-sized vessels (i.e., having a vessel capacity for 6,000 or more TEUs and a design draft of 46 feet (pg. 3: App. K) or greater).

At its current dredged depth of -42 ft (inner harbor) and -44 ft (entrance channel), Savannah Harbor cannot accommodate post-Panamax container vessels without waiting on high tides and/or limiting cargo weight. According to the DEIS, in excess of 70 percent of the fleet of calling vessels were not at their maximum load and design draft.⁶ The proposed harbor deepening project is proposed to minimize existing depth navigational problems by allowing commerce with "more fully loaded and deeper draft vessels" (pg. 2-2). Because river/channel widths are relatively narrow, larger vessels calling on the port are also further constrained by not being able to pass each other while navigating the channel, which results in one-way inbound and outbound vessel traffic.

⁵ The FEIS should discuss the source and rationale of this projected 3 percent growth rate referenced on page 61 (App. K) over the 50-year life of the project.

^o The DEIS Abstract (pg. 1) offers no timeframe with this statement, although Appendix K (pg. 3) references a 2006 date. The FEIS should also include this timeframe in the Abstract.

Regarding project and associated timeframes, project startup is expected in 2015-2016 after four to five years of proposed dredging, the life of the project is 50 years (2065), the port will reach operational capacity by 2032 (according to the COE⁷) based on the one-way vessel traffic constraint in the Savannah River channel, the Panama Canal expansion to accommodate international post-Panamax-sized vessels is to be completed by 2014-2015, and use of lower sulfur fuels would be required for marine vessels (such as those calling on the port) in 2015.

Alternatives

The DEIS evaluates five harbor deepening Action Alternatives and the No Action Alternative (no deepening). These incremental deepenings and their predicted volume of new work dredged material (in million cubic yards: mcy) are as follows (pp. 3-16 to 3-18):

2	-42 ft (0 ft deeper: 0 mcy) N	No Action Alternative (Without Project
	· C	ondition)
>	-44 ft (2 ft deeper: 10.3 mcy) - A	Action Alternative
>	-45 ft (3 ft deeper: 14.6 mcy) - A	Action Alternative
¥	-46 ft (4 ft deeper: 19.0 mcy) - A	Action Alternative
A	-47 ft (5 ft deeper: 23.6 mcy) – A in (F	Action Alternative (COE's Tentatively- dentified National Economic Development NED ⁸) Plan and Possible Tentatively Recommended Plan)
~	-48 ft (6 ft deeper: 28.3 mcy ⁹) – A A F F	Action Alternative (WRDA's Maximum Authorized Plan, Sponsor's Locally Preferred Plan, and COE's possible Tentatively Recommended Plan)

COE's Tentative NED and Recommended Plan Options

The -47 ft alternative is the COE's tentatively-identified NED Plan because the COE found it to be the alternative with the maximum net economic benefit. According to the DEIS, the NED Plan would be recommended for implementation (Recommended Plan) unless there are "overriding conditions" to favor another plan (pg. 3-19). However, such conditions may exist in this case as GPA supports the -48 ft alternative and it could become the non-federal, cost-share sponsor of that deeper alternative (pg. 2) and fund the additional cost difference between its -6 ft deepening and the NED Plan's -5 ft deepening (the FEIS should verify if this will be the case). For the purposes of the DEIS, however, the COE did not identify a single Tentatively Recommended Plan, so that both the -47 ft and the -48 ft alternative are the COE's Tentatively

⁷ As discussed herein, EPA believes that port landside activities could still grow beyond 2032 throughout the life of the project.

⁸ Per page 2 of the DEIS (Vol. 1), the NED is "the plan that maximizes net economic benefits to the Nation and fully complies with Army policy."

⁹ Page 5-97 indicates that 38.8 mcy, instead of 28.3 mcy, would be dredged for the -48 ft alternative. The FEIS should clarify this apparent inconsistency.

Recommended Plan at this time (pg. 3-22). A final COE Recommended Plan should be identified in the FEIS and selected in the COE's Record of Decision (ROD).

Dredging associated with the -47 ft or -48 ft alternative would generate significant volumes of dredged material excavated from the navigation channel, turning basins, bend wideners, harbor berths, and construction of a lengthy extension of the entrance (ocean bar) channel. The large volume of dredged material is primarily due to the upstream location of the existing Port of Savannah and therefore the long length (and depth) of the navigation channel for ocean access.

Projecting Port Growth

The DEIS alternatives analysis assumes some port growth over the life of the project. However, it appears that the COE and EPA maintain different perspectives on the economic and environmental effects of implementing the proposed action (SHEP harbor deepening) versus continuing the no action (existing condition without the project).

The DEIS states that the COE believes that the proposed action (Recommended Plan) would not increase the number of containers (TEUs) that would be processed at the port when compared to the No Action Alternative – even though the fleet mix would change to fewer vessels (larger post-Panamax) compared to the current greater volume of smaller vessels. The COE agrees that there would be port growth over time, but maintains that growth would be the same with or without the proposed action. Accordingly, the number of TEUs would stay constant (or the growth rate would stay the same) with or without the project so that port vessel, truck and train emissions would be the same (or would grow the same). A consequence of this assumption is the belief that the port air quality would not change due to the project and would improve with the replacement of multiple smaller vessels with fewer larger ones (as well as the required use of lower sulfur fuels by calling vessels in 2015). The DEIS provides insufficient information for EPA to agree with these statements, and we request additional modeling to evaluate these statements and other general conclusions regarding air emissions.

EPA acknowledges that the ability to fully accommodate larger (and presumably efficient) vessels could result in operational efficiencies that could – at least initially – reduce the number of vessel trips. Fewer vessel trips for the same amount of projected cargo weight (e.g., TEUs) along with introduction of cleaner diesel fuels by 2015 could result in a net reduction in ship emissions. However, in contrast to the COE's perspective, EPA believes that over the life of the project, the projected growth in port commerce could cause a commensurate increase in the overall vessel trips and in the number of TEUs, thereby resulting in possible increases in vessel, truck and train emissions. That is, compared to the No Action Alternative, EPA believes that the number of vessels, cargo and emissions would likely increase more over time with the operational efficiencies of the harbor deepening project, despite the use of larger vessels and cleaner fuels.

Notwithstanding these issues, EPA is pleased that the DEIS (App. K) provided an emissions inventory for the pollutants of various port sources (i.e., several criteria pollutants and other parameters such as CO, CO₂, SO₂, NO_x, HC, PM2.5, PM10 and/or VOC). Moreover, in

addition to current emissions data, some air quality data for the future condition¹⁰ were also provided to help determine any changes in emissions due to port growth. Disclosure of future air emissions for the No Action Alternative or the proposed action – regardless if considered the same or different scenarios from an air quality perspective – is useful in documenting an estimate of port air quality changes from the current to future condition.

Project Environmental Impacts

Overall, the proposed action has the potential to lower DO water quality, impact tidal freshwater wetlands by excavation and conversion to brackish wetlands or saltmarsh, and reduce fishery habitat for the federally-endangered Shortnose sturgeon and other anadromous fishes. Impacts to these important resources would occur as a direct result of sediment removal during the dredging of the navigation channel and widening of turning basins, as well as indirect impacts through increasing upstream salinities through exacerbating saltwater intrusion.

Our major concern during the Tier I and II NEPA process has been the ability to mitigate project DO impacts attributable to dredging. After extensive interpretation of DO hydrodynamic modeling data, EPA finds that project DO depletions can be reasonably restored to pre-project conditions and evenly distributed within the affected river reaches using Speece Cones for direct oxygen injection into the River. The modeling concluded that such oxygen injection would be sufficient to not only serve as DO mitigation for project losses but also for underestimated DO deficiencies associated with the last harbor deepening to -42 ft. Such artificial injection is expected to elevate DO concentrations by +0.42 mg/l on average, which would raise these river reaches to levels approaching 3.5 mg/l. To ensure that the DO mitigation is sufficient under drought conditions, EPA requests the COE assess and document in the FEIS the August 1999 low-flow conditions similar to the August 1997 normal-flow data analysis provided in the DEIS.

To achieve success in project DO mitigation, EPA expects three assurances from the COE and/or GPA sponsor. These are: 1) post-construction field monitoring of DO levels to ensure the above-described level of DO restoration. 2) guaranteed mitigation throughout the life of the project, and 3) installation and operation of the Speece Cones before dredging begins to ensure that the project's predicted impacts to DO are minimized and mitigated from the outset in order to avoid any potential temporary impacts on the aquatic community while dredging occurs.

EPA's conclusion concerning the sufficiency of the proposed DO mitigation focuses on a water quality perspective to ensure that pre-project DO levels are maintained. We therefore defer to NOAA and FWS for their ecological interpretation of these concentrations relative to DO effects on fishery (e.g., Shortnose sturgeon) and refuge (e.g., Savannah National Wildlife Refuge: SNWF) mandates under their purview.

Project DO mitigation would primarily only restore DO levels to pre-project conditions, and there remains a continuing need to improve the overall DO water quality of the Savannah River system. In this regard, EPA is currently working to revise the DO Total Maximum Daily

¹⁰ The Appendix K emissions inventory provides current and future (to 2032) emissions data for air toxics, but limits emissions data to the current condition for several criteria pollutants and other measured emissions from port sources.

Load (TMDL) for Savannah Harbor. Consistent with 40 CFR §122.44(d)(1)(vii)(B), EPA expects that the wasteload allocations for the oxygen-demanding substances contained in the TMDL, along with any relevant assumptions and requirements, will be implemented through the state National Pollutant Discharge Elimination System permit program. EPA proposed a draft DO TMDL for Savannah Harbor in May 2010 based on Georgia's revised water quality standard, which would require an approximate 85 percent aggregate reduction in point source loads. Successful implementation of the loadings required by a TMDL for DO, and any additional DO mitigation provided by the Speece Cones beyond the impact of this deepening project, would together ecologically benefit the Savannah River system.

In addition to these EPA-related issues, EPA emphasizes the importance of fully evaluating the potential for SHEP dredging to impact the habitat of endangered species (Shortnose sturgeon) and other anadromous fishes such as the popular Striped bass, and also the indirect wetland impacts of converting tidal freshwater marsh habitat into brackish wetlands or saltmarsh at the Savannah National Wildlife Refuge (SNWR) and other freshwater marshes by exacerbating saltwater intrusion.¹¹ We recommend continued coordination with FWS and NOAA regarding opportunities for developing appropriate mitigation for these impacts.

Beyond EPA's primary DO water quality concern, other substantive project concerns include wetland mitigation, general air quality, air toxics, sediment issues, and environmental justice (EJ)/children's health. EPA believes these remaining issues need additional analysis in the FEIS to complement the DEIS. As a NEPA Cooperating Agency, EPA recommends further COE coordination on these issues with EPA, including our review of draft documentation prior to the FEIS. Our remaining issues are summarized below:

+ <u>Wetland Mitigation</u>: Overall, EPA believes that the COE Wetland Mitigation Plan proposed in the DEIS should be further refined. The proposed Plan, which presently appears to emphasize the preservation of freshwater wetlands, should be modified to be consistent with Section 404(b)(1)Guidelines/2008 Mitigation Rule to replace in-type and function of both the freshwater and saltwater wetlands being project impacted. It is important to recognize, if technically supported, the wetlands preservation approach can be an element of this functional replacement mitigation approach such that these two approaches need not be mutually exclusive. A refined Plan should replace the functional impacts to all wetland types; be adequate given the proposed mitigation actions, the timeframe and the risk factors; and comply with all requirements of the 2008 Mitigation Rule. EPA recommends that the FEIS include a draft Plan prepared by the COE in cooperation with an interagency wetland mitigation "working group" including EPA, FWS and others. Given the additional requirement within WRDA 1999 that the mitigation plan shall be implemented before or concurrent with the project, it is important that this Plan be finalized in the ROD.

+ <u>General Air Quality</u>: The FEIS should demonstrate that project emissions do not interfere with area attainment and maintenance of the NAAQS for either the No Action Alternative or the Tentatively Recommended Plan. Accordingly, the FEIS (App. K) should provide a future condition analysis through the end of the project (2065). As part of this

¹¹ For the -47 ft deepening alternative, 1,177 acres of freshwater marsh would be converted and 1,212 acres for the -48 ft alternative (pg. 5-13).

evaluation, EPA requests that dispersion modeling be conducted to determine how landside emissions will impact local area air quality, with emphasis on port traffic effects in potential EJ areas and any possible NAAQS violations. The current emissions inventory of the DEIS (App. K) does not provide a future condition emissions analysis for comparison against the current conditions data provided for the selected criteria pollutants and other parameters measured, or a dispersion analysis. Furthermore, to verify the DEIS assumption that future larger vessels (Panamax and post-Panamax) calling on the port produce less emissions than the existing smaller fleet, the FEIS should compare the fuel efficiency/emissions of larger versus smaller vessels using an "emissions per TEU" metric as the basis of comparison.

+ Air Toxics: A significant number and volume of air toxics are associated with operating the port, with significant emission increases being expected over time (38 tons in 2008 to a range of 117-123 tons in 2032 per Appendix K of the DEIS). These emissions are a source of concerns to residents living in communities surrounding the Port. Accordingly, EPA requests the preparation of a screening level risk assessment to evaluate the potential impacts associated with emissions of air toxics related to the harbor deepening and its operation. Moreover, although the Appendix K emissions inventory for air toxics provides both current and future emissions data as noted earlier, future conditions data were considered the same after 2032 based on the assumption that the number of calling vessels will be constrained by 2032 (due to oneway vessel traffic) such that there will be no increase in freight thereafter. EPA believes that the future condition analysis for air toxics (and NAAQS) should extend beyond 2032 to encompass the entire 50-year life of the project (2065). The tonnage and number of TEUs could continue to increase after 2032 (along with associated additional truck/locomotive landside emissions impacts). Since not all calling vessels currently offload 100 percent of their containers at Savannah, the number of TEUs offloaded at Savannah could conceivably increase after 2032. Also, the requested dispersion modeling for criteria pollutants should include air toxics emissions. Modeling results should be used in the requested screening level risk assessment to help determine effects on landside sensitive receptors such as potential EJ areas located along road/rail corridors noted in the DEIS (pg. 5-147) and determine any areas of localized higher concentrations.

+ <u>Sediment Issues</u>: Dredged material disposal should be conducted in accordance with Section 404 of the Clean Water Act or Section 103 of the Marine Protection, Research, and Sanctuaries Act (MPRSA) consistent with EPA and COE policies provided in the joint guidance document, *Evaluating Environmental Effects of Dredged Material Management Alternatives – A Technical Framework*. In accordance with this Technical Framework, offshore disposal outside of three miles should be conducted pursuant to MPRSA and within an EPA-designated Ocean Dredged Material Disposal Site (ODMDS), in this case the Savannah ODMDS. The DEIS proposes that a portion of the project's dredged material from the ocean entrance channel be disposal at sites 11 and 12 near the channel as experimental fish habitat mounds. Although EPA generally supports fisheries enhancements and acknowledges that there is a fisheries exemption under MPRSA, we believe that this proposed reuse may not be consistent with MPRSA and would likely offer minimal fisheries habitat value. Therefore, EPA does not currently support the proposed disposal at sites 11 and 12, and recommends the evaluation of other alternatives, such as use of the Savannah ODMDS for the disposal of this material. EPA recommends further coordination with EPA, U.S. Coast Guard, and NOAA and their state fisheries counterparts regarding these issues, and the results of such coordination should be documented in the FEIS.

In addition, the DEIS documents the COE's intent to use dredging to extend the current channel offshore for over seven miles since ocean water depths in these areas will not accommodate post-Panamax vessels under all tide and cargo conditions. This channel extension would constitute an estimated 17- to -18 percent increase in the project channel length, and an additional 4.6 mcy of new dredged material. This project component should be fully analyzed and discussed in the FEIS. Specifically, the FEIS should address the multiple factors outlined in the Enclosure, including full characterization of the dredged material, identification and analysis of disposal options, potential evaluation of the Savannah ODMDS capacity in relation to any material that would be disposed in the ODMDS, precise identification of the proposed channel route and alternative routes, and discuss findings. EPA's full understanding of the ocean channel extension component is essential to the overall NEPA analysis and Agency approval of the SHEP. Therefore, EPA requests the opportunity to review and comment on the new channel dredging sections prior to the issuance of the FEIS. EPA also notes that based on the incomplete information on this issue in the DEIS, the public may not have a full understanding of this issue for purposes of public review and comment.

+ <u>Environmental Justice & Children's Health</u>: Because most of the communities surrounding the project have elevated levels of minority and low-income populations (45 percent of the population of Chatham County, Georgia, is comprised of minorities), it is appropriate that project effects on potential EJ communities and children's health were considered in the DEIS consistent with NEPA and relevant Executive Orders (EO 12898 and EO 13045). These analyses should be expanded in the FEIS to include potential landside emission effects on nearby populations (as previously requested above: *General Air Quality*), public concerns offered at the SEG and other meetings and their follow-up outcomes, and disclosure of the demographics of children under age 18 within the project area. As one offset to project impacts, we understand that members of the local community may economically benefit from the project by securing some of the 175 additional positions expected by 2020 due to port cargo growth.

Summary

While the proposed SHEP Action Alternatives have the potential to lower DO water quality, directly and indirectly impact tidal freshwater wetlands, and reduce fishery habitat, EPA finds that project DO depletions can be reasonably restored to pre-project conditions and evenly distributed within the affected river reaches using Speece Cones for direct oxygen injection into the river. Such artificial injection is expected to elevate DO concentrations by +0.42 mg/l on average, which would raise these river reaches to levels approaching 3.5 mg/l. To achieve project success, EPA expects assurances from the COE and/or GPA for post-construction field monitoring of DO levels to ensure this level of DO restoration, a financial guarantee to ensure continuation of the proposed mechanical mitigation throughout the life of the project, and Speece Cone installation and operation before dredging begins to minimize the potential impacts on the aquatic community. EPA's conclusion concerning the sufficiency of the proposed DO mitigation focuses on a water quality perspective to ensure pre-project DO levels are maintained. We defer to NOAA and FWS for their ecological interpretation of these concentrations relative to DO effects on their fishery and refuge mandates. The proposed alternatives should continue to be closely evaluated to ensure that the construction and subsequent operation of any harbor deepening would not further cause or contribute to the ongoing DO impairment in the harbor.

In addition to EPA's DO water quality concern, our other substantive project concerns include wetland mitigation, general air quality, air toxics, sediment issues, and EJ/children's health. As a Cooperating Agency, EPA recommends further COE coordination with EPA on these remaining issues, including our review of draft documentation prior to the FEIS.

Additional findings and detail of our DEIS review are provided in the Enclosure to this cover letter.

EPA DEIS Rating

EPA rates this DEIS as an "EC-2" (Environmental Concerns, additional information requested). EPA bases this rating on the overall project impacts and the additional information requested for the FEIS. If this harbor deepening project is further pursued by the sponsor, EPA expects our additional information requests will be incorporated in the FEIS and that the impacts of the proposed project will be fully mitigated consistent with the policies and regulations of the COE and its Cooperating Agencies and guaranteed throughout the life of the project. Although the COE has not yet identified a Recommended Plan, EPA believes the proposed DO mitigation would be sufficient to reasonably restore DO levels to pre-project conditions for any of the considered incremental harbor deepening alternatives (-44 ft to -48 ft).

EPA appreciates the opportunity to review the Tier II DEIS and the significant coordination the COE has provided over the project years. Should you have questions regarding our comments, you may wish to contact A. Stanley Meiburg, Deputy Regional Administrator, or Heinz Mueller, Chief of the NEPA Program Office coordinating the NEPA review, at 404-562-9611 or mueller.heinz@epa.gov.

Sincerel Gwendolyn Keyes Fleming Regional Administrator

Enclosure

ENCLOSURE

EPA RECOMMENDATIONS & ADDITIONAL COMMENTS

Based on our review of the SHEP DEIS, EPA offers the following project conclusions and recommendations on DO water quality, wetland mitigation, general air quality, air toxics, sediment quality and disposal, and EJ/children's health, as well as additional comments on various project topics.

> RECOMMENDATIONS

>> DO Water Quality

+ <u>Dissolved Oxygen Impacts</u>: Without mitigation, the proposed Savannah Harbor deepening project would result in a reduction in the dissolved oxygen (DO) in the Savannah River and Harbor area. The DEIS proposes to inject oxygen at three locations to mitigate the decrease in DO due to the physical dredging of the Harbor. The depressed dissolved oxygen levels are greater in the bottom portion of the River system. The proposed mitigation plan would result in an average increase of dissolved oxygen in the lower half of the River system of +0.42 mg/l DO above existing DO conditions or an 8.8% net increase in dissolved oxygen in the River system. This net improvement in DO is based on the August 1997 river flows representative of the average summer flows under critical temperature conditions. Based on this analysis, the overall impact of the proposed deepening and mitigation is a net improvement in the available DO under average summer flow conditions. To ensure that the DO mitigation is sufficient under drought conditions, EPA requests the COE assess and document in the FEIS the August 1999 low-flow conditions similar to the August 1997 normal-flow data analysis provided in the DEIS.

As discussed more fully below, the data in the DEIS based on the water quality model results indicate there are only four locations where the proposed mitigation does not fully mitigate for project impacts on DO. In three of those locations, EPA concludes that the lack of complete mitigation would not result in a failure to attain water quality standards that were previously attained, nor would it adversely affect habitat. In one location, involving a portion of Segment FR11, the lack of complete mitigation in this portion did not prevent the entire Segment FR11 from attaining a net increase in DO with mitigation. EPA defers to NOAA and the FWS to determine whether potential loss of habitat is significant. However, the data overall support the conclusion, as described above, that the proposed mitigation plan will produce a net increase in DO throughout the River system impacted by the proposed dredging project.

The determination that there are only four locations where the proposed mitigation does not fully mitigate for the project impacts on DO was based on a full analysis of the modeling of expected localized impacts throughout the Savannah River and Harbor system. The following discussion contains EPA's analysis of each of these localized instances in relation to compliance with applicable water quality standards (WQS) and anticipated impact on habitat. The WQS for DO for this portion of the River are a daily average of 5.0 mg/l DO and 4.0 mg/l minimum for both Georgia and South Carolina. The Georgia WQS specify a compliance point for the dissolved oxygen standards as one meter below the surface for rivers with a depth exceeding two meters. South Carolina WQS are silent on the compliance depth, but their approved Section 303(d) assessment methodology references a 0.3 meter depth for grab samples for DO to determine compliance with the WQS. The DEIS focused the DO analyses on the lower portions of the river system to assess impacts on aquatic organisms sensitive to depressed DO at the lower depths.

The WASP-EFDC water quality model, described in Section 5 of the DEIS, was used in order to assess any isolated areas negatively impacted by the lowering of DO due to dredging. The River system is divided into 27 segments, each with several cells defined by depth, length and width. There are six depth layers and the River channel geometry determines how many cells are needed to adequately cover the length and width of each segment. There were two analyses performed. The first considers the distribution of the DO values for August 1997 calculated by averaging the DO values in all cells in the bottom three layers of each segment. The second evaluated the impacts of the mitigation plan on the most impacted cell in each segment (the "critical cell"). The results of these two analyses are assessed below.

The first analysis concluded that 26 of the 27 segments experience a net increase in DO from existing conditions to post-deepening, mitigated conditions. One segment, MR6, was not fully mitigated as compared to existing DO conditions. As can be seen in the table below, the lowest dissolved oxygen values found at the first and fifth percentiles of the samples would be slightly improved from existing conditions. The most significant percent net reductions in dissolved oxygen occur at the 50th percentile and above when the DO values are maintained at or above the 5.0 mg/l daily average water quality standard. The percentage of time the water quality standards are not attained under existing conditions, less than the 50th percentile, is not changed with the DO mitigation. However, there is a net loss of DO of 0.11 mg/l at the 25th percentile and a net loss of 0.22 mg/l at the 25th percentile.

DO Conc	entration	Percenti	les (mg/l)	for Exist	ing and N	Mitigated	Conditio	ns in MR	6
Percentile	1%	5%	10%	25%	50%	75%	90%	95%	99%
Existing	2.15	2.53	3.05	3.58	5.69	6.33	6.80	6.94	7.27
Mitigated	2.23	2.51	2.93	3.36	4.99	5.39	5.55	5.66	5.91

Although the MR6 segment is not fully mitigated with respect to DO, an evaluation of the fishery habitat maps in Appendix P, indicate that MR6 does not contain any segments which adversely impact the sensitive fish species assessed in the DEIS.

The second analysis concluded that four segments had critical bottom cells that were not fully mitigated by the proposed oxygen injection system. These segments are FR2, FR11, MR6, and LBR3. Each critical cell is evaluated below.

The critical cell in FR2 was fully mitigated except at the 99th percentile DO concentration which changed from 5.09 mg/l for the existing condition to 4.87 mg/l under the mitigation plan. All other percentiles indicated the DO was increased with the mitigation plan. Segment FR2 is

located below the portions of the River system evaluated for habitat impact. Therefore, this critical cell is not a concern regarding impacts to the aquatic community.

The critical cell in FR11, located in the SNWR above the dredged zone, exhibited significant impairment under the proposed mitigation plan. This impairment is due to the geometry of the River, sediment oxygen demand, and long hydraulic retention time caused by the localized conditions. A table comparing the changes in the DO profile is presented below.

DO Conc	entration	Percentil	les (mg/l)	for Exist	ing and M	Aitigated	Condition	ns in FR1	1
Percentile	1%	5%	10%	25%	50%	75%	90%	95%	99%
Existing	4.17	4.7	4.93	5.24	5.67	6.14	6.5	6.64	7.13
Mitigated	2.71	2.69	2.72	2.74	2.78	2.89	3.03	3.11	3.18

Even though this one cell is significantly impaired the average DO for the entire bottom three layers of Segment FR11 increased by 6.2% under the mitigation plan. This decrease in DO in the critical cell is likely contributing to habitat loss in a portion of the FR11 segment. This critical bottom cell covers less than one fifth of the length of FR11 and only the right half of the river channel. EPA defers to NOAA and the FWS to determine if this isolated loss of habitat is significant.

The critical cell in MR6 (the only Segment not fully mitigated) is located in the SNWR and is significantly impacted by the proposed dredging project as shown in the table below.

DO Conc	entration	Percenti	les (mg/l)	for Exist	ing and M	Aitigated	Condition	ns in MR	6
Percentile	1%	5%	10%	25%	50%	75%	90%	95%	99%
Existing	2.11	2.49	3.01	3.51	5.61	6.36	6.80	7.06	7.32
Mitigated	2.64	2.65	2.66	2.7	2.81	3.02	3.26	3.39	3.49

The segment MR6 and its critical cell will experience lower water quality under the mitigation plan. However, this lower water quality is not expected to adversely impact fish habitat.

The critical cell in LBR3 which is located in the SNWR is not fully mitigated by the injection of oxygen. The proposed project impact on DO in the critical cell is shown below.

DO Conc	entration	Percentil	les (mg/l)	for Exist	ing and M	Aitigated	Condition	ns in LBF	13
Percentile	1%	5%	10%	25%	50%	75%	90%	95%	99%
Existing	2.89	3.28	3.47	3.68	3.95	4.34	4.73	4.99	5.24
Mitigated	3.14	3.23	3.36	3.56	3.87	4.20	4.39	4.51	4.68

The lowest DO value is mitigated but the higher percentile values are not fully restored. However, for the whole bottom half of the LBR3 segment, there is a net DO addition of 15.3% calculated by averaging the DO increases for each percentile. An evaluation of the habitat maps in Appendix P indicates that the critical segment in LBR3 is associated with habitat gains for the Shortnose sturgeon juveniles and Stripped bass spawning and no impact on the other species. Therefore, the lower water quality in the critical cell was not deemed significant. + <u>Monitoring & Adaptation</u>: Because of uncertainties associated with modeling, EPA recommends that DO levels be monitored and adaptively managed to ensure adequate oxygen injection. As was discussed at the September 2010 Executive Steering Committee meeting, this mitigation function must also be guaranteed by the COE and/or sponsor throughout the life of the project, and be implemented prior to construction to avoid DO impacts during dredging. Moreover, financial guarantees for Speece Cone operation must be provided in the FEIS and ROD by the COE and/or sponsor for the life of the project.

+ <u>Cumulative DO Benefits</u>: EPA proposed a draft DO TMDL for Savannah Harbor was reproposed in May 2010 based on Georgia's revised water quality standards, which would require an approximate 85% aggregate reduction in point source loads. Successful implementation of the loadings required by a TMDL for DO, and any additional DO mitigation provided by the Speece Cones beyond the impact of this deepening project, would together ecologically benefit the Savannah River system.

>> Wetland Mitigation

+ <u>No Mitigation Credit for Sea Level Rise</u>: Wetland marshes will be lost due to sea level rise effects over the long life of the project. Regardless of the value used in the COE analysis (e.g., +3 mm per year) to represent sea level rise, EPA believes that the proposed project should mitigate for actual wetland impacts that occur once construction is complete (the base year) and not take credit for any wetland losses due to sea level rise over the life of the project. Further, the COE should also ensure that the project fully mitigates for all impacts that would occur over the entire 50-year period of analysis.

+ <u>Project Wetland Impact Summary</u>: For the 48-ft deepening alternative supported by the sponsor, the project will excavate 14.08 acres of primarily saltwater tidal wetlands (saltmarsh). The project will also convert approximately 1,212 acres of freshwater wetlands to brackish wetlands or saltmarsh. As compensatory mitigation, the COE proposes to implement Plan 6A, which consists of a set of hydrological modifications in the Savannah Harbor which is predicted to restore freshwater flow to some areas and convert brackish wetlands to freshwater wetlands. Plan 6A reduces the net freshwater wetland loss to 337 acres. However, 730 acres of saltmarsh will also be converted to brackish wetlands.

+ <u>DEIS-Proposed COE Wetland Mitigation Plan for SHEP</u>: As mitigation for the wetland excavation impacts, the COE proposes to excavate an old confined disposal area (CDF 1S on the SNWR) down to tidal level. This would re-create approximately 45 acres of what is predicted to be saltmarsh. EPA notes that 29 acres would be dedicated to the impacts of the project and the remaining 16 acres would be "reserved" for future projects in the harbor. As mitigation for the 337 acres of freshwater wetland conversion impacts remaining after implementation of Plan 6A and the 730 acres of saltwater wetland conversion impacts, the COE proposes to preserve 2,683 acres of freshwater wetlands at a site or sites listed in a 1998 acquisition list for the SNWR. The COE used an application of the Savannah District Standard Operating Procedure (SOP) to justify these quantities of compensatory mitigation. + <u>EPA's Recommended FEIS Wetland Mitigation Plan for SHEP</u>: EPA recommends that the Wetland Mitigation Plan for SHEP include the following components:

- Use a mutually acceptable technical approach to determine the loss (and gain, if any) of all wetland functions due to the project;
- Apply the same approach to any proposed wetland mitigation action or site to determine wetland in-kind functional replacement;
- Use an appropriate methodology (like an SOP) to ensure temporal and risk factors are taken into account in determining the quantity of any proposed mitigation;
- If preservation is a component of the mitigation plan, develop site selection criteria and then identify candidate sites using the criteria;
- Develop mitigation plans for any action/site that meet the criteria of the Mitigation Rule;
- Ensure that all mitigation sites are protected in perpetuity in the target condition of the final Mitigation Plan, i.e., managed to sustain the in-kind wetland type;
- Address cumulative wetland loss/conversion in the project portion of the Savannah River system;
- As outlined in the 2008 Mitigation Rule, financial assurances for the complete implementation for the mitigation and monitoring plan should be included.

+ EPA's Concerns with Present DEIS Wetland Mitigation Plan: EPA offers the following comments and conclusions on the COE's proposed mitigation plan presented in the DEIS. Following the submission of all comments on the DEIS, we recommend the COE convene an interagency wetland mitigation "working group" consisting of agencies that commented on the mitigation plan, including EPA and FWS. The mitigation working group could then seek solutions to the issues we raise below and those raised by others. The goal of the group would be to develop an overall approach to compensatory mitigation that replaces the functions lost due to the project and to assist the COE in developing a refined draft Wetland Mitigation Plan for SHEP. The FEIS should incorporate the findings of this group and the draft Plan, while the final Wetland Mitigation Plan should be incorporated in the COE ROD.

* <u>Overview</u>: EPA recommends that the proposed compensatory mitigation plan be improved, as discussed below, to ensure that it fully complies with the Section 404(b)(1) Guidelines and the 2008 Mitigation Rule, and to ensure that it will not result in the net loss of wetland functions and types in the Savannah Harbor.

* <u>Mitigation Using Wetland Preservation</u>: The proposed preservation of 2,683 acres of some type of wetlands at an undetermined location in the Harbor represents a mitigation-toimpacts ratio of 2.5:1 for the remaining freshwater wetland impacts and the saltmarsh impacts. This is out-of-kind mitigation that is significantly below the ratios recommended in the 2001 EPA Region 4 Mitigation Policy for wetland preservation. EPA recommends development of screening criteria for wetland preservation consistent with the Mitigation Rule, focusing on wetlands that are of the highest function and which are under the most immediate threat by the project. * <u>Functional Assessment</u>: The DEIS and its supporting studies did not employ a functional assessment to objectively and quantitatively evaluate the functional losses due to excavation of wetlands and conversion of wetland types from the SHEP. A functional approach is key to the assessment of wetland impacts and the analysis of adequate compensatory mitigation actions. We recommend that the interagency working group identify tools to determine the functional losses due to the project. This same tool should then be applied to any proposed wetland mitigation action. The comparison of the results should indicate whether or not the no-net-loss-of-function criterion is met.

* <u>Monitoring Plan</u>: There should be a detailed plan to monitor wetland functional changes throughout the harbor due to the deepening in the FEIS. This could involve the application of remote sensing methods. EPA recommends the Monitoring Plan be based on the parameters used in the functional assessment cited above. The duration of monitoring should be based on the expected time for full functional replacement. The plan should extend at least seven years after construction, which is the minimum monitoring period required by the Savannah District for any mitigation project of this magnitude.

* <u>Data Collection & Monitoring</u>: EPA recommends including a comprehensive baseline data collection and monitoring plan for the mitigation acreage, specifically, predicted acres of "restoration" of freshwater wetlands through conversion from saltmarsh/brackish marsh as identified in the implementation of Plan 6A.

* <u>Preservation Site Selection</u>: The proposed preservation action of selecting one or more properties from a 1998 list of 25 properties is vague (three of the properties are already government owned, two appear to have significant development and one was rejected as a restoration site). Alternatively, EPA recommends that an updated list of specific sites be identified, and that the five preservation criteria in the 2008 Mitigation Rule be applied to these sites as well as the other site selection criteria noted above.

* <u>Standard Operating Procedure Application</u>: Based on Savannah District Guidance, the SOP is not applicable for impacts over 10 acres, though with modification, it may be able to serve as an initial evaluation tool. The 48-ft project deepening alternative would excavate 14.08 acres and hydrologically impact/convert at least 1,212 acres of wetlands. The application of the SOP to this project affects the quantity of the proposed compensatory mitigation. This is partially due to the fact that the calculations lack a scaling factor. EPA recommends that the mitigation working group assess modification of the current SOP or use of another method to ensure an adequate quantity of compensatory mitigation is provided that will replace the wetland functions lost due to the project.

* <u>SOP Factors</u>: SOP factor selections appear to be inconsistent and clarification on the technical basis for the factors used is needed. Again, EPA recommends that the mitigation working group assess modification of the current SOP and the application of the impact factors or use of another method to ensure an adequate quantity of compensatory mitigation is provided that will replace the wetland functions lost due to the project.

* <u>Threats to Preserved Tidally-Influenced Wetlands</u>: The COE characterized the threat to any potentially preserved tidally-influenced wetlands as "moderate" due to potential development on nearby uplands, even though no specific site or sites were identified. EPA generally rates the threat to these types of wetlands as "low" or "none", especially since the State of Georgia has been exerting ownership claims on all tidally-influenced wetlands that have a valid King's grant. A significant degree of threat is one factor required for any preservation area under the Mitigation Rule and a lower degree of threat would result in significantly more preservation acreage being needed in the SOP calculations. EPA recommends the mitigation working group assess the project "threat" and incorporate it into the criteria for site selection.

* Differing Resource Agency Mitigation Approaches: Project mitigation for SHEP is somewhat confounded by different resource agency philosophies for mitigating the same wetland impacts. In general, EPA emphasizes a functional assessment of wetlands that is based on physical, chemical and biological metrics to restore or enhance wetlands to offset the functional losses due to a project. For this project, it appears that FWS has emphasized wetland preservation, with the preserved land added to the SNWR, as the preferred approach. Preservation clearly has a role in wetland mitigation but it should be consistent with the 2008 Mitigation Rule and should include a thorough functional assessment of the proposed preservation sites. EPA believes the mitigation working group could help resolve the differing approaches to wetland mitigation.

EPA in its review of wetland mitigation proposals applies the Section 404(b)(1) Guidelines and the 2008 Mitigation Rule (which amended the Guidelines). We understand that FWS has a strong preference for preservation and has placed a high value on freshwater tidally-influenced wetlands. This preference is also reflected in the COE's wetland mitigation plan proposed in the DEIS. For example, while Mitigation Plan 6A may increase the acreage of freshwater wetlands, it will also decrease the acreage of saltmarsh and brackish wetlands. In contrast, EPA does not categorize and rank wetland types but instead looks for functional replacement for losses of any wetland type (i.e., all jurisdictional wetlands). Both mitigation approaches should be reasonably satisfied in the wetland mitigation plan of the FEIS, so that wetland function and habitat values will both be mitigated for project impacts. An ideal plan would seek to maintain or increase the functions of all wetlands in the Savannah Harbor area.

Reflecting the lack of a functional approach noted above, the DEIS places a higher "value" on freshwater wetlands, followed by brackish wetlands and finally saltmarsh. This was observed throughout the impact and mitigation evaluations. EPA believes that each wetland type has a unique suite of functions and alteration of these functions is a loss, regardless of the wetland type. While we agree that the Savannah Harbor is a highly managed and altered estuarine system, we recommend an objective analysis for assessing functional loss that is based on in-kind functional replacement.

>> General Air Quality

+ <u>Vessel Efficiency</u> – Appendix K of the DEIS states that "Since the total number of containerized vessels calling at the port would decrease with a deeper harbor, the total volume of air emissions would decrease." To verify the DEIS assumption that future (post-project) larger vessels (Panamax and post-Panamax) calling on the port produce less emissions than the existing smaller fleet, the FEIS should compare the fuel efficiency/emissions of larger versus smaller vessels using an "emissions per TEU" metric as the basis of comparison, and compare the emission levels per TEU for the smaller versus larger containerized vessels calling on the port.

+ <u>NAAQS Attainment</u> – The FEIS should demonstrate that project emissions should not interfere with area attainment and maintenance of the NAAQS under Section 110 of the Clean Air Act and NAAQS maintenance plan requirements. The FEIS should demonstrate this over the life of the project (2065) given the expected growth of the port. Such an analysis would require a project future condition analysis.

+ <u>Future Condition Analysis</u>: The Appendix K emissions inventory provides current and future emissions data (to 2032) for air toxics, but limits emissions data for several NAAQS and other parameters to current conditions. Therefore, EPA requests that the future condition for selected criteria and other measured pollutants also be included in the FEIS for either the No Action Alternative or the Tentatively Recommended Plan (since the COE believes them to be the same in terms of port growth and air quality).

+ Dispersion Modeling: There is no dispersion modeling in the DEIS to indicate how these emission increases will impact local area air quality monitors and communities, with emphasis on potential EJ communities. There is one target monitor of concern located in Garden City Terminal and another in downtown Savannah to determine how these emission increases will impact local area air quality. Since much of the truck traffic from the port travels through these areas, it is important to characterize the impacts along those routes to ensure that the increases will not adversely affect the models. EPA requests that the dispersion modeling evaluates potential impacts on both criteria pollutants (NAAQS) and air toxics relative to sensitive port landside receptors, with emphasis on potential EJ communities along road/rail corridors associated with the port.

+ <u>Air Analysis Conclusions</u>: The conclusions for the air emissions analysis section in Appendix K were somewhat general. The COE states that the emissions would occur with or without the project, but the COE has not supported the reasoning behind this statement. It is recommended that the COE provided documentation to support the analysis that the total cargo moving though the port would not increase or decrease as a result of the harbor deepening.

+ <u>Recommended Additional Port Mitigation</u>: EPA recommends the following additional streamlining and mitigation methods to further offset port diesel emissions and enhance the sponsor's environmental management system for the port:

* Shore Power – Since the port is electrifying its cargo cranes, EPA recommends the port evaluate the possibility of including shore power during that upgrade. Installing shore power at the same time as electrifying the gantry cranes should save costs. Since the vessels are significantly larger, EPA expects the call time in port to extend beyond the current average turn time. While short turn times may not justify shore power, longer turn times make shore power a potentially viable option to reduce air emission impacts.

* Dray Truck Upgrades - EPA recommends that the port consider programs that incentivize upgrading of dray (on-port) equipment to 2007 standards.

* Distribution Center – EPA recommends that the port coordinate with the distribution center to establish no-idle-zones at distribution centers. There is no need for a vehicle to idle while it is being loaded or unloaded.

* Eliminate or Reduce Creep Idle – Creep idle is a significant source of pollution at many ports. The port should determine if creep idle is a problem and address it accordingly. The current gating process should be effective, but an evaluation will support this.

* Alternative Fuels – Use of biodiesel in port diesel equipment will reduce emissions of polycyclic aromatic hydrocarbons (PAH) significantly. The port should consider this as a future fuel choice. In addition, since there is a reliable source of liquefied petroleum gas (LPG) nearby, the port could consider switching all on-property diesel vehicles to LPG to reduce impacts. The port should consider this as part of operating agreements with Stevedores and shipping lines if they do not have direct control of the jockey trucks.

>> Air Toxics

+ <u>Air Toxics Emissions</u> – Table 5-64 (pg. 46 of App. K) estimates the emissions of 28 air toxics (e.g., 1,3-butadiene, acrolein, acetaldehyde, etc.) from the Garden City Terminal in 2008 to be about 38 tons. The corresponding estimates for the year 2032 range from about 117 to 123 tons (Tables 5-74 and 5-76). This is a dramatic increase and reflects the possible emissions from only one terminal.

+ <u>COE Level of Analysis & Project Position</u> – Toxicity information and estimated concentrations of the air toxic pollutants around the port are not provided in the DEIS. The potential health impacts associated with these air toxics emissions are not addressed in the DEIS. The DEIS states (pg. 108 of App. K), "More detailed analyses – such as dispersion analyses to identify 'hot spots' of pollution – could be conducted. However, the Port is not a major contributor to the overall emissions in the County. When coupled with the dispersed nature of many of those 'Port' emissions along the 34-mile length of the navigation channel, the Corps concluded that such additional analyses are not warranted." Page 4 Section 2.0 (App. K) states, "This assessment does not include a detailed dispersion modeling assessment of these emissions or a risk-based assessment of the health effects associated with the proposed project."

+ <u>Screening Level Risk Assessment</u> – As noted above, a significant number and volume of air toxics are associated with operating the port and significant increases in such emissions are expected over time. Therefore, EPA believes that locally, port air toxics are a potential concern to surrounding communities. The dispersion of emissions and the location and magnitude of the emission sources are important to determining whether a particular source poses a significant risk to those nearby. EPA Region 4 has provided detailed guidance (including references to well-prepared air toxics analyses by the COE at other ports) numerous times over the last several years of coordination to assist the COE in such an evaluation. EPA continues to support for a screening level risk assessment to evaluate the potential impacts associated with emissions of air toxics related to the harbor deepening and its operation, both overall and potential any areas of localized higher concentrations, particularly in light of the projected increase in emissions of air toxics associated with the port over the next several years.

+ <u>Vessel Cargo (App. K)</u>: While the Appendix K emissions inventory for air toxics provides both current and future emissions data, future conditions data were considered the same after 2032 since the COE maintains that the number of calling vessels will be constrained by 2032 (due to one-way vessel traffic) such that there will be no increase in freight thereafter. While the number of ships calling on the Garden City Terminal is at capacity in 2032, it is unclear how the COE made a determination that there would not be an increase in cargo offloaded or an increase in overall freight received. The FEIS should clarify if the capacity at the port to store and handle additional cargo is reached at the same time. Currently, every ship that calls on the Garden City Terminal does not offload 100% of its containers. If this is the case in 2032, then the capacity of the terminal itself is the key stabilizing factor and not the number of vessels calling on the port. If the capacity of the terminal has not been reached at 2032, then that same number of vessels could still offload more containers and increase the air emissions throughout the 50-year life of the project (to 2065).

>> Sediment Issues

+ <u>Elevated Cadmium</u>: The cadmium background is elevated in some Savannah River reaches, but its re-suspension in the water column during dredging is not expected to be a significant issue with application of appropriate Best Management Practices (BMPs), including the potential use of dredging methods that minimize potential cadmium re-suspension, as appropriate.

+ <u>Upland Disposal</u>: EPA finds that the upland disposal management plan for the project's cadmium-laden dredged material is acceptable, with the exception of a few minor inconsistencies. Overall, EPA concurs with the use of eight (8) upland confined disposal facilities (CDF's) provided by the GPA/GDOT non-federal sponsor for use as part of SHEP. These CDF's are known as 2A, 12A, 12B, 13A, 13B, 14A, 14B, and Jones/Oysterbed Islands. However, dikes at the CDFs will have to be raised in height over the next 50 years to provide the needed sediment storage capacity. EPA recommends that the FEIS provide additional information on long-term maintenance issues for Savannah Harbor, and commit to specific future review dates to consider advances in dredging technologies, changes in shoaling rates or environmental conditions, as well as changes in environmental laws.

+ <u>Proposed Extension of Ocean Channel</u> – The proposals in the DEIS include dredging to extend the current channel offshore for over seven miles since ocean water depths in these areas will not accommodate post-Panamax vessels under all tide and cargo conditions. This channel extension would constitute an estimated 17-18% increase in the project channel length, while the additional 4.6 mcy of new work dredged material is a 13-15% increase in the dredged material volume.¹

¹ The cited length and volume percentages are expressed as ranges due to some inconsistencies in the DEIS (e.g., the total dredged material volume for the -48 ft deepening is 28.3 mcy on page 3-18, but 38.8 mcy on page 5-97).

This project component should be fully analyzed and discussed in the FEIS. Specifically, the FEIS should address the following:

* Characterize Dredged Material: Were core samples taken, will hard/live bottom material be dredged, are sediments contaminated, are there any additional cadmium concerns associated with this project component, etc.? Should it be determined that hard/live bottom material will be dredged within the channel extension area, an analysis of fisheries mitigation would be necessary. EPA recommends that appropriately designed fisheries enhancement in-kind habitat mitigation be used to fulfill any identified mitigation requirements.

* Offer Disposal Options: What disposal areas are available, particularly given that the use of proposed sites 11 and 12 may not be appropriate (see Dredged Material Reuse below)?

* Savannah ODMDS Capacity Evaluation: Any plans requiring use of the Savannah ODMDS should include an ODMDS capacity evaluation to ensure the ability to accommodate the related volumes of dredged materials.

* *Provide Route Variations*: The DEIS does not identify the specific alignment of the proposed new channel extension. EPA understands that hard bottom habitat has been identified in the general vicinity of the new channel extension. Are there slight alignment shifts possible within the channel corridor to avoid any potential hard bottom habitat? What mitigation measures will be taken for impacts?

* Discuss Funding: Did the WRDA 1999 authorization include the funding and cover the scope of this proposed extension?

So that EPA can have a full understanding of the ocean channel extension component, EPA requests the opportunity to review and comment on the new channel dredging sections prior to the issuance of the FEIS. EPA also notes that based on the lack of information on this issue in the DEIS, the public may not have a full understanding of this issue for purposes of public review and comment.

+ <u>Dredged Material Reuse</u>: EPA recommends that the COE consider re-entering suitable sediments dredged at the entrance channel into the sand-sharing system (longshore drift) by placement at feeder berms located south of the entrance channel in areas free from seagrasses, hard/live bottoms, and/or cultural resources. Use of suitable dredged material for beach renourishment projects can also be a reasonable reuse if locally requested; seagrasses, hard/live bottoms and/or cultural resources are not covered; and grain size is compatible with the existing beach to reduce erosion potential. Feeder berms utilized for this purpose must be located within the territorial sea (i.e., shoreward of the 3 nautical mile line) in accordance with the Clean Water Act (CWA). Placement of dredged material outside the territorial sea is regulated under the MPRSA and must be placed in an EPA- designated ODMDS after proper characterization and evaluation, and in compliance with the Ocean Dumping Regulations (40 CFR 220-228).

In regard to the proposed project disposal of dredged material at sites 11 and 12 near the entrance channel as fish habitat mounds, such reuse may not be consistent with MPRSA and should be further coordinated with EPA. Pursuant to Section 103 of MPRSA, ocean disposal of dredged material can only occur in an EPA-designated ODMDS. Alternatively, material can be placed as fill pursuant to Section 404 of the CWA within three miles of the baseline, such as the above feeder berms within the sand-sharing system. Although EPA supports fisheries enhancements and acknowledges that there is a fisheries exemption under MPRSA, the DEIS does not provide sufficient information to demonstrate that placement of dredged material at these sites would necessarily "develop, maintain or harvest fisheries" and exclude it from the Ocean Dumping Regulations (40 CFR 220.1(c)(2)). We are concerned that the fishery habitat value for these mounds would be minimal since they could easily erode, potentially be a navigational concern, be proximal to the turbidity and other effects of recurring maintenance dredging of the entrance channel, and would not provide any hard structure as is typical of fisheries enhancement projects.

Therefore, EPA recommends the evaluation of other alternatives, such as use of the Savannah ODMDS for the disposal of this material. If entrance channel dredged material cannot be properly reused in accordance with the CWA, the material, if shown to be suitable and in compliance with the Ocean Dumping Regulations, could potentially be disposed of at the Savannah ODMDS which is formally designated by EPA, consistent with MPRSA. EPA emphasizes that such project disposal at the ODMDS is a separate process from the current harbor deepening project NEPA process and will therefore need additional coordination.

>> Environmental Justice / Children's Health

+ <u>Air Emissions</u> – According to page 5-150, the COE expects the volume of containers handled at the Garden City Terminal to increase from 2.6 million TEU until the terminal reaches its capacity of 6.5 million TEU around 2032. According to the DEIS, this is predicted to significantly increase the number of truck movements per day from 4,900 to approximately 13,000. In addition, while the number of containerized ships that may use the channel would eventually be constrained by the one-way traffic limitation for calling vessels, the port capacity and amount/percentage of cargo that can be unloaded in Savannah does not appear to be restricted. As suggested in our *General Air Quality* section above, EPA expects that this project has the potential to result in additional truck and locomotive traffic within the project areas, even after 2032. In turn, these additional landside emissions could affect potential nearby communities and should be evaluated.

+ <u>Public Involvement</u> – The DEIS indicates that representatives of the potential EJ communities have not expressed *substantial* concerns about the project. It is unclear what concerns have been expressed by EJ representatives, how they were resolved and what denotes *substantial* concerns (pg. 5-145). The FEIS should incorporate this information within the EJ section for public review. EPA notes that many meetings have been held related to the project, including two public workshops at the beginning of the project. We recommend that the FEIS describe how or whether specific efforts were made to engage EJ communities in the surrounding areas during that period or subsequently. EPA commends the COE for the use of an external Stakeholders Evaluation Group (SEG), which held approximately 65 full meetings. The outcomes of SEG's extensive involvement should also be summarized in the FEIS as well as the degree to which representatives from potential EJ communities were involved or EJ concerns were discussed and

addressed in this forum. The FEIS should also indicate whether the port has a mechanism or long-term program designed to update surrounding communities on port expansion/changes and for receiving regular feedback or concerns from areas residents.

+ <u>Property Acquisition</u> – The DEIS indicates that properties will be acquired for the project, but the precise properties have not been determined. According to the DEIS, the properties will be selected from a list identified by the FWS for acquisition and could contain a small number of residences. The COE believes these impacts will be minimal because less than five properties are expected to be acquired. The FEIS should include information regarding the property type (i.e., residential, commercial), location/number, and the percentage that are owned or occupied by minority and low-income populations and describe in the FEIS how any identified issues are resolved.

+ <u>Noise & Lighting</u> – EPA appreciates the efforts that have been made to minimize noise and lighting impacts. However, in the EJ section, there does not appear to be a discussion/overlay of existing noise levels on the communities that surround the port and its transportation corridors. This baseline information should be summarized in the FEIS EJ section, or cross-referenced. We note that the GPA sponsor has programs designed to reduce air, noise and lighting impacts on the surrounding communities. For example, GPA built noise berms to offset significant noise impacts and have reduced their facility lighting to conserve energy and offset impacts.

+ EJ Project Benefits – Although it does not mitigate for project impacts, job creation is the primary benefit (offset) derived from the proposed SHEP to both EJ and other populations living in the project area. Overall, the DEIS does a good job discussing the percentage of minority residents that are currently employed by GPA and one of three unions. Based on these percentages, it is likely that EJ populations will also economically benefit from the project by securing some of the 175 additional positions expected by 2020 due to future cargo growth.

+ <u>Children's Health Documentation</u> – Unlike the EJ section, demographics related to the population of children under age 18 within the project area relative to the reference population (i.e., county and state) are not fully incorporated. This information should be provided in the FEIS under Section 5.20 on children's health. Nevertheless, EPA appreciates the inclusion of a map depicting the location of schools, hospitals and child care facilities along the navigation channel. In terms of the impacts assessment, EPA notes that the DEIS indicates that the facilities are dispersed throughout the communities and are not located disproportionately near the navigation channel of the Garden City Terminal. While these facilities may be dispersed, it is unclear whether some areas along the navigation channel, terminal or transportation corridor (trucks/locomotives), currently experience (or potentially would in the future) substantive impacts from noise, traffic, air toxics, etc., relative to more removed and unaffected (baseline) areas. In this regard, we are pleased to note that the DEIS provides information related to several measures that are being made to reduce air emissions and to improve traffic in area neighborhoods in the future.

> ADDITIONAL COMMENTS

+ <u>SHEP Modeling Results Presentation</u> – As part of the NEPA process over the last decade, the COE has invested considerable amounts of money (over \$10 million) on at least 15 major models that address a wide range of issues. Numerous engineering and scientific models were developed to quantify impacts in water quality, DO, chlorides, salinity, fisheries and conversion of freshwater to brackish wetlands. Groundwater studies and surface water modeling efforts were conducted regarding saltwater intrusion and decreased DO levels within the project area, and modeling was also conducted to study the effects of hurricane storm surges within the deepened harbor channel.

Although the conclusions from technical meetings about these diverse models (including numerous comments) are incorporated into this DEIS, EPA recommends that a separate appendix or section in the main document be added to the FEIS to provide a synopsis of the modeling with emphasis on results. Similarly, we note that Section 1.03 (*Major Conclusions and Findings*) primarily only references other sections within the DEIS where topics are discussed such as water quality and fisheries (as opposed to providing an actual summary of conclusions for the reader). We therefore recommend that the FEIS summarize the COE's findings for those sections in an appendix or separate section in the main document. We believe such summary sections for modeling and other findings would improve the readability of the FEIS and consolidate results for public and agency review.

+ <u>Cumulative Impacts</u> – Appendix L is dedicated to addressing cumulative effects. We acknowledge that considerable analysis was provided, including identification of the affected resources as well as past, ongoing and reasonably foreseeable conditions.

Despite this substantive effort, we recommend that the 22 National Pollutant Discharge Elimination System dischargers identified in the TMDL located along the Savannah River be discussed and preferably listed with their main impact identified. This is particularly relevant in this case since project and discharger impacts (oxygen-demanding effluent) both deplete river DO levels and thereby causing a local cumulative effect. The COE may wish to coordinate with the respective states and EPA to document these dischargers.

+ Alternatives - We offer the following comments and clarification for alternatives:

* <u>Action Alternatives Description</u>: Given that the DEIS indicates that approximately 70% of the vessels calling on the port are not at their maximum load and design draft, we suggest that the FEIS provide the relative capability (percentage greater than the existing 70%; pg. 3: App. K) of each deepening alternative to accommodate large post-Panamax vessels. Such an evaluation would show if any alternatives other than the -47 and -48 ft options (both being considered the Tentatively Recommended Plan by the COE in the DEIS) could also reasonably accommodate post-Panamax vessels without waiting on high tide or limiting cargo.

* Jasper County Marine Terminal: We note that the Jasper County Marine Terminal was conceptually considered for Savannah River Mile (RM) 5 in Jasper County, South Carolina during the SHEP study timeframe. This terminal was referenced in the main document (pg. 5119) and in Appendix L discussing cumulative effects (pg. 46). EPA understands that no detailed studies have been conducted for the facility and that this alternative may or may not be presently considered as an alternative to the proposed deepening of the harbor. Nevertheless, we suggest that this alternate port terminal and its status (i.e., potential as a near-term alternative) be disclosed and discussed in the main document of the FEIS under *Alternatives* (Section 3.00).

The advantage of the discussed Jasper Terminal alternative is that it would be much closer to the coast than the Port of Savannah (5 RM versus 21 RM upstream the Savannah River) and therefore require significantly less channel dredging than the proposed expansion and thereby minimize additional fish habitat losses and increases in saltwater intrusion. Such a Jasper Terminal could one day also act as a reliever port to the existing Port of Savannah due to the Port of Savannah's one-way vessel traffic constraint, which would remain even after proposed project dredging. However, a terminal near the mouth of the Savannah River would result in significant wetland losses to construct its roadways/rail spurs and other infrastructure which currently do not exist there, as well as probable secondary developmental impacts in the surrounding area.

* <u>Details of COE's Maximum Authorized Plan</u>: This -48 ft deepening plan includes dredging (6 feet deeper) most of the harbor and existing turning basin (Kings Island Turning Basin at Stations 98+500 to 100+500), the eight berths at Garden City Terminal (Berths 2, 3, 4, 5, 6, 7, 8, and 9), widening the three bend wideners (Stations -23+000B to -14+000B, 27+700 to 31+500, and 52+250 to 55+000,), constructing two meeting areas (Stations 14+000 to 22+000 and 55+000 to 59+000), and constructing an approximately 25,000 foot long extension to the existing 600 foot wide ocean bar channel from Station -60+000B to -98+600B. Dredging will remove about 15 million cubic yards of sediment from the Inner Harbor (Garden City Terminal from Station 103+000 to Station 4+000) with disposal in the existing upand CDF. Dredging will also remove about 13 mcy of sediment for the Entrance Channel (Stations +4+000 to -98+600B) with placement in nearshore feeder berms off of Tybee Island, in the submerged berms (2,000 feet from the ocean bar entrance channel), and possibly in EPA's approved Savannah ODMDS.

+ <u>Speece Cones</u> – The Speece Cone systems would be land-based, with water being withdrawn from the river through pipes, then super-saturated with oxygen and returned to the river to locally augment DO levels. We offer the following:

* <u>Locations</u>: The Speece Cone systems may be located in three locations (near Georgia Pacific, Hutchinson Island – west side, Hutchinson Island – east side). Table 5-24 projects 8-10 cones are proposed, depending on the alternative selected. The FEIS should include a detailed plan and commitment to specific Speece Cone locations, and include information about easements, rights-of-way, etc. where relevant.

* <u>Operation</u>: The energy consumption of Speece Cones could be an expensive operational cost from an electricity use perspective. In addition, depending on their final location, transmission line infrastructure to some of the cones may need to be constructed. The FEIS should consider these construction and operation costs in the overall project budget. EPA also understands that generators may be used to power isolated Speece Cones in lieu of constructing such transmission lines. If so, would these generators be operated by gasoline, diesel or electricity? If emissions are generated, have estimates been documented and minimized? Although outages of a few hours should not significantly affect river DO levels, the FEIS should discuss the likelihood of brownouts or generator malfunctions and any contingency plans for power losses for a longer term.

* <u>Noise</u>: While the DEIS concludes that the proposed harbor deepening "is not expected to result in more than minimal adverse impacts as a result of noise," and the Speece Cone systems may be located in locations that are not particularly noise-sensitive areas, no noise information from the operation of the Speece Cone systems was found in the main document of the DEIS (e.g., Section 5.21 under "A. Noise" on page 5-154 or in Section 5.2.2 under "Mitigation Impacts to Dissolved Oxygen" on page 5-48 were reviewed). The FEIS should disclose such information.

EPA is requesting such noise information since we understand that operational noise levels during the Speece Cone project demonstration (pilot study) were substantial. Therefore, we request that noise levels during operation be modeled and the anticipated seasonal schedule for operation be documented. Moreover, we suggest that noise attenuation methods be considered in terms of shielding around the cones and insulation within the cones, or perhaps upgrades in technology to collectively generate less noise at the source (source reduction). Moreover, the cumulative noise impacts of the 8-10 Speece Cones proposed should also be considered if two or more are located proximally.

+ <u>General Air Quality</u> – We offer the following additional comments on the emissions inventory for the current conditions for those measured criteria pollutants and other parameters provided in the DEIS (App. K):

* <u>Truck Model Years</u>: The model years of the Jockey trucks, for which the COE calculated emission rates, is unclear. Without model years, emissions estimates cannot be made.

* <u>MOBILE Modeling</u>: The COE used the certification levels for incoming engines instead of the in-use emission factors. These factors can be calculated using MOBILE 6 or the new MOVES model. If the COE uses MOVES, there is an air toxics model which will provide a breakout of key air toxics from this fleet.

* <u>Locomotive Calculations</u>: The hours of use from a daily average to a weekly average do not add up. Additional information is needed on how the weekly average was calculated. The 21 hours/day and only 69 hours/week for switching implies that the locomotives are being used a little over three days. Further, idling emissions can be significant. This should be calculated in the FEIS.

* <u>Emission Analysis</u>: The DEIS is limited in the supporting data for the emission estimates provided. The COE should provide model inputs and outputs for calculation of the onhighway and non-road emissions. This information will provide a sound support for the data listed in the DEIS. Without such support, the validity of the estimates cannot be assessed.

+ <u>Air Toxics</u> - The following are additional comments on air toxics (all page and table references are to Appendix K).
* <u>Port Growth & Efficiency</u>: Page 6 Section 4.0 notes that "At 2032, the capacity of the port would be reached. This means that between 2032 and 2065, no additional growth occurs in commodities or annual vessel numbers. No additional vessels could load/off-load at the port each year between 2032 and 2065." Page 80 notes that: "The reduced emissions reflect the lower number of container ships that would call in a given year with a deeper harbor." However, page 62 notes that: "Growth in such (cargo handling) efficiency has been commonly observed in the past, and is expected to continue to occur at Savannah, but the ability to predict its amount and timing are quite difficult." If increased cargo handling efficiencies occur, then the port might accommodate additional visits by large ships. EPA recommends that the COE make estimates concerning the likely efficiency increases that might occur, how this might allow additional cargo to pass through the port, and the associated increase in air pollution emissions. It should be noted that page 94 states: "The volume of air toxics emitted as a result of port operations is expected to increase as the volume of cargo passing through the port rises." This scenario should be evaluated in the FEIS.

* <u>Port Vessel Calls</u>: Pages 7-8 Table 4-3 summarizes the anticipated vessel calls at the Garden City Terminal over the next several decades for the No Action Alternative and a number of channel deepening alternatives. For the No Action Alternative or "42 feet Baseline", the total number of calls increases from 2,172 in the year 2015, to 4,148 (nearly twice as many) in the year 2032 when the capacity of the port should be reached. This increase is largely due to an increasing number of post-Panamax ships calling at the port. Post-Panamax calls rise from 308 in the year 2015 to 2,226 in 2032, an increase of 1,918 post-Panamax calls per year, nearly the entire increase that is projected to occur in calls to the port by 2032.

It is unclear how this projected increase in post-Panamax visits would be possible if, as the DEIS states in the Abstract (pg. 1): "In excess of 70% of the vessels 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 on to the consumer. Less efficient vessels also generally result in higher shipping costs." Page 3 of Appendix K supports this concern, stating: "The GPA indicates that 70% of the container vessels that called on the port in 2006 were operationally constrained by the channel depth. As the newer, larger container vessels increase their calls at the port, that percentage will increase." Post-Panamax ships are among the ships that will be operationally constrained. Given that they comprise nearly the entire increase in calls to the port over the next two decades, the number of ships that would be operationally constrained by the current channel depth could increase dramatically – to nearly all ships calling at the port.

EPA assumes that the resulting delays from congestion and the need to schedule visits to the terminals according to the tides would be economic disincentives to the use of the Port of Savannah, and result in a redirection of trade to other ports if the channel were not deepened. If redirection of trade to other ports did not occur, the EPA further assumes that the base case would result in greater waiting times for the ships to be able to navigate to and from the terminals and corresponding additional air pollution emissions.

* <u>Port Truck Calls</u>: Page 39 Section 5.14 refers to trucks calling at the Garden City Terminal. The FEIS should include any data on the number of trucks calling at the Ocean City Terminal and private terminals along the river. Also, Table 5-50 cites the number of trucks calling at Garden City in 2008. These values are identical to those in an earlier version of this document from 2006. The values should be updated or the date on the table corrected.

* <u>Locomotive Emissions</u>: The last sentence on page 44 indicates the COE obtained information from the NMIM "SCC Toxics" database provided by EPA Region 5. For the FEIS, the COE should identify the source of emission information used for locomotives and commercial marine sources.

* <u>Table 5-63 Values</u>: The values in this table (pg. 45) should be checked since they differ significantly from values in the draft version of the table provided by the COE some time ago. This table compares air toxics emissions from the port with those from the entire county. This is an inappropriate comparison in that air toxics pose a threat primarily to those who are near the source. A comparison between emissions at the port and those countywide could be misleading because the emissions from port activities are more localized than those from the county as a whole. The comparison of air toxics emissions between the county and port presented in this table should be accompanied with an acknowledgement that localized impacts at the port could be significant. We suggest the COE include an emissions density map, population density map, and map identifying locations of sensitive populations which would be informative for the reader in evaluating this information.

The first sentence on page 45 refers to Table 5-61. Should this refer to Table 5-63? The first sentence says that the table lists the relationship of 28 toxics to other calculated pollutants. Is there a column missing that would indicate percentages or ratios between the toxics and other pollutants? How did the COE develop the values listed in Table 5-63? If ratios were used to estimate emissions based on other parameters, how those ratios were developed should be detailed in the FEIS (i.e., what specifically are the numerator and denominator for each and where were those data were obtained?). The quantity of air toxics emissions should be identified by source type. This would help determine the areas that would benefit most from emission reduction efforts.

* <u>2006 Air Quality Analysis</u>: The first sentence on the last paragraph of page 3 refers the reader to the "Air Quality Analysis, Savannah Harbor Expansion Project" which was prepared in 2006. The text says that this report is available from the Savannah District. However, we suggest it be included as an appendix to the FEIS, or alternatively, be made available online.

* <u>Editorial Comment</u>: The first sentence on the last paragraph of page 5 states that the 2006 Air Emissions Analysis is Attachment A. However, Attachment A is the container fleet forecast.

+ EJ & Children's Health - EPA offers these additional comments:

* <u>EO 12898</u>: The DEIS (pg. 5-144) states that "Executive Order 12898 deals with Environmental Justice." This statement should be amended in the FEIS to reflect that the EO deals with EJ "in minority and low-income populations". The DEIS also indicates that the EO states that "...the Federal government would review the effects of its proposed actions on low income communities." We believe this statement should be removed in the FEIS because it is not found in the EO. We offer that it is more accurate to retain the following statement: "Federal agencies are 'to the greatest extent practicable and permitted by law' identify and address 'as appropriate', disproportionately high and adverse human health and environmental effects of its programs, policies and activities on minority populations and low-income populations in the United States."

* EO 13045: EPA appreciates the inclusion of a children's health section related to Executive Order (EO) 13045, which deals with the protection of children from environmental health and safety risks. As part of the background information, the DEIS indicates that the EO states that "...the Federal government would review the effects of its proposed actions on children because they may suffer disproportionately from the environmental health risks and safety risk." This statement should be removed in the FEIS since we do not believe it is accurate. However, the subsequent DEIS statement accurately reflects the EO and should be retained: "Federal agencies are to 'identify and assess environmental health risks and safety risks that may disproportionately affect children;" and 'ensure that its policies, programs, activities, and standards address disproportionate risks to children that result from environmental health risks or safety risks.""

+ Sea Level Rise – EPA and the COE concur that as sea level increases at Savannah, the amount of tidal freshwater wetlands will decrease. Since there have been continual records of sea level at Savannah for over 200 years, EPA understands that the COE decided that it would rely heavily on that site-specific historical data in its prediction of future trends in sea level rise at this site. Examination of the historic information revealed that sea level has been rising relatively constantly at Savannah at an average of +3 mm per year. Therefore, the COE decided to use a continuation of this historic rate of sea level rise at Savannah in its predictions of future wetland distributions in the estuary. EPA notes that the +3 mm per year value is within the bounds of sea level rise predicted for the next century in the 2007 report from the International Panel on Climate Change (+0.18 to +0.59 meters).

+ Fisheries – EPA gives deference to the fishery experts of FWS, NOAA and their state counterparts regarding project impacts and mitigation. However, we wish to offer that EPA conceptually supports a fish passage at the New Savannah Bluff Lock and Dam since it would open up 20 river miles of former (pre-dam) habitat above the dam that is not affected by the SHEP dredging. We also agree with the COE that the original 2002 proposal for such passage should be updated; however, we will defer to NOAA, FWS and their state counterparts regarding any new or preferred designs as to the engineering of the passage structure.

Conceptually, however, we believe that whatever design is selected should be easily available to, and usable by, all anadromous/catadromous species of SHEP concern (in terms of their varying size and behavior) and perhaps optimal for the Shortnose sturgeon due to the reduction of its habitat by past and proposed dredging below the dam and its federally endangered species status.

+ <u>Maintenance Related to Savannah NWR</u> – The federal government is responsible for maintenance of the Diversion Canal, the channels in Little Back River and Middle River, and the canals and control works for the SNWR. In May 2010, the COE entered into a contract to rehabilitate a major portion of the project, with work beginning in July 2010. The COE has requested the additional funds that are required to complete the rehabilitation work. The FEIS should include additional details on the progress of this important work.

+ <u>Bank Erosion at Old Fort Jackson</u> – The concerns that had been expressed during public review of the Tier I EIS about bank erosion at Old Fort Jackson have been addressed. In 2003, the COE partnered with the GDNR (which owns the site) to stabilize the shoreline. Similarly, the Manager of the Fort Pulaski National Monument has expressed concerns about the ongoing erosion that is occurring along portions of their river shoreline. The COE determined that the erosion is the result of several factors, but an increase in vessel size is not expected to "substantially" increase the rate of the ongoing erosion, but may have some effect. EPA recommends that the COE partner with the National Park Service to address river shoreline erosion at the Fort Pulaski National Monument.

+ <u>COE-SHPO Programmatic Agreement</u> – We suggest that a signed and dated Programmatic Agreement between the COE and the State Historic Preservation Office (SHPO) from Georgia and South Carolina be included in Appendix G.

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United States Environmental Protection Agency, Region 4

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1109-BB-101-EV01

Comment: EPA commends the COE for its significant efforts to inform the public, the Stakeholders Evaluation Group (SEG), local communities, and numerous State and federal resource agencies regarding the many issues associated with the proposed harbor deepening. EPA understands that since its inception in January 1999, the COE has met with the SEG approximately 65 times to discuss the proposed deepening. In addition to the scoping meetings of2002, a number of meetings with the public and agencies have been held to discuss project issues such as salinity changes, lowered DO, conversion of freshwater to brackish wetlands, benthic organisms, contaminated sediments, economics, and cumulative impacts related to the proposed harbor deepening.

Response: The District has maintained open and transparent communication with all interested parties throughout the entire NEPA process.

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1109-BB-101-EV02

Comment: The ·47 ft alternative is the COE's tentatively-identified NED Plan because the COE found it to be the alternative with the maximum net economic benefit. According to the DEIS, the NED Plan would be recommended for implementation (Recommended Plan) unless there are "overriding conditions" to favor another plan (pg. 3-19). However, such conditions may exist in this case as GPA supports the -48 ft alternative and it could become the non-federal, cost-share sponsor of that deeper alternative (pg. 2) and fund the additional cost difference between its -6 ft deepening and the NED Plan's -5 ft deepening (the FEIS should verify if this will be the case). For the purposes of the DEIS, however, the COE did not identify a single Tentatively Recommended Plan, so that both the ·47 ft and the ·48 ft alternative are the COE's Tentatively Recommended Plan at this time (pg. 3-22). A final COE Recommended Plan should be identified in the FEIS and selected in the COE's Record of Decision (ROD).

Response: The FEIS identifies the NED plan and its associated environmental impacts. As a result of the comments that were received on the Draft GRR and Draft EIS, and after coordination with the project's non-Federal sponsor, the Corps decided to select the NED Plan for implementation.

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1109-BB-101-EV03

Comment: The DEIS states that the COE believes that the proposed action (Recommended Plan) would not increase the number of containers (TEUs) that would be processed at the port when compared to the No Action Alternative - even though the fleet mix would change to fewer vessels (larger posi-Panamax) compared to the current greater volume of smaller vessels. The COE agrees that there would be port growth over time, but maintains that growth would be the same with or without the proposed action. Accordingly, the number of TEUs would stay constant (or the growth rate would stay the same) with or without the project so that port vessel, truck and train emissions would be the same (or would grow the same). A consequence of this assumption is the belief that the port air quality would not change due to the project and would improve with the replacement of multiple smaller vessels with fewer larger ones (as well as the required use of lower sulfur fuels by calling vessels in 2015). The DEIS provides insufficient information for EPA to agree with these statements, and we request additional modeling to evaluate these statements and other general conclusions regarding air emissions.

Response: Under both the without- and with-project conditions, the District expects the Garden City Terminal to reach its build-out capacity around 2030 when the total number of TEUs processed reaches 6.5 million. This annual capacity will be constrained by the following factors: 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 this volume of cargo whereas with channel deepening, the total number of vessels decreases as they will be able to load more completely.

No increase in cargo is expected to occur as a result of the proposed harbor deepening. As a result, the number of containers that transit the areas that surround the port remains a zero sum when compared to the without-project condition. Further, overall landside impacts outside the Garden City Terminal, e.g., noise, air emissions [including air toxics], and traffic, would not increase as a result of the proposed deepening. The project's economic benefits accrue from the use of larger, more cost-effective container ships, not an increase in the number of containers.

The Corps' multiport analysis indicates that while there would be substantial economic benefits garnered through the increased efficiency of a deeper Savannah Harbor, those efficiencies would not decrease the total transportation costs of goods through Savannah Harbor to the extent that it would alter the relative advantages of other east coast ports. This is based upon an analysis of the total transportation costs of moving goods through other ports with the cost of moving goods through a deepened Savannah Harbor. The Corps evaluated the total transportation cost of goods moving through the east coast ports and did not identify any change in the comparative costs between ports. Therefore, the Corps has no basis for believing that Savannah Harbor would have increased throughput due to deepening the harbor. See also other responses to comments on air emissions issues.

1109-BB-101-EV04

Comment: EPA acknowledges that the ability to fully accommodate larger (and presumably efficient) vessels could result in operational efficiencies that could - at least initially - reduce the number of vessel trips. Fewer vessel trips for the same amount of projected cargo weight (e.g..TEUs) along with introduction of cleaner diesel fuels by 2015 could result in a net reduction in ship emissions. However, in contrast to the COE's perspective, EPA believes that over the life of the project, the projected growth in port commerce could cause a commensurate increase in the overall vessel trips and in the number of TEUs, thereby resulting in possible increases in vessel, truck and train emissions. That is, compared to the No Action Alternative, EPA believes that the number of vessels, cargo and emissions would likely increase more over time with the operational efficiencies of the harbor deepening project, despite the use of larger vessels and cleaner fuels.

Response: According to the commodity forecast found in Section 5 of the GRR, the port's landside cargo handling is maximized at 6.5 TEUs around the year 2030, i.e., there are practical, finite limits for expansion. The basis for this determination was cited in a previous response.

This landside capacity is the port's limiting factor, rather than a constraint on the number of vessels that could be processed. Therefore, when landside cargo handling capacity is reached [2030], vessel calls

would not increase through the remainder of the project's economic life [2067]. The Corps Fleet Forecast [developed by the USACE, Mobile District in consultation with the Georgia Ports Authority] verified this projection.

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1109-BB-101-EV05, 1109-BB-101-EV06

Comment: Our major concern during the Tier I and II NEPA process has been the ability to mitigate project DO impacts attributable to dredging. After extensive interpretation of DO hydrodynamic modeling data, EPA finds that project DO depletions can be reasonably restored to pre-project conditions and evenly distributed within the affected river reaches using Speece Cones for direct oxygen injection into the River. The modeling concluded that such oxygen injection would be sufficient to not only serve as DO mitigation for project losses but also for underestimated DO deficiencies associated with the last harbor deepening to -42 ft. Such artificial injection is expected to elevate DO concentrations by +0.42 mg/L on average, which would raise these river reaches to levels approaching 3.5 mg/1. To ensure that the DO mitigation is sufficient under drought conditions, EPA requests the COE assess and document in the FEIS the August 1999 low-flow conditions similar to the August 1997 normal-flow data analysis provided in the DEIS.

Response: Concur. DO depletions caused by channel deepening will be restored to pre-project conditions through use of the oxygen injection systems.

The Water Quality Interagency Coordination Team requested the District evaluate the project's impacts on dissolved oxygen using the August 1999 low river flow conditions. The request was partially based on the States' identification of those conditions as being the critical ones for dissolved oxygen levels in the estuary. The first DO system design report also identified low river flow conditions as requiring more oxygen to mitigate project impacts than would drought flows. The Interagency Coordination Team requested the District analyze potential impacts under the August 1997 average river flows as a sensitivity analysis. The results of that evaluation were included as Supplemental Materials to the Engineering Appendix of the GRR. The District also performed two other sensitivity analyses requested by the Water Quality ICT – (A) low river flows and 1999 point source loads, and (B) low river flows and maximum permitted point source loads.

1109-BB-101-EV07

Comment: To achieve success in project DO mitigation, EPA expects three assurances from the COE and/or OPA sponsor. These are: I) post-construction field monitoring of DO levels to ensure the above-described level of DO restoration, 2) guaranteed mitigation throughout the life of the project, and 3) installation and operation of the Speece Cones before dredging begins to ensure that the project's predicted impacts to DO are minimized and mitigated from the outset in order to avoid any potential temporary impacts on the aquatic community while dredging occurs.

Response: The District agrees (1) to conduct post-construction monitoring of DO levels to ensure the project compensates for its DO impacts, (2) to operate and maintain the mitigation features as described in the FEIS throughout the life of the project, and (3) to install the Speece Cones at the beginning of the project and begin their operation on Hutchinson Island before dredging occurs upriver of Station 0. The second DO system would become operational within one year of the start of dredging upriver of Station 0, well within the four-year construction period.

1109-BB-101-EV08

Comment: Project DO mitigation would primarily only restore DO levels to pre-project conditions, and there remains a continuing need to improve the overall DO water quality of the Savannah River system. In this regard, EPA is currently working to revise the DO Total Maximum Daily Load (TMDL) for Savannah Harbor. Consistent with 40 CFR §122.44(d)(I)(vii)(S), EPA expects that the wasteload allocations for the oxygen-demanding substances contained in the TMDI, along with any relevant assumptions and requirements, will be implemented through the state National Pollutant Discharge Elimination System permit program. EPA proposed a draft DO TMDL for Savannah Harbor in May 2010 based on Georgia's revised water quality standard, which would require an approximate 85 percent aggregate reduction in point source loads. Successful implementation of the loadings required by a TMDL for DO, and any additional DO mitigation provided by the Speece Cones beyond the impact of this deepening project, would together ecologically benefit the Savannah River system.

Response: Concur. Operation of the proposed Speece Cone system is expected to have a net positive effect on the harbor's DO. The Speece cones would restore DO concentrations to pre-construction conditions and result in a slight improvement in most of the estuary.

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1109-BB-101-EV09

Comment: In addition to these EPA-related issues, EPA emphasizes the importance of fully evaluating the potential for SHEP dredging to impact the habitat of endangered species (Shortnose sturgeon) and other anadromous fishes such as the popular Striped bass, and also the indirect wetland impacts of converting tidal freshwater marsh habitat into brackish wetlands or saltmarsh at the Savannah National Wildlife Refuge (SNWR) and other freshwater marshes by exacerbating saltwater intrusion. We recommend continued coordination with FWS and NOAA regarding opportunities for developing appropriate mitigation for these impacts.

Response: The District has continued its coordination with USFWS and NOAA, and the FEIS contains more specific information on the proposed mitigation features. The Corps would continue to coordinate with the natural resource agencies if the project is approved and implemented.

1109-BB-101-EV10

Comment: Beyond EPA's primary DO water quality concern, other substantive project concerns include wetland mitigation, general air quality, air toxics, sediment issues, and environmental justice (EJ)/children's health. EPA believes these remaining issues need additional analysis in the FEIS to complement the DEIS. As a NEPA Cooperating Agency, EPA recommends further COE coordination on these issues with EPA, including our review of draft documentation prior to the FEIS. Our remaining issues are summarized below:

Response: The District met with EPA after the review period for the DEIS was complete. As a result, the Corps performed additional analyses requested by EPA (noise impacts from DO systems and alternate future conditions in air quality assessment). Those analyses have been provided to EPA and are included in the FEIS. The FEIS also contains additional demographic information on the communities adjacent to the port. That additional information (including information on minority and low-income populations) was used to refine the impact assessment regarding environmental justice and children's health. EPA will also be provided a copy of the FEIS prior to its release to the public.

1109-BB-101-EV11

Comment: Wetland Mitigation: Overall, EPA believes that the COE Wetland Mitigation Plan proposed in the DEIS should be further refined. The proposed Plan, which presently appears to emphasize the preservation of freshwater wetlands, should be modified to be consistent with Section 404(b)(1)Guidelines/2008 Mitigation Rule to replace in-type and function of both the freshwater and saltwater wetlands being project impacted. It is important to recognize, if technically supported, the wetlands preservation approach can be an element of this functional replacement mitigation approach such that these two approaches need not be mutually exclusive. A refined Plan should replace the functional impacts to all wetland types; be adequate given the proposed mitigation actions, the timeframe and the risk factors; and comply with all requirements of the 2008 Mitigation Rule. EPA recommends that the DEIS include a draft Plan prepared by the COE in cooperation with an interagency wetland mitigation "working group" including EPA, FWS and others. Given the additional requirement within WRDA 1999 that the mitigation plan shall be implemented before or concurrent with the project, it is important that this Plan be finalized in the ROD.

Response: EPA has provided specific comments concerning the proposed wetland mitigation plan in the Appendix section of its letter. The District will address each of the Agency's specific comments in a later section of this response to comments.

1109-BB-101-EV12, 1109-BB-101-EV13, 1109-BB-101-EV14

Comment: General Air Quality: The FEIS should demonstrate that project emissions do not interfere with area attainment and maintenance of the NAAQS for either the No Action Alternative or the Tentatively Recommended Plan. Accordingly_ the FEIS (App. K) should provide a future condition analysis through the end of the project (2065). As part of this evaluation, EPA requests that dispersion modeling be conducted to determine how landside emissions will impact local area air quality, with emphasis on port traffic effects in potential EJ areas and any possible NAAQS violations. The current emissions inventory of the DEIS (App. K) does not provide a future condition emissions analysis for comparison against the current conditions data provided for the selected criteria pollutants and other parameters measured, or a dispersion analysis. Furthermore, to verify the DEIS assumption that future larger vessels (Panamax and post-Panamax) calling on the port produce less emissions than the existing smaller fleet, the FEIS should compare the fuel efficiency/emissions of larger versus smaller vessels using an "emissions per TEU" metric as the basis of comparison.

Response: Air emissions studies [2002 USEPA NEI data for Chatham County compared to the calculated emissions for the Port in 2008 -shown in Table 6-3 of Appendix K of the EIS] show that the port is a small subset of the County's total emissions. Moreover, the air emission inventory [Appendix K of the FEIS] demonstrates that the proposed project emissions do not interfere with the project area's present attainment classification under the Clean Air Act. As noted, the port's capacity is reached around 2030 at 6.5 million TEUs. Its emissions were calculated for both 2030 and 2067 [end of the 50-year project's economic life] for both the No Action Alternative (-42 foot depth) and the proposed action (-47 foot depth).

Under both the without- and with- project conditions, the District expects the Garden City Terminal to reach its maximum annual capacity around 2030 [6.5 TEUs]. The bases of this determination have been detailed in previous responses. Also previously cited is the anticipation 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 (compared to the Without Project condition) as they will be able to load more deeply.

No 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. Noise, air emissions [including air toxics], and traffic would not be increased as a result of the proposed deepening.

As a result, the proposed harbor deepening will have no adverse landside impacts outside the Garden City Terminal or within the adjacent EJ communities, nor will it cause any NAAQS violations in either Chatham or Jasper Counties.

Separate from the SHEP project, the Georgia Ports Authority is conducting dispersion modeling of the air emissions at the Garden City Terminal. This analysis will provide insight into how air emissions originating from its facility disperse under without- project conditions. These analyses will not be completed until after circulation of the FEIS for review. However, since overall emissions have already been determined to remain -- at most unchanged by the proposed harbor deepening -- the results of the dispersion analysis are not needed to evaluate the proposed action.

The DEIS [Appendix K] contained a future conditions analysis, i.e., an emission inventory and comparison to current conditions for the selected criteria pollutants, as well as air toxics and greenhouse gases. The evaluation was calculated using data when the port reaches capacity at 2032 with 6.5 million TEUs. This analysis shows that air emissions [including air toxics and greenhouse gases] would be greater with the No- Action Alternative of -42 foot depth than with all the proposed harbor deepening alternatives. As noted, Garden City Terminal reaches its maximum capacity in 2030 and thereafter could not accept any additional container traffic. Therefore, its air emissions in 2065 would be comparable to those in 2030. Further, dispersion modeling is not required since no cargo increases are expected to occur as a result of the proposed harbor deepening. As a result, the project would not affect air quality in or around the port.

In developing the air emission inventory for the harbor, the District used EPA's **"Current Methodologies in Preparing Mobile Source Port-Related Emission Inventories, Final Report, dated April 2009"**. This guidance document provided the framework used to calculate all air emission estimates for OGV and land based equipment. The District has not indicated that future larger vessels produce less air emissions than the existing smaller fleet. Instead, the District has repeatedly stated that **fewer** larger vessels [more heavily loaded] could transport the same amount of cargo as a larger number of smaller vessels. Hence, a fleet comprised of **more** larger vessels would result in lower air emissions than would a fleet of smaller vessels.

The above 2009 EPA Report does not require, recommend, or provide an approved methodology to compare the emissions of the larger Post-Panamax and Panamax Ocean-Going Vessels with smaller container vessels. Similarly, it does not include a requirement for or provide an approved methodology to determine an "emission per TEU" for each vessel size, i.e., Post-Panamax, Panamax, Sub-Panamax, and Handy size, calling at a port. The procedure described in the guidance document is based on the average size of main and auxiliary engines for a vessel, not the size of the ship itself. Therefore, since the document does not recommend this analysis or provide an approved methodology, the District has concluded that this information would not be required in assessing project's potential air impacts.

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1109-BB-101-EV15, 1109-BB-101-EV16

Comments: Air Toxics: A significant number and volume of air toxics are associated with operating the port, with significant emission increases being expected over time (38 tons in 2008 to a range of 117-123 tons in 2032 per Appendix K of the DEIS). These emissions are a source of concern to residents living in communities surrounding the Port. Accordingly, EPA requests the preparation of a screening level risk assessment to evaluate the potential impacts associated with emissions of air taxies related to the harbor deepening and its operation. Moreover, although the Appendix K emissions inventory for air taxies provides both current and future emissions data as noted earlier, future conditions data were considered the same after 2032 based on the assumption that the number of calling vessels will be constrained by 2032 (due to one-way vessel traffic) such that there will be no increase in freight thereafter. EPA believes that the future condition analysis for air toxics (and NAAQS) should extend beyond 2032 to encompass the entire 50-year life of the project (2065). The tonnage and number of TEUs could continue to increase after 2032 (along with associated additional truck/locomotive landside emissions impacts). Since not all calling vessels currently offload 100 percent of their containers at Savannah, the number of TEUs offloaded at Savannah could conceivably increase after 2032. Also, the requested dispersion modeling for criteria pollutants should include air toxics emissions. Modeling results should be used in the requested screening level risk assessment to help determine effects on landside sensitive receptors such as potential EJ areas located along road/rail corridors noted in the DEIS (pg. 5-147) and determine any areas of localized higher concentrations.

Response: An increase in air emissions will occur at and in the vicinity of the port over time, but these additional emissions would not be the result of the proposed harbor deepening. It is important to note that the expected increase in the port's overall air toxics emissions is greatly subsumed by Chatham County's total air toxic emissions.

The air toxics found in the 2002 USEPA NEI data for the entire County compared to the calculated Port air toxic emissions in 2008 reveal that the port emissions are just a small subset of the County's total releases [Table 6-3 of Appendix K]. Table 5-64 of Appendix K [2008] indicates that ocean going vessels, land based operations, and tugs at the Garden City Terminal [GCT] would be discharging about 38 tons of air toxics. The GCT is one of 22 terminals [see Table 1-1, page 1 of Appendix K] in the port of Savannah.

Table 5-63 of Appendix K indicates that for the same emissions/timeframe in 2008 all 22 terminals discharged about 83 tons of air toxics. Table 5-63 compares the same air toxics emitted from all 22 terminals in the port [2008] to the US EPA's NEI data for Chatham County in 2002 of about 4,340 tons of air toxics. Hence, the entire Port accounts for only a very small percentage [about 1.9% - 83 tons/4,340 tons] of the total air toxics emitted in the air shed and by extension its environmental significance is equally limited. Therefore, a screening level risk assessment for air toxics is not warranted.

Further, Table 5-78 [Appendix K] reveals that overall emissions for all vessels and associated land based equipment for the existing -42 foot depth are greater than either the -47 or -48 foot deepened project. It is important to remember in this regard that the 28 air toxics are ratios of either VOC or PM10; therefore, if there are more VOC and PM10 emissions there are more air toxics.

In comparison, Table 6-7 in Appendix K shows EPA data from 2002 and 2007 that indicate the coal-fired Kraft Steam Electric Plant which operates in Port Wentworth [Chatham County GA], discharged 7,189.4

tons and 7,704.7 tons of SO2. For these same years EPA stated that this plant discharged 1,367,644 tons and 1,653,099 ton of CO2. Hence, the air emissions from this one coal-fired facility located just upstream of the Garden City Terminal are significantly higher than all the estimated emissions for the entire Port [existing or deepened condition, see Table 5-78 in Appendix K].

The air emission inventory conducted by the District [described in Appendix K of the EIS] was a comprehensive analysis of port-dependent emissions. All air emissions including criteria pollutants, air toxics, and greenhouse gas emissions were calculated for the No-Action Alternative [-42 foot depth], all depth alternatives [42, 44, 45, 46, 47, and 48 feet], and all years [2015, 2020, 2025, 2030, 2032, and 2065]. It included emissions from the following sources:

- Dredges used during the new work dredging
- Dredges used during maintenance dredging
- Ocean-Going Vessels
- LNG Vessels
- Tug Boats
- Intra-Harbor Shifts
- Tour Boats
- Landside equipment at GPA terminals
- Landside equipment at non-GPA terminals
- Trucks calling at the Garden City Terminal
- Locomotives serving the Garden City Terminal
- GPA fleet vehicles
- Air Toxics
- Greenhouse gases

The District followed the procedures outlined in EPA's 2009 Final Report titled "Current Methodologies in Preparing Mobile Source Port-Related Emission Inventories". The District's analysis disclosed that harbor deepening would result in fewer air emissions than the No-Action Alternative [baseline existing depth of -42 foot].

1109-BB-101-EV17

Comments: Sediment Issues: Dredged material disposal should be conducted in accordance with Section 404 of the Clean Water Act or Section 103 of the Marine Protection, Research and Sanctuaries Act (MPRSA) consistent with EPA and COE policies provided in the joint guidance document, Evaluating Environmental Effects of Dredged Material Management Alternatives – A Technical Framework. In accordance with this Technical Framework, offshore disposal outside of three miles should be conducted pursuant to MPRSA and within an EPA-designated Ocean Dredged Material Disposal Site (ODMDS), in this case the Savannah ODMDS. The DEIS proposes that a portion of the project's dredged material from the ocean entrance channel be disposal at sites 11 and 12 near the channel as experimental fish habitat mounds. Although EPA generally supports fisheries enhancements and acknowledges that there is a fisheries exemption under MPRSA, we believe that this proposed reuse may not be consistent with MPRSA and would likely offer minimal fisheries habitat value. Therefore, EPA does not currently support the proposed disposal at sites II and 12, and recommends the evaluation of other alternatives, such as use of the Savannah ODMDS for the disposal of this material. EPA recommends further coordination with EPA, U.S. Coast Guard, and NOAA and their state fisheries counterparts regarding these issues, and the results of such coordination should be documented in the FEIS.

Response: Concur. As a result of information obtained during the public comment period, the District has revised the nearshore placement plan, i.e., deleting Sites 11 and 12. Now, these sediments will be placed in the ODMDS, and testing protocols for offshore disposal will be used to evaluate those sediments.

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1109-BB-101-EV18, 1109-BB-101-EV19

Comment: In addition, the DEIS documents the COE's intent to use dredging to extend the current channel offshore for over seven miles since ocean water depths in these areas will not accommodate post-Panamax vessels under all tide and cargo conditions. This channel extension would constitute an estimated 17- to -18 percent increase in the project channel length, and an additional 4.6 mcy of new dredged material. This project component should be fully analyzed and discussed in the FEIS. Specifically, the FEIS should address the multiple factors outlined in the Enclosure, including full characterization of the dredged material, identification and analysis of disposal options, potential evaluation of the Savannah ODMDS capacity in relation to any material that would be disposed in the ODMDS, precise identification of the proposed channel route and alternative routes, and discuss findings. EPA's full understanding of the ocean channel extension component is essential to the overall NEPA analysis and Agency approval of the SHEP. Therefore, EPA requests the opportunity to review and comment on the new channel dredging sections prior to the issuance of the FEIS. EPA also notes that based on the incomplete information on this issue in the DEIS, the public may not have a full understanding of this issue for purposes of public re view and comment.

Response: Information on these issues was included in the GRR [Appendix D]; the FEIS includes a detailed summary. The District will also provide EPA with a full sediment characterization after the ongoing sampling and analysis is complete.

The EPA provides these same comments in greater detail within the Appendix of its letter. As such, the District will address each of the specific comments in a later section of this response to comments.

1109-BB-101-EV20

Comment: Environmental Justice & Children's Health: Because most of the communities surrounding the project have elevated levels of minority and low-income populations (45 percent of the population [Chatham County, Georgia, is comprised of minorities), it is appropriate that project effects on potential EJ communities and children's health were considered in the DEIS consistent with NEPA and relevant Executive Orders (EO 12898 and EO 13045). These analyses should be expanded in the FEIS to include potential landside emission effects on nearby populations (as previously requested above: General Air Quality), public concerns offered at the SEG and other meetings and their follow-up outcomes, and disclosure of the demographics of children under age 18 within the project area. As one offset to project impacts, we understand that members of the local community may economically benefit from the project by securing some of the 175 additional positions expected by 2020 due to port cargo growth.

Response: Concur. The District developed additional demographics [FEIS-Section 5.19] for the communities adjacent to the port. This additional information on minority and low-income populations was used to assess project impacts regarding environmental justice and children's health (EO 12898 and EO 13045).

1109-BB-101-EV21

Comment: While the proposed SHEP Action Alternatives have the potential to lower DO water quality, directly and indirectly impact tidal freshwater wetlands, and reduce fishery habitat, EPA finds that project DO depletions can be reasonably restored to pre-project conditions and evenly distributed within the affected river reaches using Speece Cones for direct oxygen injection into the river. Such artificial injection is expected to elevate DO concentrations by +0.42 mg/L on average, which would raise these river reaches to levels approaching 3.5 mg/1. To achieve project success, EPA expects assurances from the COE and/or GPA for post-construction field monitoring of DO levels to ensure this level of DO restoration, a financial guarantee to ensure continuation of the proposed mechanical mitigation throughout the life of the project, and Speece Cone installation and operation before dredging begins to minimize the potential impacts on the aquatic community.

Response: The District agrees (1) to conduct post-construction monitoring of DO levels to ensure the project compensates for its adverse DO impacts, (2) to operate and maintain the mitigation features as described in the FEIS throughout the project's life, and (3) to install the Speece Cones at the beginning of the project and commence their operation on Hutchinson Island before dredging occurs upriver of Station 0. The second DO system would become operational within one year of the start of dredging upriver of Station 0 which is well within the four-year construction period.

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1109-BB-101-EV22

Comment: EPA's conclusion concerning the sufficiency of the proposed DO mitigation focuses on a water quality perspective to ensure pre-project DO levels are maintained. We defer to NOAA and FWS for their ecological interpretation of these concentrations relative to DO effects on their fishery and refuge mandates. The proposed alternatives should continue to be closely evaluated to ensure that the construction and subsequent operation of any harbor deepening would not further cause or contribute to the ongoing DO impairment in the harbor.

Response: Each of the proposed harbor deepening alternatives includes a dissolved oxygen improvement system to mitigate its adverse DO effects. While the Speece Cones would produce a minor net positive effect on DO from pre-project conditions, they would not address the harbor's existing water quality impairment. To ensure the DO systems function as intended, monitoring and adaptive management is a component of the post-construction and long-term commitments.

1109-BB-101-EV23

Comment: In addition to EPA's DO water quality concern, our other substantive project concerns include wetland mitigation, general air quality, air toxics, sediment issues, and EJ/children's health. As a Cooperating Agency, EPA recommends further COE coordination with EPA on these remaining issues, including our review of draft documentation prior to the DEIS.

Response: The District met with EPA after the review period for the DEIS was complete. As a result, the Corps performed additional analyses requested by EPA (noise impacts from D.O. systems and alternate future conditions in air quality assessment). Those analyses have been provided to EPA and are included in the FEIS. The FEIS also contains additional demographic information on the communities adjacent to the port. That additional information (including information on minority and low-income populations) was used to refine the impact assessment regarding environmental justice and children's health. EPA will also be provided a copy of the FEIS prior to its release to the public.

1109-BB-101-EV24, 1109-BB-101-EV25

Comment: EPA rates this DEIS as an "EC-2" (Environmental Concerns, additional information requested). EPA bases this rating on the overall project impacts and the additional information requested for the FEIS. If this harbor deepening project is further pursued by the sponsor, EPA expects our additional information requests will be incorporated in the FEIS and that the impacts of the proposed project will be fully mitigated consistent with the policies and regulations of the COE and its Cooperating Agencies and guaranteed throughout the life of the project. Although the COE has not yet identified a Recommended Plan, EPA believes the proposed DO mitigation would be sufficient to reasonably restore DO levels to preproject conditions for any of the considered incremental harbor deepening alternatives (-44 ft to -48 ft).

Response: The District will respond to all comments provided by the EPA, and those responses will become part of the FEIS. The District will also review any of the Agency's additional information requests. Each request would be assessed to determine if the information is essential to reasoned decision-making and, therefore, for inclusion into the FEIS. The District will ensure that SHEP-derived impacts are fully mitigated as specified in the policies and regulations governing Corps Civil Works projects. The District agrees to operate and maintain the mitigation features as described in the FEIS throughout the project's economic life.

Operation of the proposed DO systems is expected to have a net positive effect on DO in the postconstruction harbor, i.e., the Speece cones are capable of maintaining DO concentrations [at least] at levels which would have occurred without deepening.

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1109-BB-101-EV26, 1109-BB-101-EV27

Comment: Dissolved Oxygen Impacts: Without mitigation, the proposed Savannah Harbor deepening project would result in a reduction in the dissolved oxygen (DO) in the Savannah River and Harbor area. The DEIS proposes to inject oxygen at three locations to mitigate the decrease in DO due to the physical dredging of the Harbor. The depressed dissolved oxygen levels are greater in the bottom portion of the River system. The proposed mitigation plan would result in an average increase of dissolved oxygen in the lower half of the River system of +0.42 mg/L DO above existing DO conditions or an 8.8% net increase in dissolved oxygen in the River system. This net improvement in DO is based on the August 1997 river flows representative of the average summer flows under critical temperature conditions. Based on this analysis, the overall impact of the proposed deepening and mitigation is a net improvement in the available DO under average summer flow conditions. To ensure that the DO mitigation is sufficient under drought conditions, EPA requests the COE assess and document in the FEIS the August 1999 low-flow conditions similar to the August 1997 normal-flow data analysis provided in the DEIS.

Response: Concur. Operation of the proposed DO systems is expected to have a net positive effect on DO in the post-construction harbor, i.e., the Speece cones are capable of maintaining DO concentrations [at least] at levels which would have occurred without deepening.

The Water Quality Interagency Coordination Team requested the District evaluate project impacts on dissolved oxygen using the August 1999 low river flow conditions. That request was based partially on the States' identification of these conditions as being most critical to the estuary's dissolved oxygen levels. As verification, the first DO system design report also recognized low river flow conditions as requiring more oxygen to mitigate project impacts than would drought flows. The Interagency Coordination Team also requested that the District analyze potential impacts under the August 1997

average river flows as a sensitivity analysis. The results of the sensitivity evaluation were included as Supplemental Materials to the Engineering Appendix of the GRR. The District also performed two other sensitivity analyses requested by the Water Quality ICT – (A) low river flows and 1999 point source loads, and (B) low river flows and maximum permitted point source loads.

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1109-BB-101-EV28

Comment: Monitoring & Adaptation: Because of uncertainties associated with modeling, EPA recommends that DO levels be monitored and adaptively managed to ensure adequate oxygen injection. As was discussed at the September 2010 Executive Steering Committee meeting, this mitigation function must also be guaranteed by the COE and/or sponsor throughout the life of the project, and be implemented prior to construction to avoid DO impacts during dredging. Moreover, financial guarantees for Speece Cone operation must be provided in the FEIS and ROD by the COE and/or sponsor for the life of the project.

Response: The lower oxygen injection system (near Hutchinson Island) would be installed and made operational prior to commencement of dredging in the inner harbor. The upper oxygen injection system would become operational within one year of that. The SHEP Mitigation Plan and Adaptive Management Plan provide for monitoring of dissolved oxygen levels in the harbor and an evaluation of the oxygen injection system. A Transfer Efficiency Study would be conducted to determine the efficiency at which the systems add oxygen to the estuarine waters. The Corps would use the efficiency rate to determine how it needs to operate the systems to add the amount of oxygen determined by the modeling to be needed to compensate for the impacts of the project. The results of this study could cause modifications to the systems such as the amount of oxygen that is injected, the number and location of Speece cones, etc.

Installation and operation of the oxygen injection system is a mitigation feature which is an integral part of the project. This mitigation feature is required for the project to be constructed and perform as planned. Consequently, the inclusion of the oxygen injection system in the project is fully described in the EIS, and a commitment to install and operate the system will be included in the Record of Decision.

1109-BB-101-EV29

Comment: Cumulative DO Benefits: EPA proposed a draft DO TMDL for Savannah Harbor was reproposed in May 2010 based on Georgia's revised water quality standards, which would require an approximate 85% aggregate reduction in point source loads. Successful implementation of the loadings required by a TMDL for DO, and any additional DO mitigation provided by the Speece Cones beyond the impact of this deepening project, would together ecologically benefit the Savannah River system.

Response: Concur. The proposed DO mitigation system [Speece Cones] is expected to result in a net positive effect on DO in the harbor. They will not only restore DO to concentrations comparable to preconstruction conditions, but also result in higher DO levels in over 90 percent of the estuarine water volume.

1109-BB-101-EV30

Comment: No Mitigation Credit for Sea Level Rise: Wetland marshes will be lost due to sea level rise effects over the long life of the project. Regardless of the value used in the COE analysis (e.g., +3 nun per year) to represent sea level rise, EPA believes that the proposed project should mitigate for actual wetland impacts that occur once construction is complete (the base year) and not take credit for any wetland losses due to sea level rise over the life of the project. Further, the COE should also ensure that the project fully mitigates for all impacts that would occur over the entire 50-year period of analysis.

Response: The Assistant Secretary of the Army (Civil Works) has granted the District's request to waiver from Section 5, paragraph E-36.c.(1) of ER 1105-2-100 regarding how environmental impacts are computed. This waiver request stresses the need to mitigate for the environmental impacts occurring when a project is implemented, rather than over an annual basis and takes into account that impacts are more certain early rather than toward the end of the 50-year project life.

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1109-BB-101-EV31

Comment: EPA's Recommended FEIS Wetland Mitigation Plan for SHEP: EPA recommends that the Wetland Mitigation Plan for SHEP include the following components:

1. Use a mutually acceptable technical approach to determine the loss (and gain, if any) of all wetland functions due to the project;

2. Apply the same approach to any proposed wetland mitigation action or site to determine wetland inkind functional replacement;

3. Use an appropriate methodology (like an SOP) to ensure temporal and risk factors are taken into account in determining the quantity of any proposed mitigation;

4. If preservation is a component of the mitigation plan, develop site selection criteria and then identify candidate sites using the criteria;

5. Develop mitigation plans for any action/site that meet the criteria of the Mitigation Rule;

6. Ensure that all mitigation sites are protected in perpetuity in the target condition of the final Mitigation Plan, i.e., managed to sustain the in-kind wetland type;

7. Address cumulative wetland loss/conversion in the project portion of the Savannah River system; 8. As outlined in the 2008 Mitigation Rule, financial assurances for the complete implementation for the mitigation and monitoring plan should be included.

Response:

- 1. The District assembled a Wetland Interagency Coordination Team (ICT) to develop an acceptable technical approach to determine wetland impacts and followed its guidance as to impact evaluation and development of mitigation plans. [see additional responses to EPA comments concerning wetland impacts];
- 2. The Savannah District's Regulatory Standard Operating Procedures (SOP) was used to assess the functional value of impacted wetlands and sites proposed for preservation;
- 3. The SOP was used to determine the quantity of proposed mitigation. [see additional responses to EPA comments concerning wetland impacts];
- 4. Preservation is a component of the mitigation plan. The District worked with USFWS and the Wetland Interagency Coordination Team (ICT) to identify sites that would provide acceptable mitigation. [see additional responses to EPA comments concerning wetland impacts];

- 5. The District complied with the 2008 Mitigation Rule when developing the mitigation plan. [see EIS Appendix C, Section VII Consideration of the USEPA/USACE Mitigation Rule, and additional responses to EPA comments concerning wetland impacts];
- 6. The District will provide the preservation mitigation sites to the USFWS for incorporation into the Savannah National Wildlife Refuge, where they will be protected in perpetuity;
- 7. The District has addressed cumulative wetland loss/conversion in the project area [Savannah River system]. [see additional responses to EPA comments concerning wetland impacts]; and
- 8. Financial assurances are not required when a government agency would construct the project. The SHEP is a civil works project that will receive funding from the Federal government. The SHEP Record of Decision (ROD) will constitute a formal, binding commitment to implement the project mitigation, subject to Congressional appropriation of funds for the project. Mitigation features are required to be implemented before or concurrent with construction, so the project could not proceed if there were not sufficient funds to implement mitigation. After construction, mitigation operation and maintenance would be the Corps' highest budget priority. The Georgia Department of Transportation (a government agency within the State of Georgia) would be committed to providing a cost-share for the project. There is little risk that mitigation features will not be implemented as planned and maintained for the life of the project.

The District will obtain funds for SHEP construction [including monitoring and adaptive management] through its annual Construction Program budget process. The Corps will develop a construction funding plan as well as a mitigation and adaptive management funding plan. The Corps will seek funding each year as identified in the funding plans. If the total costs exceed the estimates, the Corps would seek to obtain Corps approvals for any additional amounts needed through the normal budget process. Funds for un-programmed adaptive management needs would be considered should excess construction funds become available during the year. Adaptive management funds currently estimated at \$2 million per year will be sought for the entire duration of the monitoring period and for any action needed based on the monitoring results. Any project funds that are not used during the year due to unforeseen circumstances would be carried forward as needed and justified. Further, the non-Federal sponsor, acting through the Georgia Ports Authority, has agreed to set aside in advance their cost-shared portion of the monitoring and adaptive management funds in an escrow account upon approval of the project.

1109-BB-101-EV32

Comment: EPA's Concerns with Present DEIS Wetland Mitigation Plan: EPA offers the following comments and conclusions on the COE's proposed mitigation plan presented in the DEIS. Following the submission of all comments on the DEIS, we recommend the COE convene an interagency wetland mitigation "working group" consisting of agencies that commented on the mitigation plan, including EPA and FWS. The mitigation working group could then seek solutions to the issues we raise below and those raised by others. The goal of the group would be to develop an overall approach to compensatory mitigation that replaces the functions lost due to the project and to assist the COE in developing a refined draft Wetland Mitigation Plan for SHEP. The FEIS should incorporate the findings of this group and the draft Plan, while the final Wetland Mitigation Plan should be incorporated in the COE ROD.

Response: In summer 2003, the District assembled a Wetland Interagency Coordination Team (ICT) to assist in its analysis of potential wetland impacts from the SHEP. The team consisted of agency wetland experts from USEPA, USFWS, NMFS, GA DNR, SC DNR, and SC DHEC. After deliberation, the agencies identified an acceptable technical approach to determine wetland impacts. They also identified the information needed to review the DEIS. Since creation of the team, the District has hosted at least

seven meetings of the ICT, including one in June 2011 after EPA submitted this comment. During those meetings, methods for evaluating functional losses and mitigation alternatives for wetland impacts were proposed and discussed at length. After every meeting, the District prepared a Memorandum for Record (MFR), which was provided to all members of the ICT, including EPA. Of the seven meetings that were hosted by the District, five were attended by a representative of EPA. The ICT, or "working group", will continue to coordinate throughout the construction and post-construction phases as outlined in Appendix D.

1109-BB-101-EV33

Comment: Overview: EPA recommends that the proposed compensatory mitigation plan be improved, as discussed below, to ensure that it fully complies with the Section 404(b)(1) Guidelines and the 2008 Mitigation Rule, and to ensure that it will not result in the net loss of wetland functions and types in the Savannah Harbor.

Response: In subsequent comments below, the EPA provides specific recommendations to ensure the compensatory mitigation plan complies with Section 404(b)(1) Guidelines and the 2008 Mitigation Rule. The District has addressed each of the Agency's specific comments. Responses to those comments are provided below.

1109-BB-101-EV34

Comment: Mitigation Using Wetland Preservation: The proposed preservation of 2,683 acres of some type of wetlands at an undetermined location in the Harbor represents a mitigation-to-impacts ratio of 2.5: 1 for the remaining freshwater wetland impacts and the saltmarsh impacts. This is out-of-kind mitigation that is significantly below the ratios recommended in the 2001 EPA Region 4 Mitigation Policy for wetland preservation. EPA recommends development of screening criteria for wetland preservation consistent with the Mitigation Rule, focusing on wetlands that are of the highest function and which are under the most immediate threat by the project.

Response: The District has provided a functional assessment for wetlands that would be impacted as a result of the SHEP [characterization below]. The results of this functional assessment conclude that the differentiation between salt marsh and brackish marsh recommended by the Wetland Interagency Coordination Team and used in the DEIS was overly constrained. The salinity range used in the SHEP model to differentiate between brackish marsh [0.6-4 ppt] and salt marsh [> 4ppt] was quite 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]. An earlier assessment of wetland vegetation coinciding with the salinity range reported for brackish marsh systems [i.e., 5-10 ppt], both of which occur within the area of potential effect, also supports those findings. 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, would be negligible. This would be especially true when taking into account the salinity tolerance range of individual species comprising the brackish marsh community [i.e., 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, the District concluded the 740-acre calculated conversion of saltmarsh to brackish marsh if the harbor is deepened to 47-feet, may be an exaggerated value. Similar logic applies for the other project depths. In fact, in most instances

actual vegetative shifts would not be identifiable *in situ* in Savannah. That said, the District chose to be inclusive in its assessment of the potential for project-related effects and elected to include the saltmarsh 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, those acres would be converted to brackish marsh. The District's calculation of the freshwater wetlands with the potential for conversion to brackish marsh is based on a shift in 0.5 ppt salinity, a traditional rule-of-thumb for differentiating between freshwater 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 [average salinity concentration of 2.1 ppt]], a discriminate function [DF] analysis revealed that only 47% of cases resulted in the 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 traditional observations of 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 likely 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 all emergent wetland systems [see functional assessment response]. Thus, the preservation of 2,245 acres [consisting of bottom land 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 more 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 increased to 16:1.

EPA's 2001 Region 4 Compensatory Mitigation Policy provides examples of preservation projects that were used to offset impacts to aquatic resources. USEPA 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 project. 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 of 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. This would result in a minor shift in vegetation and all wetland functions associated with these areas of conversion would be retained [see response for functional assessment]. These SHEP impacts 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 has concluded that the proposed preservation mitigation for SHEP is more than sufficient. This is especially true, in comparison to 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 2001 Compensatory Mitigation Policy developed by EPA- Region 4].

33 CFR 332.3 (h)(2) of the Final Mitigation Rule states, "Where preservation is used to provide compensatory mitigation, to the extent appropriate and practicable, the preservation shall be done in conjunction with aquatic resource, restoration, establishment and/or enhancement activities. This requirement may be waived by the district engineer where preservation has been identified as a high priority using a watershed approached described in paragraph (c) of this section, but compensation ratios will be higher." A watershed assessment was conducted within the Lower Savannah River Harbor and has been updated in the FEIS. The District has again reviewed the listing of approved mitigation banks in the Lower Savannah River Watershed and evaluated the Regional Internet Banking Information and Tracking System (RIBITS) for potential mitigation banks that possess tidal freshwater credits within the Lower Savannah River Watershed. As of March 2011, Bath Branch, Brushy Creek, Margin Bay, Millhaven, Old Thorn Pond, and Phinizy Swamp banks have primary service areas that overlap the harbor area and some remaining credits. However, these banks do not contain tidal, freshwater systems and/or their associated credits. A review of secondary service areas overlapping the project area revealed Black Creek and Wilhelmina Morgan banks have some remaining credits. But likewise, these banks do not contain tidal, freshwater systems and/or their associated credits. Thus, at this time mitigation banks with "in kind" mitigation do not exist within the Lower Savannah Watershed. As of March 2011, the In-Lieu Fee Program in the State of Georgia has not been updated or approved by the District and Interagency Review Team (IRT) to provide compensatory mitigation credits that would offset impacts to aquatic resources.

As of this response date, there are no mitigation banks established with tidal, freshwater wetland characteristics. Thus, the most appropriate/practicable means of mitigating the minor shift in vegetation that would occur is the preservation of approximately 2,245 acres of bottomland hardwoods and upland buffer. USFWS and the Savannah National Wildlife Refuge (SNWR) have identified specific properties within the estuary having a high priority for acquisition. The Service believes these particular holdings are ecologically valuable and provide positive contributions to the goals of the Refuge to enhance the area's fish and wildlife resources.

The latest version of the Refuge's Acquisition Plan is dated July 2007 and is included in the document titled, "Final Environmental Assessment and Land Protection Plan; Proposed Expansion of Savannah National Wildlife Refuge". The document identified the subject lands proposed for preservation as Mill Creek and Abercorn Island. The properties comprising the Mill Creek, Abercorn Island, and Eastern Boundary areas are vegetatively characterized as wetlands and interspersed uplands. The wetlands are classified as bottomland hardwood forest, dominated by old-growth oaks, cypress, sycamore, and sweetgum. The sites are both temporarily and seasonally flooded and/or forested wetland. Thus, the proposed preservation of 2,245 acres of wetlands and upland buffer adjacent to the SNWR constitutes

"in basin" mitigation. USFWS previously identified the ecological value of those properties and believes they would be valuable additions to, and advance the goals of, the Savannah Refuge.

The Final Mitigation Rule provides for use of "out-of-kind" mitigation in certain circumstances where the mitigation is determined to be ecologically important. 33 CFR 332.3 (e)(2) of the Final Mitigation Rule states, "In general, in-kind mitigation is preferable to out-of-kind mitigation because it is most likely to compensate for functions and services lost at the impact site. If the district engineer determines, using the watershed approach in accordance with paragraph (c) of this section that out-of-kind compensatory mitigation will serve the aquatic resource needs of the watershed, the district engineer may authorize the use of such out-of-kind compensatory mitigation. The basis for authorization of such out-of-kind mitigation must be documented in the administrative record for the [permit] action."

It should also be noted that the District assembled and used a Wetland Interagency Coordination Team (ICT) consisting of technical expert representatives from USACE, Federal natural resource agencies, and State natural resource agencies representatives to identify acceptable mitigation for the proposed project. At that time, USFWS stated that mitigation actions must be performed within the basin for impacts to wetlands residing within the SNWR. The USFWS also confirmed that restoration, enhancement, and creation of saltmarsh would not mitigate for expected losses to freshwater marshes. Further, the Service stated that it did not support a proposal to create a freshwater marsh on a proposed site. This decision was made because of uncertainties in the District's ability to successfully create freshwater marsh at that location. The Service recommended preservation of lands as a possible solution and recommended sites that are part of its long- term land acquisition strategy to compliment the SNWR. The District also consulted with the Stakeholder Evaluation Group, including its Non-Governmental Organization [NGO] members, to identify any other suitable mitigation alternatives. Over the 10-year study period, no agency or organization could identify another feasible alternative as mitigation for impacts that would occur as a result of wetland conversion. Therefore, the District proceeded with the identification of preservation sites.

Given the justification and rationale for the preservation the acreage that was provided in the previous paragraphs, the District does not concur with EPA's recommendation that screening criteria for wetland preservation would be useful at this time. However, a functional assessment is provided which demonstrates that the only wetland function that would be affected by the marsh conversion would be fish and wildlife habitat [see response to functional assessment]. Hence, the preservation of freshwater habitat adjacent to the SNWR is deemed sufficient to replace the impact to that element of wetland function.

The District has considered use of the proposed properties for preservation relative to 33 CFR 332 (h) (1) (i-v) which states, "Preservation may be used to provide compensatory mitigation for activities authorized by DA [permits] when all the following criteria are met: (i) The resources to be preserved provide important physical, chemical or biological functions for the watershed; (ii) The resources to be preserved contribute significantly to the ecological sustainability of the watershed. In determining the contribution of those resources to the ecological sustainability of the watershed, the district engineer must use appropriate quantitative assessment tools, where available; (iii) Preservation is determined by the district engineer to be appropriate and practicable; (iv) The resources are under threat of destruction or adverse modifications; and (v) The preserved site will be permanently protected through an appropriate real estate or other legal instrument (e.g., easement, title transfer to state resource agency or land trust)."

Based on its analysis and coordination with the natural resource agencies that participated in the Wetland ICT, the District has:

(i) concluded that the preserved lands provide important physical, chemical and biological functions for the SNWR, the Savannah Harbor, and the Lower Savannah Watershed [see response to request for Functional Assessment]; and

(ii) the preserved lands will contribute to the sustainability of the watershed by ensuring the functions of bottomland hardwood wetlands on these properties are sustained in perpetuity, and the SNWR will be protected with a significant area of land that will function as a buffer in perpetuity. The preservation tracts will also enhance lands already within the SNWR; and

(iii) for the reasons identified in (i) and (ii), the District Engineer has determined that preservation of these 2,245 acres is appropriate and practicable; and

(iv) the District and other entities anticipate that the Savannah Harbor, and areas surrounding the SNWR, will continue to experience population growth, industrial/commercial development, and changes in land use. In addition to the industrial developments that have been permitted by the District in recent years, the US Geological Survey, Water Science Center (GaWSC) commented on the large number of industrial facilities and associated impacts that are anticipated on lands in close proximity to the Georgia Ports Authority and the SNWR. Preservation of the 2,245 acres ensures aquatic resources on the associated properties will be protected in perpetuity. The preserved land will provide additional buffer so that any future development in the vicinity will not result in a secondary and/or indirect impact to existing Refuge lands. There is also a threat that subtle changes in adjacent land use will also have a detrimental impact on the SNWR. For example, a Public Notice published by the Charleston District, Corps of Engineers on September 28, 2009 requests comment on a proposal from a private landowner to divert tidal water flow onto an approximately 693-acre parcel to increase the hydrology on 485 acres of previously-existing rice impoundment. The 693-acre property, which would be used as a mitigation bank, presently provides benefits to migratory waterfowl during migratory stops similar to those provided by Refuge lands. Conversion of such acreage to saltmarsh could shorten their stay in the area and result in the birds that the Refuge serves resuming their migration with less rest. The expected effects of the proposed Regulatory action on the SNWR have not been quantified at this time, but the proposed project is an example of the continued threat that manipulation of adjacent lands pose to the SNWR and the resources it protects. Acquisition and preservation of the proposed 2,683 acres as mitigation for the SHEP project would provide additional buffer and protection from these type of activities as well; and

(v) preservation of the 2,245 acres will include a restrictive covenant and the recording of a conservation easement with conveyance of the property to the USFWS. Collectively, the information provided in this response justifies the preservation of 2,245 acres adjacent to the SNWR as satisfying the mitigation requirements for the conversion of freshwater and saltmarsh wetlands.

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Comment: Functional Assessment: The DEIS and its supporting studies did not employ a functional assessment to objectively and quantitatively evaluate the functional losses due to excavation of wetlands and conversion of wetland types from the SHEP. A functional approach is key to the assessment of wetland impacts and the analysis of adequate compensatory mitigation actions. We recommend that the interagency working group identify tools to determine the functional losses due to the project. This same tool should then be applied to any proposed wetland mitigation action. The comparison of the results should indicate whether or not the no-net-loss-of-function criterion is met.

Response: The District has provided a functional assessment in the FEIS (Appendix C, Section VII Consideration of the USEPA/USACE Mitigation Rule) that objectively and quantitatively evaluates the functional losses due to excavation of wetlands and conversion of wetland types. In addition, Savannah District's Regulatory Standard Operating Procedure [SOP] was used to objectively and quantitatively evaluate functional losses due to excavation of wetlands as well as the conversion of wetland types that would occur as a result of the SHEP. The Wetland ICT concurred with use of the SOP to quantify impacts and the associated mitigation.

In summer 2003, the Corps assembled a Wetland Interagency Coordination Team (ICT) to assist in its analysis of potential wetland impacts from the SHEP. The team consisted of agency wetland experts from USEPA, USFWS, NMFS, GA DNR, SC DNR, and SC DHEC. The agencies identified an acceptable technical approach to determine wetland impacts. They also identified their information needs to review the DEIS. Since creation of the team, the District hosted seven meetings of the ICT, one of which was held in June 2011 in response to Agency comments on this issue. During those meetings, methods for evaluating functional losses and mitigation alternatives for wetland impacts were proposed and discussed at length. After every meeting, the District prepared a Memorandum for Record (MFR), which was provided to all members of the ICT, including EPA. Of the seven meetings that were hosted by the USACE, five were attended by a representative of EPA.

The District conducted an Agency Technical Review (ATR) to assess the use of Savannah District's SOP as a tool in the development of a mitigation plan for SHEP. The ATR was lead by the National Deep-Draft Navigation Planning Center of Expertise. The actual review was performed by experts at the Corps' Engineering Research and Development Center in Vicksburg, MS. The ATR sought to determine if the SOP was an appropriate method to ascertain the preservation acreage needed to compensate for impacts resulting from the SHEP. The ATR also evaluated the assumptions and calculations that the Savannah District used in applying the SOP for the SHEP. The SOP was used to determine the amount of preservation acreage necessary to offset the remaining impacts ONLY after avoidance, minimization, and restoration measures had been applied. After these deliberations, the ATR concurred with using the SOP to determine the amount of preservation acreage needed. Moreover, it considered the Savannah District's application of the SOP to be reasonable in quantifying impacts together with the associated mitigation that would be required.

The USFWS provided a Fish and Wildlife Coordination Act Report, dated August 2010. In that report, the USFWS concurred with use of the SOP, which calculated a need to preserve 2,245 acres adjacent to the SNWR. The Service provided updates to the SOP calculations in Appendix A of the report. The District concurred with use of the updated SOP worksheets and adopted the results of those calculations for use in the DEIS. In its Adaptive Management Program, the District also proposed funding to acquire additional wetlands [up to five percent] if monitoring demonstrates that wetland impacts are underpredicted.

Indirect Impacts Resulting in Conversion of Wetland

As detailed in other response sections and the FEIS, deepening the harbor to a 47-foot depth would result in a conversion of the dominant vegetative species typically observed in approximately 223 acres of freshwater marsh [freshwater to brackish marsh scenario]. It is important to note that many of the emergent plant species associated with freshwater marsh systems would still be readily observed in environments that have been defined as brackish marsh [Latham et. al., 1994]. Likewise, the 47-foot depth would result in a conversion of the dominant vegetative species typically observed in 740 acres of

saltmarsh [saltmarsh to brackish marsh scenario]. Nonetheless, dominant saltmarsh species like *Spartina alterniflora* would still be observed in areas which have salinities that define a brackish marsh. However, the basic wetland functions typically associated with these systems would not be materially changed. The same logic applies for other depth alternatives considered. A comparison of potential changes in elements of wetland function for both conversion scenarios is provided in Table 1.

Elements of Wetland Function	Freshwater to Brackish Marsh (Approximately 223 acres)	Saltmarsh to Brackish Marsh (Approximately 740 acres)
Water Purification	Negligible	Negligible
Flood Protection	Negligible	Negligible
Shoreline Stabilization	Negligible	Negligible
Groundwater Recharge	Negligible	Negligible
Streamflow Maintenance	Negligible	Negligible
Retention of Particles	Negligible	Negligible
Surface Water Storage	Negligible	Negligible
Subsurface Storage	Negligible	Negligible
Nutrient Cycling	Negligible	Negligible
Values to Society	Negligible	Negligible
Fish and Wildlife Habitat	Minor Adverse	Negligible

Table 1. Changes in Wetland Function as a Result of Wetland Conversion

As illustrated in Table 1, the only indirect effect the 47-foot project would have on the function of these wetlands systems would be associated with fish and wildlife habitat. All other elements of wetland function associated with predicted shifts in wetlands classification would be negligible as a result of the anticipated increase in salinity. It should be noted that areas of the Savannah Harbor identified as saltmarsh or brackish marsh support similar fish and wildlife species. Any anticipated conversion of saltmarsh to a brackish marsh system would have a negligible impact on the overall function of the wetland system. Alternatively, the District recognizes that a comparison of fish and wildlife habitat between freshwater and brackish marsh systems yields fewer similarities. However, the conversion in fish and wildlife habitat will still be minor when considering total wetland function. Post-project, there would also be some freshwater vegetation in areas now categorized as brackish marsh.

The proposed preservation of 2,245 acres consists of bottomland hardwoods, maritime forest, and uplands dominated by deciduous forest and regrowth. The bottomland hardwoods are classified as palustrine, forested, broad-leaved deciduous systems that are both temporarily and seasonally flooded. Preserving these areas would ensure their wildlife habitat is protected in perpetuity. Moreover, the additional lands would buffer the SNWR from future threats of development, i.e., changes in land use would not occur immediately adjacent to existing areas of the Refuge containing emergent wetlands. Thus, the acquisition and preservation of 2,245 acres of wetland and upland buffer provides a functional replacement for the minor conversion of the only wetland function [i.e., fish and wildlife habitat] that would be expected as a result of the 223 acre freshwater to brackish marsh conversion [See Table 1]. In conclusion, the District has determined that the functional assessment conducted for all wetland areas proposed for impact and mitigation satisfies the no-net-loss of function criterion.

Direct Impacts to Brackish Marsh

The harbor deepening project will require the excavation of 15.68 acres of brackish marsh [after implementation of all possible avoidance and minimization measures]. In brief, these marsh areas are subject to periodic flooding as a result of daily tides. Their vegetative communities are a monoculture of smooth cordgrass [Spartina alterniflora]. Approximately 7.3 acres (47%) of the total acreage to be excavated is subject to the wave action of passing ships. As a result of this perturbation, these areas exhibit vegetation densities which are significantly less than typically observed in this community type. Patches of bare, course-grain sand and mudflat are integrated throughout the patches of Spartina alterniflora in these locations. Given the sparse presence of vegetation, it would appear that these areas are challenged, somewhat degraded, and do not possess the same degree of primary productivity as observed in robust, densely-vegetated, systems located elsewhere in coastal Georgia. Mitigation of the 15.68 acres would be accomplished by restoring approximately 40.3 acres of brackish marsh (approximately 28.8 acres would provide adequate mitigation for the SHEP excavation requirements while the remaining 11.5 acres could be used for other wetland mitigation needs associated with the SHEP or the operation and maintenance of Savannah Harbor). The District used its Regulatory SOP to determine the exact number of acres that would be required for restoration [See Appendix A at the end of the Mitigation Appendix].

Historically, the District's Regulatory Division and members of the Interagency Review Team (IRT), which includes USEPA, USFWS, NMFS, and GADNR representatives, have authorized the creation of saltmarsh as mitigation to offset permitted projects located in this coastal habitat type. The table below identifies five projects in Chatham County where saltmarsh creation was used as mitigation. Typically, a ratio of 2 acres created to 1 acre impacted has been used.

Project Name	USACE	Saltmarsh	Saltmarsh
	File Number	Impacts (Acres)	Creation (Acres)
Slip One- Hutchinson Island	200501453	0.28	0.56
Hardin Canal Drainage	200600393	0.27	0.54
Skidaway Narrows Emergency Access	200600909	0.56	0.56
Skidaway Road Drainage Improvements	200601249	0.52	0.75
SLNG-Slip Construction	200200640	3.24	7.5

Projects impacting Saltmarsh and the Associated Saltmarsh Mitigation

The proposed restoration of 28.75 acres of brackish marsh as mitigation for SHEP impacts to 15.68 acres would be a ratio of 1.8:1 [acres restored to acres impacted]. The ratio is roughly the same as for other similar authorized projects that impact saltmarsh. The District's SOP confirmed this value given the area of impact and the subject marsh's current function/integrity.

In support of this site-specific mitigation, it is important to note that the 42 acres (a 1.7 acre site previously graded down by Georgia Ports Authority would be included in the restoration site) of contiguous, restored brackish marsh will include construction of tidal creeks creating edge effect which will have more ecological value than the marsh proposed for excavation. Furthermore, the proposed mitigation site is non-segmented, located "in basin" [north of the Federal Navigation Channel], and incorporates a strip of trees to separate it from the harbor; all factors which makes it an ideal mitigation option for replacing the impacted marsh acreage.

Finally, this mitigation alternative was selected after consideration of the 2008 Final Mitigation Rule. Presently, there are no mitigation banks in coastal Georgia that are approved to sell saltmarsh or brackish marsh credits. Additionally, the In-Lieu Fee program has not been updated or approved by the District and Regulatory Interagency Review Team (IRT) to provide compensation for impacts to saltmarsh or brackish marsh. Thus, site-specific mitigation represents the only course of action for mitigating impacts to the subject 15.68 acres of brackish marsh. Adaptive management would require planting *Spartina alterniflora* if the site does not naturally re-vegetate at colonization rates indicated in Table 5-2 of the FEIS. Annual monitoring reports would be prepared for seven years and provided to a Wetland Interagency Coordination Team (ICT). If the restoration site does not meet the success criteria illustrated in Table 5-2, the ICT would recommend corrective actions [e.g., new planting requirements, increased sprig densities, etc.] to achieve compliance with the reported values in Table 5-2. The need for corrective action(s) would be determined annually with agency involvement. If at the end of seven years the plant density at the restored marsh is not within 10% of the reference site, the District would implement further actions to achieve successful marsh regeneration on this site [see updated Appendix C - Mitigation Planning and Appendix D – Monitoring and Adaptive Management].

The District has determined that the functional assessment [conducted for all brackish marsh areas proposed for direct impact and mitigation] satisfies the no functional net loss criterion.

1109-BB-101-EV36, 1109-BB-101-EV37

Comment: Monitoring Plan: There should be a detailed plan to monitor wetland functional changes throughout the harbor due to the deepening in the FEIS. This could involve the application of remote sensing methods. EPA recommends the Monitoring Plan be based on the parameters used in the functional assessment cited above. The duration of monitoring should be based on the expected time for full functional replacement. The plan should extend at least seven years after construction, which is the minimum monitoring period required by the Savannah District for any mitigation project of this magnitude.

Response: The District would install/operate 12 continuous recording stations to monitor selected environmental parameters within the surrounding marsh habitat. The selected locations include sites that have previously been evaluated, so the principals could take advantage of a longer vegetative record. The sites were also chosen to cover the range of salinity conditions in the harbor and model predictions about areas that are most susceptible to salinity changes. The recording stations will monitor water surface elevation, specific conductance of surface waters that flood the marsh, specific conductance of waters in the root zone, and water depth every 30 minutes. Recorded data would be downloaded on a monthly basis. Twice a year characterization of marsh vegetation at each of these sites is also part of the monitoring plan. The preliminary sites are depicted in Figure 4 of Appendix D in the FEIS [see Appendix D for more detail on the monitoring plan]. The District has designed a Monitoring Plan based on the functional assessment provided in the response to comments. The plan's stipulations would remain operational for at least ten years after construction.

Monitoring Plan for Wetlands Subject to Indirect Impacts

The District has prepared a monitoring plan that would assess the wetland changes occurring as a result of the SHEP. As indicated in the District's response to the functional assessment request, only minor shifts in vegetation [species frequencies] are anticipated with the 223-acre conversion of freshwater to brackish marsh. Likewise, minor shifts in vegetation are the only anticipated effect that would occur with the 740-acre conversion of saltmarsh to brackish marsh. In both cases, it is important to note that some areas are not expected to experience any measureable/observable shifts in vegetation given the variability and fluctuations in salinity that the harbor currently experiences and the range of salinities that the marsh vegetation tolerate. The functional assessment revealed that the only element of wetland roles that would be impacted as a result of this conversion is the potential change in fish and wildlife habitat. Monitoring shifts in vegetation and salinity in these wetlands would indirectly assess the degree to which fish and wildlife habitat factors are being affected by the deepening. To that end, the proposed monitoring plan includes vegetative and salinity monitoring [one year] at 12 locations during the pre-construction phase of the project. Other water quality parameters would be simultaneously recorded at these sampling locations. Presently, the USGS Florida Fish and Wildlife Cooperative Research Unit is expected to be asked to conduct this work [see Appendix D of the FEIS] since they have performed it at these sites in the past. Site monitoring would continue during the construction period [estimated to be four years]. Finally, monitoring of the marsh sites, which are subject to vegetative conversion, would continue for ten years following completion of the project. Annual monitoring reports would be prepared following construction. A comprehensive report would be prepared in year six that includes data from the previous years. A final report would also include comparisons to the pre-construction monitoring results.

Monitoring Plan for Restored Wetland

Prior to the start of restoration activities at the Disposal Area 1S site, the District will survey the approximately 42-acre site to determine if any areas are already vegetated with saltmarsh species. Those fringe areas would not be subject to grading. Early investigations of the site suggest the practical acreage [approximately 42 acres] available for mitigation purposes is more than sufficient to provide the minimum area necessary to grade and ultimately restore 28.75 acres of brackish marsh, satisfying the compensatory mitigation needs for direct impacts to 15.68 acres.

The development of the restored marsh also includes a stipulation [adaptive management] requiring planting of juvenile *Spartina alterniflora* plants if the site does not begin to naturally revegetate with the rate of colonization indicated in Table 5-2 of the FEIS. Annual monitoring reports would be generated over a period of seven years 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. This would include altering planting requirements and associated sprig densities to achieve compliance with the reported percentages in Table 5-2. The need for corrective action(s) would be determined and/or implemented annually with agency involvement and concurrence. If at the end of seven years the plant density at the restored marsh is not within 10% of the reference site, then the District would implement further actions to achieve successful marsh regeneration on this site [see updated Appendix C-Mitigation Planning].

1109-BB-101-EV38

Comment: Data Collection & Monitoring: EPA recommends including a comprehensive baseline data collection and monitoring plan for the mitigation acreage, specifically, predicted acres of "restoration" of freshwater wetlands through conversion from saltmarsh/brackish marsh as identified in the implementation of Plan 6A.

Response: The marsh monitoring plan includes six sites previously examined by the USGS Florida Fish and Wildlife Cooperative Unit as well as the addition of six new ones. Continuous recording stations at these 12 sites would measure water surface elevation, specific conductance of surface waters that flood the marsh and in the root zone, as well as water depth every 30 minutes. Quantitative sampling [distribution and density] of wetland vegetation would be determined via transects taken twice annually. Marsh monitoring would be conducted prior to construction, during construction, and for ten years after construction.

1109-BB-101-EV39

Comment: Preservation Site Selection: The proposed preservation action of selecting one or more properties from a 1998 list of 25 properties is vague (three of the properties are already government owned, two appear to have significant development and one was rejected as a restoration site). Alternatively, EPA recommends that an updated list of specific sites be identified, and that the five preservation criteria in the 2008 Mitigation Rule be applied to these sites as well as the other site selection criteria noted above.

Response: The District consulted with the USFWS to obtain the latest information on properties that the Refuge seeks to acquire/preserve to expand the SNWR's boundaries. Priority would be given to acquisition of large bottomland hardwood tracts located at upriver locations in the estuary that would not be affected by the proposed harbor deepening. Sites that are presently Government-owned or which possess a conservation easement would not be considered. The District will evaluate the proposed preservation mitigation [sites] using the five criteria identified in the 2008 Mitigation Rule. Specifically, 33 CFR 332.3 (h) (1) (i-v) states, "Preservation may be used to provide compensatory mitigation for activities authorized by DA [permits] when all the following criteria are met: (i) The resources to be preserved provide important physical, chemical or biological functions for the watershed; (ii) The resources to be preserved contribute significantly to the ecological sustainability of the watershed. In determining the contribution of those resources to the ecological sustainability of the watershed, the district engineer must use appropriate quantitative assessment tools, where available; (iii) Preservation is determined by the district engineer to be appropriate and practicable; (iv) The resources are under threat of destruction or adverse modifications; and (v) The preserved site will be permanently protected through an appropriate real estate or other legal instrument (e.g., easement, title transfer to state resource agency or land trust)."

Based on our analysis and coordination with the resource agencies that participated in the IRT, the District has:

(i) concluded that the preserved lands must provide important physical, chemical and biological functions for the SNWR, the Savannah Harbor, and the Lower Savannah Watershed [see response to request for Functional Assessment];

(ii) the preserved lands must contribute to the sustainability of the watershed by ensuring the functions of bottomland hardwood wetlands on these properties are sustained in perpetuity, and the SNWR will be protected with a significant area of land that will function as a buffer in perpetuity. The preservation tracts will also enhance lands already within the SNWR by functioning as a buffer;

(iii) for the reasons identified in (i) and (ii), the District Engineer has determined that preservation of these 2,245 acres is appropriate and practicable;

(iv) the District and other entities anticipate that the Savannah Harbor and areas surrounding the SNWR will continue to experience population growth, industrial/commercial development, and changes in land use. In addition to the industrial developments that have been permitted by the USACE in recent years, the US Geological Survey, Water Science Center (GaWSC) commented on the large number of industrial facilities and associated impacts that are anticipated on lands in close proximity to the Georgia Ports Authority and the SNWR. Preservation of up to 2,245 acres ensures aquatic resources on the associated properties will be protected in perpetuity. The preserved land will provide additional buffer so that any future development in the vicinity will not result in a secondary and/or indirect impact to existing Refuge lands. There is also a threat that subtle changes in adjacent land use will also have a detrimental impact on the SNWR. For example, a Public Notice published by the Charleston District, Corps of Engineers on September 28, 2009 requested comment on a proposal from a private landowner to divert tidal water flow onto an approximately 693-acre property to increase the hydrology on 485 acres of previously-existing rice impoundment. The 693-acre property, which would be used as a mitigation bank, presently provides benefits to migratory waterfowl during migratory stops similar to those provided by Refuge lands. Conversion of such acreage to saltmarsh could shorten their stay in the area and result in the birds that the Refuge serves resuming their migration with less rest. The expected effects of the proposed Regulatory action on the SNWR have not been quantified at this time, but the proposed project is an example of the continued threat that manipulation of adjacent lands pose to the SNWR and the resources it protects. Acquisition and preservation of the proposed 2,683 acres as mitigation for the SHEP project would provide additional buffer and protection from these type of activities as well; and

(v) preservation of the 2,245 acres will include a restrictive covenant and the recording of a conservation easement with conveyance of the property to the USFWS. Collectively, the information provided in this response justifies the preservation of 2,245 acres adjacent to the SNWR as satisfying the mitigation requirements for the conversion of freshwater and saltmarsh wetlands.

1109-BB-101-EV40, 1109-BB-101-EV41

Comment: Standard Operating Procedure Application: Based on Savannah District Guidance, the SOP is not applicable for impacts over 10 acres, though with modification, it may be able to serve as an initial evaluation tool. The 48-ft project deepening alternative would excavate 14.08 acres and hydrologically impact/convert at least 1,212 acres of wetlands. The application of the SOP to this project affects the quantity of the proposed compensatory mitigation. This is partially due to the fact that the calculations lack a scaling factor. EPA recommends that the mitigation working group assess modification of the current SOP or use of another method to ensure an adequate quantity of compensatory mitigation is provided that will replace the wetland functions lost due to the project.

Response: The USACE does not concur with this assessment. The Savannah District SOP has been used, and will continue to be used to evaluate Regulatory Division permit applications with wetland impacts greater than 10 acres. The District can document 15 permitted projects in the last 5 years that the Federal and State natural resource agencies – including EPA – authorized based on the Savannah District SOP having wetland impacts greater than 10 acres [Table 3].

Project Name	USACE File Number	Wetland Impacts (Acres)
Northport/Oak Grove Plantation	200414950	33.2
Broadhurst Landfill	200501435	96.55
GDOT US441 / SR 89	200600828	64.04
Houston American Cement	200700577	21.21
Newton Tract	200701309	31.86
Robins Air Force Base	200701096	19.5
Fort Benning 69741	200900567	15.94
Fort Benning 69668	200900568	12.33
The Carter Group	200801428	11.3
GDOT I-95 Widening	200502310	14.47
Grady County	200500967	129.0
Fort Stewart	200900886	26.7
Fort Stewart Machine Gun Range	200900786	103.34
Fort Stewart Multipurpose	200901852	202.9
Range		
Fort Stewart Digital	200900885	43.6
Multipurpose Range		

Table 3. Projects with Impacts Greater than 10 acres that Used SOP Calculations to Determine Mitigation Requirements

For these projects, the SOP was considered the best available tool to quantify credits required for mitigating wetland impacts, i.e., restoration, enhancement and preservation], if applicable. In every case where impacts were greater than 10 acres, the SOP was used as an assessment tool to ensure the credits required for mitigation were practicable, but also commensurate with the magnitude of impact associated with the authorized project environmental losses.

It is important to note that while the SOP is a tool for calculating mitigation, the District also uses sound, science-based judgment when evaluating an applicant's project that would impact Waters of the US. As defined in the USACE's General Regulatory Policies, 33 CFR 320.4 (r)(2) states, "All compensatory mitigation will be for significant resource losses which are specifically identifiable, reasonably likely to occur, and of importance to the human or aquatic environment. Also, all mitigation will be directly related to the impacts of the proposal, appropriate to the scope and degree of those impacts, and reasonably enforceable." To that end, the Savannah District Regulatory Division always ensures that calculated mitigation credits derived from the SOP pass the sensibility test and are consistent with actual, project-derived impacts.

The Regulatory Division is developing an updated Mitigation SOP using a functional assessment metric. However, this tool will not available for use in time for this project. In the interim, the Regulatory Division will use the current SOP for assessing mitigation requirements for all projects [including those having a real impacts greater than 10 acres] until the updated version is finished, tested, and validated.

In a previous response, the USACE discussed the past and current use of the SOP by Savannah District's Regulatory Division when evaluating projects that have greater than 10 acres of wetland impact. For several years, the EPA has advocated use of a scaling factor primarily when calculating a loss in stream

length that exceeds 5,000 linear feet. Integrating a scaling factor into the SOP is not appropriate when evaluating SHEP-derived impacts for the following reasons: (1) Over 10 years ago, the District assembled a Wetland Interagency Coordination Team (ICT) consisting of technical expert representatives from USACE, Federal natural resource agencies, and State natural resource agencies to identify procedures to identify wetland impacts and acceptable mitigation for a harbor deepening project. The results of that coordination and collaboration included agreement to use the existing Regulatory SOP to calculate the acreage needed for preservation [see previous District response regarding formation of mitigation working group]; (2) Presently, there is no scientific approach or mathematical justification that can document/validate an appropriate value for use as a scaling factor in the current application of the existing SOP. The Savannah District, Regulatory Division continues to use the existing SOP [without a scaling factor] as one tool to assess the validity of an applicant's proposed mitigation plan for projects that would impact greater than 5,000 linear feet of stream and/or 10 acres of wetland. Based on that initial assessment, the District can determine if more or less mitigation is needed as defined in 33 CFR 320.4 (r)(2); (3) The District has performed a functional assessment of the wetland areas that would be subject to changes in salinity as a result of the harbor deepening. The District has determined that the only element of wetland function that would be affected is fish and wildlife habitat [see Functional Assessment response]. To that end, a scaling factor integrated into the SOP would not provide any greater means of evaluating impact, or enhance the ability of the current tool to identify a more appropriate form of mitigation other than what has been proposed; (4) The existing SOP was used to calculate the mitigation that would be required to offset direct impacts associated with the excavation of 15.68 acres of brackish marsh. Use of the SOP demonstrated that the restoration of 40.3 acres of brackish marsh within the Savannah Harbor would provide more than sufficient mitigation to offset the impacts. The functional assessment also concluded that the restored brackish marsh would provide greater wetland function than those areas proposed for impact [see results of Functional Assessment for direct impacts to brackish marsh].

1109-BB-101-EV42

Comment: SOP Factors; SOP factor selections appear to be inconsistent and clarification on the technical basis for the factors used is needed. Again, EPA recommends that the mitigation working group assess modification of the current SOP and the application of the impact factors or use of another method to ensure an adequate quantity of compensatory mitigation is provided that will replace the wetland functions lost due to the project.

Response: The District does not believe a mitigation working group is needed at this time to review the impact factors used in applying the SOP to this project. The Corps has conducted an independent review of the application of the SOP to this project. That Agency Technical Review (ATR) assessed the use of Savannah District's SOP as a tool in the development of a mitigation plan for SHEP. The ATR was led by the National Deep-Draft Navigation Planning Center of Expertise. The evaluation was performed by experts in the Engineering Research and Development Center in Vicksburg, MS. The ATR was to ascertain if the SOP was an appropriate method to determine the preservation acreage needed to compensate for impacts resulting from the SHEP. The ATR was also requested to comment on the reasonableness of the assumptions and calculations that Savannah District used in applying the SOP for the SHEP. The SOP was used only to determine the amount of preservation acreage necessary to offset the remaining acreage impacted after development of avoidance, minimization, and restoration features. The ATR concurred with use of the SOP to determine the amount of preservation acreage needed and considered Savannah District's application of the SOP to be reasonable in quantifying impacts and the associated mitigation that would be required.

The Fish and Wildlife Coordination Act Report (March 2011) was prepared by the USFWS and reviewed by SC DNR and GA DNR. In that report, the USFWS concurred with use of the SOP, which calculated a need to preserve 2,245 acres of land adjacent to the SNWR for the 47-foot alternative. The District had previously concurred with use of factors recommended by those agencies in the SOP worksheets and incorporated those factors in the SOP calculations used in the DEIS. Since the USFWS, SC DNR and GA DNR have concurred in the factors that the Corps used in this SOP application, hosting a review by an interagency team to review the SOP factors would duplicate what has already occurred.\

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1109-BB-101-EV43

Comment: Threats to Preserved Tidally-Influenced Wetlands: The COE characterized the threat to any potentially preserved tidally-influenced wetlands as "moderate" due to potential development on nearby uplands, even though no specific site or sites were identified. EPA generally rates the threat to these types of wetlands as "low" or "none", especially since the State of Georgia has been exerting ownership chums on all tidally-influenced wetlands that have a valid King's grant. A significant degree of threat is one factor required for any preservation area under the Mitigation Rule and a lower degree of threat would result in significantly more preservation acreage being needed in the SOP calculations. EPA recommends the mitigation working group assess the project "threat" and incorporate it into the criteria for site selection.

Response: This comment pertains to the SOP Preservation Worksheet that illustrates a "Degree of Threat" factor which gets integrated into the credit calculations. The 2,245 acres that would be preserved are immediately adjacent to the SNWR and include bottomland hardwood wetlands, as well as some uplands [see functional assessment response for description of areas to be preserved]. As described in other response sections, the lands proposed for preservation are imminently subject to development.

When reviewing the preservation worksheet and the "Degree of Threat" factor, it is important to note that the District did not use the highest value [i.e., 0.5] available for this calculation. Use of the "High" Degree of Threat value would have resulted in a greater "Sum of m Factors" calculation, which, in turn, would have ultimately reduced the required preservation acreage that was needed. Alternatively, the District chose to describe the Degree of Threat as "Moderate" which more accurately [but conservatively] reflects the current trends in the vicinity of the SNWR.

Although the "Degree of Threat" factor was defined as "Moderate", the District, USFWS, and other entities anticipate that the Savannah Harbor, and areas in the vicinity of the SNWR, will continue to experience population growth, industrial/commercial development, and changes in land use. The District evaluated development trends within five miles of the Savannah National Wildlife Refuge for the last 15 years. In those 15 years, authorization of approximately 170 regulatory permits has resulted in more than 230 acres of wetland impacts. In recent years, several industrial developments have been constructed in the vicinity of the SNWR, e.g., a Target distribution facility was constructed three years ago which converted approximately 42 acres of pristine, maritime forest and wetland. Land has been cleared in SC for an industrial park adjacent to the Refuge. The US Geological Survey, Water Science Center (GaWSC) commented to the District in its DEIS review on the large number of industrial facilities and associated impacts that are anticipated on lands in close proximity to the Georgia Ports Authority and the SNWR. Preservation of the 2,245 acres ensures aquatic resources on the associated properties will be protected in perpetuity. The preserved land will also provide additional buffer so that any future

development in the vicinity will not result in a secondary and/or indirect impact on the Refuge. There are also subtle threats in adjacent land use that could have a detrimental impact on the SNWR as evidenced by the proposal [2009 – noted previously] of a private landowner requesting a permit to divert tidal water onto an approximately 693-acre property in an effort to increase the hydrology on 485 acres of a previously existing rice impoundment. Acquisition and preservation of 2,245 acres as mitigation for the SHEP project would provide additional buffer and protection from these types of activities.

The other Federal and State natural resource agencies concurred in the District's assessment of the "Degree of Threat" factor together with the other use of SOP elements/assumption by their overall concurrence of the Fish and Wildlife Coordination Act Report.

1109-BB-101-EV44

Comment: Differing Resource Agency Mitigation Approaches: Project mitigation for SHEP is somewhat confounded by different resource agency philosophies for mitigating the same wetland impacts. In general, EPA emphasizes a functional assessment of wetlands that is based on physical, chemical and biological metrics to restore or enhance wetlands to offset the functional losses due to a project. For this project, it appears that FWS has emphasized wetland preservation, with the preserved land added to the SNWR, as the preferred approach. Preservation clearly has a role in wetland mitigation but it should be consistent with the 2008 Mitigation Rule and should include a thorough functional assessment of the proposed preservation sites. EPA believes the mitigation working group could help resolve the differing approaches to wetland mitigation.

Response: The District conducted a functional assessment that examined all of the potential direct and indirect impacts to wetlands. The magnitude of physical, chemical, and biological impact was also examined [Please see response to request for functional assessment].

The District's analysis of indirect effects concluded that the only element of wetland function that would be impacted as a result of the conversion in wetland vegetation is an impact to fish and wildlife habitat. The District then evaluated the proposed impacts using the 2008 Mitigation Rule to ascertain the appropriate mitigation that would compensate for the minor impact to fish and wildlife habitat. Fish and wildlife use of the marsh would still occur, even though the species and percent composition of vegetation would shift to some degree. Consequently, fish and wildlife species use of the marsh would shift somewhat with the shift in dominant marsh type. Ultimately, the District reaffirmed that the preservation of 2,245 acres of bottomland hardwoods and interspersed uplands adjacent to the SNWR would compensate for impacts to fish and wildlife function by protecting important freshwater wetland habitats and expanding the buffer around the SNWR. Thus, the District has satisfied EPA's request to complete a functional assessment and comply with the 2008 Mitigation Rule. In turn, the conclusion of the Corps' assessment (i.e., preservation of lands adjacent to the SNWR) agrees with an original ITR determination that preservation is an acceptable mitigation alternative for the minor conversion of wetland, which would occur as a result of harbor deepening.

Direct impacts for the proposed harbor deepening include the excavation of approximately 15.68 acres of saltmarsh. The District conducted a functional assessment of those brackish marsh systems and our findings are included in a previous response. The District also complied with the 2008 Mitigation Rule. Ultimately, our watershed assessment and iterative approach to mitigation concluded that the loss of 15.68 acres of brackish marsh could be mitigated using "in kind/in basin" mitigation that consists of restoring 40.3 acres of brackish marsh. A functional assessment of the impact and mitigation sites

concluded that restoration of the 40.3 acre marsh site would result in "no-net-loss of aquatic habitat." In fact, our assessment of the Lower Savannah Watershed and functional assessment of impact and restoration sites demonstrate that the area proposed for restoration will ultimately have greater function, integrity and productivity than those areas to be excavated (See response to functional assessment).

1109-BB-101-EV45

Comment: EPA in its review of wetland mitigation proposals applies the Section 404(b)(1) Guidelines and the 2008 Mitigation Rule (which amended the Guidelines). We understand that FWS has a strong preference for preservation and has placed a high value on freshwater tidally-influenced wetlands. This preference is also reflected in the COE's wetland mitigation plan proposed in the DEIS. For example, while Mitigation Plan 6A may increase the acreage of freshwater wetlands, it will also decrease the acreage of saltmarsh and brackish wetlands. In contrast, EPA does not categorize and rank wetland types but instead looks for functional replacement for losses of any wetland type (i.e., all jurisdictional wetlands). Both mitigation approaches should be reasonably satisfied in the wetland mitigation plan of the FEIS, so that wetland function and habitat values will both be mitigated for project impacts. An ideal plan would seek to maintain or increase the functions of all wetlands in the Savannah Harbor area.

Response: The District has concluded that the mitigation approaches proposed by EPA and USFWS have both been reasonably satisfied [please see previous/earlier responses].

1109-BB-101-EV46

Comment: Reflecting the lack of a functional approach noted above, the DEIS places a higher "value" on freshwater wetlands, followed by brackish wetlands and finally saltmarsh. This was observed throughout the impact and mitigation evaluations. EPA believes that each wetland type has a unique suite of functions and alteration of these functions is a loss, regardless of the wetland type. While we agree that the Savannah Harbor is a highly managed and altered estuarine system, we recommend an objective analysis for assessing functional loss that is based on in-kind functional replacement.

Response: The Wetland Interagency Coordination Team placed a higher "value" on freshwater wetlands, followed by brackish wetlands and finally saltmarsh. The District used that general ranking throughout its wetland impact and mitigation evaluations. However, in response to EPA's comments on the DEIS, the District developed and provided a functional approach that details the anticipated direct and indirect wetland impacts associated with the SHEP. The District agrees that each wetland type is important to the Lower Savannah Watershed. The conclusion from our functional assessment confirms that a minor shift [freshwater to brackish marsh] in the percent composition of vegetation could impact fish and wildlife habitat -one of several elements of wetland function. However, this change in fish and wildlife use should not be construed as constituting a loss in this wetland functional category. To verify that position, the magnitude of impact was considered when evaluating mitigation options to ensure compliance with the 2008 Mitigation Rule. Ultimately, the District concluded that preservation of 2,245 acres of bottomland hardwood wetlands and upland buffer around the SNWR would sufficiently compensate for the noted changes to fish and wildlife habitat - the single element of wetland function that would be affected as a result of the vegetation shift. See also EIS Appendix C, Section VII Consideration of the USEPA/USACE Mitigation Rule.

1109-BB-101-EV47

Comment: Vessel Efficiency - Appendix K of the DEIS states that "Since the total number of containerized vessels calling at the port would decrease with a deeper harbor, the total volume of air emissions would decrease." To verify the DEIS assumption that future (post-project) larger vessels (Panamax and post-Panamax) calling on the port produce less emissions than the existing smaller fleet, the DEIS should compare the fuel efficiency/emissions of larger versus smaller vessels using an "emissions per TEU metric as the basis of comparison, and compare the emission levels per TEU for the smaller versus larger containerized vessels calling on the port.

Response: In developing the air emission inventory for the Port of Savannah, the District used the US Environmental Protection Agency's (EPA's) "Current Methodologies in Preparing Mobile Source Port-Related Emission Inventories, Final Report, dated April 2009". This EPA guidance document provided the framework used to calculate all air emissions at the port. Importantly, it does not require, recommend, or provide an approved methodology to compare the emissions of the larger Post-Panamax and Panamax Ocean-Going Vessels with smaller container vessels. It does not provide a methodology for comparing the emissions of vessels greater than 3000 kW in size. Similarly, it does not include a requirement for or provide an approved methodology to determine an "emission per TEU" for each vessel size, i.e., Post-Panamax, Panamax, Sub-Panamax, and Handy size. The procedure described in the guidance document is based on the average size of main and auxiliary engines for a vessel, not the size of the ship itself. Therefore, since the document does not recommend this analysis or provide an approved methodology, the District has concluded that this information would not be required in assessing project's potential air impacts.

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1109-BB-101-EV48

Comment: NAAOS Attainment-The FEIS should demonstrate that project emissions should not interfere with area attainment and maintenance of the NAAQS under Section 110 of the Clean Air Act and NAAQS maintenance plan requirements. The FEIS should demonstrate this over the life of the project (2065) given the expected growth of the port. Such an analysis would require a project future condition analysis.

Response: A comparison of the air emissions [2002 USEPA NEI data] for Chatham County and those calculated Port emissions [2008] revealed that the latter's emissions are a small subset of the County's totals. The District has already shown in the EIS - Appendix K that the proposed deepening of the harbor would have lesser air emissions than the No-Action Alternative [baseline condition of -42 feet]. Therefore, the proposed actions would not adversely interfere with area attainment of the NAAQS under Section 110 of the Clean Air Act; CAA maintenance plan requirements only apply to areas reclassified from non attainment to attainment status, which is not the case for Chatham/Jasper Counties (never classified as non attainment).

The District has already completed a future condition analysis, i.e., an air emission inventory calculated for the port when it reaches capacity [2030] with 6.5 million TEUs. This analysis also verified that the No Action Alternative of -42 foot depth has a greater air emission profile including air toxics and greenhouse gases than the proposed deepened harbor.
1109-BB-101-EV49

Comment: Future Condition Analysis: The Appendix K emissions inventory provides current and future emissions data (to 2032) for air toxics, but limits emissions data for several NAAQS and other parameters to current conditions. Therefore, EPA requests that the future condition for selected criteria and other measured pollutants also be included in the FEIS for either the No Action Alternative or the Tentatively Recommended Plan (since the COE believes them to be the same in terms of port growth and air quality).

Response: The District has already completed a future condition analysis, i.e., an air emission inventory calculated for the port when it reaches capacity [2030] with 6.5 million TEUs. This analysis also verified that the No Action Alternative of -42 foot depth has a greater air emission profile including air toxics and greenhouse gases than the proposed deepened harbor.

The air emission inventory that the District conducted [described in EIS - Appendix K] was a comprehensive analysis of port-dependent emissions. All air emissions [including criteria pollutants, air toxics, and greenhouse gas emissions] were calculated for both the No-Action Alternative [-42 foot depth] and the proposed action [-48 foot depth], for all depths [42, 44, 45, 46, 47, and 48 feet], and all years [2015, 2020, 2025, 2030, 2032, and 2065]. Additionally, the District compared air emissions from the existing No- Action Alternative to the proposed action. The baseline No Action Alternative for all years and depths had greater air emissions [criteria pollutants, air toxics, and greenhouse gas emissions] than the proposed action.

1109-BB-101-EV50

Comment: Dispersion Modeling: There is no dispersion modeling in the DEIS to indicate how these emission increases will impact local area air quality monitors and communities, with emphasis on potential EJ communities. There is one target monitor of concern located in Garden City Terminal and another in downtown Savannah to determine how these emission increases will impact local area air quality. Since much of the truck traffic from the port travels through these areas, it is important to characterize the impacts along those routes to ensure that the increases will not adversely affect the models. EPA requests that the dispersion modeling evaluates potential impacts on both criteria pollutants (NAAQS) and air toxics relative to sensitive port landside receptors, with emphasis on potential EJ communities along road/rail corridors associated with the port.

Response: Under both the without and with project conditions, the District expects the Garden City Terminal to reach its build-out [maximum] capacity in 2030 when the total annual number of TEU reaches 6.5 million. That determination is based on the following factors: 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 port's annual cargo. However, with deepening, the total number of vessels decreases as vessels will be able to load more completely.

No 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. Noise, air emissions [including air toxics], and traffic would not be increased as a result of the proposed deepening.

Therefore, the proposed harbor deepening will have no adverse landside impacts outside the Garden City Terminal and in adjacent EJ communities. Dispersion modeling was not conducted since no cargo increases are expected to occur as a result of the proposed harbor deepening.

The Georgia Ports Authority has indicated that it is separately evaluating the dispersion of air emissions associated with their terminals, i.e., Garden City terminal and Ocean City Terminal, as well as those expected to occur in the future if the harbor is not deepened. Upon completion, GPA has indicated it would share the results with EPA.

1109-BB-101-EC01

Comment: Air Analysis Conclusions: The conclusions for the air emissions analysis section in Appendix K were somewhat general. The COE states that the emissions would occur with or without the project, but the COE has not supported the reasoning behind this statement. It is recommended that the COE provided documentation to support the analysis that the total cargo moving though the port would not increase or decrease as a result of the harbor deepening.

Response: It is in fact the terminal capacity that is the main controlling factor in how many TEUs can be loaded and off loaded at Garden City Terminal (GCT), not the number of vessels calling. The GCT capacity is estimated to be 6.5M TEUs, and the commodity forecast indicates that capacity will be reached by 2032. The primary constraints at the terminal are berthing space and the time required to move containers to and from the ships. The COE made the determination that overall freight shipped in and out of GCT would be the same in the without and with project conditions because the savings per TEU is not large enough to induce additional cargo to be shipped in and or out of Savannah.

1109-BB-101-EV51

Comment: Recommended Additional Port Mitigation: EPA recommends the following additional streamlining and mitigation methods to further offset port diesel emissions and enhance the sponsor's environmental management system for the port:

* Shore Power - Since the port is electrifying its cargo cranes, EPA recommends the port evaluate the possibility of including shore power during that upgrade. Installing shore power at the same time as electrifying the gantry cranes should save costs. Since the vessels are significantly larger, EPA expects the call time in port to extend beyond the current average turn time. While short turn times may not justify shore power, longer turn times make shore power a potentially viable option to reduce air emission impacts.

* Dray Truck Upgrades - EPA recommends that the port consider programs that incentivize upgrading of dray (on-port) equipment to 2007 standards.

* Distribution Center- EPA recommends that the port coordinate with the distribution center to establish no-idle-zones at distribution centers. There is no need for a vehicle to idle while it is being loaded or unloaded.

* Eliminate or Reduce Creep Idle - Creep idle is a significant source of pollution at many ports. The port should determine if creep idle is a problem and address it accordingly. The current gating process should be effective, but an evaluation will support this.

* Alternative Fuels - Use of biodiesel in port diesel equipment will reduce emissions of polycyclic aromatic hydrocarbons (PAH) significantly. The port should consider this as a future fuel choice. In addition, since there is a reliable source of liquefied petroleum gas (LPG) nearby, the port could consider switching all on-property diesel vehicles to LPG to reduce impacts. The port should consider this as part of operating agreements with Stevedores and shipping lines if they do not have direct control of the jockey trucks.

Response: Appendix K [Table 5-78] indicates that all air emissions [vessels and land based operations] associated with the No-Action Alternative depth of -42 feet are lower than the comparable scenario with the proposed harbor deepening. Therefore, no mitigation is required to offset port diesel emissions.

Section 5.19 in the EIS states the following: *GPA continually evaluates methods to reduce diesel consumption and emissions and provides examples of actions taken or being taken by GPA to achieve that goal.*

The District will share EPA's suggestions with the Georgia Port Authority for further reducing ongoing air emissions from operations at its terminal facilities.

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1109-BB-101-EV52

Comment: Air Toxics Emissions Table 5-64 (pg. 46 of App. K) estimates the emissions 'of 28 air toxics (e.g., 1.3-butadiene, acrolein, acetaldehyde, etc.) from the Garden City Terminal in 2008 to be about 38 tons. The corresponding estimates for the year 2032 range from about 117 to 123 tons (Tables 5-74 and 5-76). This is a dramatic increase and reflects the possible emissions from only one terminal.

Response: The emissions identified in Table 5-64 through 5-67 are for the Without Project condition at the Garden City Terminal at various years in the future. Those emissions would occur independent of any harbor deepening. The increases would occur as a result of the growth in container traffic that is expected through Savannah in response to increasing population levels.

Table 5-64 -2008 indicates that for 28 air toxics the calculated air toxics emissions for ocean going vessels, land based operations, and tugs at the Garden City Terminal (GCT) would be about 38 tons. The GCT is one of 22 terminals [Appendix K -Table 1-1] in the Port of Savannah.

Table 5-63B indicates that in 2008 all 22 terminals in the Port of Savannah (including the GCT) discharged about 83 tons of the same 28 air toxics. In a previous response it was noted that these emissions were only about 1.9%, i.e., 83 tons/4340 tons, of the total air toxics emitted in Chatham County, GA.

Currently Chatham County, Georgia and Jasper County, South Carolina are attainment areas. The District's analyses indicate that the Port of Savannah does not have a significant impact on the total air toxics (or overall air quality) of Chatham County, Georgia. Although the calculations indicate a substantial increase in air emissions at the Port over time, those increases would occur as a result of a continuation in the Southeast's long-term growth in economic activity. They would not occur as the result of a harbor deepening.

Also see our response to comment 1109-BB-101-EV51, above. It follows that if the total air emissions for the deepened harbor are less than the total air emissions for the existing No Action depth of -42 feet, then air toxics (which are a subset of VOC and PM10 emissions) would be notably less for the deepened harbor than the baseline (Without Project) condition.

1109-BB-101-EV53

Comment: *COE* Level of Analysis & Project Position - Toxicity information and estimated concentrations of the air toxic pollutants around the port are not provided in the DEIS. The potential health impacts associated with these air toxics emissions are not addressed in the DEIS. The DEIS states (pg. 108 of App. K), "More detailed analyses - such as dispersion analyses to identify 'hot spots' of pollution - could be conducted. However, the Port is not a major contributor to the overall emissions in the County. When coupled with the dispersed nature of many of those 'Port' emissions along the 34-mile length of the navigation channel, the Corps concluded that such additional analyses are not warranted." Page 4 Section 2.0 (App. K) states, "This assessment does not include a detailed dispersion modeling assessment of these emissions or a risk-based assessment of the health effects associated with the proposed project."

Response: Since the proposed deepening project would result in a net decrease in air emissions [less VOC and PM10 emissions at the port] when compared to the No-Action Alternative , the proposed action would have less air toxics emissions than the baseline condition of -42 foot depth. Also, it should be noted that air emissions for the Port's sources, i.e., ocean going vessels, were calculated along the entire 32-mile length of the navigation channel, rather than just at the terminals.

The potential health impacts associated with the air toxics emitted by the 22 terminals in the port are minor when compared to the total air toxics emitted in Chatham County, GA [see response to 1109-BB-101-EV52]. **1109-BB-101-EV54**

Comments: Screening Level Risk Assessment - As noted above, a significant number and volume of air toxics are associated with operating the port and significant increases in such emissions are expected over time. Therefore, EPA believes that locally port air toxics are a potential concern to surrounding communities. The dispersion of emissions and the location and magnitude of the emission sources are important to determining whether a particular source poses a significant risk to those nearby. EPA Region 4 has provided detailed guidance (including references to well-prepared air toxics analyses by the COE at other ports) numerous times over the last several years of coordination to assist the COE in such an evaluation. EPA continues to support for a screening level risk assessment to evaluate the potential impacts associated with emissions of air toxics related to the harbor deepening and its operation, both overall and potential any areas of localized higher concentrations, particularly in light of the projected increase in emissions of air toxics associated with the port over the next several years.

Response: For the same reasons stated previously, the overall increase in air toxics emissions at the port over the project's life is insignificant in comparison to the overall air toxic emissions for Chatham County, GA. Therefore, a screening level risk assessment will not be conducted for air toxics.

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1109-BB-101-EV55

Comments: Vessel Cargo (App. K): While the Appendix K emissions inventory for air toxics provides both current and future emissions data, future conditions data were considered the same after 2032 since the COE maintains that the number of calling vessels will be constrained by 2032 (due to one-way vessel traffic) such that there will be no increase in freight thereafter. While the number of ships calling on the Garden City Terminal is at capacity in 2032, it is unclear how the COE made a determination that there would not be an increase in cargo offloaded or an increase in overall freight received. The FEIS should clarify if the capacity at the port to store and handle additional cargo is reached at the same time. Currently, every ship that calls on the Garden City Terminal does not offload 100% of its containers. If this is the case in 2032, then the capacity of the terminal itself is the key stabilizing factor and not the number of vessels calling on the port. If the capacity of the terminal has not been reached at 2032, then that same number of vessels could still offload more containers and increase the air emissions throughout the 50-year life of the project (to 2065).

Response: According to the commodity forecast found in Section 5 of the GRR, the landside cargo handling of the port will reach its capacity of 6.5 TEUs in 2030. That annual capacity is the maximum number of containers that could reasonably be processed through the Garden City Terminal, i.e., its landside cargo handling capacity has practical, finite limits for expansion. The bases for this determination were cited in a previous response.

The landside capacity will limit the number of containers [TEUs] that can be processed through the terminal, rather than a limitation on the number of vessels that could be handled. Therefore, when landside cargo handling capacity is reached [2030], vessel calls would not increase through the remainder of the project's economic life [2067].

1109-BB-101-EV56

Comment: Upland Disposal: EPA finds that the upland disposal management plan for the project's cadmium-laden dredged material is acceptable, with the exception of a few minor inconsistencies. Overall, EPA concurs with the use of eight (8) upland confined disposal facilities (CDF's') provided by the GPA/GDOT non-federal sponsor for use as part of SHEP. These COP's are known as 2A, 12A, 12B, 13A, 13B, 14A, 14B, and Jones/Oysterbed Islands. However, dikes at the CDFs will have to be raised in height over the next 50 years to provide the needed sediment storage capacity. EPA recommends that the FEIS provide additional information on long-tem maintenance issues for Savannah Harbor, and commit to specific future review dates to consider advances in dredging technologies, changes in shoaling rates or environmental conditions as well as changes in environmental laws.

Response: Section 10.3.6 of the GRR contains a discussion of the incremental effects on operation and maintenance of the harbor from the proposed harbor deepening. USACE intends to remain current on technologies associated with long-term maintenance and will periodically meet with agency representatives to review changes in technology, shoaling rates, and/or environmental conditions and laws. Agency representatives will be made aware of any changes that are being proposed prior to the start of work.

1109-BB-101-EV57

Comment: Proposed Extension of Ocean Channel- The proposals in the DEIS include dredging to extend the current channel offshore for over seven miles since ocean water depths in these areas will not accommodate post-Panamax vessels under all tide and cargo conditions. This channel extension would constitute an estimated 17-18% increase in the project channel length, while the additional 4.6 mcy of new work dredged material is a 13-15% increase in the dredged material volume.

This project component should be fully analyzed and discussed in the FEIS. Specifically, the FEIS should address the following:

* Characterize Dredged Material: Were core samples taken, will hard/live bottom material be dredged, are sediments contaminated, are there any additional cadmium concerns associated with this project component, etc.? Should it be determined that hard/live bottom material will be dredged within the channel extension area, an analysis of fisheries mitigation would be necessary. EPA recommends that appropriately designed fisheries enhancement inkind habitat mitigation be used to fulfill any identified mitigation requirements.

* Offer Disposal Options: What disposal areas are available, particularly given that the use of proposed sites 11 and 12 may not be appropriate (see Dredged Material Reuse below)?

* Savannah ODMDS Capacity Evaluation: Any plans requiring use of the Savannah ODMDS should include an ODMDS capacity evaluation to ensure the ability to accommodate the related volumes of dredged materials.

* Provide Route Variations: The DEIS does not identify the specific alignment of the proposed new channel extension. EPA understands that hard bottom habitat has been identified in the general vicinity of the new channel extension. Are there slight alignment shifts possible within the channel corridor to avoid any potential hard bottom habitat? What mitigation measures will be taken for impacts? * Discuss Funding: Did the WRDA 1999 authorization include the funding and cover the scope of this proposed extension?

Response: All required surveys, sampling, etc. will be performed prior to construction of the proposed bar channel extension. The District has examined several channel alignments and determined the least cost alternative. If the sampling/surveys reveal the presence of hardbottom communities, mutually agreeable mitigation for such impacts will be coordinated with the Interagency Coordination Team. The District does not anticipate encountering any contaminated sediments offshore. The FEIS will include a revised placement plan in which all of the entrance channel extension sediments would be deposited in the previously-approved ODMDS or existing upland confined disposal area. The most recent capacity analysis of the Savannah Harbor ODMDS, included in Appendix R of the EIS, indicates that, for the 47 ft project, capacity would last up to 42 years. The District no longer proposes to place any of these sediments in Sites 11 and 12 as beneficial use features. The District has determined that proposed channel extension is within the WRDA 1999 authorization.

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1109-BB-101-EV58

Comment: So that EPA can have a full understanding of the ocean channel extension component. EPA requests the opportunity to review and comment on the new channel dredging sections prior to the issuance of the FEIS. EPA also notes that based on the lack of information on this issue in the DEIS, the public may not have a full understanding of this issue for purposes of public review and comment.

Response: The EIS and GRR include sufficient information on the entrance channel extension. The comprehensive information in the reports is more than sufficient for reasoned decision-making regarding the impacts expected from implementing the proposed alternative. The design for the proposed extension of the entrance channel is based on existing information and coordination with GA DNR-CRD. The District will conduct additional studies to confirm the initial determination that the proposed alignment is not likely to adversely impact significant environmental or cultural resources. Those studies will include side scan, magnetometer, and sediment testing. These confirmatory studies would be complete prior to the start of construction. The District will share the results of this sampling with the other natural resource agencies as they become available. If the presence of hard bottoms is detected within/adjacent to the alignment, all agencies will be consulted concerning necessary shifts and/or the need/kind/amount of mitigation. The Corps' ODMDS placement evaluation (included as Appendix R) concludes that the sediments are suitable for ocean disposal.

1109-BB-101-EV59

Comment: Dredged Material Reuse: EPA recommends that the COE consider re-entering suitable sediments dredged at the entrance channel into the sand-sharing system (longshore drift) by placement at feeder berms located south of the entrance channel in areas free from seagrasses, hard/live bottoms, and/or cultural resources. Use of suitable dredged material for beach renourishment projects can also be a reasonable reuse if locally requested; seagrasses, hard/live bottoms and/or cultural resources are not covered; and grain size is compatible with the existing beach to reduce erosion potential. Feeder berms utilized for this purpose must be located within the territorial sea (i.e.-shoreward of the 3 nautical mile line) in accordance with the Clean Water Act (CW A). Placement of dredged material outside the territorial sea is regulated under the MPRSA and must be placed in an EPA- designated ODMDS after proper characterization and evaluation, and in compliance with the Ocean Dumping Regulations (40 CFR 220-228).

Response: The District had proposed placing sediments dredged from the entrance channel into sandsharing berms located south of the alignment. These sites were designated as Sites 2, 3, 4, 5, 6, 11, and 12. However, the City of Tybee Island and GA DNR-CRD believe that placement of the new work sediments in those areas is not acceptable. Based on the additional information provided by GA DNR-CRD, the District has revised the sediment placement plan. New work material dredged from the entrance channel will either be placed into the CDFs or in the ODMDS.

Sites 4, 5, 6, 11 and 12 are beyond the 3-mile line. Consequently, these sites will not be used for either new work or maintenance material from the entrance channel. Sites 2 and 3 are within the 3-mile line and will still be available for placement of maintenance material from the entrance channel as provided for in the LTMS.

1109-BB-101-EV60

Comment: In regard to the proposed project disposal of dredged material at sites 11 and 12 near the entrance channel as fish habitat mounds, such reuse may not be consistent with MPRSA should be further coordinated with EPA. Pursuant to Section 103 of MPRSA, ocean disposal of dredged material can only occur in an EPA-designated ODMDS. Alternatively, material can be placed as fill pursuant to Section 404 of the CW A within three miles of the baseline, such as the above feeder berms within the sand-sharing system. Although EPA supports fisheries enhancements and acknowledges that there is a fisheries exemption under MPRSA, the DEIS does not provide sufficient information to demonstrate that placement of dredged material at these sites would necessarily "develop, maintain or harvest fisheries"

and exclude it from the Ocean Dumping Regulations (40 CFR 220.1(c)(2». We are concerned that the fishery habitat value for these mounds would be minimal since they could easily erode, potentially be a navigational concern, be proximal to the turbidity and other effects of recurring maintenance dredging of the entrance channel, and would not provide any hard structure as is typical of fisheries enhancement projects.

Response: Based on input from NOAA-NMFS, GA DNR-CRD, and the City of Tybee Island, the Final EIS proposes to place sediments from the entrance channel in either the ODMDS or an upland confined disposal site. The District no longer proposes using Sites 11 and 12 in the SHEP.

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1109-BB-101-EV61, 1109-BB-101-EV62

Comment: Therefore, EPA recommends the evaluation of other alternatives, such as use of the Savannah ODMDS for the disposal of this material. If entrance channel dredged material cannot be properly reused in accordance with the CWA, the material, if shown to be suitable and in compliance with the Ocean Dumping Regulations, could potentially be disposed of at the Savannah ODMDS which is formally designated by EPA, consistent with MPRSA. EPA emphasizes that such project disposal at the ODMDS is a separate process from the current harbor deepening project NEPA process and will therefore need additional coordination.

Response: Concur. The Final EIS indicates that sediments from the entrance channel extension will be placed at the ODMDS or an existing CDF.

The District has provided an ODMDS PlacementEvaluation (Appendix R) to address compliance with the ocean disposal laws. The District will also provide the results of additional testing to support Savannah District's determination that the exclusionary criteria of 40 CFR § 227.13(b)(3) apply. That information will be coordinated with EPA prior to the start of project construction.

1109-BB-101-EV63, 1109-BB-101-EV64

Comment: Air Emissions - According to page 5-150, the COE expects the volume of containers handled at the Garden City Terminal to increase from 2.6 million TEU until the terminal reaches its capacity of 6.5 million TEU around 2032. According to the DEIS, this is predicted to significantly increase the number of truck movements per day from 4,900 to approximately 13,000. In addition, while the number of containerized ships that may use the channel would eventua1ly be constrained by the one-way traffic limitation for calling vessels, the port capacity and amount/percentage of cargo that can be unloaded in Savannah does not appear to be restricted. As suggested in our General Air Quality section above, EPA expects that this project has the potential to result in additional truck and locomotive traffic within the project areas, even after 2032. In turn, these additional landside emissions could affect potential nearby communities and should be evaluated.

Response: According to the commodity forecast found in Section 5 of the GRR, the landside cargo handling of the port will reach its capacity of 6.5 TEUs in approximately 2030. That annual capacity is the maximum number of containers that could reasonably be processed through the Garden City Terminal, i.e., its landside cargo handling capacity has practical, finite limits for expansion. The bases for this determination were cited in a previous response.

The landside capacity will limit the number of containers [TEUs] that can be processed through the terminal, rather than a limitation on the number of vessels that could be handled. Therefore, when landside cargo handling capacity is reached [2030], vessel calls would not increase through the remainder of the project's economic life [2067]. The Corps Fleet Forecast [developed by the USACE, Mobile District in consultation with the Georgia Ports Authority] verified this projection.

Truck and locomotive traffic at the GCT will increase with or without the proposed deepening project. The trucks arriving at the port will all be using ULSD (15 ppm Sulfur) and these truck emissions would be the same whether or not the port is deepened.

The proposed deepened port will have less air emissions [criteria pollutants, air toxics, and greenhouse gases] than the No-Action Alternative.

1109-BB-101-EV65

Comment: Public Involvement - The DEIS indicates that representatives of the potential EJ communities have not expressed substantial concerns about the project. It is unclear what concerns have been expressed by EJ representatives, how they were resolved and what denotes substantial concerns (pg.5-145). The FEIS should incorporate this information within the EJ section for public review. EPA notes that many meetings have been held related to the project, including two public workshops at the beginning of the project. We recommend that the FEIS describe how or whether specific efforts were made to engage EJ communities in the surrounding areas during that period or subsequently. EPA commends the COE for the use of an external Stakeholders Evaluation Group (SEG), which held approximately 65 full meetings. The outcomes of SEG's extensive involvement should also be summarized in the FEIS as well as the degree to which representatives from potential EJ communities were involved or EJ concerns were discussed and addressed in this forum. The FEIS should also indicate whether the port has a mechanism or long-term program designed to update surrounding communities on port expansion/changes and for receiving regular feedback or concerns from areas residents.

Response: Extensive public involvement for the SHEP began in 1999. Prior to the publication of the DEIS and the public comment period, representatives of the EJ community had not expressed any substantive concerns regarding the proposed harbor deepening. During review of the DEIS, the District issued a public notice, placed notices in local newspapers, and held a workshop where staff were available to discuss the studies that had been conducted and the proposed project. During the public comment period, the District received seven different comment letters on E J issues, plus the comments from EPA on the subject. Several respondents including the Keck School of Medicine and Citizens for Environmental Justice, alleged the project would disproportionately impact environmental justice communities near Savannah Harbor. Responses to those comments explaining why the project will not disproportionately impact environmental justice communities are included in the FEIS.

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1109-BB-101-EV66

Comment: Property Acquisition - The DEIS indicates that properties will be acquired for the project, but the precise properties have not been determined. According to the DEIS, the properties will be selected from a list identified by the FWS for acquisition and could contain a small number of residences. The COE believes these impacts will be minimal because less than five properties are expected to be acquired. The FEIS should include information regarding the property type (i.e., residential, commercial),

location/number, and the percentage that are owned or occupied by minority and low-income populations and describe in the FEIS how any identified issues are resolved.

Response: The District has revised the EIS to explain that the sites to be acquired are undeveloped properties which are not presently occupied. Therefore, no disproportionate impacts to minority and low-income populations are expected.

The properties of interest are described in the latest version of the Refuge's Acquisition Plan dated July 2007 and are included in the document titled "Final Environmental Assessment and Land Protection Plan; Proposed Expansion of Savannah National Wildlife Refuge". Land Acquisition would be concentrated in areas identified as or near the "Mill Creek Acquisition Lands" and "Abercorn Island Acquisition Lands". The project would acquire properties from the Refuge's Acquisition Plan that best meet the needs of the Refuge, viz., freshwater wetlands. The District has consulted with the Refuge and intends to focus on parcels in freshwater areas that the USFWS identified as Refuge priorities. The District always attempts to acquire property from willing sellers.

1109-BB-101-EV67

Comment: Noise & Lighting - EPA appreciates the efforts that have been made to minimize noise and lighting impacts. However, in the EJ section, there does not appear to be a discussion/overlay of existing noise levels on the communities that surround the port and its transportation corridors. This baseline information should be summarized in the FEIS EJ section, or cross-referenced. We note that the GPA sponsor has programs designed to reduce air, noise and lighting impacts on the surrounding communities. For example, GPA built noise berms to offset significant noise impacts and have reduced their facility lighting to conserve energy and offset impacts.

Response: Disagree. A noise evaluation was conducted and is included in the FEIS. The results of this analysis are discussed in a new section after the Environmental Justice section of the document. No 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. As noted above, 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. Noise, air emissions, and traffic would not be increased as a result of the proposed deepening. Therefore, the proposed harbor deepening will have no appreciable additional landside impacts outside the Garden City Terminal or within the adjacent EJ communities.

1109-BB-101-EV68, 1109-BB-101-EV69

Comment: Children's Health Documentation - Unlike the EJ section, demographics related to the population of children under age 18 within the project area relative to the reference population (i.e., county and state) are not fully incorporated. This information should be provided in the FEIS under Section 5.20 on children's health. Nevertheless, EPA appreciates the inclusion of a map depicting the location of schools, hospitals and child care facilities along the navigation channel. In terms of the impacts assessment, EPA notes that the DEIS indicates that the facilities are dispersed throughout the communities and are not located disproportionately near the navigation channel of the Garden City Terminal While these facilities may be dispersed, it is unclear whether some areas along the navigation channel, terminal or transportation corridor (trucks/locomotives), currently experience (or potentially would in the future) substantive impacts from noise, traffic, air taxies, etc., relative to more removed and unaffected (baseline) areas. In this regard, we are pleased to note that the DEIS provides information

related to several measures that are being made to reduce air emissions and to improve traffic in area neighborhoods in the future.

Response: Demographics have been adequately addressed related to the population of children under age 18 within the project area and in comparison to the county and state reference population. In the EIS [Section 5.19 titled Protection of Children and Environmental Justice [EO 13045 and EO 12898] relevant issues were comprehensively discussed. Moreover, the EIS [Figure 5-59 in Section 5.19] shows the location of schools, hospital, and child care facilities dispersed along the navigation channel.

Currently the air quality in both Chatham County, Georgia and Jasper County, South Carolina is generally good. EPA has designated both counties as attainment areas.

Section 5.20 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 the following figure. The completion of those roads will remove terminal traffic from neighborhoods and lessen congestion and the accompanying air quality impacts.* Also see Figure 5-63, which graphically shows these proposed road improvements.

GPA also plans to increase the percentage of containers that are handled by rail in the future. Since rail moves cargo with less fuel than trucks, use of rail reduces the total diesel emissions from the port operations.

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1109-BB-101-EV70

Comment: Although the conclusions from technical meetings about these diverse models (including numerous comments) are incorporated into this DEIS, EPA recommends that a separate appendix or section in the main document be added to the FEIS to provide a synopsis of the modeling with emphasis on results. Similarly, we note that Section 1.03 (Major Conclusions and Findings) primarily only references other sections within the DEIS where topics are discussed such as water quality and fisheries (as opposed to providing an actual summary of conclusions for the reader). We therefore recommend that the FEIS summarize the COE's findings for those sections in an appendix or separate section in the main document. We believe such summary sections for modeling and other findings would improve the readability of the FEIS and consolidate results for public and agency review.

Response: The EPA's recommendation to include a separate appendix or section to summarize the modeling analyses is acknowledged. However, the manner in which the data are presented is sufficient to allow the reader to evaluate impacts for the various project alternatives. Summaries of individual analyses are included in the Engineering Appendix of the GRR. For further clarification, a table has been added to Appendix C and Appendix L of the EIS listing the modeling reports produced and the location of the detailed analyses. Section 1.4 of the Engineering Appendix to the GRR lists all the Engineering

software used in the SHEP study in accordance with USACE Enterprise Standard (ES)-08101 Software Validation for the Hydrology, Hydraulics and Coastal Community of Practice.

1109-BB-101-EV71

Comment: Despite this substantive effort, we recommend that the 22 National Pollutant Discharge Elimination System dischargers identified in the TMDL located along the Savannah River be discussed and preferably listed with their main impact identified. This is particularly relevant in this case since project and discharger impacts (oxygen-demanding effluent) both deplete river DO levels and thereby causing a local cumulative effect. The COE may wish to coordinate with the respective states and EPA to document these dischargers.

Response: Information concerning the 22 National Pollutant Discharge Elimination System dischargers has been added to the Dissolved Oxygen portion of Appendix L of the EIS.

1109-BB-101-EC02

Comment: Action Alternatives Description: Given that the DEIS indicates that approximately 70% of the vessels calling on the port are not at their maximum load and design draft, we suggest that the FEIS provide the relative capability (percentage greater than the existing 70%: pg. 3: App. K) of each deepening alternative to accommodate large post-Panamax vessels. Such an evaluation would show if any alternatives other than the -47 and -48 ft options (both being considered the Tentatively Recommended Plan by the COE in the DEIS) could also reasonably accommodate post-Panamax vessels without waiting on high tide or limiting cargo.

Response: The Economics Appendix of the General Reevaluation Report shows sailing draft distributions for Panamax and Post-Panamax vessels in Tables 108, 112, and 113 in the without project condition and for each of the alternative project conditions. The assumption in the draft report analysis was that Post-Panamax vessels with design drafts of about 46 feet (PPX1) would call in the without project condition, as they are calling today and have been since 2006. Post-Panamax vessels with design drafts of about 48 feet (PPX2) would begin to call on some trade routes with a 44-foot channel, some routes with a 45-foot channel, and all benefiting routes with a 46-foot channel. The benefits attained from 46 to 47 and 48 feet are the result of the vessels being able to sail at greater depths and thus carry more cargo. Since the Draft EIS was prepared, some PPX2 have begun to call at Savannah with the existing 42-foot channel. Recent announcements by carriers indicate that more will be deployed in the near future. Therefore, the Final Reports include an analysis showing that Post-Panamax vessels up to design drafts of about 48 feet will call Savannah in the without project 42-foot channel condition. Use of tide will be required for all vessels sailing at drafts greater than about 4 to 5 feet less than the design draft of the channel.

1109-BB-101-EV72

Comment: Jasper County Marine Terminal: We note that the Jasper County Marine Terminal was conceptually considered for Savannah River Mile (RM) 5 in Jasper County, South Carolina during the SHEP study timeframe. This terminal was referenced in the main document (pg. 5-119) and in Appendix L discussing cumulative effects (pg. 46). EPA understands that no detailed studies have been conducted for the facility and that this alternative mayor may not be presently considered as an alternative to the proposed deepening of the harbor. Nevertheless, we suggest that this alternate port terminal and its status (i.e., potential as a near-term, alternative) be disclosed and discussed in the main document of the FEIS under Alternatives (Section 3.00).

Response: The SHEP NEPA alternatives analysis fully considered the proposed Jasper County Marine 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 3, Final Report, pp. 1-20, and Interim Reports. In addition, the analysis of a Jasper County Marine Terminal was rolled into 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 EIS Section 3.0 and Appendix O. Among the conclusions reached as a result of the Regional Port Analysis, the Multi-Port Analysis, and the analysis of eight alternative sites for the project along the Savannah River were the following: a Jasper County Marine 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 (Jasper 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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1109-BB-101-EV73

Comment: The advantage of the discussed Jasper Terminal alternative is that it would be much closer to the coast than the Port of Savannah (S RM versus 21 RM upstream the Savannah River) and therefore require significantly less channel dredging than the proposed expansion and thereby minimize additional fish habitat losses and increases in saltwater intrusion. Such a Jasper Terminal could one day also act as a reliever port to the existing Port of Savannah due to the Port of Savannah's one-way vessel traffic constraint, which would remain even after proposed project dredging. However, a terminal near the mouth of the Savannah River would result in significant wetland losses to construct its roadways/rail spurs and other infrastructure which currently do not exist there, as well as probable secondary developmenta1 impacts in the surrounding area.

Response: For the reasons noted above, a Jasper Ocean Terminal is not a reasonable, near-term option. The impacts of just dredging to River Mile 5 would be less than those in the proposed action; however, the overall consequences associated with a new container terminal in Jasper County are currently poorly understood. If a terminal were to be constructed in Jasper County, there are other potential impacts that must be evaluated, e.g., impacts from construction of the necessary road and rail infrastructure, replacement of the lost dredged material disposal capacity for the Savannah Harbor Federal Navigation Project, and the replacement of the mitigation features currently functioning in the proposed terminal sites. These and many other studies would have to be conducted to adequately compare the impacts of the two projects. The District considered all data which was [currently/readily] available, but a more comprehensive assessment of the impacts of a Jasper Ocean Terminal is not possible at this time. However, the Joint Project Office is planning to conduct the necessary analyses [file a Section 404(b) permit application] so the detailed potential impacts associated with development of a Jasper Terminal can be evaluated.

1109-BB-101-EV74

Comment: Locations: The Speece Cone systems may be located in three locations (near Georgia Pacific, Hutchinson Island - west side, Hutchinson Island - east side). Table 5-24 projects 8-10 cones are proposed, depending on the alternative selected. The FEIS should include a detailed plan and commitment to specific Speece Cone locations, and include information about easements, rights-of-way, etc. where relevant.

Response: The locations designated for the Speece cones in the FEIS are not expected to change. The District will obtain all appropriate real estate instruments prior to project construction.

1109-BB-101-EV75

Comment: Operation: The energy consumption of Speece Cones could be an expensive operational cost from an electricity use perspective. In addition, depending on their final location, transmission line infrastructure to some of the cones may need to be constructed. The FEIS should consider these construction and operation costs in the overall project budget. EPA also understands that generators 'may be used to power isolated Speece Cones in lieu of constructing such transmission lines. If so, would these generators be operated by gasoline, diesel or electricity? If emissions are generated, have estimates been documented and minimized? Although outages of a few hours should not significantly affect river DO levels, the FEIS should discuss the likelihood of brownouts or generator malfunctions and any contingency plans for power losses for a longer term.

Response: The installation and operational costs of the Speece cones were detailed in the Engineering Appendix [Appendix C], Attachment 3. Electricity to power the Speece cone operations will not be generated on-site [rather it would be obtained from the commercial grid]. The design includes a maintenance spare at each location to address potential equipment malfunctions. Power outages do occur from time to time, but they are normally of short duration and are not expected to impact the overall functionality of the oxygen injection systems.

Page 26

1109-BB-101-EV76

Comment: Noise: While the DEIS concludes that the proposed harbor deepening "is not expected to result in more than minimal adverse impacts as a result of noise," and the Speece Cone systems may be located in locations that are not particularly noise-sensitive areas, no noise information from the operation of the Speece Cone systems was found in the main document of the DEIS (e.g., Section 5.21 under «A. Noise" on page 5-154 or in Section 5.2.2 under "Mitigation Impacts to Dissolved Oxygen" on page 5-48 were reviewed). The FEIS should disclose such information.

Response: Additional information regarding the operational noise levels from the designer of the Speece Cone System has been included in Section 5 of the FEIS.

1109-BB-101-EV77

Comment: EPA is requesting such noise information since we understand that operational noise levels during the Speece Cone project demonstration (pilot study) were substantial. Therefore, we request that noise levels during operation be modeled and the anticipated seasonal schedule for operation be documented. Moreover, we suggest that noise attenuation methods be considered in terms of shielding around the cones and insulation within the cones, or perhaps upgrades in technology to collectively

generate less noise at the source (source reduction). Moreover, the cumulative noise impacts of the 8-10 Speece Cones proposed should also be considered if two or more are located proximally.

Response: Speece cone operational noise levels were investigated by the project design contractors and this information is presented in the FEIS.

1109-BB-101-EV78

Comment: Truck Model Years: The model years of the Jockey trucks, for which the COE calculated emission rates, is unclear. Without model years, emissions estimates cannot be made.

Response: The District used the following information: EPA-approved models NONROAD2005 for the 2007 calendar year using 0.1139 Sulfur fuel and NONROAD2008 for the 2010 calendar year using 15 ppm Sulfur fuel. From these NONROAD model runs, the District used the emissions for these different fuels [0.1139 and 15 ppm Sulfur] for item SCC #2270002051. SCC #2270002051 is identified as Jockey Trucks with an average 175 HP.

1109-BB-101-EV79

Comment: MOBILE Modeling: The COE used the certification levels for incoming engines instead of the in-use emission factors. These factors can be calculated using MOBILE 6 or the new MOVES model. If the COE uses MOVES, there is an air toxics model which will provide a breakout of key air toxics from this fleet.

Response: EPA, Region 5 provided the District with spreadsheets that used the MOBILE 6 model to calculate in-use truck emission rates [by vehicle class, model year and calendar year] for a set of calendar years. MOBILE 6 spreadsheets were used with the following assumptions:

	By Model Year R	uns:								
	Calendar Years :	1980	0,1990,2000,20	1990,2000,2005,2010,2020 (July Evaluation)						
	Summer Temper	atures: 72	o 92 degrees Fahrenheit , min/max							
	Pollutants:	Crit	eria Pollutants and PM2.5 (exhaust PM only)							
	Fuels:	Def	ault for gasol	ine sulfur						
		an	d 15 ppm for	diesel sulfur						
	Other inputs:	Def	ault							
	The workbook consists of 21 worksheets, one for each of seven calendar years and									
	one of three gase	line and diesel	fuel types.							
	A description of e	each one of ther	n follows:							
	Worksheet name	Calendar Year	Sulfur content	of Fuel in ppm						
			Gasoline	Diesel						
	bymy1	1980	default	15						
	bymy2	1990	default	15						
	bymy3	1995	default	15						
	bymy4	2000	default	15						
	bymy5	2005	default	15						
	bymy6	2010	default	15						
Each of th	e above worksheets	contain data on	grams per mile	e for 28 vehicle cla	asses,					
for ages	0 to24, for VOC,CO	, NOX and total e	xhaust PM2.5							
Also inclue	ded are data on mile	es per day, travel	fraction and a	ge fraction.						

Georgia Port Authority (GPA) provided the number of trucks arriving/departing at the Garden City Terminal, but did not know model year, weight, or average speed at the terminal. However, GPA did provide the average time for each truck at the port. The District incrementally increased the GPA's truck time at the terminal to account for any stand-by time at the entrance/exit gates, as well as time required to enter/leave the Savannah Metro Area. The District then made the following assumptions: each truck was 33,000 lb (HDDV8A) and that **average** speed in the terminal is 27.6 miles/hr.

Below is a sample calculation for CO, using the MOBILE 6 spread sheets:

Multiply gm/mile by 27.6 miles/hour equals gm/hr of criteria pollutant;

Then multiply gm/hr by travel fraction to get national average default for all model years.

Sum each column to get grams of criteria pollutant and multiply by 1,001,228.8 hours/year and 0.00000110231131 to get tons/year. Therefore, the total tons of CO per year for all trucks at Garden City Terminal would be 53.7 tons [see last number on the far right column, below].

age	model year	etype	gra	ams per mile	etype desc	vtype short desc	vtype description	travel fraction	miles/day	age fraction		
C	2010)	2	0.244077321	Exhaust CO	HDDV8A	Class 8a Heavy-Duty Diesel Vehicles (33,001-60,000 lbs. GVWR)	0.0862	240.63	0.0388	0.580689237	
1	2009)	2	0.244077321	Exhaust CO	HDDV8A	Class 8a Heavy-Duty Diesel Vehicles (33,001-60,000 lbs. GVWR)	0.15251	227.527	0.0726	1.027388811	
2	2008	8	2	0.244077321	Exhaust CO	HDDV8A	Class 8a Heavy-Duty Diesel Vehicles (33,001-60,000 lbs. GVWR)	0.1271	202.749	0.0679	0.85621348	
3	2007	'	2	0.244077321	Exhaust CO	HDDV8A	Class 8a Heavy-Duty Diesel Vehicles (33,001-60,000 lbs. GVWR)	0.10592	180.67	0.0635	0.713533689	
4	2006	6	2	2.413255222	Exhaust CO	HDDV8A	Class 8a Heavy-Duty Diesel Vehicles (33,001-60,000 lbs. GVWR)	0.08829	160.996	0.0594	5.880629979	
5	2005	5	2	2.458118365	Exhaust CO	HDDV8A	Class 8a Heavy-Duty Diesel Vehicles (33,001-60,000 lbs. GVWR)	0.07364	143.462	0.0556	4.996037085	
6	2004	l I	2	2.498070106	Exhaust CO	HDDV8A	Class 8a Heavy-Duty Diesel Vehicles (33,001-60,000 lbs. GVWR)	0.06138	127.839	0.052	4.231950589	
7	2003	3	2	2.533685991	Exhaust CO	HDDV8A	Class 8a Heavy-Duty Diesel Vehicles (33,001-60,000 lbs. GVWR)	0.05112	113.917	0.0486	3.574807969	
8	2002	2	2	2.565428383	Exhaust CO	HDDV8A	Class 8a Heavy-Duty Diesel Vehicles (33,001-60,000 lbs. GVWR)	0.04264	101.511	0.0455	3.019160309	
g	2001		2	2.593715762	Exhaust CO	HDDV8A	Class 8a Heavy-Duty Diesel Vehicles (33,001-60,000 lbs. GVWR)	0.03549	90.457	0.0425	2.540606838	
10	2000)	2	2.618912811	Exhaust CO	HDDV8A	Class 8a Heavy-Duty Diesel Vehicles (33,001-60,000 lbs. GVWR)	0.02962	80.6053	0.0398	2.14099265	
11	1999)	2	2.641382553	Exhaust CO	HDDV8A	Class 8a Heavy-Duty Diesel Vehicles (33,001-60,000 lbs. GVWR)	0.02467	71.8277	0.0372	1.798496249	
12	1998	8	2	2.661363535	Exhaust CO	HDDV8A	Class 8a Heavy-Duty Diesel Vehicles (33,001-60,000 lbs. GVWR)	0.02056	64.0064	0.0348	1.510206706	
13	1997	'	2	2.679197886	Exhaust CO	HDDV8A	Class 8a Heavy-Duty Diesel Vehicles (33,001-60,000 lbs. GVWR)	0.01717	57.0358	0.0326	1.269650445	
14	1996	6	2	2.695119211	Exhaust CO	HDDV8A	Class 8a Heavy-Duty Diesel Vehicles (33,001-60,000 lbs. GVWR)	0.01426	50.8243	0.0304	1.060734239	
15	1995	5	2	2.726160213	Exhaust CO	HDDV8A	Class 8a Heavy-Duty Diesel Vehicles (33,001-60,000 lbs. GVWR)	0.01192	45.2895	0.0285	0.896884901	
16	1994	l I	2	2.75569306	Exhaust CO	HDDV8A	Class 8a Heavy-Duty Diesel Vehicles (33,001-60,000 lbs. GVWR)	0.00991	40.3575	0.0266	0.753726143	
17	1993	3	2	4.190999567	Exhaust CO	HDDV8A	Class 8a Heavy-Duty Diesel Vehicles (33,001-60,000 lbs. GVWR)	0.00827	35.9625	0.0249	0.956604033	
18	1992	2	2	4.281027481	Exhaust CO	HDDV8A	Class 8a Heavy-Duty Diesel Vehicles (33,001-60,000 lbs. GVWR)	0.00689	32.0457	0.0233	0.81409731	
19	1991		2	4.319158347	Exhaust CO	HDDV8A	Class 8a Heavy-Duty Diesel Vehicles (33,001-60,000 lbs. GVWR)	0.00575	28.5563	0.0218	0.68545043	
20	1990)	2	4.602806131	Exhaust CO	HDDV8A	Class 8a Heavy-Duty Diesel Vehicles (33,001-60,000 lbs. GVWR)	0.00479	25.4464	0.0204	0.608509382	
21	1989)	2	4.120198723	Exhaust CO	HDDV8A	Class 8a Heavy-Duty Diesel Vehicles (33,001-60,000 lbs. GVWR)	0.004	22.6749	0.0191	0.454869939	
22	1988	3	2	15.78387938	Exhaust CO	HDDV8A	Class 8a Heavy-Duty Diesel Vehicles (33,001-60,000 lbs. GVWR)	0.00332	20.2061	0.0178	1.446308436	
23	1987	'	2	16.83255045	Exhaust CO	HDDV8A	Class 8a Heavy-Duty Diesel Vehicles (33,001-60,000 lbs. GVWR)	0.00278	18.0059	0.0167	1.291527931	
24	1986	6	2	17.16458257	Exhaust CO	HDDV8A	Class 8a Heavy-Duty Diesel Vehicles (33,001-60,000 lbs. GVWR)	0.01179	16.0441	0.0796	5.585423827	
											48.69450061	
											48754336.41	
											53.742456	Total CO
												Tons/year

The District then calculated the following pollutants [HC, VOC, NOx, PM10, and PM2.5] for trucks at the Garden City Terminal. Note: MOBILE 6 spreadsheets did not have a VOC category for heavy duty trucks [HDDV8A]. However, after reviewing the Port of Portland Air Inventory Spreadsheets a VOC value of 1.005* HC was applied. This formula value was applied to calculate the VOC of heavy duty trucks [HDDV8A] at the Garden City Terminal.

It should be noted that the District did not use the new MOVES models to estimate the air emissions/toxics at the port. Rather, values for the 28 air toxics were derived by multiplying the toxic ratios by either VOC or PM10. These toxic ratios were provided by USEPA, Region 5, and pulled out/condensed from the NMIM "SCCToxics" database table.

1109-BB-101-EV80

Comment: Locomotive Calculations: The hours of use from a daily average to a weekly average do not add up. Additional information is needed on how the weekly average was calculated. The 21 hours/day and only 69 hours/week for switching implies that the locomotives are being used a little over three days. Further, idling emissions can be significant. This should be calculated in the FEIS.

Response: The District calculated both the daily and weekly average for locomotives in FEIS-Appendix K. Data provided by the Georgia Ports Authority on locomotive use at the port indicated the following **average** hours of operation:

1. Norfolk Southern used 11 locomotives for an average of 11 trips per week to and from the port. GPA stated that the line-haul locomotives only remain at the port an **average** of three hours. Therefore, the estimated average weekly and yearly line-haul locomotive hours of operation at the port are: 33 hours per week (11 locomotives/week times 3 hours/locomotive = 33 hours) and for the year is 1716 hours (33 times 52 weeks = 1716).

2. CSX used 4 switch locomotives an **average** of 3 times per week for about 21 hours per day plus 1 time per week for about 6 hours per day or on average about 69 hours per week [3 times 21 hours per day plus 6 hours per day = 69 hours]. On average the switch locomotives were used 69 hours per week times 52 weeks in a year equals 3588 hours of operation in a year.

Please note, both the hours of use for the line-haul and switch locomotives are **average estimates**. Cargo operations [goods hauled in/out and switched from the port by train] are not carried out continuously 24 hour per day 7 day a week.

The hours provided for both line-haul and switch locomotives include idling. However, GPA did not know the exact percentage of idling versus in-operation. The NONROAD model assumes that the idling air emission rate is lower than the in-operation rate. The District assumed the same in-operation air emission rate for locomotives, whether idling or in-operation. Therefore, the locomotive air emission estimates are greater [more conservative] than if idling had been factored into the equation. The District used category SCC 2285002015 for locomotives as the air emission rate [NONROAD2005 model for the 2007 calendar year using 1139 ppm Sulfur diesel fuel and NONROAD2008 model for the 2010 calendar year[using 15 ppm Sulfur diesel fuel].

1109-BB-101-EV81

Comment: Emission Analysis: The DEIS is limited in the supporting data for the emission estimates provided. The COE should provide model inputs and outputs for calculation of the on-highway and non-road emissions. This information will provide a sound support for the data listed in the DEIS. Without such support, the validity of the estimates cannot be assessed.

Response: All spreadsheets used for the calculation of air emissions found in Appendix K are located in Attachment B and are available upon request. The air emission inventory that the District conducted [described in EIS - Appendix K] was a comprehensive analysis of port-dependent emissions. All air releases [including criteria pollutants, air toxics, and greenhouse gas emissions] were calculated for all depths [42, 44, 45, 46, 47, and 48 feet] and all years [2015, 2020, 2025, 2030, 2032, and 2065]. It included emissions from the following sources:

- Dredges used during the new work dredging
- Dredges used during maintenance dredging
- Ocean-Going Vessels
- LNG Vessels
- Tug Boats
- Intra-Harbor Shifts
- Tour Boats
- Landside equipment at GPA terminals
- Landside equipment at non-GPA terminals
- Trucks calling at the Garden City Terminal
- Locomotives serving the Garden City Terminal
- GPA fleet vehicles
- Air Toxics
- Greenhouse gases

The District followed the procedures outlined in EPA's 2009 Final Report titled "Current Methodologies in Preparing Mobile Source Port-Related Emission Inventories".

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1109-BB-101-EV82

Comment: Port Growth & Efficiency: Page 6 Section 4.0 notes that "At 2032, the capacity of the port would be reached. This means that between 2032 and 2065, no additional growth occurs in commodities or annual vessel numbers. No additional vessels could load/off-load at the port each year between 2032 and 2065." Page 80 notes that: "The reduced emissions reflect the lower number of container ships that would call in a given year with a deeper harbor." However, page 62 notes that: "Growth in such (cargo handling) efficiency has been commonly observed in the past, and is expected to continue to occur at Savannah, but the ability to predict its amount and timing are quite difficult." If increased cargo handling efficiencies occur, then the port might accommodate additional visits by large ships. EPA recommends that the COE make estimates concerning the likely efficiency increases that might occur, how this might allow additional cargo to pass through the port, and the associated increase in air pollution emissions. It should be noted that page 94 states: "The volume of air toxics emitted as a result of port operations is expected to increase as the volume of cargo passing through the port rises." This scenario should be evaluated in the FEIS.

Response: GPA will increase efficiency at the 1,200 acre GCT by over 250% [6.5 million TEUs in 2030 / 2.6 million TEUs currently]. This means the TEUs per acre capacity at GCT is expected to increase from currently 2, 167 TEUs per acre (2,600,000 TEUs/1200 acres) to 5,417 TEUs per acre (6,500,000 TEUs/1200 acres) in 2030, a similar increase of over 250%. Geography will constrain the capacity of GCT effectively at 6.5 million TEUs by 2030.

Appendix K [Page 94] K does state that "The volume of air toxics emitted as a result of port operations is expected to increase as the volume of cargo passing through the port rises." The District should have indicated on page 94 that with or without the harbor deepening the volume of air toxics would increase until the port reaches capacity in 2030 with 6.5 million TEUs.

The proposed harbor deepening would not increase air emissions in the project area when compared to the No-Action Alternative of -42 foot depth. With less air emissions there will be less air toxics and greenhouse gases emitted.

1109-BB-101-EC03, 1109-BB-101-EC04

Comment: It is unclear how this projected increase in post-Panamax visits would be possible if, as the DEIS states in the Abstract (pg. 1): "In excess of 70% of the vessels 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 on to the consumer. Less efficient vessels also generally result in higher shipping costs." Page 3 of Appendix K supports this concern, stating: "The GPA indicates that 70% of the container vessels that called on the port in 2006 were operationally constrained by the channel depth. As the newer, larger container vessels increase their calls at the port, that percentage will increase." Post-Panamax ships are among the ships that will be operationally constrained. Given that they comprise nearly the entire increase in calls to the port over the next two decades, the number of ships that would be operationally constrained by the current channel depth could increase dramatically - to nearly all ships calling at the port.

EPA assumes that the resulting delays from congestion and the need to schedule visits to the terminals according to the tides would be economic disincentives to the use of the Port of Savannah, and result in a redirection of trade to other ports if the channel were not deepened. If redirection of trade to other ports did not occur, the EPA further assumes that the base case would result in greater waiting times for the

ships to be able to navigate to and from the terminals and corresponding additional air pollution emissions.

Response: Container vessels seldom operate at their design drafts. Sailing drafts vary considerably along vessel itineraries. Channel limitations at Savannah are not such that it precludes Post-Panamax (PPX) vessels from calling. In fact, the number of PPX vessel calls are increasing in number with even larger ships anticipated in the near future. However, they will operate at Savannah sailing lighter than they otherwise could with a deeper channel.

Congestion in the harbor has increased over time as more and more ships call at the port. In the without project condition, this situation is worse as it requires more ships to carry the same amount of cargo in a given year. With the deepening alternatives, both the number of vessels calling and the congestion decrease, when compared to the without project conditions. The air emissions from the additional tidal delays that the fleet would experience over time in the without project condition have not been included in the air quality analysis. Those emissions would decrease with implementation of the project alternatives because of a reduction in the number of vessels in a given year and their waiting time.

1109-BB-101-EV83, 1109-BB-101-EV84

Comment: Port Truck Calls: Page 39 Section 5.14 refers to trucks calling at the Garden City Terminal. The FEIS should include any data on the number of trucks calling at the Ocean City Terminal and private terminals along the river. Also, Table 5-50 cites the number of trucks calling at Garden City in 2008. These values are identical to those in an earlier version of this document from 2006. The values should be updated or the date on the table corrected.

Response: The majority of the truck calls at the port occur at the Garden City Terminal. According to the FEIS [Section 5.20], *GPA continues to work closely with the State of Georgia to develop more improvements to the highway system outside the Garden City 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 the following figure. The completion of those roads will remove terminal traffic from neighborhoods and lessen congestion and the accompanying air quality impacts. Also see Figure 5-63, which graphically shows these proposed road improvements.*

GPA also plans to increase the percentage of containers that are handled by rail in the future. Since rail moves cargo with less fuel than trucks, use of rail reduces the total diesel emissions from the port operations.

All of the infrastructure improvements proposed by GPA to highways and rail systems will be to service the Garden City Terminal rather than any of other port facilities.

Emission estimates for trucks at the other terminals [Ocean City Terminal and the other 20-privately owned terminals] were derived from the Port of Washington/Tacoma - Puget Sound Maritime Air Emissions Inventory, 2007. In 2002, the tonnage for Savannah = 20.7 M, Seattle = 19.6 M, and Tacoma -

= 20.6 M, so emission-wise these ports should be similar [ICF International Memo, dated Nov 17, 2006]. The methodology for calculating truck emission estimates for the other terminals was taken from EPA's "Current Methodologies in Preparing Mobile Source Port-Related Emission Inventories, Final Report, dated April 2009".

Table 5-50 was revised and updated to reflect 2008 conditions.

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1109-BB-101-EV85

Comment: Locomotive Emissions: The last sentence on page 44 indicates the COE obtained information from the NMIM "SCC Toxics" database provided by EPA Region 5. For the FEIS, the COE should identify the source of emission information used for locomotives and commercial marine sources."

Response: The District identified [FEIS-Appendix K] the information sources used for the emission inventory. Emissions from marine diesel engines and shore side locomotives were calculated using methods described in: 1. EPA's - **"Current Methodologies in Preparing Mobile Source Port-Related Emission Inventories, Final Report, dated April 2009"** and 2. Supplemental information for locomotives emissions - CFR dated April 3, 2007 [Vol. 72, Number 63 Proposed Rules pp 16037 to 16086].

1109-BB-101-EV86, 1109-BB-101-EV87

Comment: Table 5-63 Values: The values in this table (pg. 45) should be checked since they differ significantly from values in the draft version of the table provided by the COE some time ago. This table compares air toxics emissions from the port with those from the entire county. This is an inappropriate comparison in that air toxics pose a threat primarily to those who are near the source. A comparison between emissions at the port and those countywide could be misleading because the emissions from port activities are more localized than those from the county as a whole. The comparison of air toxics emissions between the county and port presented in this table should be accompanied with an acknowledgement that localized impacts at the port could be significant. We suggest the COE include an emissions density map, population density map, and map identifying locations of sensitive populations which would be informative for the reader in evaluating this information."

Response: Concur. The values in Table 5-63 have been verified for accuracy. The District disagrees that comparing air toxic emissions generated by the proposed harbor deepening to those of the County is inappropriate. Table 5-63 clearly shows that the projected air toxic emissions for all harbor terminals are minor [about 1.9%] compared to the County's total.

Appendix K [Table 6-7] reveals that in 2002 and 2007, the coal fired Kraft Steam Electric Plant operating in Port Wentworth [Chatham County GA], respectively discharged 7,189.4 tons and 7,704.7 tons of SO2. For these same years this plant also discharged 1,367,644 tons and 1,653,099 ton of CO2 [EPA data]. Hence, air emissions from this single facility would subsume all the estimated emissions for the deepened harbor [see Table 5-78 on page 63 in Appendix K]. Regardless, the evaluations verify that the proposed action will have lesser localized air quality impacts on communities in the port environs than the existing No- Action Alternative.

The District has included a population density map of the project area. However, an air emissions density map is not needed because releases resulting from a deepened harbor would be less than those

from the No Action Alternative [-42 foot depth or existing baseline condition]. Additionally, a map identifying the location of sensitive populations is already in the EIS [Figure 5-56).

1109-BB-101-EV88

Comment: The first sentence on page 45 refers to Table 5-61. Should this refer to Table 5-63? The first sentence says that the table lists the relationship of 28 toxics to other calculated pollutants. Is there a column missing that would indicate percentages or ratios between the toxics and other pollutants? How did the COE develop the values listed in Table 5-63? If ratios were used to estimate emissions based on other parameters, how those ratios were developed should be detailed in the FEIS (i.e., what specifically are the numerator and denominator for each and where were those data were obtained?). The quantity of air toxics emissions should be identified by source type. This would help determine the areas that would benefit most from emission reduction efforts.

Response: Concur. The first sentence on page 45 refers to Table 5-63, not 5-61. The second sentence or paragraph has also been revised to indicate that Table 5-63 is a list of 28 air toxics that was calculated for both the Total Port Emissions in 2008 and the US EPA NEI data for Chatham County, Georgia. For clarity, the District included another column which shows the ratios used between the toxics and VOCs or PM10. Moreover, this section was revised to reflect how these air toxic ratios were developed and the air toxics emissions will be identified by source type.

1109-BB-101-EV89

Comment: 2006 Air Quality Analysis: The first sentence on the last paragraph of page 3 refers the reader to the "Air Quality Analysis, Savannah Harbor Expansion Project" which was prepared in 2006. The text says that this report is available from the Savannah District. However, we suggest it be included as an appendix to the FEIS, or alternatively, be made available online.

Response: The reference to a 2006 Air Quality Analysis in Attachment A has been deleted from page 3 in Appendix K as it is no longer valid. As indicated on page 4 in Appendix K, the District provided the 2006 report to the EPA, Region 4 office for review and comment. As a result of this review, EPA requested the analysis be expanded to include (1) the emissions from landside equipment servicing these vessels, (2) the air toxins emitted by both the vessels and the landside equipment, and (3) similar analyses associated with the privately-owned terminals in the harbor. EPA recognized that the emissions associated from vessels calling at privately-owned terminals were not likely to be affected by the proposed harbor deepening. However, the Agency desired a comprehensive air quality assessment of all facilities to accurately place any future emission increase/decrease in its proper context.

1109-BB-101-EV90

Comment: Editorial **Comment:** The first sentence on the last paragraph of page 5 states that the 2006 Air Emissions Analysis is Attachment A. However, Attachment A is the container fleet forecast.

Response: Concur. Attachment A discusses the container fleet forecast. Its reference to the noted 2006 Air Quality Analysis has been deleted in the FEIS. As indicated on page 4 of Appendix K, the District provided the 2006 report to EPA, Region 4 office for review and comment. As a result of this review, EPA requested the analysis be expanded to include (1) the emissions from landside equipment that servicing vessels, (2) the air toxins emitted by both the vessels and the landside equipment, and (3) similar analyses associated with the privately-owned terminals in the harbor. EPA recognized that the emissions associated from vessels calling at privately-owned terminals were not likely to be affected by

the proposed harbor deepening. However, the Agency desired a comprehensive air quality assessment of all facilities to accurately place any future emission increase/decrease in its proper context.

1109-BB-101-EV91

Comment: EO 12898: The DEIS (pg. 5-144) states that "Executive Order 12898 deals with Environmental Justice." This statement should be amended in the FEIS to reflect that the EO deals with EJ "in minority and low-income populations". The DEIS also indicates that the EO states that "....the Federal government would review the effects of its proposed actions on low income communities." We believe this statement should be removed in the FEIS because it is not found in the EO. We offer that it is more accurate to retain the following statement: "Federal agencies are 'to the greatest extent practicable and permitted by law' identify and address 'as appropriate', disproportionately high and adverse human health and environmental effects of its programs, policies and activities on minority populations and low-income populations in the United States.

Response: Concur. Section 5.20, has been revised.

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1109-BB-101-EV92

Comment: EO J 3045: EPA appreciates the inclusion of a children's health section related to Executive Order (EO) 13045, which deals with the protection of children from environmental health and safety risks. As part of the background information, the DEIS indicates that the EO states that" ... the Federal government would review the effects of its proposed actions on children because they may suffer disproportionately from the environmental health risks and safety risk." This statement should be removed in the FEIS since we do not believe it is accurate. However, the subsequent DEIS statement accurately reflects the EO and should be retained: "Federal agencies are to 'identify and assess environmental health risks and safety risks that may disproportionately affect children;' and 'ensure that its policies, programs, activities, and standards address disproportionate risks to children that result from environmental health risks or safety risks.'

Response: Concur. In the EO 13045 discussion found in the FEIS [Section 5.20], the District has deleted the following statement: "... the Federal government would review the effects of its proposed actions on children because they may suffer disproportionately from the environmental health risks and safety risk." The remainder of the EO 13045 discussion was retained.

1109-BB-101-EV93

Comment: Sea Level Rise - EPA and the COE concur that as sea level increases at Savannah, the amount of tidal freshwater wetlands will decrease. Since there have been continual records of sea level at Savannah for over 200 years, EPA understands that the COE decided that it would rely heavily on that site-specific historical data in its prediction of future trends in sea level rise at this site. Examination of the historic information revealed that sea level has been rising relatively constantly at Savannah at an average of +3 mm per year. Therefore, the COE decided to use a continuation of this historic rate of sea level rise at Savannah in its predictions of future wetland distributions in the estuary. EPA notes that the +3 mm per year value is within the bounds of sea level rise predicted for the next century in the 2007 report from the International Panel on Climate Change (to. 18 to +0.59 meters).

Response: The District is pleased that EPA continues to concur with the approach taken by the District. The referenced 2007 report from the International Panel on Climate Change agrees with the earlier EPA report that discussed sea level rise at this project site and upon which the Wetland ICT based its recommendation to use 3 mm/year as the long term average for sea level rise at Savannah.

1109-BB-101-EV94

Comment: Fisheries - EPA gives deference to the fishery experts of FWS, NOAA and their state counterparts regarding project impacts and mitigation. However, we wish to offer that EPA conceptually supports a fish passage at the New Savannah Bluff Lock and Dam since it would open up 20 river miles of former (pre-dam) habitat above the dam that is not affected by the SHEP dredging. We also agree with the COE that the original 2002 proposal for such passage should be updated; however, we will defer to NOAA, FWS and their state counterparts regarding any new or preferred designs as to the engineering of the passage structure.

Conceptually, however, we believe that whatever design is selected should be easily available to, and usable by, all anadromous/catadromous species of SHEP concern (in terms of their varying size and behavior) and perhaps optimal for the Shortnose sturgeon due to the reduction of its habitat by past and proposed dredging below the dam and its federally endangered species status.

Response: The design for the fish passage structure at New Savannah Bluff Lock and Dam has been revised based on the outcome of a fish passage workshop and site visit with the interagency coordination team and fish passage experts. NOAA has concurred that the conceptual design is acceptable for passage of anadromous/catadromous species of SHEP concern as indicated in their Biological Opinion [Appendix Z of the EIS]. As the design process progresses, the District would coordinate with the natural resource agencies to ensure that the fish passage structure functions as intended.

1109-BB-101-EV95

Comment: Maintenance Related to Savannah NWR- The federal government is responsible for maintenance of the Diversion Canal, the channels in Little Back River and Middle River, and the canals and control works for the SNWR. In May 2010, the COE entered into a contract to rehabilitate a major portion of the project, with work beginning in July 2010. The COE has requested the additional funds that are required to complete the rehabilitation work. The FEIS should include additional details on the progress of this important work.

Response: The FEIS has been revised to incorporate information on the status of that work. Repair of the system on Federal lands was completed in December 2011.**Page 30**

1109-BB-101-EV96

Comment: Bank Erosion at Old Fort Jackson - The concerns that had been expressed during public review of the Tier I EIS about bank erosion at Old Fort Jackson have been addressed. In 2003, the COE partnered with the GDNR (which owns the site) to stabilize the shoreline. Similarly, the Manager of the Fort Pulaski National Monument has expressed concerns about the ongoing erosion that is occurring along portions of their river shoreline. The COE determined that the erosion is the result of several factors, but an increase in vessel size is not expected to "substantially" increase the rate of the ongoing erosion, but may have some effect. EPA recommends that the COE partner with the National Park Service to address river shoreline erosion at the Fort Pulaski National Monument.

Response: The previous Bank Erosion Study dated November 2006 was updated in June 2011 to include the most recent fleet forecast and sailing draft distribution. The analysis concluded that shoreline erosion at Fort Pulaski National Monument averages about 3.0 to 3.3 feet per year due to all causes, and no additional erosion would be caused by ship traffic associated with deepening the river.

Concur. The District is willing to partner with the National Park Service to address shoreline erosion at Fort Pulaski National Monument. The District is presently performing work for the National Monument to address protection of the Cockspur Lighthouse, and we could provide similar services to address riverbank erosion on their property.

1109-BB-101-EV97

Comment: COE-SHPO Programmatic Agreement - We suggest that a signed and dated Programmatic Agreement between the COE and the State Historic Preservation Office (SHPO) from Georgia and South Carolina be included in Appendix G.

Response: The signed Programmatic Agreement is included as Appendix G of the FEIS.



United States Department of the Interior

OFFICE OF THE SECRETARY Office of Environmental Policy and Compliance Richard B. Russell Federal Building 75 Spring Street, S.W. Atlanta, Georgia 30303



January 21, 2011

Colonel Jeffrey M. Hall U.S. Army Corps of Engineers Savannah District 100 W. Oglethorpe Avenue Savannah, Georgia 31401-3640

RE: Savannah Harbor Expansion Project, General Reevaluation Report (GRR) and Draft Tier II Environmental Impact Statement (DEIS)

Dear Colonel Hall:

The Department of the Interior (Department) has reviewed the subject documents. The Savannah Harbor Expansion Project (SHEP) involves deepening the harbor from the current inner harbor depth of 42 feet by as much as 6 feet to a maximum authorized depth of 48 feet. Authorizing language in the Water Resources Development Act of 1999 stipulates that the project may proceed only after the Secretary of the Interior, Secretary of Commerce, and Administrator of the Environmental Protection Agency approve the selected plan and determine that the associated mitigation plan adequately addresses its potential environmental impacts. The subject documents describe various models that were developed to predict changes to the environment include: salinity increases, loss of tidal freshwater marsh, reduced striped bass reproduction and recruitment, negative impacts to shortnose sturgeon habitat, reduced dissolved oxygen (DO), and potential exposure of wildlife to cadmium in dredged sediments.

General Comments

Plan Selection

The Corps of Engineers' (Corps) analysis shows that incremental net economic benefits of the alternatives are maximized at a depth of 45 feet, decrease from 45 to 47 feet, and are negative at 48 feet. The 47-foot depth provides the greatest total net economic benefits and is identified as the national economic development (NED) plan. The maximum authorized depth of 48 feet is the locally preferred plan (LPP) of the non-Federal cost share sponsor, the Georgia Ports Authority. The additional economic benefits of the LPP relative to the NED plan (about 1 percent more), but higher costs (about 6 percent more), represent negative incremental net benefits. The DEIS states the tentatively recommended plan is either the 47-foot alternative (NED plan) or the 48-foot alternative (LPP), although three other federal agencies must approve final plan selection and have expressed reservations about the deeper alternatives.

The Department's preferred plan for deepening Savannah Harbor is the 45-foot depth alternative, because it minimizes the loss of freshwater tidal wetlands, impacts to Savannah National Wildlife Refuge (NWR), and risk and uncertainty of impacts to trust fish and wildlife resources. Previous channel deepening projects have reduced tidal freshwater marsh within the Savannah River estuary from about 12,000 acres to about 3,300 acres. The majority of the remaining freshwater tidal wetlands occur on Savannah NWR. Further deepening the channel from its present depth of 42 feet would further reduce this important and increasingly rare national resource. At the NED plan depth (47 feet), a net loss of 223 acres of tidal freshwater wetlands is predicted after flow-diversion mitigation is implemented. At the LPP depth (48 feet), a net loss of 337 acres of tidal freshwater wetlands is predicted after flow-diversion mitigation 114 acres of freshwater tidal wetlands associated with the LPP would represent a 50 percent increase in impacts to the Savannah NWR over the NED plan and a cumulative loss of approximately 10 percent of the basin's remaining freshwater tidal wetlands. For this reason, the Department does not support the LPP.

Sea Level Rise

The potential effect of sea level rise on wetland habitats is mentioned throughout the DEIS. The document discusses drought, sea level rise, and channel deepening, but does not analyze the interaction between these major influences. In Appendix C (Mitigation Planning) and elsewhere in the DEIS, the Corps suggests that if the rate of sea level rise exceeds the historic rate, the proposed compensatory mitigation (e.g., land additions to the Savannah NWR for the loss of 223 acres of freshwater tidal wetlands under the NED plan) would overcompensate project impacts, because some of those acres would have converted to brackish or salt marsh without the project. The Corps proposes to reassess sea level rise effects in the future and assign "advance mitigation" credits to the project for use with future actions. The Department objects to this proposal, because sea level rise would have a negligible impact in the upper estuary if not for the cumulative impacts of previous harbor deepening. The rate of sea level rise is uncertain and substantial impacts resulting from sea level rise are likely well into the future. Conversely, the impacts of further harbor deepening will begin almost immediately. In addition, due to the complexity of the system and limitations of the models, the Department has concerns that the models may underestimate wetland impacts. The Department regards "advance mitigation" in this context as the functional equivalent of a mitigation bank, and U.S. Fish and Wildlife Service (FWS) Mitigation Policy (64 FR 49229-49234) does not allow the use of NWR lands for mitigation banks to compensate for the effects of activities authorized by the Department of the Army under Section 10 of the Clean Water Act and Section 10 of the Rivers and Harbors Act. Therefore, the Department does not support the concept of advance mitigation based on a future evaluation of the relative impacts of sea level rise. We do support, however, obtaining a waiver in this instance from the Corps' policy to implement the agency-coordinated level of mitigation for the base year (the year construction is completed) impacts, rather than mitigating for the project's average annual impacts or reassessing sea level rise impacts in the future.

Monitoring/Adaptive Management

Assuring the effectiveness of the mitigation features proposed in the DEIS is essential to the Department's approval of the selected project plan. These features were developed using preconstruction data and models to predict potential effects to the estuary. The DEIS states that natural variation alone will nearly guarantee that conditions during the first few years after construction are different from those under which the models were first calibrated. Currently, the Monitoring and Adaptive Management Plan proposes 5 years post-construction monitoring of key mitigation features, which we believe is not long enough. It is the Department's position that 10 years post-construction monitoring is necessary for the adaptive management process to work; i.e., to ensure that impacts to natural resources in this complex system resulting from project construction are limited to those predicted. Further, the Department recommends a more precise definition of observed conditions that would prompt changes to the mitigation features, and a time-line for making decisions and taking corrective actions thereafter. The Department is also concerned that funding for adaptive management will depend upon the Corps' annual appropriations process. It is relatively certain that impacts to trust resources of the Department will occur following construction, but the effectiveness of the mitigation features is much less certain. Therefore, the Department cannot agree that the proposed mitigation adequately addresses project impacts unless contingency funding for monitoring and adaptive management is assured.

The Department is concerned about the reliance on the hydrodynamic and water-quality models in the Adaptive Management Plan (AMP, Appendix D). The Plan does not include ecological performance measures to independently evaluate the effectiveness of the mitigation for the deepening of the Savannah Harbor. The models were developed to evaluate potential resource impact from deepening and to evaluate various mitigation actions to minimize environmental degradation of valued resources. The mitigation plan results in major changes to flow dynamics of the Lower Savannah River Estuary. Six of the seven mitigation features involve alterations to flow paths. The expected result of the mitigation is that the post-construction ecosystem will function in a similar manner to the pre-construction ecosystem. The monitoring data, along with ecological performance measures, should be used to evaluate the effectiveness of the mitigation features.

The AMP does not include ecosystem performance measures for the majority of the resources that the mitigation is trying to protect. The only ecological performance measure found was for the re-vegetation of Area 1S. For the other resources, the Corps proposes to use a modified version of the draft Federal Expectation for Hydrodynamic and Water-Quality Model Calibration and Confirmation performance measures. The intent is to collect additional data, simulate preand post-project scenarios with the models, evaluate the calibration of the models, re-calibrate the models (if necessary), and then evaluate the effectiveness of the mitigation.

It is not clear in the AMP how the draft Federal Expectation for Hydrodynamic and Water-Quality Model Calibration and Confirmation performance measures equates to ecological performance measures. The hydrodynamic and water-quality models currently do not meet these model calibration goals in many areas of the system (see Tetra Tech, 2006; Appendices B-K, P, and Q). If the current models do not meet the calibration performance goals, how will evaluating the model calibration performance for the post-project inform resource decision makers if the ecosystem is being protected by the mitigation features?

It is important to perform a post audit of the models to better assess their predictive capacity and uncertainties. Model calibration goals are not the same as ecological performance measures. By relying solely on the post audit of the models for the evaluation of the mitigation, an opportunity for utilizing the tremendous amount of data and analysis that were used to develop the DEIS is not being realized. The development of the DEIS involved tremendous amounts of data collection and analysis of various resources that needed protection. These data and analyses should be used in developing ecosystem performance measures. The ecosystem performance measure could be expressed as the magnitude, duration and frequency of the parameter of interest and appropriate thresholds for actions by resource agencies.

There are references in the Plan of the using the monitoring data to show if "...impacts are occurring beyond the range of those expected" and the monitoring data "...will be useful in identifying whether any impacts are occurring beyond the range of those expected" (p. 27). The expected range of impacts was never defined in the AMP. At every sampling and gaging location for a resource of concern, an ecological performance measure should be developed to define the expected ecosystem response to the deepening mitigation.

There is currently a network of 12 real-time gages that collect water level, velocity, specific conductance, and (or) temperature. Many of these stations have been collecting data since the most recent deepening in 1994. The AMP outlines additional stations that will be added to the network. These data, along with discrete sampling data, and ecological performance measures can be analyzed directly to evaluate the effectiveness of the mitigation features.

Many of the funding figures appear to be inconsistent between sections of the AMP and between the AMP and the GRR. For example, chloride sampling is listed at \$100,000 on page 18 and \$80,000 on page 24, marsh data collection is listed at \$18,000 on page 17 and \$20,000 on page 24, and long-term monitoring is listed at \$347,000 on page 37 and \$428,400 in the GRR.

Cadmium

Procedures for disposing of sediments that contain cadmium concentrations exceeding 14 parts per million (ppm) are discussed in three parts of the DEIS: 1) Section 5.4.2.2; 2) Appendix D -Monitoring and Adaptive Management; and 3) Appendix M - Sediment Quality Evaluation. These discussions are unclear and inconsistent. In particular, we recommend clarifying the proposed cadmium monitoring program. The Department recommends a program of monitoring wildlife activity in disposal areas and cadmium levels in bird tissues that is independent of the Dredge Material Containment Area (DMCA) capping criteria. Wildlife monitoring should begin with sediment placement and continue as long as all other monitoring of the DMCA. Tissue monitoring should occur: 1) prior to sediment placement to collect baseline data; 2) during sediment placement; and 3) post placement until 3 consecutive years of samples contain cadmium concentrations that are less than the potential adverse effect level, which is to be determined. The Department supports the sampling protocol (species and timing) described in Appendix D, page 23; and requests that the Corps continue to coordinate with the FWS prior to completion of the final EIS to finalize plans for biological monitoring within DMCAs, including tissue sampling.

The Department accepts the Corps' use of 4 ppm cadmium concentration in capping material as a trigger for remedial action in DMCAs. The Department understands that the Corps will move a DMCA to higher priority in the rotation for Operations and Maintenance (O&M) sediment placement and vegetation monitoring if 25 cumulative acres are found to have a cadmium concentration greater than or equal to 4 ppm. Sampling and placement will continue until the DMCA has less than 25 cumulative acres with a cadmium concentration greater than or equal to 4 ppm.

Risk and Uncertainty Analysis

The Savannah estuary is a complex system and predicting how this system may respond to substantial physical alterations (channel deepening, flow diversions, etc.) is fraught with uncertainties, which are well acknowledged within the DEIS. However, based on an analysis prepared by Kinetic Analysis Corporation (KAC), the DEIS concludes that the hydrodynamic model probably over-predicts salinity and under-predicts dissolved oxygen; i.e., the model errs towards the side of simulating conditions worse than would actually occur. We believe this

analysis may seriously misrepresent the risk associated with the water quality predictions. It is quite possible that the hydrodynamic model does not predict worst-case conditions. With the exception of the new channel depth, the KAC analysis relied upon the existing geometry of the Savannah River estuary. Several mitigation measures would significantly modify the system geometry, including significant flow diversion at McCoys Cut, closing Rifle Cut, filling the Back River sediment basin, and removing the tide gate. Flow routing and flow volume in the three main river channels would become significantly different from the current system. Therefore, we believe the degree of risk and uncertainty regarding expected water quality impacts, and in turn, wetland impacts, is considerably higher than the KAC analysis suggests. For this and other reasons, the Department recommends extending the proposed post-construction monitoring from 5 years to 10 years.

Specific Comments

Abstract

Page 1. The first paragraph of the Abstract discusses channel depths and then states that 70% of vessels do not call on Savannah at their maximum capacity or design draft, which implies that all light-loading is due to channel depth limitations. The Corps should include information on the percentage of vessels with loads constrained by channel depth and the percentage of light-loading due to other factors, such as prior calls at other ports. Additionally, the DEIS should include the predicted percentage of ships that will call on the port fully loaded or leave fully loaded if the channel is deepened.

Section 3, Alternatives

3.05, **Tentatively Recommended Plan, page 3-22**. The first paragraph of this section states that the tentatively recommended plan is either the 47-foot alternative or the 48-foot alternative. The third paragraph describes the tentatively recommended plan as the 48-foot alternative. The Errata Sheet of December 17, 2010, states that various references to the 48-foot alternative throughout the GRR and DEIS "should not be interpreted as a recommendation or preference for that alternative over the tentatively selected -47 feet NED [plan]." On September 9, 2010, the FWS provided comments on preliminary drafts of the GRR and DEIS, identified -45 feet as its preferred alternative for deepening the harbor and stated it did not support the 48-foot alternative. The final EIS will necessarily need to revise this section to discuss the multi-agency rationale for what is ultimately determined as the final plan selection.

3.11, Future Conditions Without the Project, page 3-29. This section states that 70% of vessels do not call on Savannah at their maximum capacity or design draft, which implies that all light-loading is due to channel depth limitations. The Corps should include information on the percentage of vessels with loads constrained by channel depth and the percentage of light-loading due to other factors, such as prior calls at other ports. Additionally, the DEIS should include the predicted percentage of ships that will call on the port fully loaded or leave fully loaded if the channel is deepened.

Section 4, Affected Environment

4.01.2, Geology, page 4-7. The amount of dredged material by station for both inner harbor and outer harbor do not match between Section 3 (Table 3-8, pg. 3-27; Table 3-9, pg. 3-28) and

Section 4 (Table 4-4, pg. 4-7; Table 4-5, pg. 4-7). The Department recommends corrections for clarity.

4.02.4, Surface Water, pages 4- 13-14. The discussion on DO standards is confusing. The new DO standard established by the State of Georgia is not less than 5.0 mg/L throughout the year with an instantaneous minimum of 4.0 mg/L. A number of site-specific DO standards are listed. For clarity, this section should explain how the new standard of 5.0 mg/L compares to the measured monthly ranges of DO in the Savannah River at the currently authorized depth of 42 feet.

4.04, Marine and Estuarine Resources, page 4-20. This section states that optimum striped bass spawning success requires salinity less than 1.7 ppt. Studies on the Savannah River indicate that striped bass spawn almost exclusively in areas where maximum salinity near the surface is less than 1.0 ppt. The Department recommends revision to state salinity of less than 1.0 ppt is optimum.

4.06, Invasive Species, page 4-43. This section should discuss the common reed (*Phragmites australis*) as an invasive species. The document states elsewhere (page 4-55, section 4.07) that common reed will probably dominate the confined disposal facilities (CDFs). We believe that the common reed in the CDFs is the invasive strain. According to the U.S. Geological Survey (USGS), the invasive strain originated in Europe and was possibly spread via ships' ballast. Section 5 of the final EIS should evaluate the potential for the invasive strain to crowd out native species in marshes adjacent to the CDFs.

4.06, Invasive Species, page 4-43, (2nd Comment). This section addresses only one pathway, ballast water, for introduction of aquatic invasive species. Introduction of invasive species in the Savannah Harbor, both aquatic and terrestrial, is not limited to ballast water. Insects in pallets, or plants and seeds in soil on containers, are two examples of other pathways. Invasive species can dramatically alter an ecosystem, which is a major concern for the Savannah NWR. This section should address other pathways and terrestrial systems as well as aquatic systems.

4.07, Terrestrial Resources, page 4-47. The Savannah NWR is 29,175 acres, not 25,600 acres.

4.08, Wetlands and Floodplains, page 4-62. This section refers to a 1992 Planning Aid Report, but the FWS report in question is dated September 16, 1982.

Section 5, Environmental Consequences

5.1.1.1, Impacts from Excavation of Wetlands, page 5-1. The text states that the first two entries in Table 5-1 are Refuge lands, but the table labels the first three entries as Refuge lands. Figure 5-1 is illegible, but appears to depict the Kings Island Turning Basin along with another area for dredging. It is unclear where the third area of excavation is located (we believe 96+000 to 97+000). Figure 5-2 appears to depict the non-Refuge portion of excavation from 86+000 to 88+500, but it too is unclear. A proximity map would help locate these areas in relation to the Savannah NWR.

5.1.1.2, Impacts from Excavation of Wetlands, page 5-6. The discussion in the opening paragraph references Figure 5-52 as CDF 1S; however, Figure 5-52 is a picture of Old Fort Jackson (on p. 5-134). We believe the correct reference is to Figure 5-4 on page 5-7.

5.1.1.2, Impacts from Excavation of Wetlands, page 5-6 (2nd comment). The Corps proposes to restore up to 45 acres at Area 1S on the Savannah NWR, using 14.5 acres as "advance mitigation" for direct impacts to salt marsh. These impacts include widening channel bends and turning basins both on and off the Savannah NWR. "Advance mitigation" is the functional equivalent of a mitigation bank. FWS Mitigation Policy (64 FR 49229-49234) does not allow the use of NWR lands for mitigation banks; therefore, the Department cannot support the 14.5 acres as "advance mitigation."

5.1.1.2, Impacts from Excavation of Wetlands, page 5-6 (3rd comment). This section discusses wetland restoration on site 1S. Successful wetland restoration is dependent on three primary factors: soil, hydrology and vegetation. The proposed dredged material removal should expose the original wetland soil and restore the site to the elevation of adjacent marshes. Construction of a "feeder" creek system toward the interior of the restoration site from Middle River will facilitate tidal exchange; however, if restored elevations do not properly restore tidal flow, invasive vegetation with almost no wildlife value may occupy the site. The desired vegetation outcome on the site is to establish a mixed brackish marsh, similar to adjacent marsh. Chinese tallow tree and common reed, both highly invasive exotic species, have been identified in the marshes near the restoration site. Monitoring the success of the re-vegetation for 5 years should include control measures for exotic and invasive species, if detected.

5.1.2.1 Indirect Impacts to Wetlands, page 5-9. This section references a USGS report, by the Cooperative Research Unit, titled "Simulation of Water Levels and Salinity in the Rivers and Tidal Marshes in the Vicinity of the Savannah National Wildlife Refuge, Coastal South Carolina and Georgia" but does not provide the reference. Suggest the Final EIS include the reference (Conrads et al, 2006) in the text and in the References section.

5.1.2.1 Indirect Impacts to Wetlands, page 5-10: This section states "In March 2007, the Federal Cooperating Agencies discussed a USGS proposal to revise the linkage to increase its usefulness for evaluating potential mitigation measures." but the proposal was rejected. Suggest the Final EIS include a short explanation, and relevant information, on how this decision was reached.

5.1.2.2, Indirect Impacts to Wetlands, page 5-12. This section states that the primary stress to tidal freshwater marsh is prolonged drought, which is not supported by evidence. In 1875, when the controlling depth of the navigation channel was 12-15 feet, the Savannah estuary supported an estimated 12,000 acres of tidal freshwater marsh. In 2005, when the controlling depth was 42 feet, the estuary supported only 3,269 or 4,072 acres (depending on study method used). This section should instead state that the inland intrusion of salt water resulting from channel deepening is a constant stress on tidal freshwater marsh, and that prolonged drought exacerbates this stress.

5.1.2.2, Indirect Impacts to Wetlands, page 5-13. This section states the Corps evaluated the effects of sea level rise on tidal freshwater marsh. The Department maintains that sea level rise would have a negligible impact on the Savannah NWR if not for the cumulative impact of previous harbor deepening.

5.1.2.3, Mitigation – Flow Routing, page 5-29. This section examines various alterations to rivers and creeks to reduce the impacts to tidal freshwater marsh. It states that the proposed mitigation for the 47-foot alternative is predicated on a "base year" (immediately following construction) impact of 223 acres instead of a project-life average annual impact consistent with

Corps policy. The average annual impact is lower than 223 acres due to the effect of sea level rise during the next 50 years that would occur without the project. The Department maintains that sea level rise would have a negligible impact on the Savannah NWR if not for the cumulative impact of previous harbor deepening. Therefore, we support obtaining a waiver from the Corps' policy in this instance to instead implement the agency-coordinated level of mitigation.

5.2.1, Water Quality, Dissolved Oxygen, pages 5- 37-39. This section should compare the modeled DO levels in the Savannah River under the LLP and NED depth plans with the State of Georgia's DO standard. The new Georgia DO standard is not less than 5.0 mg/L throughout the year, with an instantaneous minimum of 4.0 mg/L.

5.2.3 Chloride Concentrations, page 5-54: The document states the "The Corps had an Independent Technical Review performed of the chloride model by a staff member of the USGS in Columbia, SC. The reviewer expressed about the ability of the model to make reliable predictions at the low chloride concentrations occurring at the City's intake." Suggest the Final EIS explain "what" the reviewer expressed and include documentation of the reviewer's expertise.

5.2.5, Contingency for City of Savannah Water Intake System, page 5-60. This section describes a secondary (supplemental) water supply intake line for the City of Savannah to be constructed if needed. Based on a preliminary review, the Department would prefer intake Site 1, because intake Site 2 is likely to adversely affect more wetland and wildlife habitat. The Department requests further coordination to evaluate impacts and make recommendations if the supplemental intake site is needed in the future.

5.3.2. B, Mitigation to Impacts to Fisheries, page 5-96. The Corps proposes to fund a stocking program for striped bass based on the amount of spawning and early life stage habitat lost due to water quality changes resulting from harbor deepening: "*the extent of the stocking needed could be reduced to the amount of habitat predicted to be impacted by the project. Thus, the percentage of habitat loss could be multiplied by the cost for a full-scale stocking program to determine the amount that would be sufficient to compensate for the habitat loss that is expected.*" The expected loss of habitat is 2.9% for the 45-foot alternative and 26.9% for the 47-foot alternative. The final EIS should include a proposal to monitor/measure post-construction loss of striped bass habitat. The final adaptive management plan should address striped bass, and if habitat loss exceeds the amount predicted, include provisions and assurances to increase stocking funds accordingly.

5.4.2.2, Sediment Quality Evaluation, pages 5-100-101. This section should clarify whether the Corps intends to collect 30 or 86 sediment samples per DMCA. The Department has previously stated a concern that 30 samples are not enough. The Corps proposes taking samples 15 cm deep: the Department recommends 86 samples of the cap material per DMCA taken 30 cm deep. The DEIS sometimes refers to 7 ppm of cadmium in the capping material to trigger remedial action. The Department recommends substituting a threshold of 4 ppm throughout the DEIS for clarity. This section should fully summarize bird tissue monitoring, which is partially summarized in Appendix D, page 23, and Appendix M, page 84. The Department understood that the Corps had agreed to bird tissue monitoring independent of monitoring cadmium soil concentration levels. Tissue monitoring should occur: 1) prior to sediment placement to collect baseline data; 2) during sediment placement; and 3) post placement until 3 consecutive years of samples contain cadmium concentrations that are less than the potential adverse effect level,

which is to be determined. The Department requests that the Corps continue to coordinate with the FWS prior to completion of the final EIS to finalize plans for biological monitoring within DMCAs, including tissue sampling.

5.5, Groundwater, page 5-105. Groundwater conditions were simulated with a constant pumping rate 200 years into the future to estimate the timing of sea water intrusion into the Upper Floridan Aquifer. The DEIS states elsewhere that Chatham and Effingham counties are experiencing population growth, and it is reasonable to assume that industrial water use may also increase with the potential harbor expansion. For the final EIS, the Department recommends revisiting the groundwater simulations with consideration of likely increases in pumping rates.

5.7, Marine and Estuarine Resources, pages 5-109-113. This section discusses direct dredging impacts and generally concludes that expected impacts are minor. However, the text does not describe the long-standing striped bass spawning season window that restricts dredging and is likely largely responsible for the minor impacts conclusion. On Page 14 of Appendix H is a statement that hydraulic dredging is not conducted in Savannah Harbor during the striped bass spawning season. The Corps should revise Section 5.7 and other relevant sections to discuss the striped bass spawning window, and describe where and when hydraulic harbor deepening dredging is restricted.

5.7.1.1, Direct Dredging Impacts, page 5-110. The flow of the Savannah River is highly variable within and between years; therefore the Corps should specify the period of record used for the following calculation: *"the average daily freshwater flow in the Savannah River at Clyo is about 11,290 cfs."* The analysis presented in this paragraph should use data that represents the seasonal timing and flow conditions typical during channel maintenance operations, and if necessary, revise the conclusions based on this analysis.

5.21.I, Other Items/Factors of Concern, page 5-156. This section covers the introduction of invasive species through ballast water, but should also address other pathways through ports, such as insect larva in pallets (e.g., red bay ambrosia beetle), or seeds and plants 'hitchhiking' in soil on containers.

5.22, Mitigation, page 5-157. The Department disagrees with this statement: "*The Corps believes that with implementation of the Mitigation Plan and Monitoring and Adaptive Management Plan, the proposed action would not have significant adverse impacts on the environment.*" Under the 47- and 48-foot alternatives, which the Corps identifies as the tentatively recommended plans, the Savannah estuary would lose an estimated 223 and 337 acres of tidal freshwater marsh, respectively. We have identified loss of tidal freshwater marsh as the "*most important impact criterion in the Savannah Estuary*" (page 5-10). In-kind mitigation for this loss is not possible; therefore, significant adverse impacts remain even with implementation of the mitigation plan for the 47- and 48-foot alternatives. This is why the Department prefers the 45-foot alternative among the action alternatives, because it minimizes the loss of freshwater tidal wetlands, impacts to Savannah National Wildlife Refuge (NWR), and risk and uncertainty of impacts to trust fish and wildlife resources.

Appendix B, Biological Assessments for Threatened and Endangered Species Section 8.02.4 – Impacts to Federally Listed Threatened and Endangered Species, West Indian Manatee, page 83. Manatees have been observed on the Savannah NWR since 1987. Six manatees were observed on the Savannah NWR on August 26, 2010, at a rice trunk on the Wildlife Drive. This area is directly across from Port Wentworth on the Back River. In September of 2008, four manatees were found in the Savannah River (Front River) downstream of the Georgia Ports Authority Ocean Terminal that had been killed in a ship-related incident. This section states that manatee occurrence in the area is rare. Manatees have site fidelity to summer habitat sites, therefore, the FWS would expect the six observed on the Savannah NWR to return. The Georgia Department of Natural Resources (GADNR) has data on manatee mortality and public sightings in the Savannah River. From FWS personnel's observations and discussions with the GADNR, the FWS would not characterize manatee occurrence as rare. Usage is regular enough to characterize manatee occurrence in the Savannah River estuary as a small summer resident population.

Appendix C, Mitigation Planning

IV.A. Reducing Impacts – Hydrodynamic and Water Quality Modeling, page 30. This section states that the proposed mitigation for the 47-foot alternative is predicated on a "base year" (immediately following construction) impact of 223 acres instead of a project-life average annual impact consistent with Corps policy. The average annual impact is lower than 223 acres due to the effect of sea level rise during the next 50 years that would occur without the project. The Department maintains that sea level rise would have a negligible impact on the Savannah NWR if not for the cumulative impact of previous harbor deepening. Therefore, we support obtaining a waiver from the Corps' policy in this instance to instead implement the agency-coordinated level of mitigation.

IV.D. Reducing Impacts – Improvements to Dissolved Oxygen, page 39. The MACTEC engineering firm's report on the test of a DO injection system concluded that the system could improve a DO deficit by 0.6-0.7 mg/l. An independent peer review by USGS found that this conclusion was not supported by the data. The USGS review found instead that the natural tidal cycle accounted for most of the variation in DO levels during the demonstration. This section of the final EIS should address the USGS report. The uncertainty regarding the results of the efforts to improve DO deficiencies is additional justification for expanding the water quality monitoring efforts from 5 to 10 years.

V.A. Replacement /Compensation – Restoration/Enhancement/Creation, pages 48-50. The acreages mentioned on these pages do not correspond with those found in other places in the DEIS. Pages 48 and 50 mention 15.68 acres of brackish marsh lost, while DEIS sections 5.1.1.1 and 5.1.1.2 mention 14.08 acres. Appendix C, pages 49 and 50 state the restoration area is 45 acres, while page 49 states the restoration area is 42 acres. Figure 19 on page 49 depicts two restoration area is 42 acres. Section 5.1.1.2 page 5-6 states the restoration area is 42 acres. The Department recommends correcting any mistakes in these sections or explaining the apparent inconsistencies.

This section discusses wetland restoration on site 1S for direct impacts to brackish marsh. The desired vegetation outcome is to establish a mixed brackish marsh, similar to adjacent marsh, on the site. Chinese tallow tree and common reed, both highly invasive exotic species, have been identified in the marshes near the restoration site. Monitoring the success of the re-vegetation for 5 years should include control measures for exotic and invasive species, if detected.

On page 49, it is not clear what is meant by "The Corps would expand our restoration acreage to include their acreage (1.7 acres)." Please clarify.

On page 50, the Corps states it intends to restore all of Area 1S, using a portion for "advance mitigation." The Department regards "advance mitigation" in this context as the functional equivalent of a mitigation bank, and FWS Mitigation Policy (64 FR 49229-49234) does not allow the use of NWR lands for mitigation banks.

V.B. - **Preservation, page 54.** This section states that the proposed mitigation for the 47-foot alternative is predicated on a "base year" (immediately following construction) impact of 223 acres instead of a project-life average annual impact consistent with Corps policy. The average annual impact is lower than 223 acres due to the effect of sea level rise during the next 50 years that would occur without the project. The Department maintains that sea level rise would have a negligible impact on the Savannah NWR if not for the cumulative impact of previous harbor deepening. Therefore, we support obtaining a waiver from the Corps' policy in this instance to instead implement the agency-coordinated level of mitigation.

V.B. - **Preservation, page 57.** The following statement is misleading: "*If a higher rate of sea level rise actually occurs, some of the freshwater marshes would convert to more saline species, so they would not be available for impact by harbor deepening.*" These marshes are at risk to sea level rise only because of the cumulative effect of previous harbor deepening. Tidal freshwater marshes would not be at risk due to sea level rise at the harbor's original depth. Additionally, the impacts to freshwater marsh from harbor deepening will occur quickly compared to the timeframe for sea level rise.

V.B. - **Preservation, pages 57-60.** These pages discuss sea level rise and the possibility of overmitigating if sea level rises faster than projected. The Corps proposes to reassess sea level rise at the end of the project's life in 50 years and assign wetlands mitigation credits to the project in an amount equivalent to the over-mitigation. The Department regards "advance mitigation" in this context as the functional equivalent of a mitigation bank, and FWS Mitigation Policy (64 FR 49229-49234) does not allow the use of NWR lands for mitigation banks. This section, among others in the DEIS, also states that the proposed mitigation for the 47-foot alternative is predicated on a "base year" (immediately following construction) impact of 223 acres instead of a project-life average annual impact consistent with Corps policy. The average annual impact is lower than 223 acres due to the effect of sea level rise during the next 50 years that would occur without the project. The Department maintains that sea level rise would have a negligible impact on the Savannah NWR if not for the cumulative impact of previous harbor deepening. Therefore, we support obtaining a waiver from the Corps' policy in this instance to instead implement the agency-coordinated level of mitigation.

V.C. - **Compensation, page 65.** This section discusses a fishway at New Savannah Bluff Lock and Dam as the primary mitigation feature for the project's impacts to shortnose sturgeon. Fishway effectiveness varies considerably and is difficult to predict. If effective, this measure would provide shortnose sturgeon upstream passage to the Augusta shoals and other riverine spawning areas. Dam removal would represent a more certain means to provide both upstream and downstream passage for shortnose sturgeon and other species, and would also restore riverine characteristics to this portion of the basin; therefore, the Department would prefer dam removal in lieu of a fishway. The Department requests that the Corps continue to coordinate with the FWS to finalize plans for either fishway design and construction or dam removal.

V.C. - Compensation, page 72-73. This section describes a secondary (supplemental) water supply intake line for the City of Savannah to be constructed if needed. Based on a preliminary review, the Department would prefer intake Site 1, because intake Site 2 is likely to adversely
affect more wetland and wildlife habitat. The Department requests further coordination to evaluate impacts and make recommendations if the supplemental intake site is needed in the future.

VI.A. Mitigation Plans - Wetlands, page 81. We believe the statement: "*The plug would be constructed of fill and rock and would extend to EL 10 (above the Mean High Water line)*" is incorrect. It is our understanding that the plug in Rifle Cut will extend to EL 10 above mean low water, which is 2 feet above mean high water -- not 10 feet, as indicated.

VI.A. Mitigation Plans - Wetlands, page 90 and Section VIII – Timing of Construction, page 113. This section should discuss the timing of acquiring the mitigation lands. The Department recommends beginning no later than the start of construction and completing the acquisitions within 2 years.

VI.A. Mitigation Plans - Wetlands, pages 92-93. The Corps proposes to restore the entire site at CDF 1S, using a portion as "advance mitigation" for direct impacts to salt marsh. Claiming credit for restoration to offset as-of-yet unidentified impacts elsewhere in the future is the functional equivalent of a mitigation bank. FWS Mitigation Policy (64 FR 49229-49234) does not allow the use of NWR lands for mitigation banks; therefore, the Department cannot support restoration at this site as advance mitigation.

Successful wetland restoration is dependent on three primary factors: soil, hydrology and vegetation. The proposed dredged material removal should expose the original wetland soil and restore the site to the elevation of adjacent marshes. Construction of a "feeder" creek system toward the interior of the restoration site from Middle River will facilitate tidal exchange; however, if restored elevations do not properly restore tidal flow, invasive vegetation with almost no wildlife value may occupy the site. The desired vegetation outcome is to establish a mixed brackish marsh, similar to adjacent marsh, on the site. Chinese tallow tree and common reed, both highly invasive exotic species, have been identified in the marshes near the restoration site. Monitoring the success of the re-vegetation for 5 years should include control measures for exotic and invasive species, if detected.

The following statement, from page 92, is inconsistent with the text of DEIS Section 5.1.1.2: "Calculations derived from the SOP indicate that approximately 25.8 acres of restored saltmarsh would be required to mitigate for the 14.08 acres of impact. When combined with the 1.7 acres of previous mitigation, the resulting acreage of the mitigation site would be 25.8 acres." Adding 1.7 acres of mitigation to 25.8 acres equals 27.5 acres.

VI.B. Mitigation Plans – Dissolved Oxygen. Was the *Draft Savannah Harbor TMDL for Dissolved Oxygen* released by the U.S. Environmental Protection Agency in April 2010 evaluated for effects of the mitigation plan? With the changes in the flow dynamics, the Front River will have less flow and the residence times in the Harbor will increase. These changes could have a substantial impact on the waste load allocation. The effects on the allowable waste load to the system by the Project are not only caused by the deepening of the navigation channel but also the mitigation features affecting the flow dynamics of the estuary.

More than two years (2009 and 2010) of flow data have been collected on the Front, Middle, and Little Back Rivers. Six of the seven mitigation features involve alterations to flow paths in the system. Has the two years of measured flow been thoroughly compared with the flow predictions of the model? The *Draft Savannah Harbor TMDL* showed a frequency distribution

for the Little Back River. The model comparisons should include daily tidally filtered flows, flow volumes over specified periods, and flow partitioning between the three rivers under various flow regimes.

VI.E. Mitigation Plans - Chlorides, page 104. This section describes a secondary (supplemental) water supply intake line for the City of Savannah to be constructed if needed. Based on a preliminary review, the Department would prefer intake Site 1, because intake Site 2 is likely to adversely affect more wetland and wildlife habitat. The Department requests further coordination to evaluate impacts and make recommendations if the supplemental intake site is needed in the future.

VII. Consideration of 2008 USACE/USEPA Mitigation Rule, page 107. The DEIS uses county population projection data to estimate the percent increase in impervious surfaces, but should probably also consider industrial development adjacent to the Savannah River, in part due to harbor expansion. For example, a large industrial warehousing complex is proposed adjacent to the Refuge that would involve paving several thousand acres of forest land. The storm water runoff associated with these surfaces is a key threat to the sustainability of adjacent wetlands, which this section should address in the final EIS.

VIII. Timing of Construction, page 113. The table indicates that the Corps will provide funding to GADNR for the striped bass stocking program in late 2015 or early 2016. To offset project impacts that begin when construction is complete, GADNR must have stocking capacity in place in the first spawning season following construction. The Department recommends that the Corps transfer funding for the striped bass stocking program when dredging is initiated, which should provide enough lead time to develop stocking capacity.

Appendix D, Monitoring and Adaptive Management Program

There are inconsistencies of scope of work, roles, and required funding throughout. Strongly suggest a thorough update of Appendix D to bring this to current status and necessary funding. The GaWSC is ready to assist with this.

The USGS Georgia Water Science Center (GaWSC) led the effort in 2006 to develop the Monitoring Plan for the proposed SHEP. This was created from feedback from a multi-agency team with a broad-based variety of expertise that has been involved with the SHEP planning over the years. Much has changed with the SHEP since this plan was first developed five years ago, and subsequently the monitoring plan needs updating. The GaWSC has installed a considerable amount of additional monitoring locations that were originally outlined in the 2006 monitoring plan since its release, and this needs to be properly documented. Additionally, the GaWSC, in collaboration with the multi-agency team, has over the last two years performed the installation and operation of a chloride monitoring network for the City of Savannah water intakes on Abercorn Creek, and more detail regarding the initial results of this work should also be factored into Appendix D. The GaWSC is ready to assist in updating the monitoring plan to reflect the latest scope, roles, and budgetary needs.

Several new monitoring technologies have become available since the original plan was written in 2006. Real-time groundwater chloride monitoring should be considered as an early-warning system for the aquifers in case of damage to the confining layer. The GaWSC currently is performing similar monitoring in the Brunswick, Georgia area. Several existing USGS groundwater monitoring sites along the Savannah River channel could be upgraded to enable real time monitoring of chloride concentrations. With the deployment of index-velocity stream gages currently in place, there are also techniques now available to estimate the sediment load flux within the Savannah Harbor and surrounding estuary using a sediment surrogate approach.

These techniques were developed by the GaWSC and can be beneficial in providing insight into the environmental impacts caused by transported sediments as well as provide operational benefits to the management of the channel and port. It is anticipated that because a considerable amount of the proposed monitoring is already in place, a significant cost savings could be found to help offset the implementation of these new monitoring technologies to make a more robust monitoring effort for the SHEP.

Finally, with a large share of the monitoring data now being available in real-time, the ability to visualize and alert water resource managers and stakeholders of the real-time conditions in the Savannah River Estuary are presently available. The USGS real-time webpage, NWISWeb, currently displays all data being collected in the SHEP at

http://waterdata.usgs.gov/ga/nwis/current/?type=flow&group_key=basin_cd. The USGS has developed a real-time alerting system can be activated to electronically notify individuals when parameter(s) have exceeded a pre-defined threshold (for example, see

<u>http://water.usgs.gov/wateralert/</u>). A crucial part of any monitoring plan should now include the ability to disseminate the information using visualization and information delivery tools in order to keep stakeholders informed and allow water managers to make informed decisions in a real-time manner.

3. GOALS OF AN ADAPTIVE MANAGEMENT PLAN, page 5-6. It is stated that if a mitigation feature is changed, monitoring will continue for an additional year. This period may be too short depending on the feature that was changed, when the change was made, and the hydrologic condition for the additional year. The ecosystem has a much different response during wet and dry years.

5.B. Pre-construction Monitoring – Major Components, page 7. The Hydrologic Monitoring Plan is five years old and needs to be updated to reflect the current gaging network, advances in monitoring technologies, and changes in gaging costs for installation and annual operation and maintenance. The Hydrologic Monitoring Plan was edited by the U.S. Geological Survey (USGS) S.C. *and* Ga. Water Science Centers.

The length of the sampling period of "one lunar cycle" is not clear. Is it a 25-hour period, 14-, or 28-day cycle? With what has been learned about the dynamics of the system and data collection, is this the most cost-effective period to collect data for evaluating the ecosystem and the performance of the models?

The section on physical monitoring indicates that the project would fund USGS to collect preconstruction hydrologic data for "up to one year," but all references to pre-construction monitoring on page 8 are to "one year." The Department recommends 1 year of pre-construction monitoring.

5.C. Pre-construction Monitoring – Details of the Monitoring, page 8 and Figure 3. There are two existing water quality stations on Back River (021989784 and 021989791), and one on Front River (02198920), that have long-term salinity data. The Department recommends using this long-term salinity data set, from the end of the last harbor deepening construction to the start of any new deepening construction, as baseline salinity conditions for these sites and to supplement the 1 year of pre-construction water quality monitoring.

5.C. Pre-construction Monitoring – Details of the Monitoring, page 8. Pre-construction monitoring for 1 year is intended to create or supplement a pre-project baseline. However, information based on only 1 year of data may not provide an adequate baseline. Using existing longer-term data from water quality stations on Back River and Front River should help address this problem (see previous comment on Appendix D, section 5.C, page 8 and Figure 3). Similarly, wetland and fishery studies performed during project planning represent useful baseline information. This section and others in the final EIS should describe in greater detail developing baseline conditions for the various monitoring parameters. In addition, this section states: "Monitoring would be conducted between the time a decision is made on implementing a harbor expansion and the time the construction begins which would affect aquatic resources in the inner harbor." If construction is delayed for more than 1 year after a decision for harbor expansion, the Department recommends continuing pre-construction monitoring until construction begins.

The proposed water-quality parameters are not described. To be more complete, the full contingent of parameters available for continuous monitoring should be listing, which are: water temperature, specific conductance, pH, dissolved oxygen, and turbidity. Each parameter brings a specific scientific benefit to the monitoring plan, as well as complements each other with diagnostic troubleshooting of equipment failure.

5.C. Pre-construction Monitoring – Details of the Monitoring, page 9, Figure 3. This figure needs to be updated to reflect current (2011) real-time network.

5.C. Pre-construction Monitoring – Details of the Monitoring, Page 10. The USGS Georgia Water Science Center currently performs all of the monitoring in the SHEP

The funding figures are 5-years old and need to be revisited.

5.C. Pre-construction Monitoring – Details of the Monitoring, Page 12. The goals of the Intense Monitoring are not clear. "This sampling would address those constituents that...cannot be monitored by continuous recorders." The parameters and constituents listed; river discharge, flow volumes, flow velocity, flow direction, water surface elevation, depth, salinity, dissolved oxygen, water temperature, turbidity, pH, and specific conductance, can be monitored continuously. The remaining constituents are a short list: suspended solids, 5-day biochemical oxygen demand (BOD), and chlorides. Other parameters, constituents, and rates to consider are nutrients, long-term BOD, nitrification rates, sediment oxygen demand rate, re-aeration rates and tidal marsh dissolved-oxygen production/depletion rates.

Based upon the results of the initial chloride monitoring performed by the GaWSC, the Department recommends that SHEP chloride monitoring include a real-time index velocity streamgage at Bear Creek, and full chloride monitoring stations at Abercorn Creek (near the intakes) and on the Savannah River at I-95. Much of the monitoring infrastructure is already in place at the last two stations. The Bear Creek streamgage and some of the water-quality instrumentation would need to be reinstalled.

5.C. Pre-construction Monitoring – Details of the Monitoring, Page 14. The Georgia Fish and Wildlife Cooperative Research Unit, not the South Carolina Fish and Wildlife Cooperative Research Unit, have the fisheries personnel available to monitor the movement of fish.

5.E. Summary, Page 15. In the Cost Summary, Oversight and Contracting are listed under "Biological" but not under "Geomorphic." Should the there be a similar item under "Geomorphic"?

6.B. MONITORING DURING CONSTRUCTION-Major Components, page 16. "On a regular basis, the Corps would assess how well the ... models predict..." What is the frequency of this assessment? Every 4 months? Were other locations for sampling chlorides concentrations considered, such as the mouth of Abercorn Creek and I-95?

6.C. MONITORING DURING CONSTRUCTION-Details of Monitoring, page 18. Were other locations for sampling chlorides concentrations considered, such as the mouth of Abercorn Creek and I-95?

6.D. MONITORING DURING CONSTRUCTION-Reporting, Page 19. What is the reporting interval between the end of the 4-month data- collection periods and the release of the model evaluation reports?

6.E. MONITORING DURING CONSTRUCTION-Cost Summary, Page 19. In the Cost Summary, Oversight and Contracting are listed under "Biological" but not under "Geomorphic." Should the there be a similar item under "Geomorphic"?

7.A. Post-construction Monitoring –Goals, page 20. Are there details for the Transfer Efficiency Study of the dissolved-oxygen system? The data collection for the demonstration project was inadequate to show any conclusive effect of the injection system on the receiving waters.

7.B. Post-construction Monitoring – Major Components, page 21. The Corps commits to biological monitoring when soil cadmium concentration is greater than or equal to 4 ppm, but does not define biological monitoring. The Department understood the Corps had agreed to tissue cadmium sampling independent of soil cadmium sampling. Tissue sampling should occur: 1) prior to sediment placement to collect baseline data; 2) during sediment placement; and 3) post placement until 3 consecutive years of samples contain cadmium concentrations that are less than the potential adverse effect level, which is to be determined.

The Department accepts the Corps' use of 4 ppm cadmium concentration in capping material as a trigger for remedial action in DMCAs. The Department understands that the Corps will move a DMCA to higher priority in the rotation for O&M sediment placement and vegetation monitoring if 25 cumulative acres are found to have a cadmium concentration greater than or equal to 4 ppm. Sampling and placement will continue until the DMCA has less than 25 cumulative acres with a cadmium concentration greater than or equal to 4 ppm.

This section states that the Corps will sample the top 15 cm of the cap material. The Department recommends sampling the top 30 cm of the cap material. This section also states that the Corps will conduct biological monitoring when soil cadmium concentrations exceed 4 ppm if the area "cannot be covered by O&M sediments within 6 months." This approach would risk a failure to conduct biological monitoring in an area that the Corps intends to cover within 6 months, but for whatever reason, may not. The Department recommends biological monitoring when concentrations exceed 4 ppm without regard to when the Corps intends to cover the area with O&M sediments.

The Department requests that the Corps continue to coordinate with the FWS prior to completion of the final EIS to finalize plans for biological monitoring within DMCAs, including tissue sampling.

7.B. Post-construction Monitoring – Major Components, page 22. No monitoring is proposed for striped bass, but should be. We recommend a post-project assessment of striped bass habitat using the water quality monitoring data and updated water quality simulations. Model updates are already planned that would facilitate a low-cost assessment using the established striped bass habitat criteria. The Department recommends comparing conditions during the fourth year of post-project monitoring with pre-construction predicted habitat impacts, and formulating corrective actions as necessary based on the results.

7.B. Post-construction Monitoring – Major Components, page 23. The Department supports the sampling protocol (species and timing) described in this section, with one exception (or clarification). Sampling when the CDFs are wet is proposed for April and September. However, the next sentence says three individuals of two species (six total) "will be collected each year" (emphasis added). We recommend revising this to state that these six individuals will be collected twice a year (April and September) when the CDFs are wet.

7.C. Post-construction Monitoring – Details of the Monitoring, page 24. The DEIS shows various post construction monitoring ranging from 2 to 5 years. It is not unlikely that a drought or high-flow period lasting several years would occur during the post-construction monitoring period, which would complicate comparisons with pre-construction monitoring data. In addition, tidal freshwater wetlands respond slowly to salinity change. Therefore, the Department recommends increasing wetland and continuous water quality monitoring from 5 years post-construction to 10 years.

8.B Performance Measures – Post-construction Monitoring, page 28. We recommend developing a detailed data analysis plan for the post-construction water quality monitoring. The mitigation features will significantly alter the system, which will complicate the comparisons of pre- and post-construction conditions to determine the efficacy of the mitigation measures. A recent example of the need for such as plan was the re-oxygenation demonstration performed for the Savannah Harbor Expansion project. Monitoring data was collected, but the analysis of that data failed to conclusively quantify the effect of the demonstration project in the highly variable DO dynamics of the system.

8.B Performance Measures – Post-construction Monitoring, page 29. Concerning the revegetation of Area 1S, grading the site and its feeder creeks to the proper elevations is essential to avoid establishing invasive vegetation (e.g., Chinese tallow tree) that have little or no wildlife value. The discussion and table in this section should specify criteria for successful establishment of native wetland plants. Monitoring the success of the re-vegetation for 5 years should include control measures for exotic and invasive species, if detected.

9.B. Adaptive Management-Decision Making Process, Decision Process, page 30. This section describes an informal inter-agency review process for monitoring data and reports during the 5-year post-construction monitoring period. Within 1 year after the 5-year post-construction monitoring period, the Corps would prepare a consolidated report of the various monitoring programs, followed by 30 days of agency review, an unspecified time period for further report revision, public review, and a potential elevation process. This time-line for making decisions on adaptive management actions would likely require a minimum of 1.5 years after the 5-year

post-construction monitoring period, and could take much longer. The Department recommends compressing this process so that final decisions on corrective actions are reached within 1 year after the monitoring period. In addition, because we have recommended extending the duration of post-construction monitoring from 5 years to 10 years, we also recommend preparing and reviewing a consolidated report of the various monitoring programs at the end of 5 years, and again at the end of 10 years following project construction, to ensure that adaptive management decisions can be made when it becomes apparent that a problem exists, and in a timely manner.

9.B. Adaptive Management- Decision Making Process, pages 30-31. Appendix D contains two sections "9.B" – the second one should be "9.C."

9.B. Adaptive Management-Decision Making Process, Decision Criteria, page 31-32. The Federal modeling performance goals in the plan are those provided by review agencies in 2001 during hydrodynamic model development. Because the agencies were aware of the complexity of the system and model limitations, we allowed considerable latitude in the performance of the models. We are concerned that adopting the same tolerances for the performance of the constructed project is inappropriate, because actual impacts could differ substantially from the predicted impacts without triggering remedial action. Based on earlier coordination, the Corps modified the tolerances for achieving a goal of <1 ppt salinity to +/- 0.1 ppt, and we support this change. The goal for salinity in the range of 1-5 ppt has not been modified, and would allow considerable impact without triggering action. As proposed, a range of 0.5 to 1.5 ppt is acceptable for a salinity goal of 1 ppt (+/- 50%), while a range of 0.89 to 1.09 ppt is acceptable for a salinity goal of 0.99 ppt (+/- 10%). We recommend modifying the goal for salinity in the range 1-5 ppt to +/- 10 % (not +/- 0.5 ppt as currently stated) to make it more consistent with other goals and triggers for adaptive management.

10. Adaptive Management – Implementing Warranted Modifications, pages 32-33. This section states that the "Corps would seek and obtain its funds for this phase each year through the normal budget process," which concerns the Department. It is relatively certain that impacts to trust resources of the Department will occur following construction, but the effectiveness of the mitigation features is much less certain. Therefore, the Department cannot agree that the proposed mitigation plan adequately addresses project impacts unless contingency funding for monitoring/adaptive management activities is assured.

This section should also discuss an implementation schedule for needed corrective actions. The Department recommends initiating construction, or other appropriate remedial actions, within 1 year of a decision to modify a mitigation feature.

10.C. Adaptive Management – Monitoring after Implementing an Adaptive Management Feature, page 35. The Corps proposes to monitor the performance of corrective actions under the adaptive management program. It is unlikely that 1 year of post-construction monitoring is sufficient to determine the outcome of the action in a system as dynamic as the Savannah estuary. The Department recommends 3 years of post-construction monitoring of adaptive management actions.

11.B. Long Term Monitoring – Major Components, page 36. The Corps proposes to fund four water monitoring stations to determine whether the mitigation features are functioning as intended. A fifth station, Station 021989784, is located at the intake of the freshwater supply system for the 3,000 acres of managed wetlands on Savannah NWR and is therefore especially

important for monitoring project impacts to the Refuge. The Department recommends adding it to the Corps' list of supported stations.

Appendix L, Cumulative Impact Analysis

8.B. Wetlands, Page 16. This appendix does not include a section header to separate Section B, Tidal Freshwater Marsh, from Section A, Savannah NWR Freshwater Waterfowl Management Operations. We believe page 16 is the appropriate location for this.

8.B. Wetlands – Historic Basis, page 21. Figure 5 and the associated text do not provide an accurate representation of marshes in 1854. Most of the salt marsh shown on Figure 5 is in the Wright River system, not the Savannah system. The demarcation between freshwater marsh, brackish marsh, and salt marsh is not supported by historical information. As stated on page 20, Appendix L, tidal forest in the mid-1700's extended to the junction of Back River and the Savannah River, and brackish marshes extended to near the mouth of the river. Appendix Q, page 22, mentions that Hutchinson Island was used extensively for rice culture, which requires freshwater. Between the mid-1700's and mid-1800's, only minor modifications were made to the Savannah River. This information indicates that the depiction of marsh type extent in Figure 5 and the resulting areal estimates are mistaken, and that the freshwater limit extended to about river mile 7 in the mid-1850's. Figure 5 shows the interface at about river mile 19. The Department recommends correcting these errors.

Section 8.B. Wetlands – Present Condition, Tidal Freshwater Marshes, page 25. Figure 6 and the associated text do not provide an accurate representation of marshes in 1999. USGS estimates based on detailed field studies and Corps estimates based on the hydrodynamic model are generally consistent, but are substantially different from the estimates shown in Figure 6. The Department recommends corrections for clarity.

8.B. Wetlands – Present Actions/Stresses and Future Actions/Stresses, pages 27-28. This section states that the primary stress to tidal freshwater marsh is prolonged drought, which is not supported by evidence. In 1875, when the controlling depth of the navigation channel was 12-15 feet, the Savannah estuary supported an estimated 12,000 acres of tidal freshwater marsh. In 2005, when the controlling depth was 42 feet, the estuary supported only 3,269 or 4,072 acres (depending on study method used). This section should instead state that the inland intrusion of salt water resulting from channel deepening is a constant stress on tidal freshwater marsh, and that prolonged drought exacerbates this stress.

This section also states that the Corps evaluated the effects of sea level rise on tidal freshwater marsh. The Department maintains that sea level rise would have a negligible impact within the Savannah NWR if not for the cumulative impact of previous harbor deepening.

8.B. Wetlands – Alternatives to Mitigate for Cumulative Effects – Tidal Freshwater Marshes, page 32. The acres listed for preservation for the 48-foot project (2,094) are not consistent with the acres listed elsewhere in the document (2,683). The Department recommends corrections for clarity.

8.C. Wetlands – Saltmarsh and Brackish Marsh, page 32. The discussion of the mitigation for the loss of non-freshwater tidal marshes is confusing. Previous sections – Appendix C, Section V, and elsewhere – speak of impacts to 14.08 acres of salt and brackish marsh with 42 (or 45) acres listed as mitigation for the 44-foot alternative. Appendix C lists 15.68 acres of

brackish marsh loss for all the proposed harbor deepening alternatives. This Appendix lists the loss of 3.0 acres of brackish marsh and 12.68 acres of saltmarsh, which equals the 15.68 acres of brackish marsh mentioned in Appendix C. This is confusing because both 14.08 acres and 15.68 acres are listed as marsh loss for either the 44–foot alternative or all alternatives. Also, the acreage proposed for restoration is not clear. The Department recommends revisions for clarity.

8.C. Wetlands – Saltmarsh and Brackish Marsh, page 33. Most of the salt marsh in the estimate provided in the "Present Condition" section is in the Wright River system, and not in the Savannah River system. The Department recommends corrections for clarity.

Appendix M - Sediment Quality Evaluation

7.3. Monitoring and Contingency Plan, pages 83-86. The Department recommends taking samples of the cap material to a depth of 30 cm instead of the 15 cm depth proposed. This section also cites 7 ppm cadmium concentration as the trigger for remedial action: we recommend this section be revised to be consistent with Appendix D (Section 7.B) which identifies 4 ppm as the trigger.

We recommend biological monitoring when cadmium exceeds 4 ppm regardless whether the Corps plans to cover the area with O&M sediments within 6 months. This section, and others, should define biological monitoring in the context of cadmium in disposal areas. The Department recommends a program of monitoring wildlife activity in disposal areas and cadmium levels in bird tissues that is independent of the Dredge Material Containment Area (DMCA) capping criteria. Wildlife monitoring should begin with sediment placement and continue as long as all other monitoring of the DMCA. Tissue monitoring should occur: 1) prior to sediment placement to collect baseline data; 2) during sediment placement; and 3) post placement until 3 consecutive years of samples contain cadmium concentrations that are less than the potential adverse effect level, which is to be determined. The Department supports the sampling protocol (species and timing) described in Appendix D, page 23, and requests that the Corps continue to coordinate with the FWS prior to completion of the final EIS to finalize plans for biological monitoring within DMCAs, including tissue sampling.

Our recommendations necessitate revisions to the "Decision Matrix for Cadmium Sampling" on page 86, including: remove references to 7 ppm cadmium concentrations; remove "if necessary" in reference to tissue sampling; do not differentiate between areas slated for covering before or after 6 months; and continue wildlife use studies until tissue monitoring is completed.

Appendix Q, Risk and Uncertainty Analysis in Environmental Evaluation and Approach

4.A. Uncertainty in Wetland Impact Predictions, page 7. Based on an analysis prepared by Kinetic Analysis Corporation (KAC), this section concludes that the hydrodynamic model probably over-predicts salinity and under-predicts dissolved oxygen, i.e., the model errs towards the side of simulating conditions worse than would actually occur. We believe this analysis may seriously misrepresent the risk and uncertainty associated with the water quality predictions. With the exception of the new channel depth, the KAC analysis relied upon the existing geometry of the Savannah River estuary. Several mitigation measures would significantly modify the system geometry, including significant flow diversion at McCoys Cut, closing Rifle Cut, filling the Back River sediment basin, and removing the tide gate. Flow routing and flow volume in the three main river channels would become significantly different from the current system. Therefore, we believe the degree of risk and uncertainty regarding expected water

quality impacts, and the resulting wetland impacts, is considerably higher than the KAC analysis suggests, which is one of the reasons why the Department recommends extending the proposed post-construction monitoring from 5 years to 10 years.

4.B. Uncertainty in the Amount of Sea Level Rise, page 8. This portion of the DEIS discusses risk and uncertainty in relation to sea level rise and the modeling of impacts to freshwater marsh. This section argues for predicating mitigation on the "base year" impacts (the year construction is complete) instead of average annual impacts over the life of the project (consistent with Corps policy), because "impacts that would occur soon after the base year are those most likely to occur and least subject to uncertainty from more distant projections of future conditions." Average annual impacts are less than base year impacts because sea level rise over 50 years will cause wetland losses without the project. The Department agrees with predicating mitigation on the base year impacts, but for a different reason. The Department maintains that sea level rise would have a negligible impact on Savannah NWR if not for the cumulative impact of previous harbor deepening.

4.C. Risk with Wetland Impact Predictions, page 8. Wetland impacts are inferred from salinity changes predicted by the hydrodynamic model. This section states: "...the hydrodynamic model has roughly an 80 percent chance of over-predicting salinity levels at low salinity levels, thus leading to an over-prediction of salinity-induced impacts to wetlands. Therefore, the model is considered to present little risk for decision-makers evaluating salinity impacts to wetlands." The Department disagrees with this characterization, which was based on analysis by KAC that, with the exception of the new channel depth, relied upon the existing geometry of the Savannah River estuary. Several mitigation measures would significantly modify the system geometry, including significant flow diversion at McCoys Cut, closing Rifle Cut, filling the Back River sediment basin, and removing the tide gate. Flow routing and flow volume in the three main river channels would become significantly different from the current system. Therefore, we believe the degree of risk and uncertainty regarding expected water quality impacts is considerably higher than the KAC analysis suggests, and is a reason we recommend extending the proposed post-construction monitoring from 5 years to 10 years.

5.B. Risk with Dissolved Oxygen Predictions, page 10. This section states that the model slightly under-predicts DO levels and is therefore a good predictor of DO-related impacts. Because the project and the various mitigation features will substantially alter channel geometry of the lower river, and the hydrodynamic models are based on the current geometry, the Department attributes a relatively high degree of uncertainty with the model predictions of water quality impacts, including DO impacts. We recommend that the final EIS recognize and acknowledge this uncertainty. The risk to fish and other resources of underestimating DO impacts is further justification for expanding the monitoring effort beyond the currently proposed 5 years to 10 years.

9.00 REFERENCES

The Draft EIS references a USGS report, by the Cooperative Research Unit, titled "Simulation of Water Levels and Salinity in the Rivers and Tidal Marshes in the Vicinity of the Savannah National Wildlife Refuge, Coastal South Carolina and Georgia" but does not provide the reference. Suggest the Final EIS include the reference (Conrads et al, 2006) as follows:

Conrads PA, Roehl EA, Daamen RC, and Kitchens WM. 2006. Simulation of Water Levels and Salinity in the Rivers and Tidal Marshes in the Vicinity of the Savannah National Wildlife Refuge, Coastal South Carolina and Georgia. US Geological Survey, Scientific Investigations Report 2006–5187, 134 p. Available online at: http://pubs.usgs.gov/sir/2006/5187/pdf/sir20065187.pdf

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Page 236, sections 12.3.1 and 12.3.2. Based on an analysis prepared by Kinetic Analysis Corporation (KAC), this section concludes that the hydrodynamic model probably over-predicts salinity and under-predicts dissolved oxygen, i.e., the model errs towards the side of simulating conditions worse than would actually occur. We believe this analysis may seriously misrepresent the risk and uncertainty associated with the water quality predictions. With the exception of the new channel depth, the KAC analysis relied upon the existing geometry of the Savannah River estuary. Several mitigation measures would significantly modify the system geometry, including significant flow diversion at McCoys Cut, closing Rifle Cut, filling the Back River sediment basin, and removing the tide gate. Flow routing and flow volume in the three main river channels would become significantly different from the current system. Therefore, we believe the degree of risk and uncertainty regarding expected water quality impacts is considerably higher than the KAC analysis suggests, and is a reason we recommend extending the proposed post-construction monitoring from 5 years to 10 years.

Pages 236-237, sections 12.3.3 and 12.3.4. This section states that the model slightly underpredicts DO levels and is therefore a good predictor of DO-related impacts. Because the project and the various mitigation features will substantially alter channel geometry of the lower river, and the hydrodynamic models are based on the current geometry, the Department attributes a relatively high degree of uncertainty with the model predictions of water quality impacts, including DO impacts. We recommend that the final EIS recognize and acknowledge this uncertainty. The risk to fish and other resources of underestimating DO impacts is further justification for expanding the monitoring effort beyond the currently proposed 5 years to 10 years.

The Department appreciates the opportunity to comment on this project. Let me know if you have questions about our comments. I can be reached on (404) 331-4524 or emailed at gregory hogue@ios.doi.gov.

Sincerely,

Gregory Hogue Regional Environmental Officer

cc:

Southeast Regional Administrator, Environmental Protection Agency Southeast Regional Director, NOAA Fisheries Service Southeast Regional Director, U.S. Fish and Wildlife Service Field Supervisor, FWS, Athens, GA Refuge Manager, Savannah NWR Georgia Water Science Center, USGS South Carolina Water Science Center, USGS Senior Advisor for Science Applications, USGS

Department of the Interior, Office of the Secretary, Office of Environmental Policy and Compliance

Page 2

637-BB-141-EV01, 637-BB-141-EV02

Comment: The Department's preferred plan for deepening Savannah Harbor is the 45-foot depth alternative, because it minimizes the loss of freshwater tidal wetlands, impacts to Savannah National Wildlife Refuge (NWR), and risk and uncertainty of impacts to trust fish and wildlife resources. Previous channel deepening projects have reduced tidal freshwater marsh within the Savannah River estuary from about 12,000 acres to about 3,300 acres. The majority of the remaining freshwater tidal wetlands occur on Savannah NWR. Further deepening the channel from its present depth of 42 feet would further reduce this important and increasingly rare national resource. At the NED plan depth (47 feet), a net loss of 223 acres of tidal freshwater wetlands is predicted after flow-diversion mitigation is implemented. At the LPP depth (48 feet), a net loss of 337 acres of tidal freshwater wetlands is predicted after flow-diversion mitigation is implemented. The loss of an additional 114 acres of freshwater tidal wetlands associated with the LPP would represent a 50 percent increase in impacts to the Savannah NWR over the NED plan and a cumulative loss of approximately 10 percent of the basin's remaining freshwater tidal wetlands. For this reason, the Department does not support the LPP.

Response: The EIS/GRR has determined that the -47 foot alternative is the selected plan. The selected plan has less tidal freshwater wetland impact than the LPP. The District recognizes the Department of Interior's preference for the 45-foot depth alternative because it would result in the least adverse environmental impacts. However, deepening to -45 feet would incompletely achieve the project purpose and need, which is to address navigation inefficiencies in Savannah Harbor. The larger vessels that will be calling at Savannah need additional depth to load more fully and efficiently, which will achieve greater transportation cost savings. The Corps believes the Federal agencies should make their decisions after considering all factors involved, including the project purpose and need, economics, environmental impacts, and mitigation.

The loss/conversion/change in areal distribution of wetland community types within the Savannah Harbor estuary are the result of many factors. As discussed in the EIS, conversion of bottomland hardwoods to rice fields, shoreline/upslope development, sea level rise, etc. have contributed to changes in the amount of tidal freshwater marsh in the Savannah Harbor estuary. All of the Cooperating Agencies involved in this process were sensitive to, and indeed deferred to DOI/USFWS concerns regarding loss of tidal freshwater wetlands. To address those concerns, the Wetland Interagency Coordination Team developed mitigation consisting of preservation of over 2,000 acres of bottomland hardwood wetlands that would be added to the Savannah National Wildlife Refuge and preserved in perpetuity.

637-BB-141-EV03, 637-BB-141-EV04, 637-BB-141-EV05, 637-BB-141-EV06, 637-BB-141-EV07

Comment: The potential effect of sea level rise on wetland habitats is mentioned throughout the DEIS. The document discusses drought, sea level rise, and channel deepening, but does not analyze the interaction between these major influences. In Appendix C (Mitigation Planning) and elsewhere in the DEIS, the Corps suggests that if the rate of sea level rise exceeds the historic rate, the proposed compensatory mitigation (e.g., land additions to the Savannah NWR for the loss of 223 acres of freshwater tidal wetlands under the NED plan) would overcompensate project impacts, because some of those acres would have converted to brackish or salt marsh without the project. The Corps proposes to reassess sea level rise effects in the future and assign "advance mitigation" credits to the project for use with future actions. The Department objects to this proposal, because sea level rise would have a negligible impact in the upper estuary if not for the cumulative impacts of previous harbor deepening. The rate of sea level rise is uncertain and substantial impacts resulting from sea level rise are likely well into the future. Conversely, the impacts of further harbor deepening will begin almost immediately. In addition, due to the complexity of the system and limitations of the models, the Department has concerns that the models may underestimate wetland impacts. The Department regards "advance mitigation" in this context as the functional equivalent of a mitigation bank, and U.S. Fish and Wildlife Service (FWS) Mitigation Policy (64 FR 49229-49234) does not allow the use of NWR lands for mitigation banks to compensate for the effects of activities authorized by the Department of the Army under Section 10 of the Clean Water Act and Section 10 of the Rivers and Harbors Act. Therefore, the Department does not support the concept of advance mitigation based on a future evaluation of the relative impacts of sea level rise. We do support, however, obtaining a waiver in this instance from the Corps' policy to implement the agency-coordinated level of mitigation for the base year (the year construction is completed) impacts, rather than mitigating for the project's average annual impacts or reassessing sea level rise impacts in the future.

Response: The DEIS provided sufficient analysis of the impacts of drought, sea level rise, and channel deepening on wetlands in the Savannah Harbor estuary to provide the reader with an understanding of the effects of these phenomena. The District carried out all wetland studies and analyses identified by the Wetland Interagency Coordination Team as being required to evaluate the wetland impacts accruing to various project alternatives.

The analysis of sea level rise and its effects on tidal freshwater marsh in the estuary is a requirement of EC 1165-2-212. Additionally, ER 1105-2-100 states "Ecosystem outputs are not discounted, but should be computed on an average annual basis, taking into consideration that the outputs achieved are likely to vary over time". Based on these two requirements, Savannah District determined that the wetland mitigation (purchase of 2,245 acres of land for preservation) for the 47-foot depth channel would over compensate for project impacts in the event sea level rise exceeded historic rates. Nonetheless, the District requested a waiver of the requirements of ER 1105-2-100 regarding how environmental impacts are computed. The Assistant Secretary of the Army (Civil Works) has reviewed and approved the waiver, thereby allowing the mitigation to be based on the impacts that would occur at the time of construction. Hence, a portion of the original proposal has been removed -- a comparison of impacts after the 50-year life of the project resulting from construction versus those caused by sea level rise. The amount of wetlands to be preserved [currently 2,245 acres in extent] as mitigation for the adverse impacts of the 47-foot channel deepening provides the appropriate level of mitigation for impacts that would occur at the time of the time of the time of the appropriate level of mitigation for impacts that would occur at the time of the time of the time of the adverse impacts of the 47-foot channel deepening provides the appropriate level of mitigation for impacts that would occur at the time of project impacts of the appropriate level of mitigation for impacts that would occur at the time of project implementation.

The Wetland Interagency Coordination Team participated in the development of the procedures which were used to estimate the impacts of the various harbor deepening alternatives on wetlands. Because estuarine systems are so complex, numerical modeling will not be able to capture all of their interactions with absolute accuracy. Nonetheless, the District is confident that these analyses reasonably forecast eventual impacts to wetland community types. The selected alternative includes a post-construction monitoring plan which will empirically evaluate actual wetland impacts, as well as an adaptive management component which will adjust any of the mitigation features, as necessary.

Mitigation for all the project's direct wetland impacts can be accomplished via restoring 28.8 acres on Disposal Area 1-S. An additional 11.5 contiguous acres would also be restored on Area 1-S which would be applied to future wetland mitigation needs for future Savannah Harbor upgrades. The additional

acreage restored on the remainder of the site would only be used by the Federal government for Savannah Harbor activities. Hence, this would not constitute a wetland mitigation bank, since credits would not be sold to other entities.

As noted above, the Assistant Secretary of the Army (Civil Works) has granted the District's request for a waiver from Section 5, paragraph E-36.c.(1) of ER 1105-2-100 regarding how environmental impacts are computed. This waiver is based on the belief that the project should mitigate for the environmental impacts that would occur when the project is implemented and the fact that project impacts are more easily ascertained in the early life of the project, rather than 50 years later.

637-BB-141-EV08, 637-BB-141-EV09, 637-BB-141-EV10, 637-BB-141-EV11

Comment: Assuring the effectiveness of the mitigation features proposed in the DEIS is essential to the Department's approval of the selected project plan. These features were developed using preconstruction data and models to predict potential effects to the estuary. The DEIS states that natural variation alone will nearly guarantee that conditions during the first few years after construction are different from those under which the models were first calibrated. Currently, the Monitoring and Adaptive Management Plan proposes 5 years post-construction monitoring of key mitigation features, which we believe is not long enough. It is the Department's position that 10 years post-construction monitoring is necessary for the adaptive management process to work; i.e., to ensure that impacts to natural resources in this complex system resulting from project construction are limited to those predicted. Further, the Department recommends a more precise definition of observed conditions that would prompt changes to the mitigation features, and a time-line for making decisions and taking corrective actions thereafter. The Department is also concerned that funding for adaptive management will depend upon the Corps' annual appropriations process. It is relatively certain that impacts to trust resources of the Department will occur following construction, but the effectiveness of the mitigation features is much less certain. Therefore, the Department cannot agree that the proposed mitigation adequately addresses project impacts unless contingency funding for monitoring and adaptive management is assured.

Response: Concur. The SHEP's monitoring and adaptive management plan is specifically designed to evaluate the effectiveness of its constituent mitigation features. It is important to note that the plan includes funding to modify/supplement any mitigation feature the monitoring deems necessary.

A review of the monitoring protocol does not reveal a requirement for ten years of post-project monitoring; however, as requested by agencies including DOI/USFWS, the Corps has extended the length of the post-construction monitoring period to ten years for key components, including wetlands and water quality. The revised post-project monitoring should provide ample data regarding the project's impacts on physical parameters [dissolved oxygen, salinity, etc.] affecting water quality and other concerns, such as fish distribution, etc. Further, monitoring will be extended two additional years [to seven] to document the recovery of the CDF 1S marsh restoration site. This time extension would comport with monitoring requirements that the Regulatory Branch of USACE requires of permittees for similar activities.

The Monitoring and Adaptive Management Plan [pages 28-32] provides a discussion of postconstruction monitoring and the decision- making process that would determine if additional monitoring and/or mitigation measures are warranted. The plan did not identify specific acceptability criteria for water quality or biologic parameters [page 28] that would trigger the need to implement additional monitoring or modify mitigation measures. This was by design, i.e., there was a concern that a specific threshold for a parameter would limit the judgment of subject matter experts about when/what kind of changes might be needed when the monitoring data becomes available. Namely, the monitoring data might prompt a resource expert to recommend modifying a monitoring protocol and/or changing a particular mitigation measure, even though a specific threshold had not been reached. Further, the potential cumulative impacts of several parameters could become a concern even though the threshold limits had not been exceeded for any one parameter.

Decision points relative to changes in the monitoring plan or mitigation features can be reached at any time during the post-construction monitoring effort. As soon as they are finalized, monitoring data and reports would be made available to the resource agencies in support of this goal. The plan currently provides for a meeting each year between the District and the resource agencies to discuss the data collection and any protocol changes. However, such a meeting could be conducted at any time circumstance/concerns dictate. If the monitoring identifies impacts that are well outside of those predicted, consultation with the resource agencies would begin immediately. Corrective actions could range from a change in the monitoring plan to a cessation of construction activities until a given problem is rectified.

The District would obtain funds for project construction (including monitoring and adaptive management) through its established budget process. The Corps considers monitoring and adaptive management to be mitigation features, so they would be treated as "general navigation features" and budgeted along with funds for the channel deepening. The Corps would consider the project to still be in "Construction" until the end of the monitoring and adaptive management period. The Corps will develop a construction funding plan as well as a mitigation and adaptive management funding plan. The Corps will seek funding each year as identified in the funding plans. If the total costs exceed the estimates, the Corps would seek to obtain Corps approvals for any additional amounts needed through the normal budget process. Funds for un-programmed adaptive management needs would be considered should excess construction funds become available during the year. Adaptive management funds currently estimated at \$2 million per year will be sought for the entire duration of the monitoring period and for any action needed based on the monitoring results. Any project funds that are not used during the year due to unforeseen circumstances would be carried forward as needed and justified. If modifications are found to be warranted and they are contained in the group of actions described in the following section and the EIS, they could be implemented without further public coordination or environmental approvals. If then-existing programmed funding is not sufficient to implement the above-mentioned warranted modifications, the Corps would seek to identify funds for reprogramming. Funds to be reprogrammed must first be identified as excess to another project's needs. If such funds are identified, the District will seek to obtain them to implement the needed adaptive management actions, thereby minimizing unanticipated adverse project effects.

After completion of the adaptive management phase, the Corps would budget for operation and maintenance of the channel and its mitigation features through the Operations and Maintenance funding program. The Corps expects the Record of Decision to state that approval of the project is conditioned on performance of the monitoring and adaptive management aspects of the project. That procedure is a method identified by CEQ in their 14 January 2011 guidance titled "Appropriate Use of Mitigation Monitoring and Clarifying the Appropriate Use of Mitigated Findings of No Significant Impact" as being sufficient for a Federal agency to ensure that the monitoring and adaptive management would be performed. Further, the non-Federal sponsor, acting through the Georgia Ports Authority, has agreed to set aside in advance funds in an escrow account for the monitoring and adaptive management upon approval of the project.

Page 3

637-BB-141-EV12, 637-BB-141-EV13

Comment: The Department is concerned about the reliance on the hydrodynamic and water-quality models in the Adaptive Management Plan (AMP, Appendix D). The Plan does not include ecological performance measures to independently evaluate the effectiveness of the mitigation for the deepening of the Savannah Harbor. The models were developed to evaluate potential resource impact from deepening and to evaluate various mitigation actions to minimize environmental degradation of valued resources. The mitigation plan results in major changes to flow dynamics of the Lower Savannah River Estuary. Six of the seven mitigation features involve alterations to flow paths. The expected result of the mitigation is that the post-construction ecosystem will function in a similar manner to the preconstruction ecosystem. The monitoring data, along with ecological performance measures, should be used to evaluate the effectiveness of the mitigation features.

Response: The Monitoring and Adaptive Management Plan notes that field data collected during the post-construction monitoring and the hydrodynamic and water quality models are the main tools which will be used to determine how the project is performing and if the impacts are generally as expected. Further, the plan details that the District, Cooperating Agencies, and the state Natural Resource Agencies will review this data to determine whether impacts are generally as anticipated or whether changes to a specific project element, per se, and/or the mitigation plan are warranted. Even though the potential impacts of the project were evaluated under a range of likely conditions, the actual circumstances experienced after construction will be somewhat different from those used for evaluation in the project's feasibility phase. Consequently, the hydrodynamic and water quality models will be used to examine post-project performance under actual conditions, e.g., high/ low flows, drought, or some combination of these. The performance [accuracy] of the hydrodynamic and water models will be assessed once during pre-construction monitoring and twice during post-construction monitoring and recalibrated, as necessary. This repetition in modeling assessment/recalibration will improve their predictive accuracy by decreasing their range of uncertainty. The District and the natural resource agencies would use the modeling data [after the post-construction assessment/calibration] and compare it to actual field results to evaluate whether the system is performing as expected.

The Monitoring and Adaptive Management Plan provides a detailed discussion of how the above agencies will conduct the decision- making process, along with the concurrence process for modifying any project element or an agreed upon mitigation measures.

637-BB-141-EV14

Comment: The AMP does not include ecosystem performance measures for the majority of the resources that the mitigation is trying to protect. The only ecological performance measure found was for the re-vegetation of Area 1S. For the other resources, the Corps proposes to use a modified version of the draft Federal Expectation for Hydrodynamic and Water-Quality Model Calibration and Confirmation performance measures. The intent is to collect additional data, simulate pre- and post-project scenarios with the models, evaluate the calibration of the models, re-calibrate the models (if necessary), and then evaluate the effectiveness of the mitigation.

Response: A previous response addressed establishment of guidelines rather than specific environmental/biological performance measures. That notwithstanding, the overall goals are known for important indicator species such as Shortnose sturgeon, for which we do not want to cause drastic shifts in their distribution in the estuary. Based on previous field work and recent model predictions, the areal

extent of this habitat in the project area has been determined along with how much of that habitat may be affected by the various deepening alternatives. The adaptive management plan [Plan] provides for a year of pre-construction monitoring which would provide almost real-time data regarding this habitat, as well as a distribution study of Shortnose sturgeon within the entire study area. The Plan includes a ten-year post-construction monitoring component for these two study elements, as well as using the hydrodynamic and water quality models to evaluate project performance. Throughout and at the end of post-construction monitoring, resource agencies and the District will interpret all the collected data and reach conclusions regarding the project's overall impact on the estuary and any additional measures that may need to be taken to protect the health of a particular element therein.

637-BB-141-EV15

Comment: It is not clear in the AMP how the draft Federal Expectation for Hydrodynamic and Water-Quality Model Calibration and Confirmation performance measures equates to ecological performance measures. The hydrodynamic and water-quality models currently do not meet these model calibration goals in many areas of the system (see Tetra Tech, 2006; Appendices B-K, P, and Q). If the current models do not meet the calibration performance goals, how will evaluating the model calibration performance for the post-project inform resource decision makers if the ecosystem is being protected by the mitigation features?

Response: The natural resource agencies recognized that modeling could not replicate environmental conditions in the estuary with complete accuracy. Therefore, they established performance goals for the models which had to be generally met by their developers. Before the Corps used those tools to evaluate potential project impacts, the natural resource agencies agreed that the models acceptably met the performance criteria and were acceptable for impact evaluation purposes for this project. The Corps has scheduled three intense hydrodynamic data collection efforts if the project moves to implementation. Those efforts are designed to provide data that would allow the modelers to make the models more accurate, thereby reducing the uncertainties around the calculated values. The Corps expects that those opportunities for recalibration would result in the models exceeding the agencies' original performance expectations. The refined models would allow more accurate comparisons between the observed post-construction data and the values calculated for those conditions.

637-BB-141-EV16, 637-BB-141-EV17

Comment: It is important to perform a post audit of the models to better assess their predictive capacity and uncertainties. Model calibration goals are not the same as ecological performance measures. By relying solely on the post audit of the models for the evaluation of the mitigation, an opportunity for utilizing the tremendous amount of data and analysis that were used to develop the DEIS is not being realized. The development of the DEIS involved tremendous amounts of data collection and analysis of various resources that needed protection. These data and analyses should be used in developing ecosystem performance measures. The ecosystem performance measure could be expressed as the magnitude, duration and frequency of the parameter of interest and appropriate thresholds for actions by resource agencies.

Response: Concur. Field data collected in the estuary would be used to update/refine models to narrow the range between predicted and observed values.

As noted previously, the refinement of the models would not be the primary tool used to determine project impacts or the degree/kind of modifications which would be made to the mitigation plan. Instead, those refined models would allow more accurate comparisons between the observed post-construction data and the values calculated for those conditions. It is the comparison between observed post-construction field data and the values calculated for those conditions that would serve as the primary tool to determine project impacts and whether modifications to the mitigation plan are warranted. Further discussion regarding establishment of ranges of predicted values has been added to the monitoring and adaptive management plan [p. 16-17].

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637-BB-141-EV18

Comment: There are references in the Plan of the using the monitoring data to show if "...impacts are occurring beyond the range of those expected" and the monitoring data "...will be useful in identifying whether any impacts are occurring beyond the range of those expected" (p. 27). The expected range of impacts was never defined in the AMP. At every sampling and gaging location for a resource of concern, an ecological performance measure should be developed to define the expected ecosystem response to the deepening mitigation.

Response: Please see previous response on the establishment of performance measures. The range of values expected a given site would depend on the environmental conditions experienced at that time – river flow, temperature, tides, etc. Further discussion regarding establishment of ranges of predicted values has been added to the monitoring and adaptive management plan [p. 16-17].

637-BB-141-EV19

Comment: Many of the funding figures appear to be inconsistent between sections of the AMP and between the AMP and the GRR. For example, chloride sampling is listed at \$100,000 on page 18 and \$80,000 on page 24, marsh data collection is listed at \$18,000 on page 17 and \$20,000 on page 24, and long-term monitoring is listed at \$347,000 on page 37 and \$428,400 in the GRR.

Response: The chloride sampling costs [pages 18 and 24] differ from those for marsh collection data [pages 17 and 24] because they represent a different time frame, i.e., the expenditures on pages 17 and 18 are for monitoring during construction while the values on Page 24 are for post-project monitoring. The costs for long-term monitoring in the GRR have been corrected to reflect what is included in the Adaptive Management Plan. Although the commenter does not provide a specific references to costs in the GRR, it should be noted that final project costs listed in the GRR include a contingency percentage, which is added to the unit cost estimates upon completion and review of the total project cost estimate and cost-risk analysis by the Cost Engineer. As such, these costs may not correspond with the estimates presented in the EIS.

637-BB-141-EV20, 637-BB-141-EV21

Comment: Procedures for disposing of sediments that contain cadmium concentrations exceeding 14 parts per million (ppm) are discussed in three parts of the DEIS: 1) Section 5.4.2.2; 2) Appendix D - Monitoring and Adaptive Management; and 3) Appendix M - Sediment Quality Evaluation. These discussions are unclear and inconsistent. In particular, we recommend clarifying the proposed cadmium monitoring program. The Department recommends a program of monitoring wildlife activity in disposal areas and cadmium levels in bird tissues that is independent of the Dredge Material Containment Area (DMCA) capping criteria. Wildlife monitoring should begin with sediment placement and continue as long as all other monitoring of the DMCA. Tissue monitoring should occur: 1) prior to sediment placement to collect baseline data; 2) during sediment placement; and 3) post placement until 3 consecutive years of samples contain cadmium concentrations that are less than the potential adverse effect level, which is to be determined. The Department supports the sampling protocol (species and timing) described in Appendix D, page 23; and requests that the Corps continue to coordinate with the FWS prior to completion of the final EIS to finalize plans for biological monitoring within DMCAs, including tissue sampling.

Response: Through extensive coordination with the USFWS since release of the DEIS, the District has agreed to conduct bird blood/feather analyses as part of the monitoring efforts associated with the disposal of sediments having elevated cadmium levels. Independent of the concentrations of cadmium in cap/cover, the District will perform monthly biological monitoring of birds that use CDFs 14A/14B during and after sediment placement. Cadmium levels in blood will also be evaluated. Tissue analyses would be conducted if the blood analyses indicate a statistically significant difference in the baseline and project data. Section 5 of the EIS, Appendix D, and Appendix M have been revised to indicate this.

The District will coordinate any bird blood/feather and/or tissue sampling efforts with the FWS.

637-BB-141-EV22

Comment: The Department accepts the Corps' use of 4 ppm cadmium concentration in capping material as a trigger for remedial action in DMCAs. The Department understands that the Corps will move a DMCA to higher priority in the rotation for Operations and Maintenance (O&M) sediment placement and vegetation monitoring if 25 cumulative acres are found to have a cadmium concentration greater than or equal to 4 ppm. Sampling and placement will continue until the DMCA has less than 25 cumulative acres with a cadmium concentration greater than or equal to 4 ppm.

Response: Concur.

637-BB-141-EV23, 637-BB-141-EV24

Comment: The Savannah estuary is a complex system and predicting how this system may respond to substantial physical alterations (channel deepening, flow diversions, etc.) is fraught with uncertainties, which are well acknowledged within the DEIS. However, based on an analysis prepared by Kinetic Analysis Corporation (KAC), the DEIS concludes that the hydrodynamic model probably over-predicts salinity and under-predicts dissolved oxygen; i.e., the model errs towards the side of simulating conditions worse than would actually occur. We believe this analysis may seriously misrepresent the risk associated with the water quality predictions. It is quite possible that the hydrodynamic model does not predict worst-case conditions. With the exception of the new channel depth, the KAC analysis relied upon the existing geometry of the Savannah River estuary. Several mitigation measures would significantly modify the system geometry, including significant flow diversion at McCoys Cut, closing Rifle Cut, filling the Back River sediment basin, and removing the tide gate. Flow routing and flow volume in the three main river channels would become significantly different from the current system. Therefore, we believe the degree of risk and uncertainty regarding expected water quality impacts, and in turn, wetland impacts, is considerably higher than the KAC analysis suggests. For this and other reasons, the Department recommends extending the proposed post-construction monitoring from 5 years to 10 years.

Response: Please see previous response concerning extending the post-construction monitoring program from 5 to 10 years.

Namely, extending key components to ten years of post-monitoring data collection, including wetlands and water quality, will provide sufficient information for reasoned decision-making for resources of concern within the project area. Appendix D contains the details of the post-construction monitoring plan.

637-BB-141-EC01

Comment: The first paragraph of the Abstract discusses channel depths and then states that 70% of vessels do not call on Savannah at their maximum capacity or design draft, which implies that all light-loading is due to channel depth limitations. The Corps should include information on the percentage of vessels with loads constrained by channel depth and the percentage of light-loading due to other factors, such as prior calls at other ports. Additionally, the DEIS should include the predicted percentage of ships that will call on the port fully loaded or leave fully loaded if the channel is deepened.

Response: The statement is not intended to imply that light loading of containerships is solely due to channel depth limitations. Rather the statement is intended to express in relative terms, to what extent container vessels calling Savannah incur some restrictions due to channel depth. The statement could also be worded as follows: "About 70% of the container ships that currently call at Savannah have design drafts greater than 38 feet, so they would need tidal assistance to safely traverse the channel when fully loaded." Those vessels either arrive and depart in light loaded conditions or have to make use of tides.

Containerships seldom sail at their design drafts. There are many reasons why vessels light load, among them are prior and post port limitations and the channel itself. In some instances a vessel "cubes" out before it "loads" out. To cube out means that a vessel has all of its spaces filled with either laden or empty containers, but the weight of the cargo and containers is such that it does not require the vessel's entire design draft. In other instances, vessels may not arrive or depart a particular port at its design draft because there is not enough cargo imported or exported on that particular leg of their trip. It is neither possible nor necessary to estimate the percentage of light loads due to various factors. Tables 108, 112, and 113 in the Economics Appendix show estimated sailing draft distributions of various classes of containerships, and the distributions of sailing drafts in the without project conditions and with each of the alternatives.

637-BB-141-EV25

Comment: The first paragraph of this section states that the tentatively recommended plan is either the 47-foot alternative or the 48-foot alternative. The third paragraph describes the tentatively recommended plan as the 48-foot alternative. The Errata Sheet of December 17, 2010, states that various references to the 48-foot alternative throughout the GRR and DEIS "should not be interpreted as a recommendation or preference for that alternative over the tentatively selected -47 feet NED [plan]." On September 9, 2010, the FWS provided comments on preliminary drafts of the GRR and DEIS, identified -45 feet as its preferred alternative for deepening the harbor and stated it did not support the 48-foot alternative. The final EIS will necessarily need to revise this section to discuss the multi-agency rationale for what is ultimately determined as the final plan selection.

Response: The Corps acknowledges theSDOI's preference for the 45-foot depth alternative. The FEIS contains the views expressed by the Cooperating Agencies, and the document will addresses all agency comments received during the DEIS process.

637-BB-141-EC02

Comment: This section states that 70% of vessels do not call on Savannah at their maximum capacity or design draft, which implies that all light-loading is due to channel depth limitations. The Corps should include information on the percentage of vessels with loads constrained by channel depth and the percentage of light-loading due to other factors, such as prior calls at other ports. Additionally, the DEIS

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should include the predicted percentage of ships that will call on the port fully loaded or leave fully loaded if the channel is deepened.

Response: The statement is not intended to imply that light loading of containerships is solely due to channel depth limitations. Rather the statement is intended to express in relative terms, to what extent container vessels calling Savannah incur some restrictions due to channel depth. The statement could also be worded as follows: "About 70% of the container ships that currently call at Savannah have design drafts greater than 38 feet, so they would need tidal assistance to safely traverse the channel when fully loaded." Those vessels either arrive and depart in light loaded conditions or have to make use of tides.

Containerships seldom sail at their design drafts. There are many reasons why vessels light load, among them are prior and post port limitations and the channel itself. In some instances a vessel "cubes" out before it "loads" out. To cube out means that a vessel has all of its spaces filled with either laden or empty containers, but the weight of the cargo and containers is such that it does not require the vessel's entire design draft. In other instances, vessels may not arrive or depart a particular port at its design draft because there is not enough cargo imported or exported on that particular leg of their trip. It is neither possible nor necessary to estimate the percentage of light loads due to various factors. Tables 108, 112, and 113 in the Economics Appendix show estimated sailing draft distributions of various classes of containerships, and the distributions of sailing drafts in the without project conditions and with each of the alternatives.

637-BB-141-EV26

Comment: 4.01.2, Geology, page 4-7. *The amount of dredged material by station for both inner harbor and outer harbor do not match between Section 3 (Table 3-8, pg. 3-27; Table 3-9, pg. 3-28) and Section 4 (Table 4-4, pg. 4-7; Table 4-5, pg. 4-7). The Department recommends corrections for clarity.*

Response: Concur. The tables have been revised for consistency.

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637-BB-141-EV27

Comment: The discussion on DO standards is confusing. The new DO standard established by the State of Georgia is not less than 5.0 mg/L throughout the year with an instantaneous minimum of 4.0 mg/L. A number of site-specific DO standards are listed. For clarity, this section should explain how the new standard of 5.0 mg/L compares to the measured monthly ranges of DO in the Savannah River at the currently authorized depth of 42 feet.

Response: Concur. The DEIS has been revised to reflect the details of Georgia's water quality standards for Savannah Harbor. Additional information has been added to provide the reader with a better understanding of existing background dissolved oxygen levels.

637-BB-141-EV28

Comment: This section states that optimum striped bass spawning success requires salinity less than 1.7 ppt. Studies on the Savannah River indicate that striped bass spawn almost exclusively in areas where maximum salinity near the surface is less than 1.0 ppt. The Department recommends revision to state salinity of less than 1.0 ppt is optimum.

Response: The USFWS participated in the Fisheries Interagency Coordination Team which guided the Corps in its evaluations on Striped bass for this project. The Fisheries ICT was comprised of fishery experts from USFWS, NOAA Fisheries, EPA, GA DNR-WRD, and SC DNR. Representatives of those

organizations reviewed literature for Striped bass and, in particular, data from studies conducted in the Savannah River Basin. The criteria include the following: "Studies on the Savannah River indicate that striped bass almost exclusively spawn in areas where maximum salinity near the surface is less than one ppt (Van Den Avyle et al 1990, Reinert and Jennings 1998, Will et al 2000)." As a result, the interagency team recommended the Corps use a 90%-tile salinity value of <= 1 ppt to define acceptable Striped bass spawning habitat.

637-BB-141-EV29

Comment: This section should discuss the common reed (Phragmites australis) as an invasive species. The document states elsewhere (page 4-55, section 4.07) that common reed will probably dominate the confined disposal facilities (CDFs). We believe that the common reed in the CDFs is the invasive strain. According to the U.S. Geological Survey (USGS), the invasive strain originated in Europe and was possibly spread via ships' ballast. Section 5 of the final EIS should evaluate the potential for the invasive strain to crowd out native species in marshes adjacent to the CDFs.

Response: Concur. A discussion of the common reed (Phragmites australis) has been added to the Invasive Species section. Discussion has also been added to Section 5.0 regarding the potential for this invasive species to crowd out native species in marshes adjacent to the CDFs.

637-BB-141-EV30

Comment: This section addresses only one pathway, ballast water, for introduction of aquatic invasive species. Introduction of invasive species in the Savannah Harbor, both aquatic and terrestrial, is not limited to ballast water. Insects in pallets, or plants and seeds in soil on containers, are two examples of other pathways. Invasive species can dramatically alter an ecosystem, which is a major concern for the Savannah NWR. This section should address other pathways and terrestrial systems as well as aquatic systems.

Response: Concur. The discussion of introduction pathways of invasive species has been expanded.

637-BB-141-EV31

Comment: The Savannah NWR is 29,175 acres, not 25,600 acres.

Response: Concur. The acreage for the SNWR on has been corrected.

637-BB-141-EV32

Comment: This section refers to a 1992 Planning Aid Report, but the FWS report in question is dated September 16, 1982.

Response: Concur. The date of the Planning Aid Report has been corrected.

637-BB-141-EV33

Comment: The text states that the first two entries in Table 5-1 are Refuge lands, but the table labels the first three entries as Refuge lands. Figure 5-1 is illegible, but appears to depict the Kings Island Turning Basin along with another area for dredging. It is unclear where the third area of excavation is located (we believe 96+000 to 97+000). Figure 5-2 appears to depict the non-Refuge portion of excavation from 86+000 to 88+500, but it too is unclear. A proximity map would help locate these areas in relation to the Savannah NWR.

Response: Concur. The text on Page 5-1 has been revised to indicate that the first three areas shown in Figure 5-1 are within Refuge lands. The graphics supporting this discussion have been improved to allow the reader to identify the locations/areal extent of project affected lands more easily.

637-BB-141-EV34

Comment: The discussion in the opening paragraph references Figure 5-52 as CDF 1S; however, Figure 5-52 is a picture of Old Fort Jackson (on p. 5-134). We believe the correct reference is to Figure 5-4 on page 5-7.

Response: Concur. The text has been revised.

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637-BB-141-EV35

Comment: The Corps proposes to restore up to 45 acres at Area 1S on the Savannah NWR, using 14.5 acres as "advance mitigation" for direct impacts to salt marsh. These impacts include widening channel bends and turning basins both on and off the Savannah NWR. "Advance mitigation" is the functional equivalent of a mitigation bank. FWS Mitigation Policy (64 FR 49229-49234) does not allow the use of NWR lands for mitigation banks; therefore, the Department cannot support the 14.5 acres as "advance mitigation."

Response: Restoration of 42 acres of marsh within Disposal Area 1-S exceeds the construction project's mitigation requirements (28.75 acres). Periodically, operation of the existing Federal Navigation Project adversely impacts small amounts of brackish and saltmarsh wetlands through activities conducted at the project's confined disposal facilities. When such instances are anticipated, the District develops mitigation to compensate for the impacts. Coordination with the USFWS and the Wetland Interagency Coordination Team have identified the potential for restoration of roughly 45 acres of brackish marsh at Disposal Area 1-S. Such restoration agrees with the goals of the USFWS and the Savannah National Wildlife Refuge to restore Refuge lands to more ecologically valuable conditions, when possible. Restoration of Disposal Area 1-S is the best potential brackish marsh mitigation activity in the estuary. In the future, the Corps would likely request approval from the Service to complete the remaining restoration of the site if it does not complete that work if/when harbor deepening occurs. Restoration of the entire site at one time would be better for the environment (and the Refuge) than would construction in that area on multiple occasions. The Corps proposes to restore the entire site at one time and consider the acreage that it restores beyond the project's initial mitigation requirement as advance mitigation. Performing mitigation in advance of an impact is generally preferred by natural resource agencies. The Corps is required to perform its mitigation prior to, or at the same time as the activity that causes the impact. Since the Corps would use the advance mitigation to compensate for impacts resulting from the same overall project – the Savannah Harbor Navigation Project – this would not be a mitigation bank. The advance mitigation acreage would not be available for use by others or for other projects. Instead, it would be reserved for Federal government use as wetland mitigation solely for the Savannah Harbor Navigation Project. Outside interests could not purchase the wetland credits. As a result, the restoration of the remaining roughly 11.5 acres at Disposal Area 1S should not be considered a mitigation bank.

637-BB-141-EV36

Comment: The Corps proposes to restore up to 45 acres at Area 1S on the Savannah NWR, using 14.5 acres as "advance mitigation" for direct impacts to salt marsh. These impacts include widening channel bends and turning basins both on and off the Savannah NWR. "Advance mitigation" is the functional equivalent of a mitigation bank. FWS Mitigation Policy (64 FR 49229-49234) does not allow the use of NWR lands for mitigation banks; therefore, the Department cannot support the 14.5 acres as "advance mitigation.

Response: See previous response. Mitigation for all the project's direct wetland impacts can be accomplished via restoring 28.8 acres on Disposal Area 1-S. An additional 11.5 contiguous acres would also be restored on Area 1-S which would be applied to other wetland mitigation needs for the Savannah Harbor Navigation Project. The additional credits from restoring the remainder of the site would only be used by the Federal government for Savannah Harbor activities. Hence, this would not constitute a wetland mitigation bank, since credits would not be sold to other entities.

637-BB-141-EV37

Comment: This section references a USGS report, by the Cooperative Research Unit, titled "Simulation of Water Levels and Salinity in the Rivers and Tidal Marshes in the Vicinity of the Savannah National Wildlife Refuge, Coastal South Carolina and Georgia" but does not provide the reference. Suggest the Final EIS include the reference (Conrads et al, 2006) in the text and in the References section.

Response: Concur. The subject reference has been added to both the text and the References section.

637-BB-141-EV38

Comment: This section states "In March 2007, the Federal Cooperating Agencies discussed a USGS proposal to revise the linkage to increase its usefulness for evaluating potential mitigation measures." but the proposal was rejected. Suggest the Final EIS include a short explanation, and relevant information, on how this decision was reached.

Response: Concur. The text has been revised to include details why the decision was made not to modify the model as suggested by the USGS.

637-BB-141-EV39

Comment: This section states that the primary stress to tidal freshwater marsh is prolonged drought, which is not supported by evidence. In 1875, when the controlling depth of the navigation channel was 12-15 feet, the Savannah estuary supported an estimated 12,000 acres of tidal freshwater marsh. In 2005, when the controlling depth was 42 feet, the estuary supported only 3,269 or 4,072 acres (depending on study method used). This section should instead state that the inland intrusion of salt water resulting from channel deepening is a constant stress on tidal freshwater marsh, and that prolonged drought exacerbates this stress.

Response: The EIS provides a detailed discussion regarding the relationship of previous harbor channel deepening and how these modifications fostered a progressive increase in upstream salinity levels. In turn, those increases lessened the extent of tidal freshwater marsh. The subject paragraph was intended to describe the baseline condition with respect to current stresses, e.g., prolonged drought and sea level rise, on the remaining tidal freshwater marsh.

637-BB-141-EV40

Comment: This section states the Corps evaluated the effects of sea level rise on tidal freshwater marsh. The Department maintains that sea level rise would have a negligible impact on the Savannah NWR if not for the cumulative impact of previous harbor deepening.

Response: This section of the document discusses the three actions that will most likely affect the remaining tidal freshwater marsh, viz., prolonged drought, sea level rise, and harbor deepening.

637-BB-141-EV41

Comment: This section examines various alterations to rivers and creeks to reduce the impacts to tidal freshwater marsh. It states that the proposed mitigation for the 47-foot alternative is predicated on a "base year" (immediately following construction) impact of 223 acres instead of a project-life average annual impact consistent with Corps policy. The average annual impact is lower than 223 acres due to the effect of sea level rise during the next 50 years that would occur without the project. The Department maintains that sea level rise would have a negligible impact on the Savannah NWR if not for the cumulative impact of previous harbor deepening. Therefore, we support obtaining a waiver from the Corps' policy in this instance to instead implement the agency-coordinated level of mitigation.

Response: See previous responses on this issue. The Assistant Secretary of the Army (Civil Works) has granted the District's request for a waiver from Section 5, paragraph E-36.c.(1) of ER 1105-2-100, i.e., removal of the requirement to use an average annual analysis of project impacts and mitigation requirements.

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637-BB-141-EV42

Comment: This section should compare the modeled DO levels in the Savannah River under the LLP and NED depth plans with the State of Georgia's DO standard. The new Georgia DO standard is not less than 5.0 mg/L throughout the year, with an instantaneous minimum of 4.0 mg/L.

Response: The discussion focuses on the impacts of the various harbor deepening alternatives and how each would affect the dissolved oxygen regime in Savannah Harbor. The proposed oxygen injection system is a mitigation measure which seeks to produce a "zero-sum" as regards dissolved oxygen and is not designed to bring the harbor into compliance with Georgia water quality standards.

637-BB-141-EV43

Comment: The document states the "The Corps had an Independent Technical Review performed of the chloride model by a staff member of the USGS in Columbia, SC. The reviewer expressed about the ability of the model to make reliable predictions at the low chloride concentrations occurring at the City's intake." Suggest the Final EIS explain "what" the reviewer expressed and include documentation of the reviewer's expertise.

Response: The Corps has supplemented the modeling efforts described in the DEIS to address concerns about detection of chloride ions [even at low levels] at the City of Savannah's water supply intake. Those revised analyses are included in the FEIS.

637-BB-141-EV44, 637-BB-141-EV45

Comment: This section describes a secondary (supplemental) water supply intake line for the City of Savannah to be constructed if needed. Based on a preliminary review, the Department would prefer intake Site 1, because intake Site 2 is likely to adversely affect more wetland and wildlife habitat. The Department requests further coordination to evaluate impacts and make recommendations if the supplemental intake site is needed in the future.

Response: The FEIS has been revised to include a raw water impoundment (as opposed to a supplemental intake) to mitigate for impacts to the City of Savannah's intake at Abercorn Creek. The District will coordinate the details of the design with the natural resource agencies to confirm that it minimizes environmental impacts. If wetland mitigation is needed, the Corps would follow the Savannah District Regulatory SOP to determine the mitigation that is required.

637-BB-141-EV46

Comment: The Corps proposes to fund a stocking program for striped bass based on the amount of spawning and early life stage habitat lost due to water quality changes resulting from harbor deepening: "the extent of the stocking needed could be reduced to the amount of habitat predicted to be impacted by the project. Thus, the percentage of habitat loss could be multiplied by the cost for a full-scale stocking program to determine the amount that would be sufficient to compensate for the habitat loss that is expected." The expected loss of habitat is 2.9% for the 45-foot alternative and 26.9% for the 47-foot alternative. The final EIS should include a proposal to monitor/measure post-construction loss of striped bass habitat. The final adaptive management plan should address striped bass, and if habitat loss exceeds the amount predicted, include provisions and assurances to increase stocking funds accordingly.

Response: Concur. The Monitoring and Adaptive Management Plan has been revised to include annual Impact Assessments, which include verification of model predictions regarding impacts to Striped bass habitat. Monitoring studies would be conducted during the second, fourth, and ninth years of the Post-Construction Monitoring.

637-BB-141-EV47

Comment: This section should clarify whether the Corps intends to collect 30 or 86 sediment samples per DMCA. The Department has previously stated a concern that 30 samples are not enough. The Corps proposes taking samples 15 cm deep: the Department recommends 86 samples of the cap material per DMCA taken 30 cm deep. The DEIS sometimes refers to 7 ppm of cadmium in the capping material to trigger remedial action. The Department recommends substituting a threshold of 4 ppm throughout the DEIS for clarity. This section should fully summarize bird tissue monitoring, which is partially summarized in Appendix D, page 23, and Appendix M, page 84. The Department understood that the Corps had agreed to bird tissue monitoring independent of monitoring cadmium soil concentration levels. Tissue monitoring should occur: 1) prior to sediment placement to collect baseline data; 2) during sediment placement; and 3) post placement until 3 consecutive years of samples contain cadmium concentrations that are less than the potential adverse effect level, which is to be determined. The Department requests that the Corps continue to coordinate with the FWS prior to completion of the final EIS to finalize plans for biological monitoring within DMCAs, including tissue sampling.

Response: Appendix D and Appendix M have been updated to reflect the extensive coordination between USFWS and the District since release of the DEIS. Specifically, the District will conduct sediment analyses and avian monitoring and blood/feather sampling independent the sediment cadmium concentrations. Vegetation tissue and liver tissue sampling would only be conducted after

certain thresholds are met as outlined in Section 8 of Appendix D. Sediment sampling would be conducted to a depth of 15cm before the cap/cover is placed and to a depth of 30cm after placement of new work cap/cover sediments or O&M sediments. The District intends to collect 86 sediment samples in each CDF where the cadmium-laden materials are placed. Each successive event would be collected in the same manner. . We will clarify this position throughout the EIS, as well as the Corps' intent to take 86 sediment samples in each DMCA where cadmium-laden sediments would be deposited. After receiving the DOI comments, the District examined the depth of plant roots in the CDFs. In general, we found that the majority of the roots of plants found in the CDFs that serve as food for invertebrates average 7.5 inches and extend to 9.2 inches below the surface. Some species with tap roots extend further, but those species are not commonly used for forage by insects, birds, or animals. Based on this inspection, we concur that sampling dry and moist sediments to a depth of 30 cm (12 inches) would be sufficient to characterize the sediment cadmium concentrations that would be available for uptake into biotic systems. In locations with standing water, cadmium would be essentially insoluble and the potential path for uptake would be through invertebrates residing in the upper layers of the sediment. Anoxic conditions would occur a few inches below the sediment surface, so we believe that sampling to a depth of 15 cm (6 inches) is sufficient to characterize the sediment cadmium concentrations in areas with standing water. However, at the request of DOI and USFWS, sediment samples collected after placement of the cap/cover will be collected to a depth of 30cm. Once tissue sampling is initiated, it would be conducted for a period of five years unless tissue levels do not exceed potential adverse levels for three consecutive years. Then no further monitoring would be deemed necessary.

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637-BB-141-EV48

Comment: Groundwater conditions were simulated with a constant pumping rate 200 years into the future to estimate the timing of sea water intrusion into the Upper Floridan Aquifer. The DEIS states elsewhere that Chatham and Effingham counties are experiencing population growth, and it is reasonable to assume that industrial water use may also increase with the potential harbor expansion. For the final EIS, the Department recommends revisiting the groundwater simulations with consideration of likely increases in pumping rates.

Response: The groundwater pumping rates were simulated using a constant rate for 200 years. The State of Georgia required this approach, which is a conservative one in light of EPD's recent actions to reduce groundwater removal from the Upper Floridan aquifer. GA DNR-EPD has placed a restriction on any new permits for groundwater withdrawal and they are mandating reductions in groundwater withdrawal for existing permitees. Based on these EPD initiatives, the analysis in the EIS of project impacts is considered conservative. The District agrees that increased demand for water in Chatham and Effingham counties is likely; however, unless the above mandates are rescinded, this demand will not be met with increased withdrawals from the aquifer.

637-BB-141-EV49

Comment: This section discusses direct dredging impacts and generally concludes that expected impacts are minor. However, the text does not describe the long-standing striped bass spawning season window that restricts dredging and is likely largely responsible for the minor impacts conclusion. On Page 14 of Appendix H is a statement that hydraulic dredging is not conducted in Savannah Harbor during the striped bass spawning season. The Corps should revise Section 5.7 and other relevant sections to discuss the striped bass spawning window, and describe where and when hydraulic harbor deepening dredging is restricted.

Response: Concur. Section 5.7 and Appendix H have been revised to include a discussion of dredging restrictions during the Striped bass spawning season.

637-BB-141-EV50

Comment: The flow of the Savannah River is highly variable within and between years; therefore the Corps should specify the period of record used for the following calculation: "the average daily freshwater flow in the Savannah River at Clyo is about 11,290 cfs." The analysis presented in this paragraph should use data that represents the seasonal timing and flow conditions typical during channel maintenance operations, and if necessary, revise the conclusions based on this analysis.

Response: The EIS is revised to clarify the period of record used in the calculation of average daily freshwater river flow. Some portion of the navigation channel is being maintained every month of the year. The main point of that paragraph was the comparison between the volume flowing through a cutterhead dredge (70 cfs) and that in the entire river (average of 11,290 cfs). A large dredge captures a very small proportion of the volume of water in the Savannah River at any given time. Therefore, entrainment concerns associated with the operation of a hydraulic pipeline dredge are minimal. Even if drought flows of 4,000 cfs occur in the Savannah River estuary when dredging occurs, the same relationship exists and the same conclusion can be made.

637-BB-141-EV51

Comment: This section covers the introduction of invasive species through ballast water, but should also address other pathways through ports, such as insect larva in pallets (e.g., red bay ambrosia beetle), or seeds and plants 'hitchhiking' in soil on containers.

Response: Concur. This section has been revised to include this discussion.

637-BB-141-EV52

Comment: The Department disagrees with this statement: "The Corps believes that with implementation of the Mitigation Plan and Monitoring and Adaptive Management Plan, the proposed action would not have significant adverse impacts on the environment." Under the 47- and 48-foot alternatives, which the Corps identifies as the tentatively recommended plans, the Savannah estuary would lose an estimated 223 and 337 acres of tidal freshwater marsh, respectively. We have identified loss of tidal freshwater marsh as the "most important impact criterion in the Savannah Estuary" (page 5-10). In-kind mitigation for this loss is not possible; therefore, significant adverse impacts remain even with implementation of the mitigation plan for the 47- and 48-foot alternatives. This is why the Department prefers the 45-foot alternative among the action alternatives, because it minimizes the loss of freshwater tidal wetlands, impacts to Savannah National Wildlife Refuge (NWR), and risk and uncertainty of impacts to trust fish and wildlife resources.

Response: That statement has been removed from the EIS. It has been replaced with statements that indicate that the Mitigation and Monitoring and Adaptive Management Plan would provide adequate mitigation for all alternative depths considered.

637-BB-141-EV53

Comment: Manatees have been observed on the Savannah NWR since 1987. Six manatees were observed on the Savannah NWR on August 26, 2010, at a rice trunk on the Wildlife Drive. This area is directly across from Port Wentworth on the Back River. In September of 2008, four manatees were found

in the Savannah River (Front River) downstream of the Georgia Ports Authority Ocean Terminal that had been killed in a ship-related incident. This section states that manatee occurrence in the area is rare. Manatees have site fidelity to summer habitat sites, therefore, the FWS would expect the six observed on the Savannah NWR to return. The Georgia Department of Natural Resources (GADNR) has data on manatee mortality and public sightings in the Savannah River. From FWS personnel's observations and discussions with the GADNR, the FWS would not characterize manatee occurrence as rare. Usage is regular enough to characterize manatee occurrence in the Savannah River estuary as a small summer resident population.

Response: The phrase "their occurrence is rare" has been removed from the document.

Page 10

637-BB-141-EV54

Comment: This section states that the proposed mitigation for the 47-foot alternative is predicated on a "base year" (immediately following construction) impact of 223 acres instead of a project-life average annual impact consistent with Corps policy. The average annual impact is lower than 223 acres due to the effect of sea level rise during the next 50 years that would occur without the project. The Department maintains that sea level rise would have a negligible impact on the Savannah NWR if not for the cumulative impact of previous harbor deepening. Therefore, we support obtaining a waiver from the Corps' policy in this instance to instead implement the agency-coordinated level of mitigation.

Response: See previous response to this issue. The waiver has been approved.

637-BB-141-EV55

Comment: The MACTEC engineering firm's report on the test of a DO injection system concluded that the system could improve a DO deficit by 0.6-0.7 mg/l. An independent peer review by USGS found that this conclusion was not supported by the data. The USGS review found instead that the natural tidal cycle accounted for most of the variation in DO levels during the demonstration. This section of the final EIS should address the USGS report. The uncertainty regarding the results of the efforts to improve DO deficiencies is additional justification for expanding the water quality monitoring efforts from 5 to 10 years.

Response: As proposed, the project includes ten years of water quality monitoring. The project would install and operate five new continuous water quality monitors and use data from three other monitors that already collect data in the harbor. The monitoring also includes a Transfer Efficiency Study of the oxygen injection system after installation. The District believes that water quality conditions in Savannah Harbor will have reached equilibrium well before the end of the ten-year monitoring plan. Hence, sufficient data will have been collected to ascertain project impacts on the water quality regime.

637-BB-141-EV56

Comment: The acreages mentioned on these pages do not correspond with those found in other places in the DEIS. Pages 48 and 50 mention 15.68 acres of brackish marsh lost, while DEIS sections 5.1.1.1 and 5.1.1.2 mention 14.08 acres. Appendix C, pages 49 and 50 state the restoration area is 45 acres, while page 49 states the restoration area is 42 acres. Figure 19 on page 49 depicts two restoration areas of 34 and 8 acres for a total of 42 acres. Section 5.1.1.2 page 5-6 states the restoration area is 42 acres. The Department recommends correcting any mistakes in these sections or explaining the apparent inconsistencies.

Response: Concur. The Corps has revised the EIS to clarify these numbers.

637-BB-141-EV57

Comment: This section discusses wetland restoration on site 1S for direct impacts to brackish marsh. The desired vegetation outcome is to establish a mixed brackish marsh, similar to adjacent marsh, on the site. Chinese tallow tree and common reed, both highly invasive exotic species, have been identified in the marshes near the restoration site. Monitoring the success of the re-vegetation for 5 years should include control measures for exotic and invasive species, if detected.

Response: Concur. The monitoring plan for the restored wetland area has been revised to include monitoring for invasive species and implementation of control measures, if required.

637-BB-141-EV58

Comment: On page 49, it is not clear what is meant by "The Corps would expand our restoration acreage to include their acreage (1.7 acres)." Please clarify.

Response: The District has revised this section as follows: "The Georgia Ports Authority graded down a 1.7 acre area on Disposal Area 1-S several years ago as mitigation for habitat and functional wetland losses attendant to previous facility upgrade. This area is within the restoration site which will be used as mitigation for the SHEP. Together they will provide a continuous 42.0 acre restored wetland site.

Page 11

637-BB-141-EV59

Comment: On page 50, the Corps states it intends to restore all of Area 1S, using a portion for "advance mitigation." The Department regards "advance mitigation" in this context as the functional equivalent of a mitigation bank, and FWS Mitigation Policy (64 FR 49229-49234) does not allow the use of NWR lands for mitigation banks.

Response: See previous response. Mitigation for all the project's direct wetland impacts can be accomplished via restoring 28.8 acres on Disposal Area 1-S. An additional 11.5 contiguous acres would also be restored on Area 1-S which would be applied to future wetland mitigation needs for future Savannah Harbor upgrades. The additional credits from restoring the remainder of the site would only be used by the Federal government for Savannah Harbor activities. Hence, this would not constitute a wetland mitigation bank, since credits would not be sold to other entities.

637-BB-141-EV60

Comment: This section states that the proposed mitigation for the 47-foot alternative is predicated on a "base year" (immediately following construction) impact of 223 acres instead of a project-life average annual impact consistent with Corps policy. The average annual impact is lower than 223 acres due to the effect of sea level rise during the next 50 years that would occur without the project. The Department maintains that sea level rise would have a negligible impact on the Savannah NWR if not for the cumulative impact of previous harbor deepening. Therefore, we support obtaining a waiver from the Corps' policy in this instance to instead implement the agency-coordinated level of mitigation.

Response: See previous response. Savannah District has requested and received a waiver to deviate from the requirements of ER 1105-2-100.

637-BB-141-EV61

Comment: The following statement is misleading: "If a higher rate of sea level rise actually occurs, some of the freshwater marshes would convert to more saline species, so they would not be available for impact by harbor deepening." These marshes are at risk to sea level rise only because of the cumulative effect of previous harbor deepening. Tidal freshwater marshes would not be at risk due to sea level rise at the harbor's original depth. Additionally, the impacts to freshwater marsh from harbor deepening will occur quickly compared to the timeframe for sea level rise.

Response: See previous response. The Savannah District has requested and received a waiver to deviate from the requirements of ER 1105-2-100 based on the fact that project impacts to tidal freshwater marshes would occur soon after the harbor is deepened.

637-BB-141-EV62

Comment: These pages discuss sea level rise and the possibility of over-mitigating if sea level rises faster than projected. The Corps proposes to reassess sea level rise at the end of the project's life in 50 years and assign wetlands mitigation credits to the project in an amount equivalent to the over-mitigation. The Department regards "advance mitigation" in this context as the functional equivalent of a mitigation bank, and FWS Mitigation Policy (64 FR 49229-49234) does not allow the use of NWR lands for mitigation banks. This section, among others in the DEIS, also states that the proposed mitigation for the 47-foot alternative is predicated on a "base year" (immediately following construction) impact of 223 acres instead of a project-life average annual impact consistent with Corps policy. The average annual impact is lower than 223 acres due to the effect of sea level rise during the next 50 years that would occur without the project. The Department maintains that sea level rise would have a negligible impact on the Savannah NWR if not for the cumulative impact of previous harbor deepening. Therefore, we support obtaining a waiver from the Corps' policy in this instance to instead implement the agencycoordinated level of mitigation.

Response: See previous responses. The waiver has been approved..

637-BB-141-EV63, 637-BB-141-EV64

Comment: This section discusses a fishway at New Savannah Bluff Lock and Dam as the primary mitigation feature for the project's impacts to shortnose sturgeon. Fishway effectiveness varies considerably and is difficult to predict. If effective, this measure would provide shortnose sturgeon upstream passage to the Augusta shoals and other riverine spawning areas. Dam removal would represent a more certain means to provide both upstream and downstream passage for shortnose sturgeon and other species, and would also restore riverine characteristics to this portion of the basin; therefore, the Department would prefer dam removal in lieu of a fishway. The Department requests that the Corps continue to coordinate with the FWS to finalize plans for either fishway design and construction or dam removal.

Response: Removal of the New Savannah Bluff Lock and Dam cannot be recommended at this time. Although the structure is no longer used to support navigation on the Savannah River, most recent direction from Congress was for the Corps to rehabilitate the structure and convey it to local interests.

The design for the fish passage structure at New Savannah Bluff Lock and Dam has been revised since coordination of the DEIS to provide for an-off channel rock ramp design. The District will continue to coordinate with the USFWS and the other Cooperating Agencies about the design of the fishway at New Savannah Bluff Lock and Dam.

637-BB-141-EV65

Comment: This section describes a secondary (supplemental) water supply intake line for the City of Savannah to be constructed if needed. Based on a preliminary review, the Department would prefer intake Site 1, because intake Site 2 is likely to adversely affect more wetland and wildlife habitat. The Department requests further coordination to evaluate impacts and make recommendations if the supplemental intake site is needed in the future.

Response: See previous response on this issue. Construction of a raw water storage impoundment is proposed as mitigation for the increased chloride levels that would occur at the City of Savannah's intake on Abercorn Creek during high tides and low flows. The Corps will coordinate construction plans for this storage impoundment with the resource agencies.

Page 12

7-BB-141-EV66

Comment: We believe the statement: "The plug would be constructed of fill and rock and would extend to EL 10 (above the Mean High Water line)" is incorrect. It is our understanding that the plug in Rifle Cut will extend to EL 10 above mean low water, which is 2 feet above mean high water -- not 10 feet, as indicated.

Response: Concur. The text has been revised to indicate that the top of the plug in Rifle Cut would be at elevation 10 which is two feet above MHW.

637-BB-141-EV67

Comment: This section should discuss the timing of acquiring the mitigation lands. The Department recommends beginning no later than the start of construction and completing the acquisitions within 2 years.

Response: Concur. The project would begin acquiring the preservation lands the first year that Congress provides construction funds. It is the Corps' and GPA's intent to complete the acquisition within the first two years, but that may not be possible because of the number of actions that would need to be completed. The acquisition requirements include completing various real estate actions such as appraisals, Environmental Baseline Surveys, etc. Discussion to this effect has been added to the Mitigation Plan [Appendix C] and Section VIII.

637-BB-141-EV68

Comment: The Corps proposes to restore the entire site at CDF 1S, using a portion as "advance mitigation" for direct impacts to salt marsh. Claiming credit for restoration to offset as-of-yet unidentified impacts elsewhere in the future is the functional equivalent of a mitigation bank. FWS Mitigation Policy (64 FR 49229-49234) does not allow the use of NWR lands for mitigation banks; therefore, the Department cannot support restoration at this site as advance mitigation.

Response: See previous responses concerning restoration of Disposal Area 1S and advance wetland mitigation credits.

637-BB-141-EV69

Comment: Successful wetland restoration is dependent on three primary factors: soil, hydrology and vegetation. The proposed dredged material removal should expose the original wetland soil and restore the site to the elevation of adjacent marshes. Construction of a "feeder" creek system toward the interior of the restoration site from Middle River will facilitate tidal exchange; however, if restored elevations do not properly restore tidal flow, invasive vegetation with almost no wildlife value may occupy the site. The desired vegetation outcome is to establish a mixed brackish marsh, similar to adjacent marsh, on the site. Chinese tallow tree and common reed, both highly invasive exotic species, have been identified in the marshes near the restoration site. Monitoring the success of the re-vegetation for 5 years should include control measures for exotic and invasive species, if detected.

Response: Concur. See previous responses on this issue.

637-BB-141-EV70

Comment: The following statement, from page 92, is inconsistent with the text of DEIS Section 5.1.1.2: "Calculations derived from the SOP indicate that approximately 25.8 acres of restored saltmarsh would be required to mitigate for the 14.08 acres of impact. When combined with the 1.7 acres of previous mitigation, the resulting acreage of the mitigation site would be 25.8 acres." Adding 1.7 acres of mitigation to 25.8 acres equals 27.5 acres.

Response: Page 92 has been revised. The Corps intends to restore about 40.3 acres of wetlands on Disposal Area 1S, in addition to the 1.7 acres previously graded down by the Georgia Ports Authority.

637-BB-141-EV71

Comment: Was the Draft Savannah Harbor TMDL for Dissolved Oxygen released by the U.S. Environmental Protection Agency in April 2010 evaluated for effects of the mitigation plan? With the changes in the flow dynamics, the Front River will have less flow and the residence times in the Harbor will increase. These changes could have a substantial impact on the waste load allocation. The effects on the allowable waste load to the system by the Project are not only caused by the deepening of the navigation channel but also the mitigation features affecting the flow dynamics of the estuary.

Response: The project includes oxygen injection to offset [mitigate] adverse impacts resulting from all of the deepening alternatives. The District understands that potential impacts to dissolved oxygen are the primary concern in regards to the Savannah Harbor Draft TMDL. The modeling that the Corps performed ensures that the proposed mitigation would remove the adverse effects of harbor deepening on dissolved oxygen levels in the harbor. Water quality experts in EPA or GA DNR have not expressed any concern regarding changes in flow and any potential subsequent impacts to the TMDL from implementation of the harbor deepening or its mitigation.

637-BB-141-EV72

Comment: More than two years (2009 and 2010) of flow data have been collected on the Front, Middle, and Little Back Rivers. Six of the seven mitigation features involve alterations to flow paths in the system. Has the two years of measured flow been thoroughly compared with the flow predictions of the model? The Draft Savannah Harbor TMDL showed a frequency distribution for the Little Back River. The model comparisons should include daily tidally filtered flows, flow volumes over specified periods, and flow partitioning between the three rivers under various flow regimes.

Response: This specific analysis has not been conducted. The District performed all model analyses requested by the Water Quality Interagency Coordination Team.

Page 13

637-BB-141-EV73

Comment: This section describes a secondary (supplemental) water supply intake line for the City of Savannah to be constructed if needed. Based on a preliminary review, the Department would prefer intake Site 1, because intake Site 2 is likely to adversely affect more wetland and wildlife habitat. The Department requests further coordination to evaluate impacts and make recommendations if the supplemental intake site is needed in the future.

Response: See previous responses on this issue.

637-BB-141-EV74

Comment: The DEIS uses county population projection data to estimate the percent increase in impervious surfaces, but should probably also consider industrial development adjacent to the Savannah River, in part due to harbor expansion. For example, a large industrial warehousing complex is proposed adjacent to the Refuge that would involve paving several thousand acres of forest land. The storm water runoff associated with these surfaces is a key threat to the sustainability of adjacent wetlands, which this section should address in the final EIS.

Response: Similar to the projected cargo volume expected to pass through Garden City Terminal with or without the project, the Corps does not expect deepening the harbor to affect the rate at which the Savannah Harbor, and any associated industrial development, occurs. As such, any future development is considered part of the future without project condition, and its impacts would not be attributable specifically to the construction of the SHEP. The Corps did consider industrial development in the Savannah area as part of its assessment of how the wetland mitigation plan complies with the 2008 USEPA/USACE Mitigation Rule.

637-BB-141-EV75

Comment: The table indicates that the Corps will provide funding to GADNR for the striped bass stocking program in late 2015 or early 2016. To offset project impacts that begin when construction is complete, GADNR must have stocking capacity in place in the first spawning season following construction. The Department recommends that the Corps transfer funding for the striped bass stocking program when dredging is initiated, which should provide enough lead time to develop stocking capacity.

Response: The schedule has been revised to reflect that funding for Striped bass stocking would be made available to the Georgia DNR before dredging occurs in the inner harbor.
637-BB-141-EV76

Comment: There are inconsistencies of scope of work, roles, and required funding throughout. Strongly suggest a thorough update of Appendix D to bring this to current status and necessary funding. The GaWSC is ready to assist with this.

Response: Appendix D has been revised to correct inconsistencies of scope of work, roles and required funding.

637-BB-141-EV77

Comment: The USGS Georgia Water Science Center (GaWSC) led the effort in 2006 to develop the Monitoring Plan for the proposed SHEP. This was created from feedback from a multi-agency team with a broad-based variety of expertise that has been involved with the SHEP planning over the years. Much has changed with the SHEP since this plan was first developed five years ago, and subsequently the monitoring plan needs updating. The GaWSC has installed a considerable amount of additional monitoring locations that were originally outlined in the 2006 monitoring plan since its release, and this needs to be properly documented. Additionally, the GaWSC, in collaboration with the multi-agency team, has over the last two years performed the installation and operation of a chloride monitoring network for the City of Savannah water intakes on Abercorn Creek, and more detail regarding the initial results of this work should also be factored into Appendix D. The GaWSC is ready to assist in updating the monitoring plan to reflect the latest scope, roles, and budgetary needs.

Response: The Corps used the Hydrologic Monitoring Plan that the GaWSC developed with the other resource agencies for the Savannah estuary as the foundation for the hydrodynamic and WQ monitoring efforts. The Corps then modified that plan as needed to address issues specific to the harbor deepening project.

637-BB-141-EV78

Comment: Several new monitoring technologies have become available since the original plan was written in 2006. Real-time groundwater chloride monitoring should be considered as an early-warning system for the aquifers in case of damage to the confining layer. The GaWSC currently is performing similar monitoring in the Brunswick, Georgia area. Several existing USGS groundwater monitoring sites along the Savannah River channel could be upgraded to enable real time monitoring of chloride concentrations. With the deployment of index-velocity stream gages currently in place, there are also techniques now available to estimate the sediment load flux within the Savannah Harbor and surrounding estuary using a sediment surrogate approach. These techniques were developed by the GaWSC and can be beneficial in providing insight into the environmental impacts caused by transported sediments as well as provide operational benefits to the management of the channel and port. It is anticipated that because a considerable amount of the proposed monitoring is already in place, a significant cost savings could be found to help offset the implementation of these new monitoring technologies to make a more robust monitoring effort for the SHEP.

Response: Based on studies conducted during SHEP together with previous monitoring of groundwater wells, real-time groundwater monitoring is not warranted. The proposed monitoring program includes four groundwater monitoring well pairs to establish a before-project baseline and monitor post-project chloride levels in the Upper Floridan aquifer. These wells would be monitored annually. Because of the slow rate of movement of water through the confining layer, that program would provide a sufficient

warning system for potential unexpected impacts. Further, the District does not believe that use of new technology to monitor sediment load fluxes is warranted to address potential impacts from this project.

Page 14

637-BB-141-EV79

Comment: Finally, with a large share of the monitoring data now being available in real-time, the ability to visualize and alert water resource managers and stakeholders of the real-time conditions in the Savannah River Estuary are presently available. The USGS real-time webpage, NWISWeb, currently displays all data being collected in the SHEP at

http://waterdata.usgs.gov/ga/nwis/current/?type=flow&group_key=basin_cd. The USGS has developed a real-time alerting system can be activated to electronically notify individuals when parameter(s) have exceeded a pre-defined threshold (for example, see http://water.usgs.gov/wateralert/). A crucial part of any monitoring plan should now include the ability to disseminate the information using visualization and information delivery tools in order to keep stakeholders informed and allow water managers to make informed decisions in a real-time manner.

Response: The Monitoring and Adaptive Management Plan identifies the USGS as a likely organization to conduct the continuous water quality monitoring. Five new continuous recording water quality stations will be installed by this project. The USGS collects this data at 15-minute interval and can make the continuous real-time data available to resource managers and the general public through the USGS National Water Information System Web (NWIS Web). A program similar to that would provide sufficient real-time water quality monitoring data for the Savannah Harbor estuary.

637-BB-141-EV80

Comment: It is stated that if a mitigation feature is changed, monitoring will continue for an additional year. This period may be too short depending on the feature that was changed, when the change was made, and the hydrologic condition for the additional year. The ecosystem has a much different response during wet and dry years.

Response: The text has been revised to indicate that monitoring of an adaptive management measure would be conducted for two years and for a third year or longer if the Federal resource agencies agree that it would be prudent.

637-BB-141-EV81

Comment: The length of the sampling period of "one lunar cycle" is not clear. Is it a 25-hour period, 14-, or 28-day cycle? With what has been learned about the dynamics of the system and data collection, is this the most cost-effective period to collect data for evaluating the ecosystem and the performance of the models?

Response: The Hydrologic Monitoring portion of the Monitoring and Adaptive Management Plan has been updated to clarify that this intense monitoring would be performed over a 28-day period.

637-BB-141-EV82

Comment: The section on physical monitoring indicates that the project would fund USGS to collect preconstruction hydrologic data for "up to one year," but all references to pre-construction monitoring on page 8 are to "one year." The Department recommends 1 year of pre-construction monitoring. **Response:** Concur. Pre-construction monitoring to establish a baseline will have a one year duration.

637-BB-141-EV83

Comment: There are two existing water quality stations on Back River (021989784 and 021989791), and one on Front River (02198920), that have long-term salinity data. The Department recommends using this long-term salinity data set, from the end of the last harbor deepening construction to the start of any new deepening construction, as baseline salinity conditions for these sites and to supplement the 1 year of pre-construction water quality monitoring.

Response: Concur. The District will consider all existing data when it compiles the pre-construction monitoring information.

Page 15

637-BB-141-EV84, 637-BB-141-EV85, 637-BB-141-EV86

Comment: Pre-construction monitoring for 1 year is intended to create or supplement a pre-project baseline. However, information based on only 1 year of data may not provide an adequate baseline. Using existing longer-term data from water quality stations on Back River and Front River should help address this problem (see previous comment on Appendix D, section 5.C, page 8 and Figure 3). Similarly, wetland and fishery studies performed during project planning represent useful baseline information. This section and others in the final EIS should describe in greater detail developing baseline conditions for the various monitoring parameters. In addition, this section states: "Monitoring would be conducted between the time a decision is made on implementing a harbor expansion and the time the construction begins which would affect aquatic resources in the inner harbor." If construction is delayed for more than 1 year after a decision for harbor expansion, the Department recommends continuing pre-construction monitoring until construction begins.

Response: Concur. See previous response.

As previously stated, the District will use all available data in determining the pre-construction baseline.

One year of monitoring would be performed before dredging starts in the inner harbor (preconstruction monitoring).

637-BB-141-EV87

Comment: The proposed water-quality parameters are not described. To be more complete, the full contingent of parameters available for continuous monitoring should be listing, which are: water temperature, specific conductance, pH, dissolved oxygen, and turbidity. Each parameter brings a specific scientific benefit to the monitoring plan, as well as complements each other with diagnostic troubleshooting of equipment failure.

Response: Concur. The list of water quality parameters which will be monitored has been added to the Monitoring and Adaptive Management Plan.

637-BB-141-EV88

Comment: This figure needs to be updated to reflect current (2011) real-time network.

Response: Figure 3 of the Monitoring and Adaptive Management Plan has been updated.

637-BB-141-EV89, 637-BB-141-EV90

Comment: The USGS Georgia Water Science Center currently performs all of the monitoring in the SHEP The funding figures are 5-years old and need to be revisited.

Response: Savannah District will be responsible for performing all monitoring for the proposed harbor deepening project. The Corps plans to use multiple organizations to perform the various types of monitoring that would be conducted. It expects to seek assistance of the GaWSC for some aspects of the work -- the continuous water quality monitors.

The cost figures for the continuous water quality monitoring were reviewed and revised as appropriate.

637-BB-141-EV91

Comment: The goals of the Intense Monitoring are not clear. "This sampling would address those constituents that...cannot be monitored by continuous recorders." The parameters and constituents listed; river discharge, flow volumes, flow velocity, flow direction, water surface elevation, depth, salinity, dissolved oxygen, water temperature, turbidity, pH, and specific conductance, can be monitored continuously. The remaining constituents are a short list: suspended solids, 5-day biochemical oxygen demand (BOD), and chlorides. Other parameters, constituents, and rates to consider are nutrients, long-term BOD, nitrification rates, sediment oxygen demand rate, re-aeration rates and tidal marsh dissolved-oxygen production/depletion rates.

Response: The District has revised the EIS to clarify the goals of the intense water quality monitoring program.

637-BB-141-EV92

Comment: Based upon the results of the initial chloride monitoring performed by the GaWSC, the Department recommends that SHEP chloride monitoring include a real-time index velocity streamgage at Bear Creek, and full chloride monitoring stations at Abercorn Creek (near the intakes) and on the Savannah River at I-95. Much of the monitoring infrastructure is already in place at the last two stations. The Bear Creek streamgage and some of the water-quality instrumentation would need to be reinstalled.

Response: After completing the revised chloride analysis and development of the raw water impoundment, the District has determined that a real-time index velocity stream gage at Bear Creek is not warranted. The District will consider chloride monitoring stations at Abercorn Creek and on the Savannah River at I-95.

637-BB-141-EV93

Comment: The Georgia Fish and Wildlife Cooperative Research Unit, not the South Carolina Fish and Wildlife Cooperative Research Unit, have the fisheries personnel available to monitor the movement of fish.

Response: The District would decide which organization would conduct the Shortnose sturgeon distribution studies during development of the SOW for that effort. The work would only be performed by a qualified agency or contractor.

Page 16

637-BB-141-EV94

Comment: In the Cost Summary, Oversight and Contracting are listed under "Biological" but not under "Geomorphic." Should the there be a similar item under "Geomorphic"?

Response: The District reviewed its cost estimates and revised estimates where appropriate.

637-BB-141-EV95, 637-BB-141-EV96

Comment: "On a regular basis, the Corps would assess how well the ... models predict..." What is the frequency of this assessment? Every 4 months? Were other locations for sampling chlorides concentrations considered, such as the mouth of Abercorn Creek and I-95?

Response: An assessment of the model's performance would be performed every four months by comparing its predictions to actual measurements taken by the continuous water quality meters

The District considered numerous potential water quality monitoring locations. It believes that the stations identified in the Monitoring Plan will allow adequate identification of potential project impacts and assessment the performance of the mitigation plan.

637-BB-141-EV97

Comment: Were other locations for sampling chlorides concentrations considered, such as the mouth of Abercorn Creek and I-95?

Response: See previous response.

637-BB-141-EV98

Comment: What is the reporting interval between the end of the 4-month data- collection periods and the release of the model evaluation reports?

Response: The hydrodynamic and water quality model assessments would be conducted every four months. It is reasonable to assume that a brief technical report summarizing the work and results could be prepared within 60 days.

637-BB-138-EV99

Comment: In the Cost Summary, Oversight and Contracting are listed under "Biological" but not under "Geomorphic." Should the there be a similar item under "Geomorphic"?

Response: See previous response to this question.

637-BB-141-EV100

Comment: Are there details for the Transfer Efficiency Study of the dissolved-oxygen system? The data collection for the demonstration project was inadequate to show any conclusive effect of the injection system on the receiving waters.

Response: The overall objective of the Transfer Efficiency Study would be to determine the efficiency by which the injection systems add oxygen to the water column. Once there is a quantitative

determination of oxygen availability, a comparison can be made as to how this amount relates to that needed to mitigate project related impacts. A scope of work has not yet been developed.

637-BB-141-EV101

Comment: The Corps commits to biological monitoring when soil cadmium concentration is greater than or equal to 4 ppm, but does not define biological monitoring. The Department understood the Corps had agreed to tissue cadmium sampling independent of soil cadmium sampling. Tissue sampling should occur: 1) prior to sediment placement to collect baseline data; 2) during sediment placement; and 3) post placement until 3 consecutive years of samples contain cadmium concentrations that are less than the potential adverse effect level, which is to be determined.

Response: See previous response to this question.

637-BB-141-EV102

Comment: The Department accepts the Corps' use of 4 ppm cadmium concentration in capping material as a trigger for remedial action in DMCAs. The Department understands that the Corps will move a DMCA to higher priority in the rotation for O&M sediment placement and vegetation monitoring if 25 cumulative acres are found to have a cadmium concentration greater than or equal to 4 ppm. Sampling and placement will continue until the DMCA has less than 25 cumulative acres with a cadmium concentration greater than or equal to 4 ppm.

Response: See previous response to this question.

637-BB-141-EV103, 637-BB-141-EV104

Comment: This section states that the Corps will sample the top 15 cm of the cap material. The Department recommends sampling the top 30 cm of the cap material. This section also states that the Corps will conduct biological monitoring when soil cadmium concentrations exceed 4 ppm if the area "cannot be covered by O&M sediments within 6 months." This approach would risk a failure to conduct biological monitoring in an area that the Corps intends to cover within 6 months, but for whatever reason, may not. The Department recommends biological monitoring when concentrations exceed 4 ppm without regard to when the Corps intends to cover the area with O&M sediments.

Response: See previous response to this question.

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637-BB-141-EV105

Comment: The Department requests that the Corps continue to coordinate with the FWS prior to completion of the final EIS to finalize plans for biological monitoring within DMCAs, including tissue sampling.

Response: The Corps has coordinated with the USFWS concerning this issue during development of the FEIS. The monitoring described in the FEIS includes the results of that coordination.

637-BB-141-EV106

Comment: No monitoring is proposed for striped bass, but should be. We recommend a post-project assessment of striped bass habitat using the water quality monitoring data and updated water quality simulations. Model updates are already planned that would facilitate a low-cost assessment using the

established striped bass habitat criteria. The Department recommends comparing conditions during the fourth year of post-project monitoring with pre-construction predicted habitat impacts, and formulating corrective actions as necessary based on the results.

Response: Concur. The District agrees that a post-project assessment of Striped bass habitat impacts using the most recent water quality monitoring data and updated water simulations would be appropriate. This would be conducted during the second, fourth, and ninth years of the post-construction monitoring. Appropriate sections of the document including the Monitoring and Adaptive Management Plan have been revised to indicate the inclusion of this work.

637-BB-141-EV107

Comment: The Department supports the sampling protocol (species and timing) described in this section, with one exception (or clarification). Sampling when the CDFs are wet is proposed for April and September. However, the next sentence says three individuals of two species (six total) "will be collected **each year"** (emphasis added). We recommend revising this to state that these six individuals will be collected twice a year (April and September) when the CDFs are wet.

Response: Concur. The Monitoring and Adaptive Management Plan has been revised to indicate that six individuals will be collected twice a year (April and September) when the CDFs are wet.

637-BB-138-EV108

Comment: The DEIS shows various post construction monitoring ranging from 2 to 5 years. It is not unlikely that a drought or high-flow period lasting several years would occur during the post-construction monitoring period, which would complicate comparisons with pre-construction monitoring data. In addition, tidal freshwater wetlands respond slowly to salinity change. Therefore, the Department recommends increasing wetland and continuous water quality monitoring from 5 years post-construction to 10 years.

Response: The District has revised the monitoring plan to include ten years of post-construction monitoring, which is sufficient to capture a range of flows over which to identify the project's impacts and evaluate the performance of the mitigation features.

637-BB-141-EV109, 637-BB-141-EV110

Comment: We recommend developing a detailed data analysis plan for the post-construction water quality monitoring. The mitigation features will significantly alter the system, which will complicate the comparisons of pre- and post-construction conditions to determine the efficacy of the mitigation measures. A recent example of the need for such as plan was the re-oxygenation demonstration performed for the Savannah Harbor Expansion project. Monitoring data was collected, but the analysis of that data failed to conclusively quantify the effect of the demonstration project in the highly variable DO dynamics of the system.

Response: A detailed data analysis plan is not warranted in a feasibility study. That more detailed work would typically be performed after decisions are made to implement a project. However, based on coordination with the NMFS and the USFWS during preparation of the FEIS, additional details concerning data analysis have been added to the Monitoring and Adaptive Management Plan (Appendix D). The District believes the level of detail in the EIS describing the monitoring that would be performed is sufficient.

The initial reports of that limited demonstration project (re-oxygenation demonstration) were supplemented and revised by GPA's contractors, and the revised reports containing additional information quantifying the effects on D.O. were provided to the natural resource agencies.

637-BB-141-EV111, 637-BB-141-EV112

Comment: Concerning the revegetation of Area 1S, grading the site and its feeder creeks to the proper elevations is essential to avoid establishing invasive vegetation (e.g., Chinese tallow tree) that have little or no wildlife value. The discussion and table in this section should specify criteria for successful establishment of native wetland plants. Monitoring the success of the re-vegetation for 5 years should include control measures for exotic and invasive species, if detected.

Response: Table 4 in the Monitoring and Adaptive Management Plan specifies the criteria which will be used to determine if wetland growth in Disposal Site 1S is occurring at an acceptable rate. The plan has been revised to include monitoring for invasive species [especially common reed and Chinese tallow tree] together with measures to control such species should they prove to be a problem.

637-BB-141-EV113, 637-BB-141-EV115

Comment: This section describes an informal inter-agency review process for monitoring data and reports during the 5-year post-construction monitoring period. Within 1 year after the 5-year post-construction monitoring period, the Corps would prepare a consolidated report of the various monitoring programs, followed by 30 days of agency review, an unspecified time period for further report revision, public review, and a potential elevation process. This time-line for making decisions on adaptive management actions would likely require a minimum of 1.5 years after the 5-year post-construction monitoring period, and could take much longer. The Department recommends compressing this process so that final decisions on corrective actions are reached within 1 year after the monitoring period. In addition, because we have recommended extending the duration of post-construction monitoring from 5 years to 10 years, we also recommend preparing and reviewing a consolidated report of the various monitoring programs at the end of 5 years, and again at the end of 10 years following project construction, to ensure that adaptive management decisions can be made when it becomes apparent that a problem exists, and in a timely manner.

Response: The District believes the timelines discussed in the Monitoring and Adaptive Management Plan regarding data compilation, draft report preparation, and agency/public review are reasonable.

As stated in previous responses, the District believes that up to ten years of selective post-construction monitoring is sufficient. It should be stressed that the opportunity for Cooperating Agencies to make recommendations about changes in project and/or mitigation measures will not be limited to the immediate period after completion of the post-construction monitoring. The Monitoring and Adaptive Management Plan includes a meeting between the District and the natural resource agencies at the end of each monitoring year to discuss any changes to the monitoring requirements, the project, or the mitigation features. This type of meeting could be held on a more frequent basis if circumstances require.

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637-BB-141-EV114

Comment: Appendix D contains two sections "9.B" – the second one should be "9.C."

Response: Concur. Correction has been made.

637-BB-138-EV116

Comment: The Federal modeling performance goals in the plan are those provided by review agencies in 2001 during hydrodynamic model development. Because the agencies were aware of the complexity of the system and model limitations, we allowed considerable latitude in the performance of the models. We are concerned that adopting the same tolerances for the performance of the constructed project is inappropriate, because actual impacts could differ substantially from the predicted impacts without triggering remedial action. Based on earlier coordination, the Corps modified the tolerances for achieving a goal of <1 ppt salinity to +/- 0.1 ppt, and we support this change. The goal for salinity in the range of 1-5 ppt has not been modified, and would allow considerable impact without triggering action. As proposed, a range of 0.5 to 1.5 ppt is acceptable for a salinity goal of 1 ppt (+/- 50%), while a range of 0.89 to 1.09 ppt is acceptable for a salinity goal of 0.99 ppt (+/- 10%). We recommend modifying the goal for salinity in the range 1-5 ppt to +/- 10 % (not +/- 0.5 ppt as currently stated) to make it more consistent with other goals and triggers for adaptive management.

Response: The District revised Appendix D to include the suggested goal for salinity predictions (+/- 10% in the 1-5 ppt range). While this goal may not be achievable, modelers would strive to reach this objective.

637-BB-141-EV117

Comment: This section states that the "Corps would seek and obtain its funds for this phase each year through the normal budget process," which concerns the Department. It is relatively certain that impacts to trust resources of the Department will occur following construction, but the effectiveness of the mitigation features is much less certain. Therefore, the Department cannot agree that the proposed mitigation plan adequately addresses project impacts unless contingency funding for monitoring/adaptive management activities is assured.

Response: See previous response to this question.

637-BB-141-EV118

Comment: This section should also discuss an implementation schedule for needed corrective actions. The Department recommends initiating construction, or other appropriate remedial actions, within 1 year of a decision to modify a mitigation feature.

Response: The District concurs with the goal of initiating construction within one year of a decision to implement an adaptive management feature. However, a one-year time limitation on implementing a remedial action may not be achievable in all circumstances. If the action were identified in the EIS and contingency funds were available, a one-year duration would be reasonable. However, if the remedial action was outside the identified scope of the EIS, additional NEPA documentation [and time] would be required. Significant modifications to the project or its mitigation features could exceed available funding, requiring a request for additional money. Those steps could easily take more than one year to complete.

637-BB-141-EV119

Comment: The Corps proposes to monitor the performance of corrective actions under the adaptive management program. It is unlikely that 1 year of post-construction monitoring is sufficient to determine the outcome of the action in a system as dynamic as the Savannah estuary. The Department recommends 3 years of post-construction monitoring of adaptive management actions.

Response: This section has been revised to provide for two years of monitoring after implementation of an adaptive management feature. A longer monitoring period may be considered should the Corps and the Cooperating Agencies deem it necessary and the monitoring could be conducted using funds within the approved threshold identified for Adaptive Management.

637-BB-141-EV120

Comment: The Corps proposes to fund four water monitoring stations to determine whether the mitigation features are functioning as intended. A fifth station, Station 021989784, is located at the intake of the freshwater supply system for the 3,000 acres of managed wetlands on Savannah NWR and is therefore especially important for monitoring project impacts to the Refuge. The Department recommends adding it to the Corps' list of supported stations.

Response: The continuous water quality monitoring station at the intake to the Savannah National Wildlife Refuge is already funded by the Georgia Ports Authority. The Georgia Ports Authority has stated their intention to continue funding operation of this station.

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637-BB-141-EV121

Comment: This appendix does not include a section header to separate Section B, Tidal Freshwater Marsh, from Section A, Savannah NWR Freshwater Waterfowl Management Operations. We believe page 16 is the appropriate location for this.

Response: Concur. The District has revised the EIS as suggested.

637-BB-141-EV122

Comment: Figure 5 and the associated text do not provide an accurate representation of marshes in 1854. Most of the salt marsh shown on Figure 5 is in the Wright River system, not the Savannah system. The demarcation between freshwater marsh, brackish marsh, and salt marsh is not supported by historical information. As stated on page 20, Appendix L, tidal forest in the mid-1700's extended to the junction of Back River and the Savannah River, and brackish marshes extended to near the mouth of the river. Appendix Q, page 22, mentions that Hutchinson Island was used extensively for rice culture, which requires freshwater. Between the mid-1700's and mid-1800's, only minor modifications were made to the Savannah River. This information indicates that the depiction of marsh type extent in Figure 5 and the resulting areal estimates are mistaken, and that the freshwater limit extended to about river mile 7 in the mid-1850's. Figure 5 shows the interface at about river mile 19. The Department recommends correcting these errors.

Response: Figure 5 was originally developed during the studies relating to the development of the dissolved oxygen TMDL for the harbor. The District included it in the EIS to show that different natural resource agencies have different understandings of the historic conditions in the estuary. Since man has

made many changes in this estuary over time, some of the differences are the result of analyzing conditions at different points in time.

637-BB-141-EV123

Comment: Figure 6 and the associated text do not provide an accurate representation of marshes in 1999. USGS estimates based on detailed field studies and Corps estimates based on the hydrodynamic model are generally consistent, but are substantially different from the estimates shown in Figure 6. The Department recommends corrections for clarity.

Response: Figure 6 was originally developed as part of the s analyses for the dissolved oxygen TMDL for the harbor. The District included it in the EIS to show that different natural resource agencies have different understandings of the historic conditions in the estuary. Since man has made many changes in this estuary over time, some of the differences are the result of analyzing conditions at different points in time.

637-BB-141-EV124

Comment: This section states that the primary stress to tidal freshwater marsh is prolonged drought, which is not supported by evidence. In 1875, when the controlling depth of the navigation channel was 12-15 feet, the Savannah estuary supported an estimated 12,000 acres of tidal freshwater marsh. In 2005, when the controlling depth was 42 feet, the estuary supported only 3,269 or 4,072 acres (depending on study method used). This section should instead state that the inland intrusion of salt water resulting from channel deepening is a constant stress on tidal freshwater marsh, and that prolonged drought exacerbates this stress.

Response: The Present and Future Stresses Sections of this discussion have been revised to indicate that salinity levels are and will continue to be a stress on tidal freshwater marsh.

637-BB-141-EV125

Comment: This section also states that the Corps evaluated the effects of sea level rise on tidal freshwater marsh. The Department maintains that sea level rise would have a negligible impact within the Savannah NWR if not for the cumulative impact of previous harbor deepening.

Response: This section has been revised to show the relationship between sea level rise/past harbor deepening projects and their cumulative adverse effect on tidal freshwater wetlands.

637-BB-141-EV126

Comment: The discussion of the mitigation for the loss of non-freshwater tidal marshes is confusing. Previous sections – Appendix C, Section V, and elsewhere – speak of impacts to 14.08 acres of salt and brackish marsh with 42 (or 45) acres listed as mitigation for the 44-foot alternative. Appendix C lists 15.68 acres of brackish marsh loss for all the proposed harbor deepening alternatives. This Appendix lists the loss of 3.0 acres of brackish marsh and 12.68 acres of saltmarsh, which equals the 15.68 acres of brackish marsh mentioned in Appendix C. This is confusing because both 14.08 acres and 15.68 acres are listed as marsh loss for either the 44–foot alternative or all alternatives. Also, the acreage proposed for restoration is not clear. The Department recommends revisions for clarity.

Response: Appropriate sections of the document have been revised to indicate that the amount of direct marsh loss associated with harbor deepening is 15.68 acres. Revisions to the text were also made to describe the marsh restoration feature at Disposal Site 1-S, viz., a roughly 40.3-acre portion would be

topographically sculpted to create a suitable marsh habitat. This parcel also includes a 1.7-acre area previously graded down by the Georgia Ports Authority for similar mitigation purposes. Of the 42-acre total, only 28.8 acres would be necessary to mitigate for the subject harbor deepening. The remaining roughly 11.5 acres would serve as mitigation for other impacts from SHEP or O&M of the Savannah Harbor Navigation Project.

Page 20

637-BB-141-EV127

Comment: Most of the salt marsh in the estimate provided in the "Present Condition" section is in the Wright River system, and not in the Savannah River system. The Department recommends corrections for clarity.

Response: The information included in the EIS was originally developed by during analyses for the dissolved oxygen TMDL for the harbor. The District included it in the EIS to show that different natural resource agencies have different understandings of the historic conditions in the estuary. Since man has made many changes in this estuary over time, some of the differences are the result of analyzing conditions at different points in time.

637-BB-141-EV128

Comment: The Department recommends taking samples of the cap material to a depth of 30 cm instead of the 15 cm depth proposed. This section also cites 7 ppm cadmium concentration as the trigger for remedial action: we recommend this section be revised to be consistent with Appendix D (Section 7.B) which identifies 4 ppm as the trigger.

Response: See previous responses to this question.

637-BB-141-EV129

Comment: We recommend biological monitoring when cadmium exceeds 4 ppm regardless whether the Corps plans to cover the area with O&M sediments within 6 months. This section, and others, should define biological monitoring in the context of cadmium in disposal areas. The Department recommends a program of monitoring wildlife activity in disposal areas and cadmium levels in bird tissues that is independent of the Dredge Material Containment Area (DMCA) capping criteria. Wildlife monitoring should begin with sediment placement and continue as long as all other monitoring of the DMCA. Tissue monitoring should occur: 1) prior to sediment placement to collect baseline data; 2) during sediment placement; and 3) post placement until 3 consecutive years of samples contain cadmium concentrations that are less than the potential adverse effect level, which is to be determined. The Department supports the sampling protocol (species and timing) described in Appendix D, page 23, and requests that the Corps continue to coordinate with the FWS prior to completion of the final EIS to finalize plans for biological monitoring within DMCAs, including tissue sampling.

Response: There are two basic components of the monitoring plan in regard to the disposal of cadmium-laden sediments in the CDFs. The first involves sampling of the cadmium-laden sediments after placement in the CDFs. Second, the District would sample the initial cover/cap material to be placed over the cadmium sediments. This material would be other new work sediments that contain lower cadmium levels. After this cover has been placed, sediment samples would be collected and analyzed. If cadmium levels in the cover are equal to or exceed 4 mg/kg in a cumulative area of 25 acres or greater, an additional cover of maintenance dredging sediments would be applied. If the

concentration of cadmium in these samples is below 4 mg/kg, no further action would be required. If the samples exceed 4 mg/kg, then an additional cap of O&M material would be placed over the sediments and additional soil sampling conducted. This process would be repeated until cadmium concentrations in sediments in the CDF cover are 4 mg/kg or less.

637-BB-141-EV130

Comment: Our recommendations necessitate revisions to the "Decision Matrix for Cadmium Sampling" on page 86, including: remove references to 7 ppm cadmium concentrations; remove "if necessary" in reference to tissue sampling; do not differentiate between areas slated for covering before or after 6 months; and continue wildlife use studies until tissue monitoring is completed.

Response: The Decision Matrix has been removed from the document.**637-BB-138-EV131 Comment:** Based on an analysis prepared by Kinetic Analysis Corporation (KAC), this section concludes that the hydrodynamic model probably over-predicts salinity and under-predicts dissolved oxygen, i.e., the model errs towards the side of simulating conditions worse than would actually occur. We believe this analysis may seriously misrepresent the risk and uncertainty associated with the water quality predictions. With the exception of the new channel depth, the KAC analysis relied upon the existing geometry of the Savannah River estuary. Several mitigation measures would significantly modify the system geometry, including significant flow diversion at McCoys Cut, closing Rifle Cut, filling the Back River sediment basin, and removing the tide gate. Flow routing and flow volume in the three main river channels would become significantly different from the current system. Therefore, we believe the degree of risk and uncertainty regarding expected water quality impacts, and the resulting wetland impacts, is considerably higher than the KAC analysis suggests, which is one of the reasons why the Department recommends extending the proposed post-construction monitoring from 5 years to 10 years.

Response: See previous responses to this question.

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637-BB-141-EV132

Comment: This portion of the DEIS discusses risk and uncertainty in relation to sea level rise and the modeling of impacts to freshwater marsh. This section argues for predicating mitigation on the "base year" impacts (the year construction is complete) instead of average annual impacts over the life of the project (consistent with Corps policy), because "impacts that would occur soon after the base year are those most likely to occur and least subject to uncertainty from more distant projections of future conditions." Average annual impacts are less than base year impacts because sea level rise over 50 years will cause wetland losses without the project. The Department agrees with predicating mitigation on the base year impacts, but for a different reason. The Department maintains that sea level rise would have a negligible impact on Savannah NWR if not for the cumulative impact of previous harbor deepening.

Response: The DOI's comments concerning the effects of past harbor deepening on sea level rise and the SNWR are acknowledged.

637-BB-141-EV133, 637-BB-141-EV134

Comment: Wetland impacts are inferred from salinity changes predicted by the hydrodynamic model. This section states: "...the hydrodynamic model has roughly an 80 percent chance of over-predicting salinity levels at low salinity levels, thus leading to an over-prediction of salinity-induced impacts to wetlands. Therefore, the model is considered to present little risk for decision-makers evaluating salinity impacts to wetlands." The Department disagrees with this characterization, which was based on analysis by KAC that, with the exception of the new channel depth, relied upon the existing geometry of the Savannah River estuary. Several mitigation measures would significantly modify the system geometry, including significant flow diversion at McCoys Cut, closing Rifle Cut, filling the Back River sediment basin, and removing the tide gate. Flow routing and flow volume in the three main river channels would become significantly different from the current system. Therefore, we believe the degree of risk and uncertainty regarding expected water quality impacts is considerably higher than the KAC analysis suggests, and is a reason we recommend extending the proposed post-construction monitoring from 5 years to 10 years.

Response: The District acknowledges the DOI's disagreement with the basic conclusion in the Risk and Uncertainty Analysis [page 8] that states "the hydrodynamic model has roughly an 80 percent chance of over-predicting salinity levels at low salinity levels, thus leading to an over-prediction of salinity-induced impacts to wetlands. Therefore, the model is considered to present little risk for decision- makers evaluating salinity impacts to wetlands". The Risk and Uncertainty Analysis was performed by an independent contractor. The USFWS reviewed those findings before it agreed that the model was sufficient for impact evaluation purposes on this project. The post-construction monitoring plan is designed to provide data to refine and improve the accuracy of the hydrodynamic and water quality models.

637-BB-141-EV136, 637-BB-141-EV135

Comment: This section states that the model slightly under-predicts DO levels and is therefore a good predictor of DO-related impacts. Because the project and the various mitigation features will substantially alter channel geometry of the lower river, and the hydrodynamic models are based on the current geometry, the Department attributes a relatively high degree of uncertainty with the model predictions of water quality impacts, including DO impacts. We recommend that the final EIS recognize and acknowledge this uncertainty. The risk to fish and other resources of underestimating DO impacts is further justification for expanding the monitoring effort beyond the currently proposed 5 years to 10 years.

Response: The risks and uncertainties of the proposed dissolved oxygen system for Savannah Harbor are fully discussed in the Risk and Uncertainty Analysis [page 9-11]. The post-construction monitoring plan is designed to provide data to refine and improve the accuracy of the hydrodynamic and water quality models, and quantify impacts from a harbor deepening.

Please see previous responses concerning extending the five-year post-construction monitoring plan to ten years.

637-BB-141-EV137

Comment: The Draft EIS references a USGS report, by the Cooperative Research Unit, titled "Simulation of Water Levels and Salinity in the Rivers and Tidal Marshes in the Vicinity of the Savannah National Wildlife Refuge, Coastal South Carolina and Georgia" but does not provide the reference. Suggest the Final EIS include the reference (Conrads et al, 2006) as follows:

Conrads PA, Roehl EA, Daamen RC, and Kitchens WM. 2006. Simulation of Water Levels and Salinity in the Rivers and Tidal Marshes in the Vicinity of the Savannah National Wildlife Refuge, Coastal South Carolina and Georgia. US Geological Survey, Scientific Investigations Report 2006–5187, 134 p. Available online at: <u>http://pubs.usgs.gov/sir/2006/5187/pdf/sir20065187.pdf</u> "

Response: Concur. This reference has been added to the references section.

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637-BB-141-EV138

Comment: Based on an analysis prepared by Kinetic Analysis Corporation (KAC), this section concludes that the hydrodynamic model probably over-predicts salinity and under-predicts dissolved oxygen, i.e., the model errs towards the side of simulating conditions worse than would actually occur. We believe this analysis may seriously misrepresent the risk and uncertainty associated with the water quality predictions. With the exception of the new channel depth, the KAC analysis relied upon the existing geometry of the Savannah River estuary. Several mitigation measures would significantly modify the system geometry, including significant flow diversion at McCoys Cut, closing Rifle Cut, filling the Back River sediment basin, and removing the tide gate. Flow routing and flow volume in the three main river channels would become significantly different from the current system. Therefore, we believe the degree of risk and uncertainty regarding expected water quality impacts is considerably higher than the KAC analysis suggests, and is a reason we recommend extending the proposed post-construction monitoring from 5 years to 10 years.

Response: Please see previous responses on this concern.

637-BB-141-EV139

Comment: This section states that the model slightly under-predicts DO levels and is therefore a good predictor of DO-related impacts. Because the project and the various mitigation features will substantially alter channel geometry of the lower river, and the hydrodynamic models are based on the current geometry, the Department attributes a relatively high degree of uncertainty with the model predictions of water quality impacts, including DO impacts. We recommend that the final EIS recognize and acknowledge this uncertainty. The risk to fish and other resources of underestimating DO impacts is further justification for expanding the monitoring effort beyond the currently proposed 5 years to 10 years.

Response: Please see previous responses on this concern.



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

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JAN 25 2011 F/SER

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

Dear Colonel Hall:

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

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

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



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

Habitat Suitability Assessment for Shortnose Sturgeon

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

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

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

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

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

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

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

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

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

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

Enclosure

National Oceanic and Atmospheric Administration, National Marine Fisheries Service

PRELIMINARY REMARKS: NOAA/NMFS submitted comments on January 25, 2011 in the form of a letter with backup comments (Letters 752 and 753). After the comments were submitted, the Corps engaged in additional consultation and coordination with NMFS and other natural resource agencies regarding threatened and endangered species. On November 4, 2011, NMFS issued its Biological Opinion (BO) for the project. The BO concurred with the findings of the Corps' Biological Assessment for Threatened and Endangered Species (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 (species under NMFS jurisdiction). The BO further determined that construction of the SHEP would not jeopardize Kemp's ridley sea turtles, loggerhead sea turtles, Shortnose sturgeon, and Atlantic sturgeon, and imposed reasonable and prudent measures (RPM)/terms and conditions protecting these species. The project's compliance with the ESA regarding federally threatened and endangered species is fully documented in EIS Sections 4.09 and 5.11, and in Appendices B (BATES), and Z (Biological Opinion).

Page 1

752-BB-14-EV01

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

Response: As indicated in your letter, the Corps has been closely coordinating with NMFS Southeast Regional Office for a number of years to ensure all environmental impacts, including NMFS' trust resources, are adequately identified for each alternative plan. NOAA staff participated in the Fisheries Interagency Coordination Team since its creation in 2002. That team reviewed the tools the Corps would use to identify project impacts and defined how we would use those tools to calculate the number of impacts. Since the Alternative Formulation Briefing in 2008, the Corps provided additional modeling data at NOAA-NMFS' request on numerous occasions. Those modeling results indicate that the chosen mitigation plan adequately addresses predicted impacts to the affected resources. Each of NOAA-NMFS' identified remaining concerns will be addressed in the FEIS in either the response to comments appendix or through a revision to the report itself. As a Cooperating Agency, the Corps will continue to coordinate with NOAA-NMFS as the Corps progresses with implementation of this project.

752-BB-14-EV02, 752-BB-14-EV03

Comment: Of paramount importance to NMFS is assuring the impacts of the project do not threaten the continued existence of the shortnose sturgeon, an endangered species that still persists in the Savannah River. The sturgeon's remaining foraging and refuge habitat is largely within the Harbor, and the dredging and hydrological changes of the project will degrade large portions of this habitat, rendering it unsuitable for shortnose sturgeon. The two deficiencies of the DEIS and mitigation plan relating to shortnose sturgeon highlighted here are preventing us from fully evaluating project impacts on this species and significantly affecting the adequacy of the proposed mitigation plan.

Response: The Corps performed extensive studies to evaluate potential impacts fishery resources, including Shortnose sturgeon. The hydrodynamic and water quality models were developed over a number of years, and their use and modeling employed approaches that were agreed upon by all the Cooperating Agencies. The Corps conducted studies and worked in conjunction with the Fisheries Interagency Coordination Team (of which NOAA Fisheries was a member) to identify critical species and acceptable habitat criteria for each life stage. The results of the extensive analyses and mitigation planning, including flow re-routing and addition of dissolved oxygen, have minimized impacts to Shortnose sturgeon habitat. The latest modeling indicates that harbor deepening would reduce winter habitat for Shortnose sturgeon adults and juveniles, and increase the summer habitat for Shortnose sturgeon in this river basin, the increase in spawning habitat that the Corps proposes would more than offset for the remaining unavoidable impacts to winter habitat.

Based on the extensive coordination that has occurred and the changes to the project since release of the DEIS, NOAA has concurred that the project would not jeopardize the continued existence of Shortnose sturgeon in the Savannah River. Specific comments on the two deficiencies are addressed in comments below.

Page 2

752-BB-14-EV04

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

Response: As noted in NOAA's comment, the Corps has coordinated extensively with NOAA-NMFS to provide additional data they have requested for the Shortnose sturgeon assessment. At NOAA's request, the Corps coordinated a change in the habitat suitability criteria with the Fisheries Interagency Coordination Team. The Corps provided NOAA with updated analyses to incorporate that change. The Corps concurs that there were inconsistencies in the EIS that have since been corrected and new information on Shortnose sturgeon impacts provided to NOAA-NMFS. However, the Corps does not concur that the analyses were deficient. The Corps conducted all analyses that the Fisheries Interagency Coordination Team identified as necessary to adequately address impacts to fisheries, including Shortnose sturgeon. In good faith, the Corps has also accommodated requests from NOAA for additional data which, in some cases, our subject matter experts do not see as critical to assessing project impacts to Shortnose sturgeon habitat because the outcomes would not change the proposed mitigation features. The Corps included the updated analyses in the FEIS.

Based on the extensive coordination that has occurred and the changes to the project since release of the DEIS, NOAA has concurred that the project would not jeopardize the continued existence of Shortnose sturgeon in the Savannah River as documented in their Biological Opinion, which is included in Appendix Z of the FEIS.

752-BB-14-EV05, 752-BB-14-EV06

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

Response: As noted in Section 5.03 of the EIS, the Cooperating Agencies and the Fisheries Interagency Coordination Team could not identify measures in the estuary that would restore or enhance Shortnose sturgeon habitat. Therefore, the team agreed in June 2007 that allowing passage around the lowest dam on the river, the New Savannah Bluff Lock and Dam, would provide an additional 20 miles of upstream habitat and would compensate for losses in Shortnose sturgeon habitat in the estuary due to harbor deepening.

The Corps acknowledges that the acreage of acceptable Shortnose sturgeon habitat in the estuary would be reduced. The Corps is pleased that NOAA acknowledges that providing Shortnose sturgeon access to spawning habitats upstream of the New Savannah Bluff Lock and Dam would adequately mitigate for habitat losses in the estuary.

752-BB-14-EV07, 752-BB-14-EV08

Comment: As currently proposed the COE's fish passage is not likely to be successful in passing sturgeon to justify its use as mitigation against the much more certain impacts of the harbor deepening. If a fish passage structure is to be used as mitigation for impacts of the harbor deepening there will need to be extensive changes to the proposed design. Even if an effective design can be agreed upon, the fish passage structure would require maintenance and repair in perpetuity. The removal of the NSBLD is our preferred method to allow sturgeon access to upstream habitats. In comparison to the uncertain success and impermanence of the proposed passage structure, removal of the NSBLD would certainly restore access to upriver habitat in perpetuity. Additionally, cost information we included in our enclosed comments indicates removal would be the less expensive option in the short- and long-term. Such action would be consistent with the COE Savannah District's recommendation in the September 2000 report on the NSBLD disposition study.

Response: The Cooperating Agencies agreed in 2007 that fish passage would provide acceptable mitigation feature for the proposed project impacts to Shortnose sturgeon habitats. The Corps was clear that it would propose a bypass structure that the natural resource agencies had previously approved at that site. In 2010, the Corps consulted the Federal and State regional natural resource agencies to determine if the state-of-the-art had advanced substantially since the present design was prepared. In response, NMFS expressed concern over the design of the passage similar to that stated in the comment. However, no fishery experts in the regional natural resource agencies identified any specific change to the proposed design that should be made as a result of recent documented fish passage research. Since no agency identified specific changes that should be incorporated, the Corps does not concur that extensive changes to the design must be implemented. To ensure that the bypass design was the best one possible for that location, the Corps convened a fish passage workshop after release of the DEIS to refine the design. As a result of that meeting, fish passage criteria were revised.

In coordination with NMFS and other resource agencies, the fish bypass design has been altered to allow a larger percentage of flow as well as more accessible entry and exit for Shortnose sturgeon. The Corps would also monitor the passage of Shortnose sturgeon through the structure to ensure it performs as intended.

The Corps acknowledges that removal of the lock and dam is NOAA's preferred method to allow Shortnose sturgeon access to upstream habitat. The Corps also acknowledges that removal of the lock and dam would benefit the 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 Corps is obligated to maintain the project as Congress provides funding to operate such projects.
- 2) The current authorization language (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 Lock and Dam to the City of North Augusta.
- 3) Removal of the structure would adversely impact the freshwater supply of eight major users.

Page 3

752-BB-14-EV09

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

Response: The Corps performed extensive studies to evaluate potential impacts to fishery resources. The hydrodynamic and water quality models were developed over a number of years, and their use and modeling approach employed was agreed upon by all the Cooperating Agencies. The Corps conducted studies and worked in conjunction with a Fisheries Interagency Coordination Team to identify critical species, and acceptable habitat criteria for each critical life stage. The District carried out all fisheries studies and analyses identified by the Fishery Interagency Coordination Team as being required to adequately evaluate the impacts of the various project alternatives. The following five responses address the key topics referenced above.

752-BB-14-EV10, 752-BB-14-EV11

Comment: First, the Ocean Bar Channel Extension is a project feature added relatively late to the project design. One consequence of the feature is that hardbottom habitat may be adversely affected by dredging the channel extension. In addition, additional dredge material will need to be placed in the area of the potential hardbottom dredging impact. To date, the COE has assured NMFS that surveys will be completed of the bar channel extension and that this survey information will be adequate to describe potential impacts of dredging to hardbottom habitat. Further, the areas where the additional dredged material will be placed support important managed species including red snapper. The dredge material has been proposed to be placed and configured in a way that would provide suitable fishery habitat in the impacted hardbottom areas. To fully assess the likely success of this mitigative measure, NMFS requests plans be included in the FEIS for the dredge material placement and configuration as well as information on monitoring the effectiveness and durability of these features.

Response: The District does not believe that hardbottom communities exist in the proposed alignment of the entrance channel extension. However, the Corps has committed to perform surveys prior to

construction of the Entrance Channel extension to confirm that no hardbottom communities are within the proposed dredging area.

After coordination with GA DNR-CRD, the dredged material placement plan has been revised and now calls for placing all sediments excavated from the entrance channel in previously-approved areas: either in the Offshore Dredged Material Disposal Site or an upland confined disposal site. The Final EIS has been revised to reflect this change. It should be noted that the proposed features were designated as beneficial use of dredged material, not mitigation as indicated in NMFS' comment.

752-BB-14-EV12

Comment: Second, dredge material is proposed for placement at a feeder berm near Tybee Island. This material is intended to replenish the beaches of Tybee Island downstream of the feeder berm. To ensure this result is likely, NMFS requests modeling be conducted to demonstrate the likely fate and disposition of the material placed at the Tybee Island feeder berm.

Response: After coordination with GA DNR-CRD, the dredged material placement plan has been revised and now calls for placing all sediments excavated from the entrance channel in previously-approved areas: either in the Offshore Dredged Material Disposal Site or an upland confined disposal site. Since nearshore placement of new work sediments is no longer proposed, the Corps will not model or monitor the fate of the deposited sediments.

752-BB-14-EV13, 752-BB-14-EV14

Comment: Third, although considerable progress has been made in developing the Monitoring and Adaptive Management Plan described in DEIS Appendix D, NMFS requests further elaboration in two areas:

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. 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 the various mitigation measures. Specific parameters were not established that would replace the judgment of agency technical experts concerning when changes might need to be made. In other words, based on the data collected, some resource experts may see a need to modify the monitoring and/or a mitigation measure, even though a specific threshold for a parameter has not been reached. Also, resource experts may become concerned about the potential cumulative impacts of several parameters, even though the threshold limits have not been exceeded for any one parameter. Establishing thresholds for individual parameters would remove that flexibility. Based on recent coordination with NMFS, the Corps has agreed to establish expected ranges of predicted values for certain water quality parameters. This discussion has been added to the pre-construction monitoring section of the Monitoring and Adaptive Management Plan (Appendix D).

Decision points about changes in the monitoring plan or mitigation features could 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 is expected to be available on-line on a real-time basis. Although the plan provides for a meeting between the Corps and the natural resource agencies at the end of each year of monitoring to discuss the data and any changes that need to be made, such a meeting could be held at any time that concerns so dictate. If the monitoring identifies impacts that are well outside of those predicted, consultation with the resource agencies would begin immediately. Corrective actions could range from

a change in the monitoring plan to a cessation of construction activities until a given problem could be rectified.

The current Monitoring and Adaptive Management plan is adequate to address impacts of the project and its associated mitigation features. The species that would be monitored after construction are ones identified by the Fisheries Interagency Coordination Team as being critical to understanding the impacts of a harbor deepening project on the estuary. Other species – such as shrimp and crabs -- were considered by the Interagency Coordination Team, but the Team (and the Cooperating Agencies) recognized that those species generally accept a range of salinity conditions and believed they would not be particularly susceptible to changes from harbor deepening. However, at the request of NMFS, crabs and shrimp will be added to the fish surveys as proposed at no additional cost to the project. National Marine Fisheries Service (NMFS) Comments on: Draft Tier II Environmental Impact Statement for the Savannah Harbor Expansion Project, Chatham County, Georgia and Jasper County, South Carolina (DEIS) and Draft General Re-evaluation Report for the Savannah Harbor Expansion Project, Chatham County, Georgia and Jasper County, South Carolina (DGRR)

January 25, 2010

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

Section 7 of the Endangered Species Act (ESA)

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

Affected Species

Sea Turtles

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

North Atlantic Right Whales

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

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

Recent Proposed Listing of Atlantic Sturgeon

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

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

Shortnose Sturgeon

Habitat Suitability Modeling

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

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

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

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

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

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

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

COE-Proposed Measures to Address Impacts to Shortnose Sturgeon

Dissolved Oxygen Injection

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

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

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

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

Proposed Sill at Lower Middle River

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

Fish Passage at New Savannah Bluff Lock and Dam

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

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

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

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

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

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

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

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

Project Impacts

Entrance Channel (Ocean Bar Channel) Deepening and Extension

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

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

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

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

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

Monitoring and Adaptive Management

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

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

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

National Marine Fisheries Service Page 1

753-BB-26-EV01

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

Response: Concur. The Corps is proactive in its commitment to sea turtles. In addition to restricting hopper dredging activities during periods when turtles are known to occur in abundance, installing draghead deflectors and real-time dredging quality management software on all dredges operating under contract, South Atlantic Division encourages 100% (24-hr) observer coverage on hopper dredges, which is more stringent than what is outlined in the 1997 NMFS SARBO. The District has employed 100% observer coverage on all O&M dredging for over ten years. The Corps intends to continue with the 100% observer coverage for the proposed project.

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753-BB-26-EV02

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

Response: Concur. Page 181 of Appendix B in the DEIS has been revised to reflect the correct language.

753-BB-26-EV03

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

Response: Concur. Even though the listing for the Atlantic Sturgeon is not final, the BATES considers project effects on the species and the NMFS Biological Opinion thoroughly addressed the Atlantic sturgeon.
Page 3

753-BB-26-EV04

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

Response: The Corps is pleased that NOAA concurs that the habitat modeling produced a more accurate depiction of acceptable habitat when the revised criteria were included.

753-BB-26-EV05

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

Response: The Corps conducted studies in conjunction with the Fisheries Interagency Coordination Team, and the results of those studies did not indicate a lack of depth as problematic in the areas suggested. That Interagency Team did not identify river depth as a limiting factor in what would be considered acceptable habitat for Shortnose sturgeon. The model bathymetry map represents average depths from a 2004 USGS survey. The channel cells do not go dry during model simulations or experience instabilities due to wetting and drying. The actual survey data indicates the presence of deep holes along this stretch of river.

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753-BB-26-EV06

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

Response: Concur. The analyses performed to evaluate impacts of the various proposed mitigation plans at each depth alternative were extensive, allowing the Cooperating Agencies and Fisheries Interagency Coordination Team to review a comprehensive assessment when examining impacts of the various project alternatives.

753-BB-26-EV07, 753-BB-26-EV08, 753-BB-26-EV09

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

Response: The models employed in the Corps' analysis are complex, but they were developed over a number of years by subject matter experts with integrated input from the Cooperating Agencies and the Fisheries Interagency Coordination Team to ensure the results were meaningful and accurate. While all models have uncertainty, the SHEP hydrodynamic and water quality models are the best prediction tool available to understand future conditions in the harbor under various scenarios and allow stakeholders to make decisions regarding future harbor improvements. Earlier in this letter NOAA stated that

incorporating the revised SNS habitat criteria resulted in the habitat modeling producing more accurate depictions of acceptable habitat.

The Corps provided NMFS the updated modeling scenarios as requested, and the results have been incorporated into the Final EIS.

The habitat suitability criteria used in the model runs were defined and agreed upon by the Cooperating Agencies and the Fisheries Interagency Coordination Team, of which NMFS was a participating member. The criteria used in the model runs include both summer and winter foraging habitat for Shortnose Sturgeon. The Corps believes the criteria, data, and outputs of the models as presented in the DEIS and coordinated with NMFS, are sufficient to evaluate impacts from the different project alternatives. To specifically address Shortnose Sturgeon foraging habitat, the Corps funded additional analyses requested by NOAA of the bottom substrates in the upper harbor and in the main river up to I-95 (Dial Cordy, 2010). The investigation found the bottom to consist predominantly of sands, which readily support benthic communities used by sturgeon. As noted in Section 5.3.2 of the EIS, the Cooperating Agencies and the Fisheries Interagency Coordination Team could not identify measures in the estuary that could completely restore Shortnose Sturgeon habitat. As a result, the team agreed in June 2007 that allowing passage around the lowest dam on the river, the New Savannah Bluff Lock and Dam, would provide an additional 20 miles of upstream habitat and would compensate for habitat losses, including foraging habitat, in the estuary due to deepening of the harbor.

753-BB-26-EV10

Comment: Some of the proposed flow re-routing modifications include closing Rifle Cut and allowing the Sediment Basin to fill-in. The COE's assessment of the habitat .suitability models with the flow re-routing modifications indicate that areas above the Sediment Basin within the Back River will become "suitable habitat" for shortnose sturgeon. However, NMFS is concerned that this is an inaccurate assessment as the elimination of Rifle Cut, which connects the Middle and Back Rivers, coupled with the shallow depth of the Sediment Basin, could result in the Back River becoming a dead end for adult sturgeon trying to migrate between their upriver spawning habitat and downstream foraging habitat. Juvenile shortnose sturgeon already cannot enter through the lower end of the Back River due to the high salinities found there. We have concerns that what the COE is showing as habitat gained in some areas of the Back River (and we are still evaluating usage of the area) would produce an inaccurate assessment of the mitigation effects. While more habitat may be created, that could be classed as "suitable" when based on salinity and dissolved oxygen parameters, it may be located in areas not used by sturgeon or in areas that will become inaccessible to sturgeon after the flow re-routing modifications have been completed. Therefore, the "gain" would have no value to sturgeon.

Response: The Fisheries Interagency Coordination Team (including NOAA Fisheries) did not identify river depth as a factor in what should be considered acceptable habitat for Shortnose sturgeon. The Corps' studies indicate that depths in Back River are sufficient to support fish populations and fish movement. The closure of Rifle Cut is an integral part of the flow re-routing system that minimizes salinity impacts due to harbor deepening. The Corps does not believe the closure of this feature will constrain Shortnose sturgeon access to Back River, because the Back River will still be accessible via the confluence at Middle and Little Back Rivers. The Corps believes the criteria, data, and outputs of the models are sufficient to evaluate impacts under the different project alternatives.

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753-BB-26-EN01, 753-BB-26-EV11

Comment: The area the COE identified as of primary cOl1cern for low DO is located between Fort Pulaski and the Seaboard Coastline Railroad Bridge, a length of approximately 27 river miles. This also includes the primary areas identified as important foraging habitat for the shortnose sturgeon within the lower Savannah River. According to the DEIS, model predictions from the SHEP studies indicate that further deepening will have additional impacts on the dissolved oxygen regime in the Savannah Harbor. Using guidance provided by the Water Quality Interagency Coordination Team, the analyses conducted were based on average drought river flow conditions (August 1999). Other sensitivity analyses included average river flows (August 1997) and 2004 point source loads. Project impacts to DO were found to be higher during drought conditions than during average flow conditions. Supplemental model runs provided to NMFS after the publication of the DEIS have shown that when the 2004 point source loads are added to average river flows, there is an additional loss of acceptable habitat in the Front River adjacent to and upriver from the confluence with the lower Middle River. While this is a preliminary assessment and may not be completely based on accurate data, it may show that compounded effects of high point source loads and deepening of the harbor may result in additional loss of habitat for shortnose sturgeon. To offset the decrease in DO associated with the project, the injection of DO using Speece cones is proposed. The injection systems would be located along the banks of the Savannah River at three sites: the Georgia Pacific facility, located above the project area; and at International Paper within the project area on the West and East sides of Hutchinson Island along the Front River and Back River. The systems would be operated during July through September to provide the needed amount of oxygen. The cost to operate the systems would use a large portion of the mitigation budget. NMFS has previously expressed a concern to the COE about whether the on-going cost to operate the systems can be maintained in perpetuity. In its response, the COE stated that funding for any portion or feature of the project, whether mitigation or navigation, is subject to the normal budgetary process and appropriation by the US Congress. The COE stated they cannot predict or speculate on the amount of appropriations that a future Administration or Congress may provide to operate the Savannah Harbor Navigation Project. Without funds to operate the Navigation Project, the COE said they would have no funds to operate the project's mitigation features. They further stated that failure to operate all aspects of the project as described in the EIS and the Record of Decision (including its mitigation features) would subject the COE to legal challenges that it is operating the project outside its NEPA clearances. NMFS is concerned that the environmental impacts will continue in perpetuity, while the mitigation measures will only be operational as long as funding is available. The COE's record of not providing adequate maintenance of the mitigation features within the Savannah National Wildlife Refuge partially substantiates this concern.

Response: The SHEP water quality impact evaluation was conducted via four model scenarios as specified by the Water Quality Interagency Coordination Team [Section 7.4.3 of the Engineering Appendix]. All model scenarios included an array of point source loadings. The basic evaluation specifies low river flow and 2004 point source loads. There are three sensitivity analyses: (1) average river flow with 2004 point source loads, (2) low river flow with 1999 point source loads, and (3) low river flow and fully permitted point source loads. Details of the water quality analysis are included in the Engineering Appendix Supplemental Materials, specifically; "Water Quality Impacts of the Savannah Harbor Expansion Project" dated Feb 2007.

Installation and operation of the oxygen injection system is a mitigation feature which is an integral part of the project. This mitigation feature is required for the project to be constructed and perform as

planned. Consequently, the inclusion of the oxygen injection system in the project is fully described in the EIS, and 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.

As for the existing freshwater control system located partially within the Savannah National Wildlife Refuge, the Corps has recently funded and completed rehabilitation of those structures.

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753-BB-26-EV12, 753-BB-26-EV13

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

Response: The Corps, in partnership with Georgia Ports Authority, conducted extensive analyses, including performing a demonstration project that demonstrated the capability of the Speece Cones to add oxygen to the system without adversely affecting fishery resources. The results are summarized in the *Oxygen Injection Design Report Savannah Harbor Expansion Project*, dated October 2010. The report, prepared for GPA by Tetra Tech, is included as part of the Engineering Appendix supplemental materials in the GRR. The State and Federal natural resource agencies approved the Corps' use of the EFDC and WASP computer models to evaluate potential water quality impacts from harbor deepening. The models that the agencies determined were suitable to predict impacts are the same ones that the Corps' contractors used to design the D.O. systems. The suitability of those models to simulate flow, mixing, and dispersion within the estuary under impact scenarios should be the same as for scenarios that evaluate impacts plus D.O. mitigation.

In February 2010, the Corps met with the Cooperating Agencies, including NMFS, and resource agencies to discuss refinement of the oxygen injection system. At that time, the agencies agreed that the water quality analyses could examine effects in the lower half of the water column (3 bottom layers of model grid), rather than just the bottom grid layer. It was agreed that, to refine the D.O. system design, analysis of the bottom half of the water column would be more representative and still somewhat conservative of average conditions throughout the water column. Impacts to sturgeon habitat, however, were evaluated using solely the bottom grid layer of the model. The outputs presented in the EIS are representative of bottom conditions and are not averaged over the bottom half of the water column.

753-BB-26-EV14, 753-BB-26-EV15

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

Response: As a result of recent coordination with NOAA-NMFS, the Corps no longer proposes to raise the height of the Middle River Sill as part of the project mitigation plan.

753-BB-26-EV16

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

Response: As noted in Section 5.3.2 of the EIS, the Cooperating Agencies and the Fisheries Interagency Coordination Team did not identify measures in the estuary that could completely restore winter Shortnose Sturgeon habitat. Therefore, the team agreed in June 2007 that allowing passage around the lowest dam on the river, the New Savannah Bluff Lock and Dam, would provide an additional 20 miles of upstream habitat and compensate for losses in the estuary due to harbor deepening. In 2010, the Corps and the Cooperating Agencies again considered other mitigation alternatives and concluded that the fish passage as designed was still the most viable solution. At that time, NMFS expressed concern over the design of the passage as noted in the comment. Following release of the DEIS, the Corps held a fish passage workshop in April of 2011, and the fish passage criteria were revised. In coordination with NMFS and other resource agencies, the fish bypass design has been altered to allow a larger percentage of flow as well as more accessible entry and exit for Shortnose sturgeon. On November 4, 2011, NMFS issued its Biological Opinion (BO) for the project, which addresses fish passage design and contains reasonable and prudent measures/terms and conditions requiring that the design ensure safe and effective passage for sturgeon (Shortnose and Atlantic). As the design process progresses, the District would coordinate with the natural resource agencies to ensure that the fish passage structure is easily available to, and usable by, all anadromous/catadromous species in the river and that the design will comply with all other applicable requirements of the BO.

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753-BB-26-EV17, 753-BB-26-EV18, 753-BB-26-EV19

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

Response: In coordination with NMFS and the resource agencies, the Corps has updated the fish bypass design to allow a larger percentage of flow as well as more accessible entry and exit for Shortnose sturgeon. The Corps believes the current design is sufficient to allow passage of Shortnose sturgeon and allowed within the authorizations under which the NSBL&D is maintained. To ensure that the passage functions as intended, the Corps will coordinate with the natural resource agencies during development of plans and specifications to identify whether any revisions to the current design are warranted. The Corps will continue to seek input from the resource agencies of literature documentation of passage criteria for Shortnose sturgeon. See also previous response.

If the Atlantic sturgeon is formally listed, the Corps will coordinate with the NMFS to determine if any additional measures are required to protect this species.

The Corps believes the cost estimates presented in the report are accurate. Costs for maintenance of the fish passage structure and any potential modifications as a result of adaptive management practices have been included in the project costs as described in Appendix D of the DEIS. Installation and operation of the fish passage is a mitigation feature which is an integral part of the project. This mitigation feature is required for the project to be constructed and perform as planned. Consequently, the inclusion of the fish passage in the project is fully described in the EIS, and the Corps will document in the project Record of Decision its binding commitment to install, operate, and maintain the fish passage in accordance with the project mitigation plan subject to Congressional appropriation of funds for the project.

753-BB-26-EV20

Comment: The regional resource agencies were recently contacted (on October 1, 2010) by the COE to provide input on the proposed fish passage design. The responses received from the agencies clearly indicated that there is concern about the design and that the best alternative would be removal of the lock and dam. Comments provided about the design emphasized the lack of its proven effectiveness to pass sturgeon. Previous comments provided to the COE by NMFS explained how a single miscalculation or any combination of the various attributes of the design could cause it to fail. For example, a lack of adequate water flow, an inadequate attraction flow to direct sturgeon to the bypass, wrong placement of boulders or resting places within the bypass, the wrong slope of the rock ramp, or inadequate depth and width characteristics could contribute to the structure not being successful in passing sturgeon.

Response: The best alternative for fish would be removal of the dam. However, there are other factors to consider (please see next response). In 2010, the Corps requested comments of the natural resource agencies on the proposed horseshoe bypass design for the fish passage. In response, NMFS expressed concern over the design similar to that stated in this comment letter. However, fishery experts in the regional natural resource agencies did not identify any specific change to the proposed design that needed to be made as a result of recent documented fish passage research. In April 2011, the Corps convened a fish passage workshop to review the design of the fish bypass. As a result of that meeting, fish passage criteria were revised. In coordination with NMFS and other resource agencies, the fish bypass design has been updated to allow a larger percentage of flow as well as more accessible entry and exit for Shortnose sturgeon. On November 4, 2011, NMFS issued its Biological Opinion (BO) for the project, which addresses fish passage design and contains reasonable and prudent measures/terms and conditions requiring that the design ensure safe and effective passage for sturgeon (Shortnose and Atlantic). As the design process progresses, the District would coordinate with the natural resource agencies to ensure that the fish passage structure is easily available to, and usable by, all anadromous/catadromous species in the river and that the design will comply with all other applicable requirements of the BO. The Corps would also monitor the passage of Shortnose sturgeon through the structure to ensure it performs as intended.

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753-BB-26-EV21

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

Response: The Corps acknowledges that removal of the lock and dam is NMFS' preferred method to allow sturgeon access to upstream habitat. The Corps also acknowledges that removal of the lock and dam would benefit the 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 maintained by the Corps; therefore, we are obligated to maintain the project as Congress provides funding.
- 2) The current authorization language (WRDA 2000, amended in Omnibus Act 2001) calls for repair and rehabilitation of the structure, construction of a fish passage, and conveyance of Lock and Dam to the City of North Augusta.
- 3) The Corps must maintain a pool elevation so as not to impact current users.
- 4) Removal of the structure would adversely impacts freshwater supply for eight major users.

753-BB-26-EV22

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

Response: After coordination with GADNR-CRD, the dredged material placement plan has been revised and now calls for placement of all entrance channel sediments into previously-approved areas: either the Offshore Dredged Material Disposal Site or an upland confined disposal site. The Final EIS has been revised to reflect this change. The Corps will perform additional surveys prior to construction of the entrance channel extension to ascertain any potential impacts to hardbottom habitat.

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753-BB-26-EV23, 753-BB-26-EV24

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

Response: The Final EIS was updated to show placement of new sediment from the entrance channel in either the ODMDS or an upland confined disposal site. Sites 11 and 12 have been removed from project plans.

If surveys of the area of the bar channel extension indicate the project may potentially impact hardbottom habitats, then mitigation for such impacts will be evaluated at that time.

753-BB-26-EV25

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

Response: The Monitoring and Adaptive Management Plan (Appendix D of the EIS) provide a discussion of post-construction monitoring and the decision making process that would determine if additional monitoring and/or mitigation measures are warranted. The plan does not identify specific acceptability criteria for water quality or biological parameters that would trigger the need for action to implement additional monitoring or modify the various mitigation measures. Specific parameters were not established so as not to limit the judgment of experts with respect to when changes might need to be made. In other words, based on the data collected, some resource experts may see the need to modify monitoring and/or a mitigation measure, even though a specific threshold for a parameter has not been reached. Also, resource experts may become concerned about the potential cumulative impacts of several parameters even though the threshold limits have not been exceeded for any one parameter. Establishing thresholds for individual parameters would remove that flexibility. Based on recent coordination with NMFS, the Corps has agreed to establish expected ranges of predicted values for certain water quality parameters. This discussion has been added to the pre-construction monitoring section of the Monitoring and Adaptive Management Plan.

Decision points about changes in the monitoring plan or mitigation features could 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. Although the plan provides for a meeting between the Corps and the resource agencies at the end of each year of monitoring to discuss the data and any changes that need to be made, such a meeting could be required at any time if concerns so dictate. If the monitoring identifies impacts that are well outside of those predicted, consultation with the resource agencies would begin immediately. Corrective actions could range from a change in the monitoring plan to a cessation of construction activities until a given problem could be rectified.

The Corps believes the current Monitoring and Adaptive Management plan is adequate to address impacts of the project and its associated mitigation features.

From:	<u>Hector.L.Schmidt@uscg.mil</u> on behalf of <u>Schmidt, Hector LTJG</u>
То:	CESAS-PD, SAS
Cc:	Embres, Joseph
Subject:	DEIS Savnah Dredge Project
Date:	Friday, December 10, 2010 11:01:56 AM
Attachments:	10-170 Signed-Response letter to ACOE Draft EIS Savannah Dredge Project.pdf

Mr. Bailey,

Mr. Balley, Please see the attached letter for the Seventh Coast Guard District's response to your request for comments regarding the Savannah Dredge Project DEIS. Thank you very much for including us in your preliminary discussions and scoping process. Our office does plan to send Mr. Joe Embres to the Evaluation Group meeting at 9 AM, Tuesday, December 14, 2010 and the Expansion Project Workshop for the public at 4-8 PM, Wednesday, December 15, 2010. If you should have any questions regarding our letter or if there is anything else that we can help with please let him know. He can be reached at Joseph.B.Embres@uscg.mil or 305-415-6750.

Thank you,

LTJG Hector Schmidt U.S. Coast Guard District Seven Waterway Management PH# 305-415-6748 FAX# 305-415-6757

U.S. Department of Homeland Security United States Coast Guard Commander Seventh Coast Guard District 909 SE First Avenue, Suite 406 Miami, FL 33131 Staff Symbol: dpw Phone: (305) 415-6748 Fax: (305) 415-6757

16518 Serial: 10-170 08 Dec 2010

William G. Bailey Chief, Planning Division Department of the Army Savannah, District 100 W. Oglethorpe Ave Savannah, GA 31401-3640

Dear Mr. Bailey,

This letter responds to your November 15, 2010, letter informing the Seventh Coast Guard District that the Savannah District, Army Corps of Engineers has prepared a Draft Tier II Environmental Impact Statement (DEIS) and General Reevaluation Report to incrementally evaluate deepening the Savannah Harbor Federal Navigation Project to a maximum depth of -48 feet Mean Lower Low Water as authorized by the Water Resource Development Act of 1999. Please accept this letter as our official response to that request.

The proposed project includes: channel deepening from the sea 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.

At this time, we have identified two issues of concern that are not included in your DEIS. We recommend both of our below concerns be addressed in your Tier II Environmental Impact Statement.

- 1. The proposed change in direction, widening, deepening and lengthening of the Harbor Entrance Channel, meeting areas, Kings Island Turning Basin and widening at three bends will create a need for the Coast Guard to reposition, establish and disestablish Navigational Aids, to include the construction of a new lighted channel entrance Range. The lighted entrance Range will require the installation of submerged electrical cable on the sea floor from the shoreline out to approximately six miles offshore. The addition of multiple buoys marking the extended entrance channel and the construction of a new Range will cost an estimated \$4,000,000.00 for this project, which has not been identified nor forecasted.
- 2. The proposed change in lengthening the Harbor Entrance Channel will create a need to relocate the sea buoy further offshore. This change will impact Coast Guard Regulation 33 CFR 165.756 Regulated Navigation Area (RNA); Savannah River, Georgia. The proposed change may add longer delays to incoming and outgoing vessels when the specific conditions are met within the RNA.

Please note that this response is based on your DEIS and that there may be additional concerns if there are changes with the proposed project. We look forward to continued cooperation with you during the planning phase of this project. If you have any questions, please feel free to contact me at 305-415-6750.

Sincerely,

1

J. B. EMBRES Chief, Planning and Marine Information Section Aids to Navigation and Waterways Management Branch Seventh Coast Guard District

Copy: USCG MSU Savannah USCG Sector Charleston USCG CG-553 USCG CEU Miami

U.S. Department of Homeland Security, United States Coast Guard

Page 2

187-MR-02-EC01

Comment: The proposed change in direction, widening, deepening and lengthening of the Harbor Entrance Channel, meeting areas, Kings Island Turning Basin and widening at three bends will create a need for the Coast Guard to reposition, establish and disestablish Navigational Aids, to include the construction of a new lighted channel entrance Range. The lighted entrance Range will require the installation of submerged electrical cable on the sea floor from the shoreline out to approximately six miles offshore. The addition of multiple buoys marking the extended entrance channel and the construction of a new Range will cost an estimated \$4,000,000.00 for this project, which has not been identified nor forecasted.

Response: Costs for the new navigation range were identified in the project reports [see Table 13 of the Engineering Appendix] and included in the economic analysis of the project. The Coast Guard is responsible for funding and implementing the needed navigation aids. The length of time it typically takes between a draft feasibility report and a constructed deep-draft navigation project provide the Coast Guard with time to budget for these expenses. Savannah District will coordinate with the Aids To Navigation and Waterways Management Branch of the Seventh Coast Guard District as this project moves forward.

187-MR-02-EN01

Comment: The proposed change in lengthening the Harbor Entrance Channel will create a need to relocate the sea buoy further offshore. This change will impact Coast Guard Regulation 33 CFR 165.756 - Regulated Navigation Area (RNA); Savannah River, Georgia. The proposed change may add longer delays to incoming and outgoing vessels when the specific conditions are met within the RNA.

Response: Concur that with the sea buoy relocated / entrance channel extended farther offshore, the time to transit the port would be lengthened. The longer entrance channel was included in the HarborSym analysis, which determined that total vessel delays (compared to the no-action alternative) would decrease with the proposed harbor deepening.

From:	Catsambis, Alexis CIV NHHC
То:	CESAS-PD, SAS
Cc:	Nevland, Robert NAVHISTCEN; Schwarz, George R CIV NHHC
Subject:	Savannah District Draft EIS Comments
Date:	Monday, January 10, 2011 5:05:43 PM

Dear Mr. Bailey,

Thank you for allowing the Naval History & Heritage Command (NHHC) the opportunity to comment on your extensive and well-prepared DEIS and GPR pertaining to the Savannah Harbor Federal Navigation Project.

Whereas we still need some time to put together an official hard-copy response, pending informal discussions with partner SHPOs, we wanted to formally convey some key thoughts while the extended comment period is still in effect. These relate to the primary point of interest to NHHC, the data recovery effort from CSS Georgia.

Overall, a good general plan has been laid out for the CSS Georgia site and we are grateful for the demonstrated concern and efforts of the USACE, as well as the Georgia and South Carolina SHPOs, in properly addressing this resource. However, and in view of the Navy's role as managers of the resource under the Sunken Military Craft Act, we would like to express the following comments:

-The Sunken Military Craft Act (H.R. 4200, Title XIV) is not included in the list of Federal Laws and Policies that USACE must consider in its proposed actions (Table 1-2, page 1-9). As you are aware, CSS Georgia falls under the protection of the Sunken Military Craft Act.

-The CSS Georgia Programmatic Agreement does not include the Naval History and Heritage Command (NHHC) as a consulting party. The US Navy maintains ownership of CSS Georgia and is responsible for its preservation, therefore NHHC should be included as

a partner in all planning, excavation, and conservation phases affecting the site. Consulting party status should be a consideration.

-USACE has not expressly identified funding for conservation of CSS Georgia artifacts, although a \$5 million estimate is listed as a ceiling for recovery costs and a \$20,000/yr is put aside for curation of the recovered material. We would like to ensure that USACE factors in conservation costs. These may be reflected on pg. 179 of the GPR, but we could not locate a related textual reference in either document.

-There is mention in the DEIS, but not in the Programmatic Agreement, that USACE must file an Archaeological Research Permit Application For Ship and Aircraft Wrecks under the Jurisdiction of the Department of the Navy prior to any intrusive archaeological investigation of the CSS Georgia site. We would like to ensure that this requirement is clear.

Thank you again for the opportunity to comment and for your continuing efforts. Congratulations on your work thus far; we look forward to working with you on this project in the future. If we can be of further assistance or for any clarifications, please do not hesitate to contact Dr. Robert Neyland, Head of the NHHC's Underwater Archaeology Branch at (robert.neyland@navy.mil) or (202)-758 3850.

Kind Regards,

Alexis Catsambis

Alexis Catsambis Underwater Archaeologist & Cultural Resource Manager Underwater Archaeology Branch, Naval History & Heritage Command, Dept. of the Navy

Washington Navy Yard

805 Kidder Breese St, SE, Washington, D.C. 20374-5060 voice: (202) 433-9787 | fax: (202) 433-2729 email: alexis.catsambis@navy.mil

Naval History & Heritage Command

1119-MR-04-EV01

Comment: "The Sunken Military Craft Act (H.R. 4200, Title XIV) is not included in the list of Federal Laws and Policies that USACE must consider in its proposed actions (Table 1-2, page 1-9). As you are aware, CSS Georgia falls under the protection of the Sunken Military Craft Act."

Response: The Sunken Military Craft Act (H.R. 4200, Title XIV) has been added to Table 1-2 of the FEIS.

1119-MR-04-EV02

Comment: "*The CSS Georgia Programmatic Agreement does not include the Naval History and Heritage Command (NHHC) as a consulting party. The US Navy maintains ownership of CSS Georgia and is responsible for its preservation, therefore NHHC should be included as a partner in all planning, excavation, and conservation phases affecting the site. Consulting party status should be a consideration."*

Response: The NHHC is listed as a consulting party in the CSS Georgia Mitigation Phase and Task Description that is included in Appendix F; however, NHHC was not named as a consulting party in the Programmatic Agreement. This will be remedied by modifying the Programmatic Agreement to include the NHHC as a consulting party for the CSS Georgia portion of the project.

1119-MR-04-EV03

Comment: "USACE has not expressly identified funding for conservation of CSS Georgia artifacts, although a \$5 million estimate is listed as a ceiling for recovery costs and a \$20,000/yr is put aside for curation of the recovered material. We would like to ensure that USACE factors in conservation costs. These may be reflected on pg. 179 of the GPR, but we could not locate a related textual reference in either document."

Response: Approximately \$4,500,000 has been set aside for conservation of the CSS Georgia.

1119-MR-04-EV04

Comment: "There is mention in the DEIS, but not in the Programmatic Agreement, that USACE must file an Archaeological Research Permit Application For Ship and Aircraft Wrecks under the Jurisdiction of the Department of the Navy prior to any intrusive archaeological investigation of the CSS Georgia site. We would like to ensure that this requirement is clear."

Response: The District will file an Archaeological Research Permit Application for ship and aircraft wrecks prior to any intrusive archaeological investigation of the CSS Georgia site.