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June 5, 2012

VIA HAND DELIVERY

Colonel Jeffrey M. Hall
District Commander
US Army Corps of Engineers
Savannah District
ATTN: PD
101 West Oglethorpe Ave.
Savannah, GA 31401

Re: Final General Reevaluation Report and Environmental Impact Statement for Savannah Harbor Expansion Project, Chatham County, GA and Jasper County, SC

Dear Colonel Hall:

On April 20, 2012, the Savannah District of the U.S. Army Corps of Engineers (the “Corps” or “Savannah District”) issued a notice regarding the release of the Final General Reevaluation Report (“GRR”) and Tier II Environmental Impact Statement (“FEIS”) for the Savannah Harbor Expansion Project (“SHEP”) and providing that comments would be due on these documents by noon on May 21, 2012. See 77 Fed. Reg. 23713 (Apr. 20, 2012). Subsequently, the comment period was extended until June 5, 2012.

On behalf of the Savannah Riverkeeper, South Carolina Coastal Conservation League, South Carolina Wildlife Federation, the National Wildlife Federation, and the Center for a Sustainable Coast (the “Conservation Groups”), the Southern Environmental Law Center (“SELC”) submits this comment letter to express our concerns about this proposed project, which remain substantial.¹ As described in more detail below, this proposal raises serious problems regarding compliance with the National Environmental Policy Act (“NEPA”), 42 U.S.C. §§ 4321 *et seq.*; the federal Clean Water Act (“CWA”), 33 U.S.C. §§ 1251 *et seq.*; the Endangered Species Act (“ESA”), 16 U.S.C. §§ 1531 *et seq.*, among other applicable state and federal laws. This letter is intended to supplement the previous comment letters submitted by SELC on this proposal, including the comments we submitted on the draft GRR and Tier II DEIS on January 25, 2011, which are incorporated herein by reference.²

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

² We also incorporate the exhibits submitted with our comments on the draft GRR and DEIS, including, but not limited to, the expert reports of Robert N. Stearns, Ph.D. and Shawn P. Young, Ph.D.

In sum, we continue to be troubled by the Corps' assumption that the proposed deepening is unrelated to efforts by the Georgia Ports Authority ("GPA") to maintain or increase its business. In keeping with its assumption, the Corps has explained that its "analysis did not reveal that additional permanent jobs would be created as a result of the harbor deepening." FEIS, App'x. A at p. 1986. Notably, the Corps' assumption, as we have explained previously, is directly contradicted by the public statements of GPA, including its executive director, Cutis J. Foltz, who recently told the Savannah Morning News that "[t]he ships and jobs will only come to Savannah if the harbor is deepened."³ This striking inconsistency has undermined the economic and environmental analyses undertaken for this proposal

If one accepts for purposes of argument the Corps' conclusion that SHEP is unrelated to efforts by GPA to increase its throughput, then there is no need to spend over \$650 million in U.S. taxpayer monies on this proposal. Selecting the no-action alternative would also spare natural resources of national significance without negatively affecting GPA's business.

The final GRR and FEIS also reveal that the Corps has greatly over-estimated the economic benefits generated by this proposal by wrongly attributing cost savings to SHEP when the lion's share of transportation efficiencies are actually due to the expansion of the Panama Canal. Moreover, for the alleged efficiencies that are, in fact, attributable to SHEP, the Corps has refused in its final studies to say whether the majority of those cost savings are expected to accrue to U.S. citizens or foreign interests.

In addition to these fundamental economic questions, the final GRR and FEIS fail to address the significant environmental problems associated with dredging a complex estuarine environment in which the controlling depth of the waterbody has already been deepened by approximately 30 feet in the past 150 years. In addition to degrading a national wildlife refuge, endangering federally-protected species, dumping cadmium-laden materials along the side of the river, and other negative impacts, the Corps proposes to exacerbate already severe and unnaturally low levels of dissolved oxygen in the river and to mitigate for these impacts by using a host of mechanical respirators (also known as Speece Cones) to inject super-oxygenated water into the river. Notably, the owner of the company that manufactures the Speece Cones has said these cones have never before been used on such a grand scale. And finally, the Corps still resists undertaking an adequate study of a sufficient range of alternatives for accommodating the anticipated larger class of containerhips and instead has arbitrarily limited its review of alternatives to different depths in the Savannah River.

For these reasons and others, the final studies prepared by the Corps for the SHEP fail to make a convincing case to support the selected 47-foot depth alternative. Because we have commented at length on most of these issues in connection with the DEIS and draft GRR, we will present our concerns in summary form here.

³ See Walter Jones, Georgia Ports new boss makes case for harbor deepening, Savannah Morning News (Jan. 20, 2012), available at <http://savannahnow.com/latest-news/2010-01-20/georgia-ports-new-boss-makes-case-harbor-deepening> (last visited May 27, 2012) (attached hereto as Ex. A at p. 12).

ECONOMICS

The Corps' assumption that SHEP is unrelated to efforts by GPA to grow its business is flawed and skews analyses of environmental impacts of the project

In our comments on the draft studies, we explained that we were troubled by the central assumption underlying the draft GRR and DEIS: that the proposed deepening is unrelated to efforts by the GPA to maintain or increase its business. This assumption is flatly contradicted by the Corps' Tier I Environmental Impact Statement, including the Corps' original purpose and need statement; statements by GPA and its proponents; and GPA's willingness (as reflected in the DEIS) to pay a substantial sum of money for an extra foot's worth of depth. In our previous comments, we explained our concern that the Corps, in making this assumption, had badly skewed the environmental studies by failing to evaluate the indirect effects associated with SHEP.

A review of the final GRR and FEIS shows that the Corps is sticking with this assumption. See FEIS at p. 7-7 ("No increase in cargo is expected to occur as a result of the proposed harbor deepening"). In fact, the Corps has even attempted to purge from the FEIS admissions it made in the DEIS on this point. Appendix L of the DEIS included a statement saying that harbor deepening would increase the amount of goods brought into the Savannah port, which could trigger the need for additional distribution centers and other support facilities or expansion of existing ones. DEIS, App'x. L at p. 34. According to the Corps, this statement was erroneous and has been deleted from the FEIS. FEIS, App'x. A at p. 1936.⁴

In responding to our comments on the draft studies, the Corps explains its position in the following way:

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

FEIS, App'x. A at p. 1918. The Corps also states that:

Although GPA provided its views on future growth at the Garden City Terminal, the Corps made its own determinations and conclusions and is not responsible for statements made *by other stakeholders* concerning traffic growth with or without the deepening project. The Corps believes that its determination and conclusions

⁴ Although this statement has been deleted by the Corps, the reality that SHEP will spur associated development remains unchanged as evidenced by proposed projects, like the Riverport in Hardeeville, SC. See Note 9 below.

relative to traffic growth are supported by the studies, projections and information in the administrative record.

FEIS, App'x. A at p. 1926. (Emphasis added). In sum, the Corps premises its assumption that SHEP is unrelated to efforts by GPA to grow its business by relying on the "GPA capital improvement program," yet, at the same time, ignores GPA's and its proponents' own statements about the importance of the deepening to increasing the port's throughput. Although it is true that the Corps should not simply defer to statements made by *stakeholders* regarding issues, such as traffic, growth, or the affect of the project, it is arbitrary and unreasonable for the Corps to base its assumptions on the effect of capital expenditures made by GPA and then to completely disregard GPA's publicly-articulated position on the significance of those expenditures and the proposed deepening.

Below are just a few recent examples of such statements by GPA, its boosters, and GPA's competitors. These statements contradict the Corps' assumption regarding the affect of deepening on throughput and also show that GPA and its rivals are pursuing deepening projects as part of a competition to lure larger ships and their cargoes.

- In 2010, Curtis Foltz, the executive director of the GPA reportedly told the Georgia House and Senate appropriations committee that: "The ships and jobs will only come to Savannah if the harbor is deepened." See Walter Jones, Georgia Ports new boss makes case for harbor deepening, Savannah Morning News (Jan. 20, 2012), available at <http://savannahnow.com/latest-news/2010-01-20/georgia-ports-new-boss-makes-case-harbor-deepening> (last visited May 27, 2012) (attached hereto as Ex. A at p. 12).
- In a press release announcing the release of the GRR and FEIS, GPA included a quotation from the mayor of Savannah, saying "A *deeper Savannah Harbor brings in more business*, creates more jobs and is good for the hundreds of local companies that rely on the imports and exports of the country's single largest container port." Port of Savannah Harbor Deepening Reaches Major Milestone (Apr. 11, 2012), available at <http://www.gaports.com/corporate/SavannahHarborExpansionProject/PressReleases.aspx> (last visited May 29, 2012) (emphasis added) (attached hereto as Ex. A at p. 19).
- "I believe very strongly we will be successful in securing funds to develop the port in time to give [Georgia] a *comparative advantage in the Southeast*." Statement by Atlanta Mayor Kasim Reed. Dan Chapman, Deal, Reed boost Savannah port expansion, Atlanta-Journal Constitution (Oct. 25, 2011), available at www.ajc.com/business/deal-reed-boost-savannah-1209855.html (emphasis added) (last visited May 27, 2012) (attached hereto as Ex. A at p. 3).
- "We will have so much more cargo coming in and that, obviously, will create more jobs," Georgia's Governor Deal told the AJC. "It will mean more rail cars and more 18-wheelers coming and going from the port. It will just be good for the entire state of Georgia." Dan Chapman, A deep gamble, Atlanta-Journal Constitution (Apr. 1, 2012) (attached hereto as Ex. A at p. 14).

- In an article written by the GPA itself, entitled “Georgia Ports key to new business opportunities; What SHEP means for new business opportunities,” Georgia’s Liberty County development authority’s chief executive, Ron Tolley was quoted as saying the following: “When larger ships start coming through, they’ll offer economies of scale compared to existing ships. So parts that can handle larger ships will see more business. It’s that simple.” In addition: “‘Economic development is a very competitive business, and our region vies with ports up and down the eastern seaboard,’ he said. ‘Right now we’re in a very good position, and we want to retain that advantage, not let it escape from us. But we can’t do it if other ports can handle new ships and we can’t. The bottom line is – we want to win.’” Georgia Ports Authority, Georgia Ports key to new business opportunities, Savannah Morning News (June 8, 2011), available at <http://savannahnow.com/exchange/2011-06-08/georgia-ports-key-new-business-opportunities#.T8UwAMWeZ48> (last visited May 29, 2012) (attached hereto as Ex. A at pp. 1-2).
- Jim Newsome, director of the South Carolina Ports Authority, was recently quoted as labeling “the Savannah-Charleston rivalry ‘the most intensive competition in the world port business today.’” Dan Chapman, No one dares to be left out of the race, Atlanta Journal-Constitution (Apr. 3, 2012) (attached hereto as Ex. A at p. 18).
- “‘Make no mistake about it, we are competing. We are competing with other ports for funds and for resources,’ said Jim Newsome. Newsome, the South Carolina Port CEO, said Tuesday, their chief competitor is nearby Savannah. Charleston is just beginning its study to deepen, meantime Savannah is finishing. And this is despite Charleston’s chance to have its port dredged deeper, and have it done cheaper.” WCIC, Port Leaders fight to keep pace in dredging race, (Dec. 13, 2011), available at <http://www.abcnews4.com/story/16317862/port-leaders-fight-to-keep-pace-in-dredging-race> (last visited May 29, 2012) (attached hereto as Ex. A at p. 10).
- “South Atlantic ports are regional ports and at least one South Atlantic port needs to be authorized to handle 8,000 to 10,000 TEU ships without tidal restriction. . . . Finally and perhaps most importantly, *every port wants a deep water harbor; however, it is not in the national interest to make this a reality due to the scarce resources at hand for the federal government.* Deepening projects should be viewed no differently than investment decisions in the private sector that have limited capital budgets or funds. They should be prioritized on rigorous cost/benefit criteria that take into account the most benefit to a region for the least cost, most expedient timeframe, and most environmental capability for our nation. . . . Therefore, one South Atlantic port must quickly achieve the same or even slightly greater depth parameters as ports in the North Atlantic and Mid-Atlantic to allow shipping lines and their cargo customers to maximize the economic advantage of full ships.” South Carolina Ports press release, SC Ports Chief Provides Testimony to Congress on Modernizing Seaports, (Oct. 26, 2011), available at <http://www.scspace.com/about/news/pressroom/pressroom.asp?PressRelease=332> (last visited May 29, 2012) (attached hereto as Ex. A at pp. 5-7) (emphasis added).

In addition to these public statements, we have included a follow-up report from Robert N. Stearns, Ph.D., a former Corps economist we retained to examine the draft studies and the final GRR and FEIS. In addition to the statements above, Dr. Stearns explains why the Corps' assumption that levels of traffic through the port will be the same regardless of channel depth is erroneous.

Stearns points out that the even the Corps' own economic studies conducted in support of the SHEP acknowledge that a shallower channel creates inefficiencies, which in the Corps' view has already affected traffic levels. Expert Report of Robert N. Stearns, Ph.D., at p. 1 (attached hereto as Ex. B) (hereinafter referred to as the "Stearns Report").⁵ The Economic Appendix to the GRR picks up on the same theme when it states as follows: "By 2008, the inadequate channel depth caused one carrier to temporarily dropping [sic] one of its Savannah legs from its rotation due to the increased demand for cargo moving from the United States to Europe" and expressed concern that "these disruptions are likely to increase in the future as carriers shift to larger, more efficient vessels." Stearns Report at p. 1. According to Stearns, the "need to remain cost competitive implies that without a deeper channel the port will lose traffic to other ports." Id. at 2.

The Corps' conclusion that deepening is unrelated to its underlying business is premised on the Multiport analysis – a flawed analysis that the Corps performed for SHEP. Id. According to the Corps' Multiport study, SHEP should not be expected to shift any containerized cargo away from competing ports" Id. (quoting the Multiport study).

The conclusion in the Multiport study that SHEP will not result in any diversion of cargo is wrong for two main reasons. First, it is a "basic tenet of economic theory that if the price of a product falls, people will buy more of that product. Consequently, if the efficiency gains caused by port deepening are passed on as lower prices, the net effect may be more goods shipped through the port." Id.

Second, and more importantly, the Multiport study erred by not considering the full geographic distribution of points of delivery from Atlantic coast ports. Id. at 2-3. If the Corps' Multiport analysis had considered the full geographic range of points of delivery ports in the Atlantic region, "*it is a mathematical certainty* that some points would fall into a 'competitive area' where transportation cost differentials between two ports would fall below the expected cost savings from the Savannah Harbor deepening project." Id. at 3 (emphasis added). In other words, the Corps uses its Multiport analysis to create the perception that ports like Savannah and Charleston are not competing against one another because they each serve a different hinterland and that a deepening in Savannah does not cause cargo to divert from Charleston to Savannah.

⁵ For nearly ten years (1986-1995), Dr. Stearns worked for the Department of the Army, first as a senior policy advisor for the Corps' Civil Works program and later as Deputy Assistant Secretary for Project Management. In these capacities, he had extensive experience in developing new policies and presenting ideas to Congress, the Office of Management and Budget and other high ranking government officials. More recently, Dr. Stearns served as a senior analyst for the National Academy of Public Administration for its 2007 study, "Prioritizing America's Water Resources Investments: Budget Reform for Civil Works Projects at the U.S. Army Corps of Engineers." His career also includes 15 years teaching economics, quantitative methods, and statistics at the college level, most recently as an adjunct professor at the University of Maryland's School of Public Policy. Dr. Stearns received a Ph.D. in economics from Yale University and a B.A. in mathematics from Swarthmore College.

But this representation does not reflect reality. A legitimate Multiport analysis would have acknowledged that ports do have hinterlands that overlap. A Multiport analysis recognizing this fact would have shown that “[d]eepening Savannah Harbor *would* matter; more traffic would come to the port. The Corps’ failure to recognize this remains a significant weakness in its analysis.” *Id.* (Emphasis in original).

In light of the statements by GPA and its supporters, statements made by rivals of GPA, and Stearns’ analysis, the Corps’ assumption that deepening the channel is unrelated to GPA’s underlying business is an arbitrary assumption and is not reflective of reality.⁶ To the extent SHEP generates transportation efficiencies, these cost savings will affect the flow of goods, which will affect the extent of the Garden City Terminal’s (“GCT”) throughput.⁷ As a result, this Corps assumption not only misrepresents the nature of this proposal and its effects on the Savannah port (and other ports that compete with Savannah), but the Corps has also used this assumption erroneously to relieve itself of the responsibility of evaluating growth-induced impacts. *See* FEIS, App’x. A at p. 1936 (“saying cargo growth through the harbor would not be affected by the proposed harbor deepening. As a result, the project does not need to evaluate (or mitigate) for the environmental impacts that may occur as a result of growth independent of the proposed action”). In this way, the Corps has avoided evaluating the effects of SHEP with respect to a wide range of environmental impacts from air quality to federally-protected species to invasive species.

For example, with respect to air quality, the FEIS states that:

Harbor deepening is not the causal factor that would lead to growth in container volume through the port on any given time line. The District’s analysis forecasts emissions over time, with or without a harbor deepening. Since the air emissions would not increase as a result of the project, detailed modeling of those emissions is not needed to conclude the project would not produce significant adverse impacts on air quality. . . . With harbor deepening, total air emissions generated by port operations would decrease when compared to the without project condition. Since the air emissions would not increase as a result of the project, a risk-based health impact study of the effects of those (ongoing) emissions is not warranted.

FEIS, App’x. A at p. 1934. *See also* FEIS, App’x. A at pp. 1934-35 (“The EIS explains that because the proposed harbor deepening is not expected to increase the number of vessels or total

⁶ In the alternative, if one accepts for purposes of argument the assumption that this proposal is not needed to increase the Garden City Terminal’s throughput, the no-action alternative is the winning alternative because it would obviate the need to spend over \$650 million in public money, protect natural resources of national significance, and yet have no effect on GCT’s business.

⁷ As explained below, we believe the Corps’ calculation of benefits is greatly overstated and that a proper analysis of benefits will significantly reduce the cost-benefit ratio for this project. Nevertheless, no matter the extent of transportation savings generated by this project – even if the benefits do not exceed costs – whatever benefits are generated by SHEP will still have an effect on the flow of goods through GCT and other ports in the region that compete with Savannah.

cargo moving through the port, no changes to air quality or incremental impacts on compliance with the NAAQS would occur as a result of this project. Increases in air emissions at the port are expected over time as a result of growth in demand for goods that move through the port. Those increases would occur independent of a harbor deepening. Since the deepened port's total emissions would be less than those of the status quo, the proposed action would not cause air quality degradation in Chatham or Jasper County or be the cause of either of those areas being considered as a non-attainment or maintenance area").⁸

In addition to air quality, the Corps applies this erroneous assumption to other important issues, such as impacts to federally-protected species, such as right whales, manatees, and sea turtles. See FEIS, App'x. A at p. 1968 (saying "[w]ith deepening the total number of vessels in the Harbor will decrease (compared to the without project condition) as vessels would be able to load more completely without the present constraints of draft. Therefore, fewer ships would transit the estuary with incrementally lesser impact on sea turtles than under the without project condition"; and FEIS, App'x. A at p. 1968 (explaining that in Corps' view the proposed project will result in decreased risk of vessel strikes with endangered right whales); and FEIS, App'x. A at p. 1969 (arguing that the project will result in reduced impacts to manatees because "fewer ships would call on the port (compared to the without project condition) and concluding that ship traffic is not expected to impact manatees any more (and intuitively less) than under existing conditions").⁹

The Calculation of NED Benefits is Erroneous

An analysis of the Corps' calculation of benefits or transportation savings for SHEP reveals that the calculation is seriously flawed in that the Corps has attributed transportation cost savings to SHEP when a significant percentage of those efficiencies are not a result of SHEP, but are actually due to the Panama Canal expansion. Expert Report of Asaf Ashar, Ph.D. at pp. 3-6

⁸ The failure to adequately study air impacts associated with this proposal is significant due to the significant health-related impacts associated with port and ship emissions. See, e.g., J.J. Winebrake, et al., *Mitigating the Health Impacts of Pollution from Oceangoing Shipping: An Assessment of Low-Sulfur Fuel Mandates*, Environmental Science and Technology / Vol. 43, No. 13 (2009) (attached hereto as Ex. C).

⁹ In addition to considering the indirect effects of harbor deepening on air quality and federally-protected species, the Corps must consider the growth-induced impacts of SHEP, such as the construction of additional warehousing facilities, roads, and the like. The proposed Riverport development in Hardeeville, SC provides a good example. The Riverport is a massive development proposal on the edge of the Savannah National Wildlife Refuge, which includes warehousing, distribution, and light industrial areas in addition to mixed-use community development. In the purpose and need statement for the Riverport project, the applicant explains that the "Port of Savannah is the fastest growing port in the nation and the fourth largest port in the nation. It is the second largest container port in the eastern United States, and there are plans to double its size to handle six million TEU containers each year. Projected growth of the port and growth in the areas surrounding Savannah *directly relate to a need for additional business/commercial and warehousing/distribution/light industrial areas.*" Riverport Project Site, Project No. SAC 2010-0064, Alternatives Analysis, SLF III – Hardeeville, LLC at p. 4 (Feb. 1, 2001). (Emphasis added). This is precisely the type of development that the Corps must evaluate as an indirect or induced effect of SHEP. The expansion of highways, such as U.S. Highway 17, in and around the port provide another example. See Luke Thompson, *Residents get a look at proposal to widen US 17 in Jasper County*, Island Packet, (Sept. 14, 2010), available at <http://www.islandpacket.com/2010/09/14/1372258/residents-get-a-look-at-proposal.html> (last visited June 4, 2012) (attached hereto as Ex. D). Failure to consider these indirect effects of SHEP violates NEPA.

(attached hereto as Ex. E) (hereinafter referred to as the “Ashar Report”).¹⁰ The Corps calculates benefits based on cost differentials between various channel depths. Ashar Report at p. 6. These savings are generated by replacing smaller vessels (Panamax or “PX” ships) with larger and more economical ones (Post-Panamax 1 and 2 or “PPX1&2”). The problem is that the Corps ascribes the benefits associated with the shift to larger ships to SHEP when the change in fleet mix and resulting efficiencies are actually a result of the Panama Canal expansion.

For example:

in 2020 if the [Savannah] channel remains at 42-ft, there will still be 778 PX; the number will decrease to 649 PX if the channel depth increased to 47 ft.

Accordingly, deepening of the channel to 47 ft results in replacing 129 PX (778-649) by PPX1&2. Let’s assume for the sake of example that all these PX were replaced by PPX1 . . . the unit cost of PX at 42-ft is \$2.46 and that of PPX1 at 47-ft is \$1.92. The difference in unit cost of \$0.54 (2.46-1.92) is the transportation cost savings. These savings, or benefits, are later compared to the costs of deepening the channel and a benefit/cost ratio is calculated.

Ashar Report at pp. 5-6. The way in which the Corps calculated and attributed these savings to SHEP is erroneous. *Id.* at 6. The cost savings should have been separated into those attributed to the Panama Canal expansion and those due to SHEP. “The conversion from PX to PPX1&2 is unrelated to the deepening of Savannah and will take place following the Canal expansion – *even if Savannah’s channel remains unchanged at 42-ft.*” *Id.* (emphasis in original). In fact, the present deployment of PPX1&2 of Asian services to the U.S. East Coast via the Suez Canal indicates that these shipping services will have the option to replace their Panamax ships with larger vessels when the Canal is expanded even if the SHEP does not proceed. *Id.* at 2-6.

According to Dr. Ashar,

a reasonable assumption for the Without Project should be that the Asia/Panama fleet mix consists of PPX1&2 ships, similar to that employed by Asia/Suez services at that time. Then, in the case of With-Project, when the channel is deepened to 47 ft, the unit cost of the assumed PPX1 will be further reduced from \$2.02 to \$1.92 for PPX1 and from \$2.04 to \$1.82 for PPX2. Only these cost differentials should therefore be attributed to the channel deepening project. . . .

¹⁰ Dr. Ashar is a research professor with the National Ports & Waterways Initiative (“NPWI”). NPWI is a maritime research program of The University of New Orleans / Transportation Institute. Dr. Ashar has been with NPWI since 1985. Before that he was Senior Port Planner and Transportation Analyst with the Port of Seattle, WA from 1981 to 1985, and Senior Advisor for Operations with the Port and Rail Authority of Israel, Ports of Haifa & Ashdod from 1972 to 1980. Dr. Ashar has more than 30 years of extensive experience with ports, shipping, and multi-modal transportation systems in the US and more than 30 countries in Asia, South & Central America, Africa, West & East Europe, and the Middle East. His academic background includes degrees in Industrial Engineering & Management (Technion, Israel), Marine System Management (Massachusetts Institute of Technology), and Maritime Studies and International Transport (University of Wales).

Accordingly, the reduction in benefits attributed to the channel deepening in this case is substantial, from \$0.54 to \$0.10.

Id. at 6. For this and other reasons, “most of the savings and benefits should be attributed to the Canal expansion and not to the [Savannah] channel deepening” and this flaw in the Corps’ analysis “could critically affect the feasibility of the entire SHEP.” Id. at 7-8.

In addition to improperly attributing benefits to SHEP as opposed to the Panama Canal expansion, the Corps’ calculation of benefits is further undermined by its failure to accurately forecast the emergence of Post-Panamax three vessels (“PPX3”). The increasing numbers of PPX3 ships (either through the Suez or the Panama Canal) will either directly call or, using a hub and spoke pattern of deployment, may use feeder vessels to call at East Coast ports. Under either scenario, the growing use of PPX3 ships “is bound to result in traffic loss for Savannah along with benefits attributed to SHEP.” Id. at 11. If PPX3 directly call on East coast ports, then the GCT will lose some of its traffic to other ports because PPX3 ships cannot access the Port of Savannah (even if it is deepened to 47-feet). Id. Alternatively, if PPX3 ships utilize a hub and spoke service pattern in which foreign transshipment hubs could off-load to smaller feeder vessels, there may be even greater negative impacts to traffic in Savannah. For example, currently, most of the Asian shipping services bypass the Florida ports, with GCT handling much of Florida’s Asian traffic. This situation would change with the increasing deployment of PPX3 in a hub and spoke service pattern once feeder vessels start directly calling on Florida’s ports (to the detriment of GCT) with containers from Asia. Id.

For these reasons, the Corps’ calculation of transportation savings is likely flawed in a significant way, and the Corps must re-examine its cost-benefit analysis in light of the erroneous attribution of transportation cost savings to SHEP (as opposed to the Panama Canal expansion) and the emergence of PPX3 ships. See Hughes River Watershed Conservancy v. Glickman, 81 F.3d 437, 447-48, 450 (4th Cir. 1996) (held that the Corps violated NEPA “by relying on an inflated estimate of the [p]roject’s recreation benefits” and finding that such reliance failed to ensure that the public had “accurate information to enable them to evaluate the [p]roject”).

The Corps fails to demonstrate which nation actually benefits from the deepening

Another shortcoming of the Corps’ economic analysis is that it does not address which interests are going to benefit from the harbor deepening. As the Corps explains at great length in the draft studies and the FEIS and GRR, a deeper Savannah Harbor will, according to the Corps, mean that bigger ships will be able transport the same amount of throughput in and out of the port, resulting in transportation savings. In our last comment letter on the draft studies, we asked the Corps to determine who will benefit from these alleged cost savings. Will these cost savings be passed on to the American consumer in the form of lower consumer prices or will they be pocketed by foreign manufacturers or foreign shipping lines?

In the response to comments, the Corps states that: “No attempt is made to distribute these benefits in accordance with geographic location or the extent of their participation in the economic cycle. Production, transportation, distribution, wholesale and retail selling, and consumption are all elements in this cycle.” FEIS. App’x. A at p. 1992.

The Corps' non-response is inadequate and irresponsible. Since the Corps has already calculated the total benefits to the U.S. economy, presumably the Corps could have disclosed the regional and local economic impacts directly and indirectly related to SHEP. At a minimum, the Corps should have informed the public as to which locations and traffic flows actually benefit from SHEP.

Although the Corps is unwilling to say who or which nation benefits from this deepening, a table in the Corps' Multiport analysis shows how much is saved in dollars per TEU on different trade routes when the channel is deepened. Stearns Report at p. 4. Taken as a whole, the table shows that benefits to imports exceed benefits to exports. In other words, to the extent SHEP creates transportation efficiencies, the information that the Corps has provided to the public indicates that the majority of benefits from this project would accrue to other nations, not the United States. Id. at 5.

The unwillingness of the Corps to address this issue is unreasonable, arbitrary, and capricious. The public has been told that this project is in the nation's interest, yet it appears from the information made available in the FEIS and GRR that instead of benefiting this nation, a majority of the benefits created by this project and funded by scarce taxpayer dollars actually benefit foreign interests.

ALTERNATIVES ANALYSIS

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

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

In response to comments, the Corps says:

The pertinent conclusions relative to the wide range of alternatives studied for SHEP are: (1) there is no feasible alternative to improving Savannah Harbor because the major South Atlantic ports will experience so much cargo growth from 2005 to 2050 they will all need deepening or improvement, (2) no one South Atlantic port has the ability to expand to accommodate all the growth in container volume expected in the region, (3) the proposed deepening of Savannah Harbor would not divert container traffic from other ports because the shipping cost efficiencies would not outweigh the additional landside transportation costs

FEIS, App'x. A at p. 1952.

These excuses are incorrect and do not obviate the need to complete a rigorous alternatives analysis. It seems as if the Savannah District, knowing it wants to deepen Savannah, has created a set of assumptions that it believes should excuse it from taking a serious look at other alternative sites.

The first excuse supplied by the Corps is flawed in a number of ways. First, it is inconsistent with the Corps' own conclusion that deepening is unrelated to GPA's underlying business. How can the Corps on the one hand argue that deepening is unrelated to a port's underlying business and then turn around and argue that it need not consider deepening other ports as an alternative to SHEP since all of these ports will need to be deepened due to anticipated cargo growth? These two assumptions contradict one another. If deepening is truly unrelated to cargo growth, then there is no need to deepen any port in the region. According to the Corps, the growth in cargo at all major ports will result not from deepening, but from capital improvements made by ports at their terminals in the form of new cranes, expansions on the upland, and the like. If this is the case, why spend billions of dollars to deepen all major ports if the cargo is coming anyway?

In addition to being internally inconsistent, the notion that all major ports need to be deepened is also at odds with the Corps' position regarding the implications of the Panama Canal expansion. For example, in an April 2012 working draft paper prepared by the Corps' Institute for Water Resources ("IWR") entitled "U.S. Port and Inland Waterways Modernization Strategy" (hereinafter referred to as the "IWR Modernization Strategy" and attached hereto as Ex. F), the Corps states:

There is a high degree of uncertainty in the details of when such vessels [Post-Panamax] will arrive in large numbers, which ports they will call, how deep calling vessels will draft and, consequently, how deep and wide navigation channels and other related navigation infrastructure must be. One pivotal uncertainty is the role that transshipment hubs in the Caribbean or on U.S. shores could play in transferring freight from large vessels to smaller feeder vessels. Over time, these uncertainties will be reduced as experience replaces expectation. We can be more certain that in the absence of transshipment centers, post-Panamax vessels will call at ports in large numbers, they will call *most* major ports and *their sailing drafts and other dimensions will become known*. Our

challenge is to invest in capacity expansions in the *right places* at the *right time* consistent with industry needs.

IWR Modernization Strategy at p. iv-v (emphasis added). The Corps' working paper is instructive on a couple of fronts. For starters, the Corps' own IWR does not say that all South Atlantic ports (or even that most major ports) need to be deepened. In fact, the IWR says there is a "high degree of uncertainty" regarding "how deep and wide navigation channels" must be. Importantly, the IWR finds that the "challenge is to invest in capacity expansions in the *right places* at the *right time* consistent with industry needs." *Id.* (Emphasis added). Here, the Savannah District says they all need to be deepened, which is one sure way of avoiding the challenge of studying and picking the right one.

Further, for some reason, the Savannah District has dismissed out of hand what the IWR calls a "pivotal uncertainty": the potential transshipment hub. In fact, in an earlier IWR white paper, the Corps said, "there is a strong possibility that Freeport, Bahamas would increase its standing as a trans-shipment port. With a depth of 52 feet, Freeport could become much like a hub airport – large Post-Panamax vessels could arrive at Freeport and then transfer cargo onto smaller vessels destined for other US ports. Other Caribbean ports such as Puerto Caucedo in the Dominican Republic are also seriously considering expansions to become hub ports. This suggests that the US may not need to deepen as many ports as it believes, or perhaps not as deep." The Implications of Panama Canal Expansion to U.S. Ports and Coastal Navigation Economic Analysis, IWR White Paper (Dec. 2008).

Despite this "pivotal uncertainty," which may obviate the need for deepening as many ports to the currently proposed depths, the Corps dismissed the hub and spoke possibility in connection with SHEP. See GRR, App'x. A at Regional Port Analysis at p. 30 (arguing that a foreign hub port would have a considerable cost disadvantage from the perspective of double port handling of containers shuttled to domestic spoke ports). In these ways, the Corps' assumption that all ports need to be deepened conflicts with what the IWR has said and is clearly arbitrary and capricious.

The second assumption the Corps makes is similarly flawed and ignores recent developments. For example, the Corps may choose to look the other way, but Florida is right now positioning the Port of Miami and Port Everglades as the type of new large U.S. ports that can accommodate anticipated growth in traffic, according to a recent article in the Journal of Commerce. See Peter T. Leach, Officials Hope to Turn Port of Miami, Everglades into Transshipment Hubs, The Journal of Commerce Magazine (May 25, 2012) (attached hereto as Ex. A at pp. 26-27). The article states :

With more than \$1 billion in investments, Miami could move into the top ranks of Southeast markets. FEC CEO Jim Hertwig aims to steal a march on Savannah and Charleston by moving import containers from the Port of Miami to Jacksonville, where they can switch to CSX or Norfolk Southern trains for transport farther north. "We can offer rail connectivity to 70 percent of the U.S. population," he said . . . "We can get a container offloaded at Miami to Atlanta in less time than it will take a ship to get from Miami to Savannah." He also aims to

capture more export cargo from ports farther north. Hertwig says he can compete with the Charleston and Savannah gateways into the Southeast or with landbridge from the West Coast ports by offering lower intermodal rates to Atlanta, Charlotte and other cities.

Id. The Florida ports are clearly taking steps to accommodate some of the growing container volume anticipated by the Corps. Even if the Florida ports cannot accommodate all of this growth on their own, that does not relieve the Corps of the responsibility of examining which ports or combination of ports in the South Atlantic are best situated to handle the growing volumes.

The Corps' third excuse for not engaging in a legitimate alternatives analysis is similarly weak. The Corps says that it did not need to look harder at alternatives since SHEP will not have the effect of diverting traffic away from other ports. Not only does this assumption flatly contradict the statements revealing that the race to deepen ports on the east coast is a competition, but we have already shown why this assumption is wrong. See pages 5-6 above (explaining the flaws in the Corps' Multiport analysis); and Stearns Report at pp. 2-3 (same).

It may be that neither the Corps nor the GPA wants this EIS to rigorously compare SHEP to deepening at alternate ports because they worry that the comparison will not help SHEP. After all, deepening Savannah is more than twice the estimated cost of deepening Charleston, and the IWR has already stated that: "Savannah appears to have more significant environmental limitations associated largely with dredging and terminal expansion requirements." U.S. Port and Inland Waterways Modernization Strategy at p. 36. Unfortunately, neither NEPA nor the CWA allow the Corps to narrow the scope of alternatives analysis to avoid unflattering comparisons.¹¹

The scope of the FEIS should have been broad enough to evaluate similar actions

To determine the scope of environmental impact statements, agencies shall consider three types of actions: connected, cumulative, and similar actions. 40 C.F.R. § 1508.25. The Council on Environmental Quality's ("CEQ") NEPA regulations define similar actions in the following way:

Similar actions, which when viewed with other reasonably foreseeable or proposed agency actions, have similarities that provide a basis for evaluating their environmental consequences together, such as common timing or geography. An agency may wish to analyze these actions in the same impact statement. It should do so when the best way to assess adequately the combined impacts of similar actions is to treat them in a single impact statement.

40 C.F.R. § 1508.25(a)(3).

¹¹ In carrying out its alternatives analysis, the Corps also short-changed consideration of the Jasper Ocean Terminal. We will not re-state herein our reasons for why this alternative deserved greater scrutiny. For a discussion of this issue, please refer to our comments on the draft studies at pp. 33-34, and 46.

On the Atlantic coast, multiple ports are jockeying to deepen their harbors all with the same overall goal – to accommodate Post-Panamax ships as a result of the deepening of the Panama Canal. See FEIS, App’x. A at p. 1991 (saying “[t]he expansion of the Panama Canal [scheduled for completion in 2014] has been a primary motivation for the SHEP”; Section 905(b) WRDA Analysis for Charleston Post-45 deepening at <http://www.sac.usace.army.mil/?action=programs.post45> (explaining that “additional depth would be required to serve existing users of Charleston Harbor” due to the Panama Canal expansion); and Jacksonville Port Authority Expansion Plans at <http://www.jaxport.com/cargo/facilities/expansion-plans> (detailing the Jacksonville Port Authority’s expansion plans, including a \$600 million for harbor deepening projects in anticipation of the Panama Canal expansion).

Not only do each of these deepening proposals have the same goals, but they are in competition with one another, are each located within 200 miles of each other on the South Atlantic coast, and will each impact similar resources, including shortnose and Atlantic sturgeon, North Atlantic right whales, and sea turtles. Given their similarities, these expansion proposals should be evaluated in a single EIS.¹²

If the Corps is unwilling to consider a broader range of alternatives, then the 44- and 45-foot depth alternatives are the least damaging practicable alternatives

In addition to evaluating a sufficiently broad range of alternatives under NEPA and state law, the Corps understands that projects, such as this, can only be authorized if they represent the least damaging practicable alternative that will meet the basic purpose and need for the project. 40 C.F.R. § 230.10(a).

If the Corps is unwilling to adequately evaluate a broad range of alternatives and instead limits its detailed analyses to alternate depths in the Savannah River, then it is clear that the 44- or 45-foot depth alternatives are not only less damaging, but are also quite practicable. First, the lion’s share of economic benefits can be accrued from these lower depth alternatives. Table 58 of the Economic Appendix to the GRR shows that 63 percent of average annual transportation benefits can be obtained by simply deepening the harbor to 44 feet, and that 86 percent of the benefits can be had by deepening to 45 feet.

Second, in terms of environmental impacts, the 44- and 45-foot depth alternatives would have less severe impacts as well (assuming the proposed mitigation plan is effective, which for significant elements of this plan, is uncertain at best). For example, for wetlands, the 44-foot depth alternative would impact 551 acres of wetlands, the 45-foot alternative would impact 967 acres of wetlands, and the 47-foot depth alternative would impact 1,177 acres of wetlands. See FEIS at Table 5-6 (Summary of Project-Related Impacts without Mitigation). With flow

¹² As we discussed in our comments in the draft studies, the Corps is required to thoroughly assess the cumulative effects of the proposed SHEP. 40 C.F.R. § 1508.7 & 1508.25. In addition to the comments already made in our previous letter on the DEIS, the Corps’ cumulative impacts analysis must also include an evaluation of the combined effects of SHEP and the pending proposal for maintenance dredging in 37 existing berthing facilities in the harbor. See Savannah District JPN dated Jan. 25, 2012.

rerouting mitigation, the 44-foot alternative results in a gain of 322 acres of freshwater wetlands, the 45-foot alternative results in a loss of 32 acre of freshwater wetlands, and the 47-foot alternative results in a loss of 223 acres of freshwater wetlands. FEIS at Table 5-19.

Further, the USFWS has commented that “[b]ased on the information obtained for the specific purpose of evaluating this project, it is clear that the 44 and 45-foot alternatives would have much lower impacts on fish and wildlife resources.” FEIS, App’x. E at p. 46. The S.C. Department of Natural Resources (“SCDNR”) has also “concluded that the only deepening alternatives that could be considered minimally acceptable are the 44-ft alternative or the 45-ft alternative, provided the proposed mitigation for each of these alternatives proves to be successful.” FEIS, App’x. A at p. 471.

If the range of alternatives is arbitrarily restricted to different depths of deepening the harbor, then the least damaging practicable alternative in this instance is the 44- or 45-foot depth alternative, which would still generate almost all of the benefits to be derived from the 47-foot deepening, yet would spare the river at least some of the harm. See Stearns Report at pp. 4-5.

In a similar vein, in its NOPD, the SRMC finds that the “difference in adverse environmental impacts between controlling depths of -45 and -47 feet is significant, and the difference in economic benefits is minimal.” SRMC NOPD at p. 48; see also SRMC NOPD at p. 54 (noting that the DEIS indicated that the 47-foot depth alternative provided a marginally lower cost-to-benefit ratio than the 45-foot depth alternative). A copy of the SRMC NOPD and its supporting documents are attached hereto as Ex. G.

The Corps Must Prepare a Programmatic EIS

In addition to arguing for a broader alternatives analysis, we have asked the Corps to undertake a programmatic EIS.

In response to this request, the Corps states in the FEIS as follows:

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

FEIS, App'x. A at p. 1939.

Again, the Corps' rationale falls flat. First, there is a host of proposed port deepening projects that are not speculative. According to the Corps' own IWR, Northeastern U.S. ports at Norfolk, Baltimore, and New York have or will soon have 50-foot channels. U.S. Port and Inland Waterways Modernization Strategy (Draft) at 19 (Apr. 2, 2012). There are additional ports authorized to be deepened to 50 or 55 feet, such as Mobile Harbor, Alabama and Mississippi River from Baton Rouge to the Gulf. And, several ports are under study to deepen their channels to depths between 47 and 50 feet, including Boston Harbor, Miami Harbor,¹³ Port Everglades and Canaveral Harbor, and Sabine Neches Waterway, Freeport Harbor, Corpus Christi, and Brazos Island Harbor (Brownsville). Id.

Not only are the above projects not speculative, but the Ninth Circuit has pointed out that an agency may not limit its EIS analysis to only those projects that are finalized. N. Plains Res. Council, Inc. v. Surface Transp. Bd., 668 F.3d 1067, 1077-1079 (9th Cir. 2011) (finding the BLM arbitrary and capricious when it limited EIS analysis to construction of projects expected within five years). Indeed, "NEPA requires that an EIS engage in reasonable forecasting. Because speculation is . . . implicit in NEPA, [] we must reject any attempt by agencies to shirk their responsibilities under NEPA by labeling any and all discussion of future environmental effects as crystal ball inquiry." Selkirk Conservation Alliance v. Forsgren, 336 F.3d 944, 962 (9th Cir. 2003).

Second, although as the Corps points out not all of the above-described deepening proposals are currently pending before the Corps, it cannot be disputed that a number of them have recently been authorized or are under study by the Corps, including South Atlantic ports, such as SHEP, Charleston, and Jacksonville. In any case, separate projects need not be at precisely the same stage of development in order to be considered together in the Corps' NEPA analysis. For example, the EPA, in conjunction with the Corps, the US Department of the Interior's Office of Surface Mining and Fish & Wildlife Service, and the West Virginia Department of Environmental Protection, prepared an environmental impact statement looking at the impacts of mountaintop mining and valley fills. The EIS was completed as part of a settlement agreement in the court case known as Bragg v. Robertson, Civ. No. 2:98-0636 (S.D. W.V.). The purpose was to evaluate options for improving agency programs that will contribute to reducing the adverse environmental impacts of mountaintop mining operations and excess spoil valley fills in Appalachia. The geographic focus was approximately 12 million acres encompassing most of eastern Kentucky, southern West Virginia, western Virginia, and scattered areas of eastern Tennessee; the analysis included mining projects that are not yet permitted. Just as a programmatic EIS was appropriate in analyzing the overall effects of all mountaintop mining in a large region, a programmatic EIS here would provide a region-wide understanding of the economic and environmental impacts of harbor deepening.

The Corps' third excuse – that no one has contended that SHEP will negatively impact the environment in areas such as Charleston and Jacksonville misses the point entirely.

¹³ It has been reported that Miami's deepening will start later this year and be completed on 2014. See Peter T. Leach, Officials Hope to Turn Port of Miami, Everglades into Transshipment Hubs, The Journal of Commerce Magazine (May 25, 2012) (attached hereto as Ex. A at pp. 26-27).

Although SHEP itself may not degrade waters in Florida, these related actions – the deepening of Savannah, Charleston, and Jacksonville (all within 200 miles of each other) will negatively impact South Atlantic estuaries in similar ways for similar reasons. Moreover, these duplicative deepening in the South Atlantic region threaten to harm the same federally-protected species, such as North Atlantic right whales, sturgeon, manatees and sea turtles, which can be found in coastal waters from Florida through South Carolina.

Fourth, Congress did not preempt a programmatic EIS in this instance. It is well established that a Congressional action does not override existing law without an express statement to that effect. See Flint Ridge Dev. v. Scenic Rivers Ass'n, 426 U.S. 776, 787-88 (1976) (explaining NEPA will only “give way” where there is “a clear and unavoidable conflict in statutory authority”); Texas Committee on Natural Resources v. Bergland, 573 F.2d 201, 206-07 (5th Cir. 1978) (NEPA’s “statutory conflict exception has been applied sparingly. The conflict between the agency’s organic statute and NEPA must be both fundamental and irreconcilable”).

Congress clearly did not preempt a programmatic EIS in this instance. In WRDA 1999, Congress provided that the Secretary of the Army must review and approve of an EIS that “includes” “an analysis of the impacts of project depth alternatives ranging from 42 feet through 48 feet.” Water Resources Development Act of 1999, Section 101(b)(9). The fact that Congress directed the Corps to include in its EIS an analysis of deepening the harbor to various depths in no way conflicts with NEPA’s requirement to consider a sufficiently broad range of alternatives to the proposal. There simply is no clear and unavoidable conflict here. Rather, the Corps has concocted a preemption argument as a feeble attempt to avoid compliance with NEPA.

Finally, according to the CEQ’s NEPA regulations, a single EIS is required for an “agency action,” which includes “a group of concerted actions to implement a specific policy or plan” or “systematic and connected agency decisions.” Each of the above-noted deepening projects is under the Corps’ authority and is intended to achieve the same stated objective: to accommodate larger container ships that are expected in light of the Panama Canal expansion. Moreover, Congress has directed the Corps’ IWR to submit to the Senate and House committees on appropriations a report on how the Congress should address “the critical need for additional port and inland waterways modernization to accommodate post-Panamax vessels.” IWR Modernization Strategy at p. 1. Pursuant to Congress’ direction, the IWR is right now developing its “strategic vision.” Id.; see id. at pp. x and 55-56 (referring to the “strategy to sustain the nation’s globally competitive navigation system”). Despite the Corps’ desire to evaluate each deepening proposal in isolation from one another, the IWR’s ongoing strategy development on this precise topic demonstrates the connected nature of these deepening and supports the rationale for evaluating these proposals in a single EIS.

ENVIRONMENTAL ISSUES

Modeling

The final GRR and FEIS are highly reliant on the use of models.¹⁴ Review of modeling exercises performed for SHEP has indicated several significant flaws.

First, as we indicated in our comments on the DEIS, the Corps modeling with respect to DO has not accounted for the full scope of the dredging contemplated by the SHEP. In particular, the Corps has not modeled the two feet of allowable overdepth and up to six feet of advance maintenance in selected areas that would be included above and beyond the 47-foot depth alternative. In other words, the actual channel depth resulting from the proposed project could be as much as 55 feet. But, the FEIS and DO modeling ignore what this might mean in terms of further deterioration in DO levels and other impacts. Technical Memorandum of NewFields, LLC at pp. 4-5, 9 (June 4, 2012) (hereinafter referred to as the “NewFields Report” and attached hereto as Ex. I). As a result, the modeling conducted could not actually predict impacts to DO (and salinity), nor could the Corps accurately assess impacts to aquatic resources. Id. By ignoring the full scope of the dredging and attendant impacts to DO, the Corps necessarily underestimated the negative impacts and the amount of mitigation that would be necessary to compensate for the impacts. And, the Corps is not entitled to rely on inaccurate models to support its conclusions. Cf. Native Ecosystems Council v. U.S. Forest Serv., 418 F.3d 953, 964 (9th Cir. 2005) (“An agency may not rely on incorrect assumptions or data in an EIS.”).

¹⁴ As we explained in our comments on the draft studies, the Corps failed to make available in the draft GRR and DEIS sufficient information to allow the public to scrutinize the results derived from the various modeling efforts. Prior to the release of the draft GRR and DEIS, on October 22, 2010, we submitted a Freedom of Information Act (“FOIA”) (this FOIA request was assigned FOIA number FP-11-6621) request to the Corps seeking information related to the use of models. After initially saying that it would be unable to turn over the requested information until March (after the close of the comment period), the Corps sent a CD to counsel for the Conservation Groups, which arrived on January 19, 2011 – three full business days prior to the close of the official comment period. At the time we submitted our comments on the draft studies, we explained that we were in the process of determining whether the Corps had turned over all of the requested information. Once the Conservation Groups were given the information requested, the Groups intended to review the modeling analyses conducted in support of the DEIS and GRR and to supplement our comments on the draft studies.

In the Corps’ response to comments, it says: “The commenter also stated that it submitted a Freedom of Information Act request for specific information relating to the use of the models identified, and indicated that the Corps provided the requested information on January 29, 2011. The commenter stated that it intended to review the modeling analyses and supplement the initial comment letter, however, no supplemental comments were received.” FEIS, Appendix A at p. 1921. As the Corps understands, its initial response to our FOIA was insufficient. It was not until months later in June 2011 that we actually received enough information to allow us to review the various modeling exercises. See letters dated March 22, 2011 and June 2, 2011 from G. Rogers Sloan (Corps) to Bill Sapp (SELC) regarding the Corps’ response to FOIA No. FP-11-6621 (attached hereto as Ex. H). Because the comment period on the draft studies expired months prior to the release of this information, we are submitting additional comments with respect to Corps modeling efforts now in connection with the comment period on the final GRR and FEIS.

Moreover, the Corps declined to turn over records we requested regarding the groundwater modeling performed for SHEP, including DYNSSYSTEM numerical code source codes or executable files. Instead, the Corps said we could purchase this information from a company called CDM. Id.

Second, the model grid convergence test performed to determine the appropriate level of grid resolution for numerical modeling analyses was insufficient. NewFields Report at pp. 6-7. The convergence testing for SHEP should have identified the coarsest grid resolution at which the cell size resolution and the resulting bathymetric representation no longer had a significant effect on model output. The oversimplified bathymetries relied on by the Corps do not represent the actual bathymetric character of the channel and therefore the convergence testing relied on for SHEP does not evaluate the sensitivity of the actual SHEP model to grid resolution. In addition, reported differences in salinity predictions between the enhanced and convergence grids were as great as 21 percent. In light of these findings, additional grid resolution testing should have been performed and finer grid resolutions should likely have been used for the final model runs. Id.

Third, our understanding of the hydrodynamic modeling for SHEP is that the Corps only considered two hydrologic scenarios: average/typical as represented by the hydrograph from March 1, 1999 to November 1, 1999; and low flow/dry as represented by the hydrograph from March 1, 2001 to November 1, 2001. We do not believe that the climatic and hydrologic conditions evaluated sufficiently represent the full range of conditions possible during the 50 year analysis period considered for this project, and, as a result, the Corps likely “underestimate[s] the negative impacts of the project on the habitats and organisms in the Savannah Harbor.” Id. at 9.

Fourth, the numerical modeling approach developed for the SHEP was essentially a chain of inter-connected modeling tools. The EFDC hydrodynamic model predicted the depths and flow patterns of water in the harbor, which were fed into the WASP water quality mode, which, in turn, predicted resulting salinity patterns. Id. Output from both of these models was then used to predict impacts on or changes to wildlife habitats in the harbor. Because each successive step in this chain depends on the accuracy and validity of predictions in the previous step, any errors or conditions not considered will be propagated through or not considered in the next step. In light of the errors and omissions described above, which have been propagated through the chain of modeling and analysis tools, we believe the modeling efforts have skewed the habitat impacts analyses. Id.

Finally, as described in greater detail below, the FEIS presents the results of dissolved oxygen modeling, which have changed from results included in the DEIS. No new modeling documentation supporting these changes was available in either the final GRR or FEIS. The failure to explain these new results raises significant concerns regarding the reliability of DO modeling efforts. Id. at 4.

Water Quality

As we discussed in our comments on the draft GRR and DEIS, the SHEP proposal will violate Georgia’s and South Carolina’s water quality standards in violation of state law and the federal Clean Water Act. Further, in a number of instances, the FEIS obscures the current state of water quality in the Lower Savannah River and fails to adequately describe the significance of this project on already degraded waters in violation of NEPA. Below are our principal concerns.

Applicable Water Quality Standards for Dissolved Oxygen

To place the proposed deepening in its proper context for purposes of evaluating water quality impacts, it is important to understand the applicable water quality standards for dissolved oxygen. As explained in Section 4.02.2.2 of the FEIS, Georgia and South Carolina water quality standards for dissolved oxygen in the Savannah Harbor provide for a daily average of 5.0 mg/L and no less than 4.0 mg/L at all times. See Ga. Comp. R. & Regs 391-3-6-.03 and S.C. Code Ann. § 48-1-83, *et seq.* The Georgia water quality standards provide further that “[i]f it is determined that the ‘natural condition’ in the waterbody is less than the values stated above, then the criteria will revert to the ‘natural condition’ and the water quality standard will allow for a 0.1 mg/L deficit from the ‘natural’ dissolved oxygen value. Up to a 10% deficit will be allowed if it is demonstrated that resident aquatic species shall not be adversely affected.” Id. To our knowledge, it has not been determined that the natural condition of the waters in the vicinity of the project are less than the values stated above, nor has it been determined that resident aquatic species shall not be adversely affected by this project. Therefore, the applicable Georgia standard for DO for this project remains a daily average of 5.0 mg/L and no less than 4.0 mg/L at all times.

South Carolina has classified the Savannah River from the Seaboard Coastline Railroad to Fort Pulaski as SB (DO not less than daily average of 5 mg/L and a minimum of 4 mg/L). Like Georgia, South Carolina law also contains criteria for water bodies that have “naturally low dissolved oxygen” where the natural condition of the waterbody may be less than the standard and where the DO in those waters may be lowered cumulatively no more than 0.1 mg/L. FEIS at § 4.02.2.2; S.C. Code Ann. § 48-1-83. South Carolina has not determined that the natural condition of the river in the vicinity of the project is lower than the applicable DO standard; therefore, the relevant standard for South Carolina is the same as Georgia and remains a daily average of 5.0 mg/L and no less than 4.0 mg/L at all times.

The FEIS and GRR Fail to Sufficiently Explain the Significance of Current Water Quality Problems in the Lower Savannah River

Although the FEIS describes the applicable standards for DO in the river and notes the fact that a total maximum daily load (“TMDL”) has been established for the harbor, the FEIS and GRR fail to include a sufficient discussion explaining to the public the current state of water quality in the harbor and what that degraded state means for fish, other aquatic life, businesses, and people. Current levels of DO in the harbor do not meet the Georgia or South Carolina standards for DO for significant periods of time. NewFields Report at p. 13. In fact, the harbor already has severe water quality problems, but the Corps fails to explain just how serious the problems are. Id. For example, Table 5-20 in the FEIS reveals that for 10 percent of the time, the average DO levels in over 50 percent of the zones in the estuary studied for the SHEP are already in violation of the applicable DO standard. Id. Not only does the Corps fail to explain the significance of this fact, but the FEIS and GRR conceal just how bad the problem is. Tables 5-20 and 5-21 present the current *average* DO for various cells in the river, but these average numbers mask just how often instantaneous measurements of DO fall below the applicable standard. By presenting averages, “numerous incidences of cyclic violation are concealed.” Id. at 14. A report found on the website for this project (<http://sav->

harbor.com/Study%20Reports/Modeling%20Data%20Report/section5.pdf) shows that the DO standards for Georgia and South Carolina are actually “violated almost all of the time” during the summer months. NewFields Report at pp. at 14, 25. In order to place this project in its proper context, the FEIS must be supplemented to include a discussion on the current state of water quality in the river. Such a discussion should fully describe the extent of the already-present water quality problems and how those problems already impact aquatic resources, businesses, and people.

The GRR and FEIS Do Not Properly Evaluate Cumulative and Secondary Effects of Harbor Deepening

The FEIS fails to properly evaluate the cumulative and secondary effects of harbor deepening. In Section 5 of the FEIS, the Corps states that the DO depression associated with all previous deepenings is estimated to be 1 mg/L. This estimate “is likely flawed.” *Id.* First, as to cumulative effects, the harbor bottom used to be as much as 30 feet deeper than the present depth. NewFields Report at p. 15. Historic deepenings of the channel have allowed the saltwater – freshwater interface to move farther upstream. Incoming saltwater has a substantial negative effect on DO levels, and when the river was shallower than the present depth, the effect of the salt water portion of the water column was greatly reduced in the harbor. Accordingly, before the river was deepened, the harbor in the vicinity of the Garden City Terminal would have been dominated by freshwater and lower salinity. In other words, deepening the harbor has increased the saltwater effect at a point upstream of its historic interface with freshwaters, and as a result, one of the cumulative effects of prior deepenings has been to lengthen and exacerbate the DO depression in the harbor.

Second, the Corps’ estimate that all prior deepenings have reduced DO levels by 1 mg/L in the harbor also fails to take into account the induced and secondary effects of repeated channel deepenings. *Id.* at 16. The modeling that the Corps undertook to reach this estimate of the DO depression likely fails to account for the impact on DO from development, including wastewater and stormwater discharges, and other induced or secondary effects of harbor deepening. *Id.* For these reasons, the “Corps’ conclusion that all prior deepenings have resulted in a 1 mg/L reduction in DO is likely flawed and under-represents the true diminution.” *Id.* The FEIS must be revised to properly evaluate the cumulative and indirect effects of deepenings on water quality, including DO levels. Without a proper evaluation of these impacts, it is not possible to evaluate the impacts of the current proposal on water quality.

Changes in the modeling results for DO levels in the FEIS raise substantial questions regarding the reliability of the Corps’ modeling efforts

Both the DEIS and FEIS contain modeling results, predicting DO decreases resulting from the 47-foot depth alternative (without mitigation). *See* NewFields Report at p. 18; DEIS at Table 5-20; and FEIS at Table 5-23. A comparison of the predicted percent changes for DO shows that the difference in results between the DEIS and FEIS is dramatic. For example, as illustrated in the NewFields report, a comparison of the results between the DEIS and FEIS for the same 47-foot depth alternative in various zones in the river reveal significant changes. Some predictions increase significantly, and others decrease without any explanation in the text of the

FEIS. For Zone FR1, the DEIS predicted a DO decrease from the 47-foot depth alternative of 1.6 percent, yet the FEIS shows an increase of 1.3 percent. The DEIS shows a decrease of 8.3 percent for Zone BR1, yet the FEIS now says that the decrease will be 28.5 percent. In spite of these substantial changes in results, we cannot find an explanation for these new results in the FEIS. The failure to explain these variations in predictions on the effects of the project on DO significantly erodes confidence in the modeling results.

The results presented in Table 5-23 of the FEIS raise other concerns, too. As explained in the FEIS, Table 5-23 “shows the predictions of the dissolved oxygen regime deterioration of the 47-foot channel project.” FEIS at p. 5-49. The FEIS goes on to explain that “a substantial decrease in dissolved oxygen would occur” in certain critical cells of the Front River, Middle River, Lower Back River, as well as the Back River. Conversely, the FEIS reports that DO levels would increase in other zones of the river. Table 5-23 presents the relative percentage differences from the existing condition for each zone by various percentages ranging from the first percentile to the 99th percentile. Given the way the results are presented, if you move from right to left along this table from the first percentile to the fifth percentile and all the way to the 99th percentile, there should be a steady progression in these results (either an increase or decrease). Typically, the first percentile would show the lowest results, and the numbers would improve as the corresponding percentile increases. In other words, if this chart were presenting how a class of students performed on a test, the first percentile would show those students who had the lowest score, while the 99th percentile would show those students with the highest score. That is not the case here. The numbers presented in Table 5-23 vary dramatically, going up and down, as one moves from lowest to highest percentile without any explanation for why this is so. In this way, confidence in the results presented is further undermined.

The Corps has Failed to Demonstrate that Reliance on Dissolved Oxygen Mitigation would be Reasonable or that such Mitigation would Ensure Compliance with Water Quality Standards

The Corps explains in Section 5.02.2 of the FEIS that “oxygen injection is the most cost-effective method for raising dissolved oxygen levels in the harbor.” Further: “The systems would be land-based, with water being withdrawn from the river through pipes, then super-saturated with oxygen and returned to the river. . . . The intake and discharge would be located along the side of the river and not extend into the authorized navigation channel.” FEIS at p. 5-53. For the 47-foot depth alternative, there would be three injection locations. Twelve cones would be installed, and ten cones would be operated with the stated capacity of increasing DO in the river by 40,000 pounds per day. FEIS at p. 5-53. The Corps has failed to demonstrate that this mitigation measure will be effective for the following reasons.

For starters, Speece Cones have typically been used in conjunction with a dam, reservoir, or point source discharge of pollution. They have not been used in connection with a deepening project, which extends over such a large segment of a river. Even the president of the company that manufactures Speece Cones admitted in a recent newspaper article that these cones have never been used on such a large scale as the SHEP. Specifically, Steve Hatchel, president of the company that makes Speece Cones said: “We’ve worked on fairly large reservoirs and dams, but nothing that’s been 27 miles long.” See At Ga port, river respirators to help fish breathe, Russ

Bynum, AP (Apr. 28, 2012), available at http://www.boston.com/news/nation/articles/2012/04/28/at_ga_port_river_respirators_to_help_fish_breathe/?page=2 (last visited May 24, 2012) (attached as Ex. A at p. 25).

Even assuming that Speece Cones could be used effectively on such a large scale in an estuary, such as the Savannah, and that the transfer of oxygen to the water and mixing is 100 percent efficient, the amount of oxygen planned to be discharged into the estuary – forty thousand pounds per day – is “clearly insufficient” in light of the volume of water in the estuary to offset the deficit in DO levels caused by the deepening. See NewFields Report at p. 14.

The FEIS states that: “The oxygen injection system configuration is designed to remove the incremental effect of a deeper channel in 97 percent of the cells in the hydrodynamic model.” FEIS at p. 5-54. As the SRMC NOPD points out, the Corps is essentially planning not to fully mitigate for the deepening’s impact on DO levels. As put by the SRMC, “what is relevant is that it is possible for the SHEP mitigation plan to meet the SHEP 97% criteria while at the same time causing a 3% decrease in dissolved oxygen that would exacerbate the dissolved oxygen deficit being addressed in the TMDL.” SRMC NOPD at n.29 (May 8, 2012) (emphasis and internal quotations omitted). In other words, even if the DO mitigation were to work perfectly for the life of the project, it will not fully mitigate for the ways in which the project will contribute to the current DO impairment.

Due to its concerns about the effectiveness of the Speece Cones, the USFWS asked the U.S. Geological Survey (“USGS”) to evaluate the “Savannah Harbor Reoxygenation Demonstration Project” report prepared for the GPA by MACTEC Engineering and Consulting. See letter from Paul A. Conrads (USGS) to Ed Eudaly (USFWS) dated May 11 2008 (attached hereto as Ex. J). In his initial letter, Mr. Conrads explains that:

Estuarine systems, such as Savannah Harbor, are constantly integrating changing streamflow, changing tidal conditions, and changing meteorological conditions including wind direction and speed, rainfall, and atmospheric pressure. Dissolved oxygen (DO) in the estuary is responding to these forces in addition to other sources and sinks of oxygen such as tidal exchange, primary productivity, point-source loading, non-point source loading, tidal marsh exchange, rainfall impacts, and benthic demands.

To evaluate the effect of the ReOx injection on the dissolved-oxygen concentration of the Front River, the analysis needs to account for the major forces of DO in the system, such as the 14- and 28-day tidal cycle, to make defensible conclusions on the demonstration project. From my review of the report, the data presented in the report, and limited evaluation of additional data, I found that the analysis in the report did not convincingly isolate the DO effects of the injection system from other factors affecting DO deficit to be able to support a defensible conclusion on the feasibility of the ReOx project.

Letter from Paul A. Conrads (USGS) to Ed Eudaly (USFWS) at p. 1 dated May 11 2008. In addition to other flaws, USGS pointed out in its letter that the beginning of the demonstration

project “occurred during a tidal phase when there are improving DO deficit conditions.” Id. at 3. USGS explained further that the demonstration project was unable to demonstrate that the 0.4 mg/L DO improvement was attributable to the Speece Cones as opposed to the naturally occurring tidal phase. In fact, the USGS pointed out that: “The DO deficit improved by 0.7 mg/L on the Cooper River during the same time period and we know that is not attributable to the demonstration project.” Id.

The following year, on April 13, 2009, USGS wrote a follow-up letter after completing its review of the “Savannah Harbor ReOxygenation Demonstration Project Report: Supplemental Data Evaluation Report” by MACTEC and the supporting report “Modeling of GPA’s Oxygen Injection Demonstration Project Savannah Harbor, Georgia” by Tetra Tech, Inc. Having reviewed these new reports, the USGS remained highly skeptical, authoring a subsequent letter, which stated as follows:

MACTEC’s supplemental report provides additional analysis and discussion of the ReOx system performance and assessment of the instream monitoring data. The report relies on theoretical calculations and numerical model simulations of oxygen transfer to the river and impacts and anecdotal evaluation of the monitoring data to demonstrate the feasibility of the ReOx system. The supplemental report does describe a few additional analyses of the monitoring data but none of them produces a quantification of the contribution of the ReOx system on the DO variability of the river. *With the lack of any quantification of the ReOx system on the instream DO, the data and analysis are not adequate for making regulatory decisions.*

Letter from Paul A. Conrads (USGS) to Sandra Tucker (USFWS) dated April 13, 2009 (emphasis added) (attached hereto as Ex. K).

Our review of the FEIS indicates that the Corps has not addressed the comments submitted by the USGS. In comments submitted on the DEIS, the U.S. Department of the Interior (“DOI”) stated:

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.

FEIS, App’x. A at 144. In the FEIS, the Corps responds to this comment in the following way:

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.

FEIS, App'x. A at 144. The Corps' response does not address the concerns raised by the USGS and the Department of Interior. The concerns raised by the USGS and the DOI remain unaddressed. Based on the current information in the record, the Corps has simply failed to demonstrate that the Speece Cones will be effective. As such, it can be expected that the Corps will be unable to mitigate for this deepening, which will cause and/or contribute to water quality violations in Georgia and South Carolina.

The USGS and SRMC are not the only agencies that have raised significant concerns about the Speece Cones. In its comments on the draft GRR and DEIS, the SCDNR reached a similar conclusion, saying “[t]he results of a demonstration project conducted to determine the effectiveness of the system in the vicinity of the oxygen injection system in Savannah Harbor were inconclusive. The slight increase in dissolved oxygen in the vicinity of the oxygen injection system was shown to be within the normal range of natural variability due to tidal influences and could not be definitely attributed to the oxygen injection system itself.” SCDNR Analysis of the Draft Tier II Environmental Impact Statement for the Savannah Harbor Expansion at p. 5 (Jan. 25, 2011); FEIS, App'x. A at p. 477.

The National Marine Fisheries Service (“NMFS”) states in its Biological Opinion for the project that: “The COE is proposing to install oxygen injection systems on the Savannah River above and within the project area to mitigate for expected impacts to dissolved oxygen caused by deepening the harbor. *NMFS believes there is a high degree of uncertainty associated with the proposed use of an oxygen injection system.* These systems, known as Speece Cones, will be used during the summer months to inject oxygen into the river, as needed. *These systems have not been previously used in a tidal system such as the Savannah River, so their efficacy cannot be thoroughly assessed before installation.*” FEIS, App'x. Z at 189. (Emphasis added).

Even the Corps has acknowledged the unproven nature of the Speece Cones. See FEIS, App'x. Q at p. 10 (“[u]se of oxygen injection in an estuarine environment is relatively new. The technology has been used for years in industrial applications (single pipes) and in lakes. It has not been used before to treat the large volumes of water typically associated with tidal estuaries. Since this technology has not been applied before to this situation, there is substantial uncertainty about whether the system will be as effective as it is intended”).

The Corps also responds to comments regarding concerns about plans to utilize the Speece Cones by pointing out that the Georgia and South Carolina water quality certifications provide that: “[n]o dredging may occur if the dissolved oxygen levels fall below the specified dissolved oxygen levels.” FEIS, App'x. A at p. 1946. This statement is a gross mischaracterization of the applicable provisions.

Georgia's 401 water quality certification states in relevant part that:

Dredging operations must maintain a daily average of 5.0 mg/L and an instantaneous *average* of 4.0 mg/L throughout the water column during those times of the year when the natural condition in the waterbody has a dissolved oxygen level above these values. . . . Since the available dissolved oxygen deficit has already been allocated, the USACE will only be able to conduct maintenance dredging when the dissolved oxygen, one meter from the bottom, is 3.0 mg/L or greater and the maintenance dredging does not affect the dissolved oxygen levels in the Savannah Harbor. *Variances for maintenance dredging when dissolved oxygen levels are less than 3.0 mg/L may be granted if the additional oxygen is effectively injected into the Savannah River Harbor as appropriate.*

Georgia 401 Water Quality Certification at p. 8 (FEIS, App'x. Z at p. 246) (Emphasis added).

This language from the Georgia 401 is inconsistent with Georgia's DO standard and will not ensure compliance with water quality standards. As an initial matter, the water quality certification misstates the Georgia standard for DO. The DO standard includes an instantaneous *minimum* – not average – of 4.0 mg/L. Further, the Corps should not be able to conduct maintenance dredging when it is contributing to a violation of water quality standards. The 401, therefore, should prohibit maintenance dredging when the DO levels in the river are 4.0 mg/L or lower – not 3.0 mg/L. There is no basis for allowing dredging when DO levels are below 4.0 mg/L.

As far as the 401 water quality certification issued by the S.C. Department of Health and Environmental Control (“SCDHEC”) goes,¹⁵ it does not contain any limits on dredging to ensure compliance with water quality standards for dissolved oxygen in South Carolina. SCDHEC Board Final Agency Decision, Board Docket No. 11-RFR-52 (Nov. 15, 2011); FEIS FEIS, App'x. Z at p. 249.

Finally, the adaptive management plan described in the FEIS does not provide reasonable assurance of compliance with water quality standards either. Our comments regarding the deficiencies of the adaptive management plan can be found below at p. 41.

Section 404(b)(1) Guidelines Prohibit Authorization of the Project

As explained in our comments on the DEIS and draft GRR, the Section 404(b)(1) Guidelines prohibit authorization of a discharge of dredged or fill material that “[c]auses or contributes, after consideration of disposal site dilution and dispersion, to violations of any applicable State water quality standard.” 40 C.F.R. § 230.10(b)(1).

Here, the project would cause and contribute to violation of water quality standards. In fact, the Corps admits as much in the FEIS. First, the Corps acknowledges that the river already fails to meet applicable water quality standards for DO: “Evaluation of impacts to the dissolved

¹⁵ Of course, the issuance of this certification by SCDHEC has been challenged in South Carolina Administrative Law Court. As such, issuance of the water quality certification has been automatically stayed.

oxygen regime is critical, because this segment of the river is on the State of Georgia's Section 303(d) list as impaired for dissolved oxygen." FEIS at p. 5-42.

Second, the Corps concedes that, without mitigation, SHEP will contribute to the already-present water quality problems. "Deepening the navigation channel would adversely impact dissolved oxygen levels in the harbor without mitigation." FEIS at p. 5-53; see also FEIS at p. 5-49 ("For the 47-foot channel a substantial decrease in dissolved oxygen would occur in the critical cells . . .").

Third, the Corps explains that: "Model predictions from the SHEP studies indicate that further deepening will have *additional impacts on the dissolved oxygen regime in Savannah Harbor.*" FEIS at p. 5-42. (Emphasis added). See also NewFields Report at p. 17 (explaining that "existing water quality violations will persist and are likely to become more severe because of the consequential effects of the harbor deepening project and the failure to provide an effective mitigation plan").

The SRMC's NOPD shows specifically how the Corps' own modeling illustrates how the deepening will exacerbate water quality conditions in certain zones of the harbor.

For example, in the river segment identified as FR11 by the Savannah Corps (and segment FR-27 in the TMDL model), the pre-SHEP condition is approximately 4.93 mg/L at the 10th percentile. In other words, that segment is close to attaining the water quality standard. However, even after the oxygen injection system mitigation is implemented, that stretch is modeled to have a DO level of approximately 2.72 mg/L at the 10th percentile – a decrease of 44.8%. For the river segment identified as BR3 (and segments BR-01 and LBR-02 in the TMDL), the pre-SHEP condition is approximately 3.44 mg/L at the 10th percentile, which is below the water quality standard. Even with the injection system, this segment will not achieve the original level, but instead will be a reduced 3.16 mg/L, which is a 8.14% reduction.

SRMC NOPD at pp. 34-35 (citations omitted). And, as the SRMC points out, the Corps is not even planning to mitigate for its entire impact on DO from this deepening as it is only planning to mitigation target success rate of 97 percent.

To sum up, the Lower Savannah River is already failing to meet applicable water quality standards for DO, which already poses a critical problem for aquatic life in the estuary. Prior deepenings have contributed to this problem, and the Corps explains that without mitigation this deepening "will have additional impacts on the dissolved oxygen regime in Savannah Harbor." FEIS at p. 5-42. In order to avoid a conclusion that the SHEP will cause or contribute to violations of water quality standards, the Corps relies on the plan to use Speece Cones to address the lowering of DO levels caused by SHEP. However, as demonstrated above, the Corps has failed to show that it would be reasonable to rely on such mitigation. As such, the Corps has

been unable to demonstrate compliance with the Section 404(b)(1) Guidelines because it can be expected that the proposed deepening will cause and/or contribute to the DO impairment.¹⁶

The 404(b)(1) Guidelines also provide that no discharge of dredged or fill material shall be permitted that will cause or contribute to significant degradation of the waters of the United States. As an initial matter, there can be no dispute that the Lower Savannah River has already been degraded in a significant way. In fact, the “river already is in very poor condition with respect to DO” NewFields Report at p. 13. During the warmer months of the year, the harbor is below and in violation of water quality standards for DO a large percentage of the time. Id. at 14.

As explained above, there is also agreement that without mitigation the SHEP will exacerbate the degraded state of the river. The Corps, however, attempts to diminish the significance of the negative impact of this project on the river when it concludes that: “From a general perspective, the model shows that harbor deepening without mitigation would result in insignificant (1-2%) increases in the percentage of the harbor’s waters with violations of existing dissolved oxygen standards.” FEIS at p. 5-47. Although the FEIS claims that the lowering of water quality in the river as a result of SHEP is “insignificant (1% to 2%),” such a lowering in dissolved oxygen levels will, in fact, have a significant impact on the river by exacerbating dead zones in the river, which can be lethal to fish. According to NMFS, “[t]he proposed expansion, deepening, and modification of the Savannah Harbor through will have a significant effect on the habitat of sturgeon” and “[s]turgeon have been shown to be impacted by low dissolved oxygen levels, and mortality of sturgeon can occur within hours of exposure to low dissolved oxygen.” FEIS, App’x. Z at p. 189. See also NewFields Report at p. 13 (explaining that “[t]his project, which will exacerbate, the already significant DO problem presents a critical problem for fish and other aquatic resources, especially when, at times, 50% or more of the water body is stressful at best and deadly at worst for resident and transient biota”). Because the project will cause and contribute to significant degradation of the river, approval of the 47-foot depth alternative must be denied under the CWA.

Superelevation

Our review of the final GRR and FEIS indicates that the Corps has failed to consider the issue of superelevation in connection with the proposed deepening. The issue is whether the deepening would result in a slight lowering of the surface of the river in the middle of the channel. If the deepening of the river results in the lowering of the surface of the river even by an inch or half an inch, then such a change in elevation could have a significant impact on adjacent wetlands. The Corps should have performed an elevation study to examine this issue because even a one-inch lowering of surface waters could alter significant stands of adjacent saltmarshes.

¹⁶ In addition to violating water quality standards for DO, it is also likely that this proposal will cause or contribute to violations of water quality standards in connection with the disposal of dredged material in the Confined Disposal Facilities for the reasons enumerated in the NewFields Report at pp. 27 to 32.

Wetlands Mitigation

The Corps predicted that the SHEP would result in direct impacts to approximately 16.68 acres of brackish marsh. FEIS at pp. 5-1. The proposal would also negatively impact 223 acres of tidal freshwater marsh, causing a conversion to brackish marsh. And, without the proposed flow-rerouting mitigation plan, the SHEP would directly impact 1,117 acres of wetlands at the 47-foot depth alternative. FEIS at p. 5-29 and Table 5-6. As discussed in our previous comments, the mitigation proposal for wetlands is deficient for a number of reasons, including, but not limited to, the following.

First, a review of the FEIS and GRR indicate that the Corps has not sufficiently responded to EPA's comments on the draft studies regarding the failure to complete a sufficient functional assessment to properly evaluate the functional losses due to excavation of wetlands and conversion of wetland types associated with SHEP. As EPA explained in their comments, a functional assessment "is key to the assessment of wetland impacts and the analysis of adequate compensatory mitigation actions." FEIS, App'x. A at p. 31. Although the Corps attempts to make the case in the FEIS that it did employ such a functional approach, the Corps' effort in this regard misses the mark. We cannot find in the FEIS or the GRR a sufficient, quantitative analysis of the benefits and services lost by the deepening and the extent to which the mitigation plan compensates for those lost values. Without such an analysis, the Corps is unable to demonstrate that it has sufficiently mitigated the impacts of the SHEP on wetlands and aquatic resources.

Second, we remain concerned about the Corps' decision to rely on the Savannah District's Standard Operating Procedure for Compensatory Mitigation (March 2004) (the "SOP") since the SOP was designed to provide guidance for projects involving ten acres of impact or less. The SOP states that it "is applicable to regulatory actions requiring compensatory mitigation for adverse impacts to 10 acres or less of wetland or other open waters" and that the "SOP may be used as a guide in determining compensatory mitigation requirements for projects with impacts greater than the above wetland and stream limits, or for enforcement actions, *however, higher than calculated credit requirements would likely be applicable to larger impacts.*" SOP at 1 (emphasis added). In light of the extent of impacts from this proposal to resources of national importance, reliance on the SOP is misplaced, resulting in insufficient mitigation. See also S.C. Department of Health and Environmental Control Notice of Proposed Decision at pp. 8-9 (Sept. 30, 2011) (FEIS, App'x. N at pp. 1085-86) (explaining why DHEC staff believed the Corps' proposed wetlands mitigation for the 48-foot depth alternative was flawed); see also SCDHEC Board Final Agency Decision, Board Docket No. 11-RFR-52 at ¶ 3 (Nov. 15, 2011) at FEIS; App'x. Z at p. 249 (explaining agreement of GPA to transfer saltmarsh to the state of South Carolina due to: "DHEC concerns about the sufficiency of mitigation for potential impacts on salt marsh"). Moreover, as explained in the SRMC NOPD, the Corps improperly used the SOP factors in devising its mitigation plan. See Savannah River Maritime Commission – Wetland Mitigation, Arcadis Report at pp. 3-6 (attached hereto as Ex. G). The SRMC NOPD also explains that it is unclear whether GPA will follow through with the agreement it made with respect to the additional mitigation referred to in the Final Agency Decision. SRMC NOPD at pp. 21-22.

Third, the EPA and Corps' wetlands mitigation rules (33 C.F.R. §§ 325 and 332) (hereinafter referred to as the "Mitigation Rule") underscore the importance of providing in-kind mitigation for unavoidable impacts to "difficult-to-replace" aquatic features, such as freshwater tidal wetlands: "For difficult-to-replace resources (e.g., bogs, fens, springs, streams, Atlantic white cedar swamps) if further avoidance and minimization is not practicable, the required compensation should be provided, if practicable, through *in-kind* rehabilitation, enhancement, or preservation since there is greater certainty that these methods of compensation will successfully offset permitted impacts." 33 C.F.R. § 332.3(e)(3) (emphasis added). The Corps' position is that it was difficult to identify preservation opportunities involving freshwater tidal wetlands. If in-kind mitigation cannot be undertaken here for wetlands of national significance, we believe that there should be far greater preservation mitigation as provided for in EPA Region 4's Mitigation Policy. See EPA Region 4 Compensatory Mitigation Policy attached hereto as Ex. L (suggesting compensatory mitigation ratios of between 10:1 and 60:1 for preservation depending upon the relative functions performed by the impact site versus the mitigation site).

Fourth, in addition to the 223 acres of tidal freshwater marsh impacts, approximately 740 acres of saltmarsh would also be impacted by the flow rerouting proposal since more freshwater would be introduced into the Little Back and Middle Rivers, causing impacts to saltmarshes. FEIS at p. 5-29. The Corps is not mitigating for these impacts because it says that such an impact is minimal and does not result in a net loss of wetlands and that causing a shift in saltmarshes to brackish marsh "could be viewed as restoration in kind." FEIS, App'x. A at p. 1973. The failure of the Corps to mitigate these impacts is arbitrary and capricious.

Fifth, as with other features of SHEP, the Corps has not provided sufficient information regarding key aspects of the mitigation proposal. Not only was the information lacking from the draft GRR and DEIS, but such information is also lacking here in the final studies. Although the Corps has indicated how many acres of wetlands preservation it will undertake, the Corps has failed to identify the actual properties it proposes to permanently protect. In the FEIS, the Corps says that the USFWS has identified properties within the estuary that are ecologically valuable and provide positive contributions to the goals of the Savannah National Wildlife Refuge, but the "plan" included in the FEIS is in the process of being "updated." FEIS at p. 5-38. See also GPA Resp. to Requests for Admission at p. 5 (Apr. 3, 2012) (saying "[n]o final decision has been made regarding the specific properties that actually will constitute the mitigation required in paragraph 3 of the [DHEC Board] Final Agency Decision, dated November 15, 2001"). Although the Corps proposes to acquire lands from this list and provide them to the USFWS, the public is left to wonder which specific properties the Corps may select. At this time, it is impossible for the public to review and comment on the specific properties that may ultimately comprise the wetlands mitigation for a significant aspect of this proposal. Such an approach undermines the public's opportunity to engage in the NEPA and CWA process for this proposal.

Sixth, in addition to not identifying specific mitigation sites in the FEIS and GRR, it appears that neither the FEIS nor the GRR account for all of the wetland impacts (and the mitigation that will be needed) for this proposal. Section 5.02.3 of the FEIS describes issues related to chloride concentrations and City of Savannah's water intake on Abercorn Creek. Within this section of the FEIS, the Corps explains that it will need to construct a raw water storage impoundment of about 35 acres in size at a cost of \$25.2 million. FEIS at p. 5-80. This

reservoir facility will be needed to address issues relating to lead contamination and disinfection byproduct formation associated with rising levels of chlorides, yet we cannot locate in the FEIS a sufficient discussion, explaining the environmental impacts associated with the construction of such a reservoir. It can be expected that the construction of such a facility would have aquatic impacts and require its own mitigation to offset these impacts, yet that issue remains unclear in the FEIS and GRR. In this way, the Corps has underestimated and failed to disclose the complete range of impacts from the SHEP, and, as such, these omissions frustrate the ability of the public to fully comment on the proposal.

Seventh, for direct impacts to brackish marsh, the Corps is proposing to “restore” “a previously used, sediment placement area (CDF 1S) within Savannah Harbor.” FEIS, App’x. C at p. 122. According to the Corps, “CDF 1S is located adjacent to the confluence of Front River and Middle River, and it is located within the boundaries of the Savannah National Wildlife Refuge. Much of the site is currently ‘high ground’ as a result of the previous sediment disposal actions, which were terminated at least 20 years ago. The proposed restoration area is approximately 40.3 acres. A small portion of the site was graded down by GPA several years ago as mitigation for work at their facilities. The Corps would expand the restoration acreage to include GPA’s existing saltmarsh acreage (1.7 acres) to create a 42 acre wetland area.” FEIS, App’x. C at p. 122.

The Corps has not demonstrated why this aspect of the wetlands mitigation proposal should qualify as “restoration.” According to the Mitigation Rule, wetlands restoration “means the manipulation of the physical, chemical, or biological characteristics of a site with the goal of returning natural/historic functions to a former or degraded aquatic resource.” 33 C.F.R. § 332. The FEIS says that CDF 1S was historically used for sediment disposal and that much of the site is currently high ground. The FEIS does not explain whether this area was historically a wetland. If the site was not previously a wetland, then this part of the Corps’ proposal would not qualify as wetlands restoration. Instead this mitigation would more properly be characterized as wetlands creation, which is not a preferred form of mitigation and should require a greater ratio of mitigation. See EPA Region 4’s Mitigation Policy at Ex. L at p. 6. The conclusion that this component of the mitigation plan is creation rather than restoration is also supported by how long the Corps has said this area has been an upland.

Dredged Material Management

Currently, material dredged from the Savannah Harbor shipping channel is placed within several large confined disposal areas (“CDFs”) or deposited within the Ocean Dredged Material Disposal Site (“ODMDS”). At this time, annual dredging results in the generation of approximately 6 million cubic yards (“MCY”) annually, much of which is deposited in the CDFs. NewFields Report at p. 27. If the depth of the shipping channel is expanded to 47-feet, this will result in the generation of approximately 13 MCY of new dredged material to be placed in the CDFs in addition to the annual operations and maintenance dredging material. Id.

Our review of the FEIS and GRR reveals that the Corps has failed to consider two important aspects of CDF material management: control of dredged material pH and its affect on metal mobility, and the control of invasive species within the CDFs. “Failure to adequately

address these issues is a significant deficiency and it likely to lead to the uncontrolled release of low pH stormwater containing elevated metal concentrations in excess of state water quality standards.” Id.

Dredged Material pH Management

The placement of dredged material into contained disposal sites and subsequent dewatering of the material results in oxidation of the soils and a decrease in soil pH. The dredged material management plan anticipates that the new work sediments will be allowed to dry for approximately 2.5 years on average. During this time, “the soils are likely to become oxidized creating acidic conditions.” Id. at 28. In fact, extensive research at CDFs located in the Chesapeake Bay has indicated that extended periods of CDF drying can result in dramatic pH reductions in stormwater discharges and exceedances of water quality criteria for metals in ponded water. Id. at 29.

Despite the potential for creating acidic conditions, neither the GRR nor the FEIS discuss, study, or evaluate the potential for acid generation and the effect on metal mobilization. Likewise, the final studies similarly fail to adequately assess the potential for long-term metal discharges from the CDFs. In fact, it does not appear to us that the Corps has conducted any studies to evaluate the mobility of zinc, nickel or metals other than cadmium under acidic or oxidizing soil conditions. Id. The Final Sediment Quality Evaluation (FEIS Appendix M) focused on cadmium because cadmium was the only metal to exceed sediment quality guidelines (*i.e.*, Effects Range-Median, ERM). Given that the data indicated that nickel and zinc will increase in mobility under oxidizing conditions, the more detailed studies should have been expanded to include these additional metals. In addition, the use of the sediment quality guideline (ERM) as a screening tool for determining the potential for metal mobilization is inadequate. NewFields Report at p. 29.

The failure to adequately evaluate increased metal mobility is a particular concern in light of the fact that this area of the river is listed on the 2010 303(d) list for impairment to aquatic life use due to zinc and for fish consumption due to mercury. See SCDHEC Notice of Proposed Decision at p. 7 (Sept. 30, 2011) (FEIS, App’x. N at p. 1084); South Carolina 2010 303(d) List, available at <http://www.scdhec.gov/environment/water/tmdl/index.htm#303d> (last visited May 26, 2012). As stated above, the Section 404(b)(1) Guidelines prohibit authorization of a discharge of dredged or fill material that “[c]auses or contributes, after consideration of disposal site dilution and dispersion, to violations of any applicable State water quality standard.” 40 C.F.R. § 230.10(b)(1). The 404(b)(1) Guidelines also provide that no discharge of dredged or fill material shall be permitted that will cause or contribute to significant degradation of the waters of the United States. Here, discharges from the CDFs would violate both of these provisions.

As discussed below at p. 43, the provisions in the Corps’ adaptive management plan are inadequate. Also, neither the Georgia 401 water quality certification nor the South Carolina 401 water quality certification (which is currently under challenge and stayed) contain enforceable limits on the discharges from the CDFs. Moreover, we cannot find an adequate discussion in the FEIS or the GRR, explaining if there are sufficient measures, such as NPDES permits, in place to regulate these discharges. Section 5.07.2.2 states only that:

The turbidity in effluent from diked sediment placement is controlled by adjustable spillways. The South Carolina standard for turbidity is that discharges are not to exceed 25 NTUs provided the existing uses of the water body are maintained. Savannah District imposes a 500 mg/L limit on suspended solids in the CDF discharges. This limit is believed to be sufficient to reduce turbidity impacts in the receiving waters to acceptable levels.

The failure to require frequent and long-term monitoring for metals (e.g., nickel, zinc, cadmium, copper, lead, and mercury) and pH analysis of all discharges from the CDFs and to establish limitations on those discharges to ensure compliance with water quality standards is a significant problem. In addition, the failure to address the threat of metal mobility now may pose a barrier to future re-development when the subsurface soils are exposed during construction. In this way, the SHEP may pose a significant barrier to the development of the Jasper Terminal. NewFields Report at p. 32.

Ocean Dredge Material Disposal Sites

The Ocean Dumping Act, found within the Marine Protection, Research, and Sanctuaries Act, regulates Ocean Dredge Material Disposal Sites and delineates several steps a permitting authority should complete before issuing a permit. 40 C.F.R. § 230.5. One such step requires the permitting authority to determine if the discharge is covered by a general permit or not. 40 C.F.R. § 230.7. If the material does not satisfy the general permitting requirements the agency must conduct a more in-depth analysis. 40 C.F.R. § 230.5.

The FEIS states as follows with respect to the current state of analysis for ODMDS issues:

Sediments dredged from Stations +4+000 to -97+680B, if determined to meet Open Dumping Criteria, will be placed in the Savannah ODMDS. The ODMDS will receive both new work and maintenance sediments from the entrance channel. In 2005, samples of bottom sediments from the excavation area in the existing entrance channel were tested to evaluate contaminants which may be present in new work sediment materials. No contaminants were detected at levels of concern. Those evaluations are described fully in Appendix M - Sediment Quality Evaluation. *Additional sampling and testing (bioaccumulation studies) for the existing and extension of the entrance channel are in progress to confirm that the new work material complies with the Ocean Dumping Criteria and is suitable for placement in the Savannah ODMDS.* The results of these analyses would be used to prepare a Section 103 Evaluation for SHEP. The Corps would provide that evaluation to EPA Region 4, accompanied by a request that they concur with the Corps' determination that the SHEP new work and future maintenance material meets the Ocean Dumping Criteria and is suitable for placement in the Savannah ODMDS.

FEIS at p. 6-2 (emphasis added).

As with respect to other features of the FEIS, we are troubled by the decision by the Corps to publish a FEIS and to provide for a public comment period prior to the completion of the relevant analysis in support of the proposal. In this case, the Corps has failed to complete their study of bioaccumulation prior to their issuance of the FEIS, thereby overlooking a “necessary environmental analysis.” The Corps’ “NEPA procedures must insure that environmental information is available to public officials and citizens *before* decisions are made and *before* actions are taken.” 40 C.F.R. § 1500.1(b) (emphasis added); see also Ohio Valley Env'tl Coalition v. U.S. Army Corps of Eng'rs, 674 F. Supp. 2d 783, 808-09 (S.D. W.Va. 2009) (same); Sierra Nevada, 376 F. Supp. 2d at 990 (NEPA regulations “require that an agency give environmental information to the public and then provide an opportunity for informed comments to the agency”). According to the CEQ Guidelines, such procedures are necessary because “public scrutiny [is] essential to implementing NEPA.” 40 C.F.R. § 1500.1(b). The Corps should have completed their data-set before publishing its FEIS. By failing to do so, the Corps has again undermined the ability of the public to fully comment on the SHEP.

Invasive Species – *Phragmites* within CDFs

Phragmites (or the Common Reed) is a plant that can reach 10 to 12 feet and grows in very dense patterns that can crowd out native plants, resulting in monocultures with minimal ecological value. *Phragmites* grows along the shorelines of waterbodies or in water several feet deep. In South Carolina, it is restricted to the outer coastal plain where it occurs in fresh, brackish and salt marshes and along streams, rivers and estuaries. Within South Carolina, *Phragmites* infestations have impacted shallow water habitat in the Winyah Bay/Santee Delta area for over three decades. SCDNR has battled *Phragmites* in its waterfowl impoundments for most of that time with limited success with a cost ranging between \$100,000 to over \$300,000 per year. For these reasons, *Phragmites* has been identified as an Invasive and Noxious Weed in the state of South Carolina. See NewFields Report at pp. 32-33; see also <http://plants.usda.gov/java/noxious?rptType=State&statefips=45> (last visited June 4, 2012).

Executive Order 13112 provides that federal agencies whose actions may affect the status of invasive species shall, to the extent practicable and permitted by law, “not authorize, fund, or carry out actions that it believes are likely to cause or promote the introduction or spread of invasive species in the United States” unless the agency has determined that “the benefits of such actions clearly outweigh the potential harm caused by invasive species; and that all feasible and prudent measures to minimize risk of harm will be taken in conjunction with the actions.” Executive Order 13112, § 2(3) (1999).

The FEIS fails to demonstrate compliance with Executive Order 13112. First, the CDFs, which are located within South Carolina, are dominated by *phragmites*. The sections of the FEIS addressing invasive species do not identify this species as a South Carolina listed invasive and noxious plant, omit an evaluation or discussion of the extent to which the SHEP will exacerbate or promote this problem, and similarly fail to determine whether the benefits of the proposed deepening clearly outweigh the potential harm and to show that all feasible and prudent measures to minimize risk of harm will be taken in conjunction with the SHEP.

Notably, in discussing the wetlands mitigation plan for Site 1S, the FEIS acknowledges in that context that *phragmites* is an invasive species and indicates that a monitoring and control plan would be developed to manage the plant. FEIS at p. 5-7; NewFields Report at p. 33. It is therefore unclear why the sections of the FEIS addressing invasive species omit a discussion relating to the CDFs and the promotion of *phragmites* there and why no monitoring or control plan has been developed for the CDFs. The FEIS should be supplemented to include sufficient analysis on promotion of *phragmites* in connection with the CDFs. This supplementation should include a detailed benefit/harm analysis and feasible and prudent measures to minimize the risk of harm from the SHEP in this regard.

Endangered Species Act

In our comments on the DEIS and draft GRR, we articulated concerns regarding the failure of the Corps to comply with the Endangered Species Act. The final studies do not address our concerns.

Shortnose Sturgeon and Atlantic Sturgeon

Subsequent to the expiration of the comment period on the DEIS and draft GRR, NMFS finalized a Biological Opinion for this project (“BiOp”). To our knowledge the public was not afforded an opportunity to comment on either a draft version of the BiOp or the final BiOp. The BiOp is deeply flawed.

In its response to comments, the Corps explains that “NMFS concluded that construction of the SHEP is not likely to jeopardize the survival and recovery of the Shortnose sturgeon or Atlantic sturgeon in the Savannah River. With implementation of Reasonable and Prudent Measures NMFS identified to protect these species, NMFS concluded that the overall effect on the Shortnose and Atlantic sturgeon would be acceptable.” FEIS, App’x. A at p. 1961. As explained by the Corps, NMFS relies heavily on a fish passage facility at the New Savannah in its BiOp to avoid finding jeopardy for these species. According to NMFS, adverse effects of habitat loss on SNS juveniles will be reduced by being “spawned upriver due to the construction of a sturgeon-friendly fish passage facility, thus giving them more time and distance to mature before reaching the lower river.” FEIS, App’x. Z at p. 178. For purposes of evaluating SHEP’s impact on reproduction of SNS, the BiOp states “the implementation of the timely sturgeon-friendly fish passage before the project’s full impacts occur within the inner harbor will result in the addition of 20 miles of spawning habitat that is expected to result in increased spawning activity over the long term. Adding 20 miles of available habitat will also lengthen the amount of residency time of early juveniles in freshwater, thereby resulting in juveniles being older and larger when they reach the freshwater/saltwater interface and more adept at adjusting to different salinities.” Id. In addition to supporting its finding of no jeopardy with fish passage, NMFS also bases its opinion regarding the likelihood of SNS recovery on fish passage. Id. at 179. And, not surprisingly, NMFS grounds its finding of no jeopardy for ATS on the fish passage facility as well. Id. at 180-81.

NMFS’ reliance on the proposed fish passage facility to support its jeopardy analysis, as an integral part of the Incidental Take Statement, and throughout its BiOp is unreasonable,

arbitrary, and capricious. Loss of nursery habitat for SNS and ATS cannot be compensated for with the (possible) addition of spawning habitat through a fish bypass at Augusta.” Expert Report of Mark R. Collins, Ph.D., at p. 3 (attached hereto as Ex. M) (hereinafter referred to as the “Collins Report”).¹⁷ The problem with the Corps’ and NMFS’ approach is that “these species depend on the entire riverine/estuarine system to complete their life cycles, so modification of any part of the system could impact the health of their populations, and in this case most concern is directed toward the estuary (i.e., project area).” Id. Even if in theory it was possible that sturgeon could utilize the fish passage facility and lay eggs above the dam, those fish would still “fail to survive as populations because harbor deepening could eliminate nursery habitat for the juveniles.” Id.

Dr. Collins elaborates in his report on why it is unreasonable to rely on the proposed fish passage facility to offset impacts of SHEP. Dr. Collins explains:

Mitigation for the impacts to SNS and ATS habitats due to SHEP is based almost entirely on the supposed reproductive benefits of the proposed fish passage around the New Savannah Bluff Lock and Dam. The proposed passage is an untried and unproven technique for these species. In fact, there is no known and proven method for passing these species around/ through dams effectively. It should be noted that here we are referring to two very different species in terms of size, behavior, feeding habits, and migratory patterns, and further that consideration must be given to passage of adults of both species not only upstream but also downstream (these are not salmonids that die after spawning) and passing any progeny downstream to the nursery habitat in the estuary. The supposed benefit of lengthier downstream migration of juveniles is: (a) likely untrue, (b) dependent on downstream larval passage, the likelihood of success of which is only guesswork, and (c) assumes that spawning adults actually desire to move to sites above the dam. In fact, when 4 adult SNS with transmitters were placed above the dam in a test, 3 immediately returned downstream (with unknown injury and mortality levels) and one was lost, suggesting that these fish may not actually desire to be upriver of the dam. This fish passage attempt could be an interesting (and expensive) test, but it certainly should not be considered mitigation for SHEP impacts.

Collins Report at p. 3.

In its response to comments, the Corps says the following about how the concept for the fish passage facility was developed:

¹⁷ Dr. Collins is a biologist, who, until he retired recently, worked for the S.C. Department of Natural Resources for 26 years. Dr. Collins has 20 years of experience studying fish and water quality in the Savannah River. His work has included research into the life history and movements of species such as shortnose and Atlantic sturgeon, king mackerel, and red snapper. Dr. Collins received a Ph.D. in zoology from the University of Florida and a B.S. from the University of South Carolina.

An interagency workshop was held [April 2011] which was attended by the National Marine Fisheries Service [the agency with statutory responsibility for the Shortnose sturgeon], the US Fish and Wildlife Service, and the state natural resource agencies. The main focus of the workshop was to address agency concerns over the effectiveness of the proposed fish bypass [horse shoe] which would be located at the New Savannah River Bluff Lock and Dam. Based on input from the workshop attendees and a follow-on site visit with Dr. Luther Aadland (fish passage expert with Minnesota Department of Natural Resources) that was arranged by NMFS the District revised its proposed fish bypass design and the FEIS proposes an Off-Channel Rock Ramp to provide access to traditional spawning areas at the Augusta Shoals. As stated in the BO, the goal for the fish passage is to achieve a 75% success rate in upstream passage coupled with 85% effectiveness for downstream passage. A detailed design, would be prepared if the project proceeds to construction. Thus, the proposed installation of an unproven fish passage structure should not be accepted as mitigation for loss of nursery habitat.

FEIS, App'x. A at p. 1966.

With respect to this interagency workshop, Dr. Collins states: “the results of the meeting of regional scientists and engineers convened by GPA/ACOE were disregarded, and an alternate and non-vetted fish passage method is now proposed. This proposal will require acquisition of private property and an intensive engineering effort and will still have a probability of failure. Further, based on experience with sturgeon life history, telemetry, and behavior, the proposed monitoring timeline and budget are inadequate.” Collins Report at p. 3.

In sum, the Corps' and NMFS' reliance on this fish passage proposal as a critical element of the BiOp, including the jeopardy analysis and the Incidental Take Statement, is irrational, arbitrary, and capricious.

Modeling for SNS and ATS

The modeling relied on to address impacts to SNS and ATS is flawed. Specifically, the input data (baseline tolerances) for SNS and ATS are at times derived from studies undertaken in the Northeast United States where sturgeon life histories “differ greatly from those in the south.” Id. 2.

Further, the use of the percentiles in the model to quantify habitat impacts is particularly troublesome. Collins Report at p. 3. The statement that “this portion of the project area will be acceptable habitat 90% of the time” implies that fish will only die 10 percent of the time. The fish species at issue “only get to die once, so the 90th percentile rule essentially means 100% mortality for all fish in the area at some point. A human analogy might be “you will have oxygen 90% of the time, so you will have to hold your breath for 2.4 continuous hours each day.” Id. at 3.

Conference consultation for ATS

NMFS explains that the BiOP includes its “conference opinion for the South Atlantic DPS of Atlantic sturgeon, which is proposed for listing under the ESA. Conference is only required where the proposed action ‘is likely to jeopardize’ the proposed species; if the listing is finalized without changes from the proposed rule, the conference opinion can quickly be adopted and made operative and avoid potential delays associated with reinitiation of consultation.” FEIS, App’x. Z at p. 8. See also FEIS, App’x. A at p. 1998 (saying “[i]f the Atlantic Sturgeon is formally listed, then the District would evaluate project effects on this species”). Now that the ATS has been listed under the ESA (77 Fed. Reg. 5914 (Feb. 6, 2012) (listing the Atlantic sturgeon as an endangered species)), we respectfully request that NMFS reinitiate consultation and inform the public of opportunities to engage in this process.

Re-initiation of consultation for the ATS will give NMFS and the Corps the opportunity to address significant shortcomings in the BiOp with respect to this species. In addition to the concerns noted above, our review of the BiOp and other documents included with the FEIS and GRR reveal that many critical parameters related to Atlantic sturgeon life history have not been defined and that impacts on ATS have not been sufficiently considered. Collins Report at p. 1. Further, the spawning periodicity of ATS has recently been described by two separate laboratories as twice per year, Spring and Fall, suggesting the possibility of separate races (as has been reported from Russia), which may make the conservation of this species even more difficult than for SNS and more complex in terms of SHEP impacts. Id. at 1-2.

It should also be noted that individual ATS do not spawn in both seasons, nor usually in consecutive years, so the details of the reproductive process are complicated and will require further study for purposes of this project. Importantly, for the Corps’ purposes here, all life history stages (except eggs) have been found in the project area, from larvae through juveniles to adults, “so one can logically conclude that this estuary is an important habitat and essential to this Distinct Population Segment.” Id. 2. The biological and scientific resources needed to examine tolerances are available and should not be ignored in a rush to deepen the estuary and quite possibly destroy critical habitat for both species. The USFWS Bears Bluff National Fish Hatchery is currently holding ATS broodstock and successfully spawned the fish last Fall. They are now holding Age 0 progeny that could be used to experimentally define juvenile habitat tolerances. The hatchery also has access to SNS broodstock and has worked with both SCDNR and University of Georgia laboratories in previous sturgeon life history research. Id.

BiOp findings not supported by facts

NMFS violated the Endangered Species Act by issuing an insufficient and unsubstantiated Biological Opinion and Incidental Take Statement. Independent of the analysis of the jeopardy finding and adequacy/accuracy of scientific data, the NMFS conclusions with respect to the incidental takings of the SNS and ATS were arbitrary and capricious. Where the NMFS concludes that the agency action will not jeopardize the continued existence of a species but is likely to result in incidental takings, it must issue an Incidental Take Statement, supported by a rational connection between the facts found and the conclusions made in the BiOp. 16 U.S.C.S. § 1536(b)(4), Defenders of Wildlife v. Martin, 454 F.Supp. 2d 1085, 1100. The

conclusions made by NMFS in the BiOp and ITS have no rational, scientific, or conceivable connection to the facts found in the BiOp.

First, the BiOp stated that research has not indicated that juvenile SNS will use an alternate route through the estuary to access preferred habitat, and that there is no evidence of juvenile SNS using certain areas indicated as suitable habitat. FEIS, App'x. Z at p. 157. Similarly, research has not indicated that adult SNS will use alternate routes to access suitable habitat, and evidence has not indicated that adult SNS will alter normal activity to avoid undesirable high salinities, such as moving up in the water column. FEIS, App'x. Z at p. 161.

Further, the BiOp found that “all juveniles of both species of sturgeons and all adult SNS will be affected by the deepening. The loss of foraging area mentioned above will reduce the amount of prey available to juveniles, making successful foraging more difficult. This reduction in prey and reduction in foraging success will result in slower growth rates and reduced fitness of juvenile sturgeon. Reduced fitness can also lead to disease and mortality. Adult SNS will also face a reduction in foraging success which will lead to reduced fitness... disease, mortality, lower fecundity in females, and a reduction in the energy required to make spawning runs, thereby causing a lowering of reproductive success.” FEIS, App'x. Z at p. 172-173.

Following this analysis, the NMFS concluded that these “effects are expected to be nonlethal for juvenile and adult sturgeon. NMFS believes the effects of these impacts will be reduced by the timely construction of a sturgeon-friendly fish passage” (unreasonableness of this reliance discussed above). FEIS, App'x. Z at p. 176-177. “Therefore, it is our opinion that the SHEP is not likely to jeopardize the continued existence of SNS” or ATS. FEIS, App'x. Z at p. 177. After failing to estimate an actual number of ATS that would be ‘taken’, NMFS relied on loss of acres of habitat (which is an inadequate surrogate) in the ITS to estimate the loss of SNS, and arbitrarily conclude that these impacts will not rise to a population level adverse effect. FEIS, App'x. Z at p. 178-179. No rational connection between the facts found in the BiOp regarding the extensive negative and lethal effects that the SHEP will have on the sturgeon can be conceived, and even if so, no such explanation was provided by NMFS or the Corps. The mere reference to the proposed fish passage is unavailing and insufficient to support the leap from “reduction in prey, foraging success, disease, mortality, lower fecundity in females, lower reproductive success” in sturgeon to “the SHEP is not likely to jeopardize” the SNS and ATS. Therefore, the BiOp and ITS are in violation of the ESA because the conclusions found are arbitrary and capricious.

North Atlantic right whales, manatees, and sea turtles

The analysis in the BiOp, FEIS, and GRR is also flawed with respect to these species. The Corps responded to our comments on the draft studies by arguing that channel deepening will not increase the number of vessels calling at GCT. In fact, the Corps says “fewer ships would transit the estuary with incrementally lesser impact . . . than the without project condition.” FEIS, App'x. A at p. 1968. For the reasons already contained herein, we believe the Corps’ assumption on this point is erroneous and therefore its analysis (and the analysis of NMFS and USFWS) of the impacts of SHEP on these species was arbitrary and capricious.

Adaptive Management Plan

The Adaptive Management Plan remains flawed.

The Corps would have the public believe that deepening of the harbor will be stopped if dredging will result in unacceptable dissolved oxygen levels. See FEIS, App'x. A at 1946 (“No dredging may occur if the dissolved oxygen levels fall below the specified oxygen levels. These conditions add protection to the Savannah River estuary so that dredging will not result in unacceptable dissolved oxygen levels”). This statement is very misleading. As discussed above in the water quality section, Georgia’s 401 water quality certification does not ensure compliance with water quality standards. Neither does the Adaptive Management Plan.

The Adaptive Management Plan contains provisions for monitoring of DO levels in the vicinity of the dredge during the summer months. FEIS, App'x. D at p. 18. According to these provisions, the “Corps will coordinate a detailed monitoring plan with Georgia DNR-EPD prior to conducting” dredging in the inner harbor during the summer months. Further, the FEIS states that the standard for the monitoring agreed upon with NMFS and GA DNR EPD is as follows:

Dredging operations must maintain a daily average of 5.0 mg/L and an instantaneous average of 4.0 mg/L throughout the water column during those times of year when the ambient condition in the waterbody has a dissolved oxygen level above these values. If it is determined that the ambient condition in the waterbody is less than these values, the criteria will revert to the “ambient condition” and the water quality standard will allow for a 0.1 mg/L deficit from the “ambient” dissolved oxygen value. Since the available dissolved oxygen deficit has already been allocated, the USACE will only be able to conduct maintenance dredging when the dissolved oxygen, one meter from the bottom, is 3.0 mg/L or greater and the maintenance dredging does not affect the dissolved oxygen levels in the Savannah River Harbor. Exceptions for maintenance dredging when dissolved oxygen levels are less than 3.0 mg/L may be allowed if coordination occurs with NMFS and GA DNR-EPD and subsequent issuance of a waiver from GA DNR-EPD

FEIS, App'x. D at p. 18.

There are a host of problems with this approach. First, this provision deviates from applicable water quality standards. This provision says that dredging operations must maintain an instantaneous *average* of 4.0 mg/L, but the actual standard for both states is an instantaneous minimum of 4.0 mg/L. The Adaptive Management Plan also allows for the criteria to revert to the “ambient condition” when the applicable water quality standards only allow for a deficit from natural conditions *if it can be determined that natural conditions are less than the stated values above*. As explained previously, neither state has demonstrated that the natural condition of the estuary is less than the stated values provided for in each state’s standard. Moreover, this provision of the Adaptive Management Plan would allow for maintenance dredging when the dissolved oxygen, one meter from the bottom, is 3.0 mg/L or greater. The FEIS fails to explain why the Corps has chosen to ignore water quality standards and to allow dredging when DO

levels are at 3.0 mg/L when both states have a DO standard with an instantaneous minimum of 4.0 mg/L. And finally, the Adaptive Management Plan, like Georgia's 401 water quality certification, provides an exception for maintenance dredging "if coordination occurs with NMFS and GA DNR-EPD and subsequent issuance of a waiver from GA DNR-EPD." FEIS, App'x. D at p. 18. In these ways, this provision of the Adaptive Management Plan attempts to re-write Georgia's and South Carolina's dissolved oxygen standards in a way that will allow this proposal to cause and/or contribute to water quality violations and degradation of the river in violation of the Clean Water Act and state law. Moreover, the notion that dredging will not be allowed if such activity exacerbates DO levels is plainly false.

Second, the primary determinant of success or failure in the Adaptive Management Plan for DO management is based on the water quality models that were developed and used to plan the project. However, as explained in the FEIS and in the NewFields Report, the Adaptive Management Plan involves continued recalibration of the models as additional data is gathered during and after construction. See FEIS, App'x. D at p. 31; NewFields Report at p. 19. Repeated recalibration of the models will change the models' characterization of the starting condition of the harbor prior to commencement of the deepening. In other words, *the baseline conditions relied on by the Corps to evaluate the impact of the deepening on the estuary will evolve.* Id. As opposed to using the actual water quality standards to determine whether the project should be allowed to move forward, the Corps proposes to use its own modeling results, which will change over time, to determine whether "impacts are outside the range of those expected." FEIS, App'x. D at p. 32. See also FEIS, App'x. D at p. 40 (saying the "decision to implement any adaptive management measure during the construction process would also be based on model predictions of dissolved oxygen and salinity that would be conducted during the construction phase of the project"). In this way, the standards by which the Corps has chosen to evaluate its project will continue to shift, and it is highly unlikely the Corps will take corrective action even if the deepening is causing or contributing to water quality violations or significant degradation of the river.

Third, the Adaptive Management Plan's decision making process will not remedy water quality violations. According to the Corps, the decision process in regards to any adaptive management measures would be ongoing throughout the Construction and Post-Construction phases of the project. FEIS, App'x. D at p. 38. After monitoring data and reports are available "for a given year," the Corps would meet with the Cooperating Agencies and the state natural resource agencies to review the new information. FEIS, App'x. D at p. 38. The Corps goes on to explain that:

If the monitoring identifies impacts that are outside the range of those expected, the Corps would consult with the Cooperating Agencies and the natural resource agencies to identify what actions may be appropriate. This could include more detailed monitoring in certain locations to obtain a better understanding of what is occurring. The monitoring could also dictate changes in how the project is being constructed, such as modifying the operation of the CDFs to improve the water quality in the effluent or a delay in the dredging operations until a problem could be assessed and corrective measures implemented. Adaptive management measures that might be required during construction of the project could be

implemented in an expeditious manner since decisions regarding changes to the monitoring plan or the construction process are normally delegated to the District/Division level.

FEIS, App'x. D at p. 38. Further,

If agreement cannot be reached because one of the parties believes that additional data is needed to conclude a feature is needed, adaptive management funds could be used for an additional year of monitoring to obtain the needed information.

* * *

If after either the 10-year Post-Construction monitoring period is complete or after an additional year's worth of data is collected, it appears that the agencies will not be able to agree on whether a specific modification is warranted, upon the request of two of the four Federal agencies, the Corps would convene a meeting of the Federal agencies in Washington. At that meeting, Washington-level agency representatives would make a decision on the issue.

FEIS, App'x. D at p. 38. In other words, if the modeling shows a violation in DO levels, the Adaptive Management Plan envisions a consultation process amongst agencies in which the implementation of an effective resolution would appear to be anything but expeditious.

Some of these same problems plague other elements of the Adaptive Management Plan as well. For CDFs, for example, response plans should be developed prior to commencement of the project and included in the FEIS in the event that discharges from CDFs exceed water quality standards. With respect to discharge monitoring, it does not appear as if the FEIS contains any plans indicating how CDFs will be managed should total suspended solids, metal concentrations, or pH values exceed state standards.

Fourth, in many ways, the Adaptive Management Plan seems designed to allow the project to move forward even if water quality monitoring shows that the waters in the vicinity of the project are violating applicable water quality standards. Instead of halting work, monitoring results will be used to recalibrate the models, leading to a constantly evolving baseline against which the Corps will measure the impacts of the project. This statement from the Corps seems to drive the overall concern home: "Obviously, the post-construction phase of the project would present the best opportunity to evaluate the performance of the project and its mitigation features with respect to the response of the ecosystem." FEIS, App'x. D at p. 41. The problem, of course, is that after the project is constructed, it may be impossible to remedy the ways in which the deepening exacerbates environmental problems, such as low DO or impacts to federally-endangered species. To be effective, the Adaptive Management Program must halt construction if the project causes or contributes to water quality problems or significant degradation of the river. Unfortunately, the Adaptive Management Plan is not designed with this goal in mind.

Fifth, as we stated in our comments on the DEIS and draft GRR (see pages 61-64 of SELC Comments on draft GRR and DEIS), we remain concerned that the Corps has not made

adequate provisions in its adaptive management plan to ensure that the fifth element – adapting the mitigation – will be completed. If, for instance, the chloride levels in the tidal freshwater wetlands reach levels higher than expected and many more of these rare wetlands are degraded as a result, then more wetlands mitigation would be required than is provided for under the adaptive management plan. And under the Corps’ plan there is no guarantee that money will be available for such mitigation because the necessary funds will have to be approved by the Administration and appropriated by Congress on a yearly basis.

In fact, the Corps states in its response to comments that:

If more funds are required to conduct additional monitoring or modify any of the mitigation features associated with the project, these funds would be requested through the annual construction budget process. Funding requests for mitigation measures receive highest priority because they must be secured before project construction can be completed. Following completion of these activities, the project would enter the operation and maintenance phase, which becomes responsible for costs associated with maintaining the mitigation features of the project, e.g., an oxygen injection system. Funding requests for mitigation features for projects (either in the construction or operation/maintenance) phases receive the Corps’ highest priority.

FEIS, App’x. A at 1947. In the current climate of fiscal restraint, there is no assurance that Congress would appropriate money for additional mitigation for a civil works project that would, by that time, be completed. In other words, the Corps has not ensured that there will be enough funding to implement the Adaptive Management Plan, and critical elements of this plan may not have funding even if they are needed.

Further, although GPA has offered to provide financial assurance to fund operation and maintenance of the Speece Cones in any year that sufficient federal funds for operation and maintenance of the system are not made available, the amount and manner of such assurances remain vague at best. In addition to identifying an agreed upon amount that would be “sufficient,” the method of ensuring those funds will be available has not been identified. Moreover, the DHEC final agency decision that contains this language expressly states that the Corps “may not include these additional measures in the Final EIS or ROD for the project.” SCDHEC Final Agency Decision at ¶¶ 2, 11 (Nov. 15, 2011) (FEIS, App’x. Z at pp. 252-54).

Chlorides and the City of Savannah’s Water Supply

The Corps’ analysis regarding the impact of deepening on the City of Savannah’s water supply have changed dramatically since the release of the draft GRR and DEIS. In the DEIS, the Corps stated with respect to the impact of chlorides on the City of Savannah’s water supply that: “Based on these predicted levels of effects, minimal impacts are expected to water at the City of Savannah’s water intake on Abercorn Creek from the proposed harbor deepening alternatives.” DEIS at p. 5-55. The FEIS and GRR now reveal that the deepening is likely to cause significant problems for Savannah’s water supply. According to the FEIS, “[b]ased on the laboratory analyses performed, lead corrosion is projected to increase considerably with increased chlorides

. . .” and “[w]hether those increased levels would exceed regulatory action limits as defined by the USEPA’s Safe Drinking Water Act (SDWA) Lead and Copper Rule, 40 CFR Part 141, as adopted in Georgia, cannot be determined with certainty due to the fact that regulatory sampling for lead is performed at the customer’s tap . . .” FEIS at p. 5-69.

In addition to lead, the FEIS also articulates new concerns regarding disinfection byproduct formation (“DBP”). See FEIS at § 5.02.13. Exposure to DBPs can lead to “[p]otential cancer [and] reproductive and developmental health risks.” FEIS at p. 5-70.

As a result of these drinking water concerns (and those relating to the industrial water supply), the Corps says it evaluated a number of different ways for addressing these problems. See FEIS at p. 5-72. According to the Corps, “[b]ased on recent analyses, the storage alternative was determined to be the most cost-effective option to mitigate against both the increasing lead corrosion and the increasing DBP formation predicted with harbor deepening.” FEIS at p. 5-79. The Corps states further that the impoundment “would be about 35 acres in size and cost about \$25.2 million.” FEIS at p. 5-80. Given the health risks identified in the FEIS and the need for sufficient mitigation to address this issue, it is unclear why the FEIS includes only a “preliminary layout and conceptual site plan.” FEIS at p. 5-80. Given the importance of this issue to Savannah, the FEIS and GRR should include more definitive plans for the proposed mitigation.

Also, it can be expected that the construction of such an impoundment and its attendant infrastructure would have aquatic impacts and require its own mitigation to offset these impacts. Yet, that issue remains unclear in the FEIS and GRR. Without these details, the Corps has failed to demonstrate compliance with the Section 404(b)(1) Guidelines for any aquatic impacts associated with the construction of this impoundment and, by failing to provide sufficient detail on this topic, has failed to afford the public a meaningful opportunity to comment on this aspect of the proposal. The Corps should supplement its FEIS and GRR (and provide an additional opportunity for public comment) once it refines its plans for the raw water impoundment and determines the extent of aquatic impacts that will be necessitated by the construction of this water storage facility. The Corps’ supplementation of the FEIS must include a more in depth discussion of how this impoundment will work; the extent of aquatic impacts from construction; and an analysis of how this aspect of the SHEP will comply with the Section 404(b)(1) Guidelines, including the avoidance, minimization, and mitigation requirements.

Groundwater Supplies

We have the following concerns regarding the impact of this proposal on groundwater supplies.

First, our understanding is that the Corps’ consultant, CDM, developed a ground-water flow model with salt water intrusion simulation capabilities based on an existing USGS MODFLOW regional ground-water flow model. It is unclear the extent to which the model used for the SHEP deviates from the USGS model. The FEIS or GRR should provide a thorough explanation of how the USGS model was obtained, when it was obtained, and differences from the final published USGS model.

Second, the Corps has not provided the proprietary DYNSTEM model codes or executable files for this aspect of the project, frustrating a rigorous third party review of groundwater modeling efforts. These proprietary codes are developed and maintained by CDM, the Corps' consultant for the project. The public should not have to purchase expensive information from a Corps consultant in order to understand an EIS.

Third, it does not appear to us that a rigorous evaluation of head residuals in the vicinity of the project has been conducted to evaluate modeling efforts. Comparison of simulated to observed heads, through time, in well clusters near the area of concern is needed to provide sufficient insight into the model's ability to represent site conditions and to understand chloride breakthrough simulations. Further, the Corps' decision to forego an aquitard feasibility test is also a concern. Due to these shortcomings, the groundwater evaluations lack sufficient detail in evaluating the adequacy of the groundwater flow calibration near the area of concern, and neither the GRR nor FEIS provide reasonable assurance of the model's ability to represent site conditions.

OTHER ISSUES

The FEIS misstates the legal status of the project

The FEIS and GRR misstate the legal status of the proposal by failing to identify other permits that are needed for the SHEP.

First, under South Carolina's Pollution Control Act ("PCA"), it is "unlawful for any person, directly or indirectly, to throw, drain, run, allow to seep or otherwise discharge into the environment of the State organic or inorganic matter, including sewage, industrial wastes and other wastes, except as in compliance with a permit issued by the Department." S.C. Code § 48-1-90. The PCA's definition of "the environment" includes land and waters of the State. *Id.* at § 48-1-10. The Corps has not obtained a PCA permit authorizing it to dispose of cadmium and other dredged materials on the land and/or in the water in South Carolina. Nor has the Corps obtained PCA permits authorizing it to discharge highly oxygenated water or dredged and/or fill materials to waters in the State of South Carolina. These discharges would violate Section 48-1-90 of the PCA if they are made without the required PCA permits. Despite the PCA requirement, the Corps fails to disclose in the FEIS or GRR that authorization is required under the PCA before the SHEP can proceed.

Second, the Corps has failed to obtain (and apparently has no intent to obtain) permits under the National Pollutant Discharge Elimination System program to authorize the discharges from the Speece Cones. The Corps has acknowledged that the SHEP would make already serious water quality problems in the river even worse by adversely affecting dissolved oxygen levels. To mitigate for the lowering of water quality in the river, the Corps is proposing to install Speece Cones at various locations in an attempt to re-oxygenate the river. These Speece Cones would draw water out of the river, supersaturate the water with oxygen, and then inject supersaturated water into the river. Substantial questions have been raised regarding the effectiveness of this measure to raise the depleted levels of oxygen in the water column.

In addition to questions about the ability of the Speece Cones to remedy the overall lowering of dissolved oxygen levels in the river system, reviewers of the project, retained by the Corps, have raised concerns regarding the toxic effect of the discharges from the Speece Cones on aquatic life. In February 2011, the Battelle Memorial Institute prepared the Final Independent External Peer Review Report for the Savannah Harbor Expansion Project (hereinafter referred to as the “Battelle Report”) (an excerpt of the Battelle Report is attached hereto as Ex. N). In this report, Battelle expressed concerns about the impacts of the Speece Cones on aquatic species. According to the report, the plan to use the Speece Cones “appears to substitute the toxicity of low to zero oxygen concentration in the harbor waters to a similarly toxic environment by supersaturating the water column with DO over 10 times higher than normal levels.” Battelle Report at A-4. The report states further that: “[o]nce water becomes supersaturated (i.e., the oxygen concentration exceeds concentrations that can occur under natural conditions), the ability of fish to breathe is a concern.” Id. In fact, “in highly oxygenated water, oxygen bubbles will cling to fish gills and the fish will stop breathing.” Id. The Panel concluded that the discharge from the Speece Cones “can be toxic to fish that encounter it” and “[i]t would appear that the oxygen injection system proposed (Speece Cones) could have lethal impacts to fish species. Impacts to threatened and endangered species, such as shortnosed sturgeon, American shad, and striped bass, would be of special concern.” Id. In light of the negative impacts to fish from the discharge of super-saturated levels of oxygen, we believe NPDES permits under the CWA are required for the Speece Cones.

The GRR and FEIS Rely on outdated material

The data used to quantify baseline natural resources for the FEIS are out-dated and not reflective of the current status of the resources in the project area. There have been several navigation projects within the harbor, including the construction of the Tidegate in 1977, which ceased operations in 1990 (FEIS Section 4.07.1); the 1992 filling of the Cutoff Diversion Canal; and deepening projects in 1977 and 1994. Much of the relevant data relied upon in the FEIS was often collected prior to these projects and likely does not reflect current conditions. NewFields Report at pp. 2-3. Specifically, data relied on for marine and estuarine resources, including wetlands, needs updating. Failure to do would be arbitrary and capricious because alterations in the estuary have occurred since the data was collected, and these alterations have likely reduced the value and reliability of the data considerably. Id.

Conclusion

We appreciate the opportunity to submit these comments on the proposal to deepen the Savannah Harbor. For the reasons described herein, we believe the SHEP raises serious concerns under the National Environmental Policy Act, the Clean Water Act, the Endangered Species Act, and other state and federal laws and regulations. Accordingly, a Supplemental FEIS should be prepared to address the identified deficiencies, and consultation with the federal resource agencies should be re-opened pursuant to Section 7 of the Endangered Species Act. In the interim, a Record of Decision for the deepening should not issue.

Sincerely,



Christopher K. DeScherer

Enclosures

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