



Savannah Harbor Expansion Project

Frequently Asked Questions (FAQs)

U.S. ARMY CORPS OF ENGINEERS

BUILDING STRONG.

April 7, 2017

1) **[New]** What is the purpose of the Savannah Harbor Expansion Project?

- **[New]** The Savannah Harbor Expansion Project will deepen the harbor and shipping channel from its current authorized depth of 42 feet below mean low low-water to a new authorized depth of 47 feet below mean low low-water.
- **[New]** The deeper harbor will allow newer, larger cargo vessels to call with fewer tidal restrictions and with heavier loads. The deepening will allow Savannah to remain one of the nation's busiest container ports. It currently ranks as the fourth busiest in the nation and the second busiest on the East Coast.

2) **Why is the U.S. Army Corps of Engineers even involved in a navigation plan like the Savannah Harbor Expansion Project?**

- Congress charged the U.S. Army Corps of Engineers (USACE) with the responsibility for improving harbors under the Rivers and Harbors Act of 1899. That responsibility remains with the Corps of Engineers. As part of this mission, we must ensure that commerce has safe and adequate access to ports throughout the USA.
- Congress provides funding to the Corps to study potential harbor improvements around the country. These studies provide Congress with information to decide which projects are justified and would best benefit the nation.
- The Savannah District is the long-term operations and maintenance agent for the harbor. The district routinely dredges the harbor and shipping channel to its currently authorized depth of 42 feet.
- The non-federal sponsors for the project, the Georgia Department of Transportation and the Georgia Ports Authority, participate in the project by sharing the costs of deepening the harbor and providing such items as real estate.

3) **When did construction begin on the Savannah Harbor Expansion Project (SHEP)?**

- Construction began in January 2015 when archeologists mobilized for the first contract on the [recovery of the CSS Georgia](#) ironclad. The remains of the [CSS Georgia](#), a Confederate ship, rested on the bottom of the Savannah River adjacent to the shipping channel, near Old Fort Jackson. The location of CSS Georgia impeded the channel expansion.
- The Savannah District awarded the [first dredging contract](#) in March 2015 and the deepening began on [Sept. 10, 2015](#). This contract covers the deepening of the outer harbor and the extension of the shipping channel further into the Atlantic Ocean. The outer harbor extends from approximately Fort Pulaski into the Atlantic Ocean. The channel must be deepened to 47 feet and extended an additional 7 miles to reach water naturally 47 feet deep or deeper. By contract, the outer harbor deepening must be complete by July 2018.
- **[Updated]** Construction on the [dissolved oxygen injection system](#) and the [raw water storage impoundment](#) began in early 2016 and a dike raising began in spring 2016. The removal of the [tide gate](#) and other improvements to the sediment basin began in late 2016. McCoy's Cut Area Work contract, the next installment of the flow re-routing activities, is scheduled to be awarded in 2017. The remaining mitigation features are scheduled to be completed in the coming years.
- **[New]** As of February 2017 contractors were on pace to finish five SHEP related features in 2017. See the [story here](#).

4) **Who pays for the harbor expansion?**

- The cost to expand the harbor will be shared between the federal government and the State of Georgia with the

federal government covering 75 percent of the costs. The State of Georgia will provide the remaining 25 percent.

5) What are the costs and benefits to the nation to deepen the Savannah Harbor?

- **[Updated]** The latest estimates indicate a construction cost of \$973 million, up from the 2014 estimate of \$706 million. Even with the higher initial cost, the project's annual net benefits are now projected to be \$282 million. The economic study evaluated benefit through 2065.
- **[Updated]** At the 47-foot depth, the construction and environmental mitigation FY17 costs are \$973 million (fiscal year 2017 dollars) with an annual benefit of \$282 million to the nation. This means for every dollar invested in the project, the nation will receive \$7.30 in economic benefits. In the 2012 General Re-evaluation Report, the Benefit-to-Cost ratio was \$5.50 to \$1. This updated 7.3-to-1 increase in BCR came from new data on increased fuel costs and a review of new efficiencies in shipping fleet.
- Local and regional benefits, which the Corps cannot consider, may exist. These benefits can be considered by the State of Georgia in its funding justification.

6) [New] What is causing the cost increase for SHEP?

- **[New]** The increase in cost for SHEP can be attributed to a combination of multiple factors to include:
- Some of the cost increase is attributed to escalation involved with extending the timeline to complete the project. The time it will take to complete the project has increased for a number of reasons. The primary reason can be attributed to measures in place to ensure contracts are awarded fairly and to ensure the best value to the taxpayer. For example, a protest on the award of the Dissolved Oxygen Injection feature increased the construction timeline by several months.
- **[New]** A sharp increase in cost for industrial dredging due to market conditions driving supply and demand, (Inner Harbor dredging is the single most costly feature of the project).
- **[New]** Incremental funding of contracts as a result of being unable to fully fund every contract upfront
- **[New]** SHEP includes several "one-of-a-kind" features never before designed or constructed. In these features, as we progress from conceptual to specific designs, changes can sometimes occur that may or may not affect (or impact) project cost.

7) [New] How will this affect the national benefits expected from the project?

- **[New]** In addition to the cost update we also performed a full economic update that revealed greater benefits. The new annual net return is now \$282 million – that's an additional \$108 million each year over the previous estimate of \$174 million a year.
- **[New]** The economics update shows benefits of the project have grown significantly as well compared to the costs. The updated economics reveals an increase in the return on investment, from the previous \$5.50 for every dollar spent, to a \$7.30-return for every dollar spent.

8) [New] How did benefits increase especially considering the cost of the project increased?

- **[New]** Project benefits come mostly from transportation cost savings. Most of these savings come from the deeper harbor allowing larger more efficient vessels to call on Savannah without tidal delays. Previous estimates from 2011 proved to be conservative compared to the economic activity observed in the years since then. The fuel savings alone are immense. Since economic demands in shipping are rapidly increasing, benefits reflect this reality.

9) [New] How does the market value of dredging and construction increase project costs?

- **[New]** The dredging industry has limited resources and equipment that are in increasing demand from ports and harbors that are deepening or maintaining depth. Compounding the demand are the heavy rainfall and thunderstorms in spring 2016 that caused significant flooding in the Southern Plains to the Lower Mississippi Valley. The resulting sediment and silting required an immediate need for extensive dredging operations between Baton Rouge and New Orleans. The increasing demand has driven up the cost of dredging and associated mobilization and de-mobilization of equipment needed for dredging. Construction costs have also risen due to an

increased demand for specialized work in the last several years.

10) [New] Why were the first several projects awarded at a higher cost than anticipated?

- **[New]** Increased dredging costs and significant material changes were required to ensure the project's features are constructed to endure through the project's 50-year lifecycle.

11) [New] You previously reported SHEP was a five year project. Why has that now been extended? Was it because the costs have increased? Is a lack of funding a cause for the timeline extension?

- **[New]** The updated cost had no impact on the timeline extension required to complete SHEP.
- **[New]** The time it will take to complete the project has increased for various reasons. The primary reason can be attributed to measures in place to ensure contracts are awarded fairly and to ensure the best value to the taxpayer. As stewards of federal resources we are committed to taking extra steps in the award process to ensure small businesses and other disadvantaged competitors are fairly considered throughout the bidding process. This can increase project duration, especially when there are protests involved.
- **[New]** Another contributor to the timeline extension is the discovery of a need for specialized work in the inner harbor during the detailed design phase. The specialized work will ensure impacts to the environment are avoided.
- **[New]** Projects of this magnitude are highly complex requiring alignment of multiple timelines within features in order to continue making progress. Subtle, unforeseen conditions that emerge within each feature during the detailed design phase can accumulate to extend the overall timeline. Examples include a protest from unsuccessful bidders on the Dissolved Oxygen contract.
- The time it takes to complete the project depends on a number of factors including, but not limited to acquiring lands, entering into construction contracts, and timely funding. The state of Georgia provided their cost share up front and we moved forward with the first construction features with this funding.

12) [New] What is the specialized work needed that extended the timeline for the Inner Harbor?

- **[New]** During the detailed design phase we found a revision was needed in the way some of the sediments containing naturally-occurring cadmium will be handled in order to ensure no impact to the environment when placing it in the dredged material containment areas. The special handling of cadmium requires that we isolate some of the inner harbor sediments and keep that material wet, before capping it with clean material.
- **[New]** Cadmium, a naturally occurring heavy metal, is found in some locations in the undisturbed sediment in the inner harbor that needs to be removed to deepen the harbor. At the levels found in the clay soil, it only poses a danger to small wildlife. We will continue to monitor these impacts before, during and after the deepening.
- **[New]** The cadmium beneath the Savannah River dates from the Miocene Epoch and is believed to be at least five million years old. Contrary to some reports, this cadmium is not the byproduct of industrial use or electrical generation. The cadmium in this Miocene layer is molecularly bound to other material in the layer.

13) [New] Why does the time extension cause the cost to increase for the project?

- **[New]** Price escalation is typically inherent in a process that takes longer than expected. Part of the project includes environmental monitoring of the river and estuary during the construction phase. This monitoring has an associated cost; therefore, monitoring for longer periods results in additional costs. Other areas required extension because challenges have emerged that require more work, which not only requires more time but also adds to costs. A primary example involves the extended time needed to complete Inner Harbor Dredging. Initial estimates during the conceptual design phase suggested the work could be completed in approximately two years; but the detailed design phase revealed specialized operations were needed in the disposal areas, which requires several hundred more days to complete.

14) [New] Are the cost increases for environmental mitigation proportionate to the cost increases for harbor deepening work?

- **[New]** The majority of cost increase is attributable to environmental mitigation features. The Dissolved Oxygen

Injection System, awarded in July 2015, reflects part of the increase due to significant material changes to be used for the construction of the system. The changes in material increase the initial costs for the feature, but reduce the overall lifecycle cost. Other environmental feature cost increases include the Sediment Basin Area work which requires increased material and handling costs above the feasibility-level estimates.

- **[New]** The next most significant cost increases for the SHEP are found in the two navigation features: Inner Harbor Dredging and Outer Harbor Dredging. Since market conditions are causing a sharp increase in the cost for dredging, significant cost increases are attributed to deepening work in both inner and outer harbor.
- **[New]** The remainder of the cost increase is attributed to the engineering & design and construction management costs associated with the execution of the remainder of the Savannah Harbor Expansion Project.

15) [New] Will annual maintenance cost for the harbor increase? If so will the project benefits still justify the higher cost?

- **[New]** Once SHEP is complete annual maintenance of the Savannah Harbor is expected to increase by about \$6 million, from about \$22 million to about \$28 million. Approximately \$3 million of the increase is accounted for in the operation of the Dissolved Oxygen Injection System and the remaining \$3 million increase is the additional cost of maintaining the harbor at the 5-foot deeper depth of -47 feet.
- **[New]** The benefits of a deeper harbor greatly exceed the cost of SHEP construction combined with the higher annual operation and maintenance expenses. After accounting for the project costs and annual expenses, SHEP is estimated to yield an annual net benefit of \$282 million.

16) What kind of funding do you expect to receive from Congress?

- The Savannah Harbor must compete for funds with other national projects. The nation's elected representatives (the President and the Congress) give priority and funding to the projects as they see fit.

17) What is the Corps of Engineers current role in the expansion project?

- Congress charged the Corps of Engineers with evaluating all practical expansion alternatives to the deepening that it authorized in 1999. We began with looking at alternatives to deepening the harbor. We found that none of those preliminary measures would provide the same level of transportation efficiencies as would deepening to the Garden City Terminal. The Corps analyzed each harbor deepening alternative—dredging to depths from 42 to 48 feet—in detail using computer models of water and wave actions, computer-simulated ship movements, and analyzed engineering and economic data as part of the Final General Re-evaluation Report (GRR).
- In addition, the Savannah District prepared an Environmental Impact Statement (EIS) that describes the impacts of each depth alternative. By law, we also provided a mitigation plan for the significant environmental impacts. In other words, the Corps identified what steps must be taken to avoid impacts, reduce impacts and replace/compensate for impacts to the environment at each alternative dredging depth.

18) What was the outcome of the Environmental Impact Statement study?

- The study reflected an extensive analysis of the engineering alternatives, environmental impacts, and economic costs and benefits of deepening the Savannah Harbor and shipping channel. It detailed our recommendations and included the selected alternative of -47 feet, that depth which provides the greatest benefits to the nation. The final General Re-Evaluation Report and Environmental Impact Statement were accepted by three other federal agencies and withstood the scrutiny of a formal independent external peer review. The Corps' Chief of Engineers issued a "Record of Decision," a formal document that announces the selected depth that is supported by the overall analysis in 2012. The Record of Decision was signed by then-Assistant Secretary of the Army (Civil Works) On Oct. 26, 2012.

19) Why has the study process taken so long?

- The Savannah Harbor Expansion Project is a vastly complex effort. Engineering, economic and environmental studies simply take time. During the August 2008 internal Corps review, we discovered the need for additional analyses for certain aspects of the study, including economics, engineering and environmental. Each of these major study components affects the others. If the output of one changes, that change alters something in the analyses contained in the other two. These revisions have been very time consuming but are vital to this report's credibility as we entered into reviews by independent panels – both inside and outside of the Corps of Engineers.

- All of this work was conducted in concert with the agencies that cooperated in preparing the Environmental Impact Statement. These include the Georgia Ports Authority (GPA), the US Fish and Wildlife Service, NOAA Fisheries and the Environmental Protection Agency. The studies that were performed and the impact analyses were also conducted in cooperation with the state natural resource agencies.

20) What was determined through the economic portion of the study?

- The Corps is a steward of taxpayer money and must determine which projects are good investments for the nation. It's charged with making the best use of the country's resources.
- The Corps determines engineering feasibility, economic viability, and environmental acceptability; Congress determines which projects the nation invests in.
- We looked at the issues from a national perspective. We considered actions that will increase the net value of the national output of goods and services. In the case of the proposed deepening, we looked at future shipping fleet configurations, projections on trade, and the state of the economy now and projected into the future. At the end of our evaluation, we identified the plan that best benefits the nation from an economic perspective.
- The Savannah District selected the 47-foot dredging depth as being in the best interest to the nation. This depth reasonably maximizes net national economic development benefits. We determined that deepening to 47 feet provides the greatest net benefits to the nation. (Regional economic benefits are not used for project economic justification by the Corps of Engineers since they would not affect the entire nation.) We concluded that 47 feet reached the best balance between enhancing the national economy and mitigating for impacts to the environment.

21) How did you determine the net national economic benefits?

- A deeper shipping channel allows larger and fewer ships to move the same amount of goods at a lower transportation cost. Fewer, larger ships also would lessen congestion in the harbor, according to the GRR. A deeper channel means larger ships can enter and leave with less delay waiting for high tides.
- With regard to the benefits, the basic economic benefit is the reduction in the costs to transport the commodities. This reduction represents a national economic development (NED) gain because when transportation costs are reduced, those dollars are available for productive use elsewhere in the economy. We do not try to estimate where exactly these resources are used; from a NED perspective it would be almost impossible to do so.
- **[Updated]** Our latest reports indicate an estimated net annual economic benefit to the nation of \$282 million for the selected 47-foot depth, up from the previous \$174 million. This is an increase over our estimate in the 2012 final report. The increase in net annual benefits comes from new data on increased fuel costs and a review of new efficiencies in the projected shipping fleet.
- The term "efficiencies" means a savings in transportation costs. Those savings may be passed on to the consumer through lower prices in the goods purchased.
- The Corps of Engineers can only consider national benefits when determining the recommended plan. Other benefits (state or regional) may exist but cannot be considered by the Corps.

22) Will deepening create jobs? If so, how many?

- Based on the amount of money to be spent during the construction phase of the project, we calculated that more than 11,000 1-year jobs nationwide will be created for each year of construction. Of these there will be more than 3,700 bi-state jobs (Georgia and South Carolina) and approximately 2,400 local jobs.
- The Corps of Engineers used a standard formula for calculating job creation based on construction dollars spent. These jobs will not be all construction jobs, but will include those in support of the entire effort. We do not predict the number of permanent jobs that may be created based on the deepening.

23) What is the raw water storage impoundment and why is it needed?

- We studied the impacts of deepening on water in Abercorn Creek, upstream from the harbor, to determine the deepening's impact on chlorides in the city's water intakes. The SHEP mitigation plan includes the construction of [an impoundment](#) that will provide an additional source of freshwater for use on extremely rare days when low river flow and unusually high tides may push salt water further upstream, potentially affecting the quality of water

withdrawn by the City of Savannah through their intakes at Abercorn Creek. The impoundment will allow the city to continue to provide very low chloride water. The impoundment will primarily benefit industrial users of the water during these rare occasions.

- Even without the impoundment, Savannah's water would remain well within clean water standards. The impoundment ensures no change to the high quality of water provided by the City of Savannah.

24) Why did you select the current location for the raw water storage impoundment?

- During Feasibility and Design phases, a total of nine different sites were considered for this mitigation feature of SHEP. The evaluation criteria developed were utilized to identify the most practicable location for the impoundment. The District released a Draft Environmental Assessment in July 2013 to solicit the public's views on the alternatives. As a result of that evaluation and coordination, we revised the design for construction of the raw water storage impoundment ([RWSI](#)) to its present site between I-95 and Georgia Highway 21 (near the Rice Hope development).
- Relative to the other eight sites considered, construction of the RWSI at the selected site minimizes the acres of wetland impacts, minimizes potential land use compatibility issues. It also locates the impoundment further away from residential developments, minimizing risk to human health and safety due to flooding.

25) During construction of the raw water storage impoundment many hundreds of dump truck runs pass through a residential neighborhood. Why not use adjacent I-95? What other routes were considered? What about the safety of the neighborhood? What about additional wear-and-tear on the streets? What about the impacts on my property values during construction?

- During the design process we investigated accessing the site from I-95. The Federal Highway Administration will not allow a construction entry from I-95 for this project since the impoundment is not part of a federal highway project. Additionally, we determined that there was not enough space on I-95 for proper acceleration and deceleration lanes between the existing visitors' center and exit 109. Plus no viable median crossing exists in the vicinity of the proposed entry. Interstate access is not constructed or allowed for short term construction projects.
- In addition to consideration of using I-95, we also discussed other alternatives but they were not carried forward for further consideration due to the Clean Water Act section 404(b)(1) analysis undertaken as part of the NEPA analysis¹. The alternative we selected was the Least Environmentally Damaging Practical Alternative (LEDPA). One of the other two alternative routes considered was access from GA SR-21 near Wendy's. This option was infeasible because it would require building a culvert crossing or bridge over Black Creek, which would be cost prohibitive and impact wetlands. We also discussed using several other potential access points north of Lakeside Boulevard but all of these options would require construction of a long stretch of gravel road along the power easement to access the project site, which also comes with environmental impacts.
- **[Updated]** Construction traffic runs during daylight hours and the contractor will avoid rush hours as much as practicable. The contractor has an excellent safety record and will make drivers aware of the additional need for alertness in the residential neighborhood.
- During a public workshop held on Feb. 29, 2016, there were two haul routes identified and explained. When the contractor hauls material from the borrow pit on Old Augusta Road (Pit #1), trucks may turn left into the Rice Hope subdivision. When the contractor hauls material from the second borrow pit off Midland Road (Pit #2), trucks must turn right when entering the subdivision. See maps of the routes [here](#).
- **[Updated]** In order to ensure a safe environment the contractor provides flagmen at the entrance to the site and also at the traffic circle during periods of high truck traffic, but especially during school hours and when students are in transit between home and school.

¹ The 404(b)(1) Guidelines provide that "no discharge of dredged or fill material shall be permitted if there is a practicable alternative to the proposed discharge which would have less adverse impact on the aquatic ecosystem, so long as the alternative does not have other significant adverse environmental consequences." 40 C.F.R. §230.10(a). An alternative is practicable if it is "available and capable of being done after taking into consideration cost, existing technology, and logistics in light of overall project purposes." 40 C.F.R. §230.10(a)(2). If a project that involves the filling of wetlands is not water dependent, the Corps must presume that practicable alternatives exist that do not impact wetlands unless the project applicant clearly demonstrates otherwise. In the case of a civil works project, we need to convince ourselves of this in our analysis.

- The contractor reinforced the roads before heavy truck traffic began in order to minimize the construction traffic impacts.
- The construction and any impact are temporary and will be similar to other projects of similar size conducted throughout this region. The terms of the contract require the contractor to restore the road to the original (or better) condition upon completion of the project.

26) When did construction of the raw water storage impoundment begin and how long will it last?

- Active construction on the raw water storage impoundment (RWSI) began in March 2016.
- We estimate active construction will take 18 – 21 months depending on weather and other factors.

27) What have you done to communicate your plans about construction of the raw water storage impoundment? Why did news of the pending construction only appear a few weeks before commencing construction?

- We first provided design information on the raw water storage impoundment (RWSI) with the release of the Savannah Harbor Expansion Project General Re-Evaluation Report (GRR) and the Environmental Impact Statement (EIS) in 2011. Local and regional news media reported on many aspects of the SHEP including the RWSI and its proposed location at that time. We also sought public input during coordination of a Draft Environmental Assessment (EA) in 2013 which evaluated several potential sites for the location of the RWSI. The media reported on this change as well.
- We held discussions with local officials and with the Georgia Department of Transportation about the construction of the RWSI beginning in 2012.
- We held a public information workshop on Feb. 29, 2016, to provide another opportunity for the public, elected officials and the media to obtain additional information about the construction. We continue to engage directly with representatives of the Rice Hope developer and the Rice Hope Home Owners Association to address questions and concerns related to the project in an effort to correct misunderstandings and avoid any unnecessary impacts to the community.

28) When did construction begin on the dissolved oxygen injection system?

- Although we awarded the construction contract for this feature in July 2015, one of the unsuccessful bidders filed a protest with the Government Accountability Office (GAO). The protest delayed beginning the work until the GAO denied the protest on Oct. 8, 2015. The notice to proceed was issued Oct. 21, 2015. Workers began clearing the land for construction in February 2016. Heavy construction began in April 2016.
- The protest added about two months to the completion estimate for the DO injection system.
- **[New]** [Speece cones](#) for the dissolved oxygen injection system [arrived](#) in December 2016. These devices will allow the Corps of Engineers to provide the required amount of dissolved oxygen (40,000 pounds per day) into the harbor after deepening.

29) Will the DO system delay affect the completion date for the SHEP or its cost?

- The delay of dissolved oxygen system construction did not affect its cost. It does have the potential to slightly prolong completion of the SHEP. Before dredging the inner harbor can begin one of the two DO system plants, the one on Hutchison Island, must be complete, operational, and shown to perform as expected.

30) How are you limiting impacts to endangered species, especially sea turtles and shortnose sturgeon during dredging?

- Savannah District tracks the project wildlife takes as part of our normal environmental compliance monitoring. We report the information about takes to the natural resources agencies in the manner that they have requested.
- We regret the death, officially known as a taking, of any species; however, some adverse impacts are an unavoidable result of keeping the waterways open for commerce. We assessed those potential impacts to endangered and threatened species as part of the Environmental Impact Statement. In the natural resource agencies' approvals for the project, the agencies – NOAA and the USFWS in particular – recognized that some endangered species would be adversely impacted. Those agencies' approvals include a limit to the extent of

those impacts.

- Our dredging contract plus the SHEP biological opinion spells out a long list of precautions and actions the dredge operator must take to ensure protection of the environment and of wildlife. The list is too long to go over here, but to see the list visit our SHEP site: <http://1.usa.gov/1PNSEqf>
- The Corps implemented relocation trawling to reduce the potential for impacts to endangered species. We use a contractor trawl in front of working hoppers to collect and relocate endangered species that may otherwise encounter the dredge. We move fish or turtles that we collect in this trawling well away from the navigation channel.

31) Why do you need to remove the remains of the CSS Georgia from the Savannah River?

- The remains of the [historic CSS Georgia](#), scuttled in 1864 by her crew, sit alongside the shipping channel. The Savannah Harbor Expansion Project would have damaged those remains. The Corps of Engineers [is removing the remains](#) from their current location to protect them from further damage. (Previous recovery efforts, marine organisms, and maintenance dredging have damaged the relic over the years.) [Protecting the remains of this vessel](#) remains a priority with the Savannah District.

32) What have you recovered from the CSS Georgia so far?

- Archeologists have recovered more than 29,700 artifacts, most of which are related to the mechanics of the vessel. They've also recovered five cannon, 241 pieces of ordnance, a propeller with attached shaft, parts of the propulsion system and a wide variety of [small items](#) from the era.
- One of the five cannon turned out to be 9,000-pound Dahlgren cannon; a pleasant surprise to archaeologists because they previously thought it was a smaller and different type of cannon. In September 2015 workers discovered and removed [a second](#), previously undiscovered Dahlgren cannon.

33) Were you able to recover the casemates from the CSS Georgia?

- **[Updated]** We recovered more than 43,500 pounds of casemate. The larger east and west casemate sections still remain in the river. These larger pieces contained much more material and proved heavier than originally estimated. Before inner harbor dredging we will work with the consulting parties to recover the 2 remaining casemate sections, the east and west casemate. This work will continue in the [summer of 2017](#) when we expect to remove the remaining two casemate sections.
- Our expert teams have done, and continue to do an excellent job in this recovery process. They've worked in a combination of the worst conditions: up to 50 feet underwater in total darkness, a high-velocity river, only 60 – 90 minutes per dive at slack tides during day-light hours and adjacent to the fourth busiest container port in the USA.

34) What will you do with the remains of the CSS Georgia after you remove them from their current location?

- All the items we brought up, including casemate sections, were shipped to the Conservation Research Laboratory at Texas A&M University where they will be in the conservation process for 1 to 3 years.
- No final decision has been made on the ultimate disposition of the remaining artifacts. The remains are the responsibility of the U.S. Navy. The Savannah District incorporated removal of the wreck from the beginning of planning for the harbor expansion.
- In 2013 workers [removed a loose section](#) of the casemate of the CSS Georgia from the Savannah River and shipped it to Texas. There experts in marine archeology from Texas A&M University began studying the condition of the artifact to help determine the best methods for handling the remains as the Corps removes them from the river.
- In January 2015, divers with marine archeology expertise began mapping the CSS Georgia wreck site. The divers, who worked in almost complete darkness, helped establish the best methods for removing the vessel's remains from the river. They have also [removed small artifacts](#) from the river bottom for examination, study and preservation.
- For more information on the current status of work at the CSS Georgia wreck site, visit the [CSS Georgia website](#).

35) How are you balancing the environmental and economic issues?

- The Corps of Engineers is charged by Congress to oversee the nation's ports, including the Savannah Harbor. Our studies and recommendations considered the economic needs of the nation plus environmental protection and mitigation. We conducted the studies to ensure we can meet both goals. Mitigating for environmental impacts will be a significant portion of the total project cost.
- **[Updated]** Mitigation plans call for opening additional habitat for the endangered Atlantic and shortnose sturgeon and other species of migratory fish by [creating a means](#) to allow fish to swim upstream of the New Savannah Bluff Lock & Dam. We are adding special devices to inject oxygen into the estuary to replace what will be impacted as a result of deepening efforts. We have also provided funds for GA DNR to expand their stocking program for young striped bass to mitigate for loss of some spawning habitat.
- **[Updated]** We purchased more than 2,200 acres of freshwater marsh to add to the Savannah National Wildlife Refuge to mitigate for the anticipated change of 223 acres of freshwater tidal wetlands into brackish marsh. We also plan to restore 28 acres of brackish marsh formerly used as a dredged material disposal site.
- **[New]** The SHEP includes an extensive environmental monitoring program. The effort included 1-year of Pre-Construction Monitoring, which was performed before construction activities started. We are now performing During-Construction monitoring, which will continue until all the navigation channel is deepened. We will then monitor for 10 years after the construction is complete to ensure the mitigation features perform as intended and the environmental impacts do not exceed what was predicted in the 2012 Final EIS. The monitoring is being performed by the University of Georgia, Clemson University, SC DNR, U.S. Geological Service, and Savannah District. The results of the monitoring are [posted here](#).

36) **[New]** Will you place a weir in the middle of the Savannah River to replace the New Savannah Bluff Lock & Dam?

- **[New]** The Water Infrastructure Improvements for the Nation Act, known as the WIIN Act, became public law Dec. 16, 2016. A specific section of this law directly affects the Savannah River just below Augusta. A section of the law directs the Corps of Engineers to select and construct one of two alternatives. The alternatives will reopen traditional spawning grounds to certain endangered or threatened fish. One alternative calls for removal of the NSBL&D after constructing a water damming structure (or weir) "at an appropriate location" in the river, that would "maintain the pool for water supply and recreational activities" for communities upstream of the current structure. This weir would continue to provide an upstream pool but also permit fish to pass upstream to historic spawning grounds.
- **[New]** The other alternative calls for repair of the lock and requires modification of the structure to allow fish to pass upstream. Because the WIIN only became law in December 2016, we have not had time to determine the best design to accomplish Congressional direction. To read more about this issue, [click here](#).

37) **[Updated]** What will be SHEP's impact on Savannah's water?

- Our studies indicate that impacts to the Floridan Aquifer will be *insignificant* at all depth alternatives studied. The "confining layer" of ancient material beneath the riverbed that protects the aquifer varies from about 40 feet thick near Tybee Island to more than 100 feet thick along River Street in downtown Savannah, even after deepening. The concerns to the aquifer come from heavy usage, not from deepening.
- We also studied the impact of deepening on the Savannah water intakes on Abercorn Creek, upstream from the harbor, to determine the impact of chlorides. The plan provided for the construction of a freshwater impoundment that will provide a temporary supply of freshwater for use on extremely rare days when low river flow and high tides may push salt water too far upstream, potentially affecting water uptakes at Abercorn Creek. The impoundment will allow the City of Savannah to continue to provide very low chloride water. The impoundment will primarily benefit industrial users of the water during these rare occasions.
- Even without the impoundment, Savannah's water would remain well within clean water standards. The impoundment ensures no change to the high quality of water provided by the City of Savannah.

38) Is the material currently dredged from beneath the river safe to place in the disposal area and will material dredged from the deepening also be safe?

- The material dredged from the harbor during routine dredging washes down from upstream or is pushed into the

river by tides. The dredged material is composed of sands and other materials in varying amounts depending on which span of the channel is being dredged at any given time. The channel near the ocean tends to have more sand, while the channel and harbor turning basin tend to have other materials. We pump the material into the disposal site and allow the solid material to settle out of the water. Once the water is clear enough we discharge it either into the Wright River or the Savannah River. We then allow the disposal area to dry during which we manage the area for wildlife habitat and to prepare it for future dredge disposal.

- Cadmium, a naturally occurring heavy metal, is found in some locations in the undisturbed material beneath the Savannah River that would need to be removed to deepen the harbor. At the levels found in the clay soil, it only poses a danger to small wildlife. We [will monitor](#) these [impacts before](#), during and after the deepening. We plan to place the sediment containing cadmium into a confined area and cover it with at least two feet of clean material to prevent long term exposure to wildlife. In addition, if any portion of this site later becomes the site of a proposed port in Jasper County, S.C., the cadmium, already covered by clean sediment material, would be further sealed with concrete and asphalt.
- This cadmium beneath the Savannah River dates from the Miocene Epoch and is at least five million years old. Contrary to some reports, this cadmium is not the byproduct of industrial use or electrical generation. The cadmium in this Miocene layer is molecularly bound to other material in the layer.

39) Will the Savannah National Wildlife Refuge lose a significant portion of freshwater habitat?

- The 47-foot plan includes several modifications to tidal creeks in the upper harbor. These changes will re-direct the flow of saltwater to significantly reduce the amount of impacts to freshwater marsh, which was determined the highest priority wetland natural resource in the Savannah River Basin (determined in 2003 by the Wetlands Interagency Coordination Team, which included representatives from Georgia, South Carolina, USEPA, USFWS and NOAA Fisheries.) The flow re-routing plan essentially will direct more freshwater into the Back River area on the South Carolina side of the river.
- **[Updated]** With flow re-routing, the project will only affect 223 acres of freshwater wetland. This impact has been mitigated with the acquisition and preservation of 2,245 acres of freshwater marsh for the Savannah National Wildlife Refuge. The USFWS previously identified the lands to be acquired as valuable additions to the refuge. Georgia obtained those lands and we are currently in the process of transferring them to the USFWS.
- Flow re-routing would reduce salinity in 740 acres of salt marsh, converting it to brackish marsh (essentially making it less salty, but not exceeding four parts per thousand of salinity). Studies show the wetlands will retain the same functional value, thus constituting “no net loss” of wetlands.
- **[Updated]** The 47-foot plan would excavate 16 acres of tidal brackish marsh to remove Back River tide gates and deepen the Kings Island Turning Basin. To mitigate for those impacts, 28 acres of brackish marsh will be restored on Onslow Island, a former dredged material disposal site in the upper portion of the harbor, at an estimated cost of \$20.2M.

40) What impacts will the deepening have on dissolved oxygen in the Savannah River?

- Harbor deepening and saltwater intrusion lead to a decrease in the already low dissolved oxygen content in the lower Savannah River. During hot summer months, dissolved oxygen drops below the state standards, which are set to protect fish and shellfish in the estuary. We conducted extensive analyses to identify the effects of the project and evaluate possible mitigation. Those analyses identified oxygen injection in several places in the lower Savannah River as the best solution. Although we are not permitted to improve the existing low dissolved oxygen levels under this project, we are permitted to offset its impacts so that the dissolved oxygen would not be any lower as a result of a harbor deepening.
- We plan to use special injection devices to oxygenate river water which will then be mixed back into the river. This technology has been used successfully elsewhere. Construction and placement of the devices is included in construction costs. Operation and maintenance of the oxygen injection system will be part of the on-going, routine costs of maintaining the harbor.

41) How will use of an oxygen injection system improve dissolved oxygen in the river as a result of deepening?

- **[Updated]** The deepening project includes the installation, operation and maintenance of 12 oxygen injection devices, called [Speece cones](#), which will inject heavily oxygenated water into the river to maintain oxygen levels

at their present levels during hot, dry months, when oxygen levels typically drop. Two of the 12 devices will serve as back-up units. The dissolved oxygen (DO) injection system costs \$99.9 million, with annual operations and maintenance costs at \$3 million. Tests conducted in the harbor of the DO injection devices showed them to be effective in adding oxygen to the water. Modeling performed for SHEP indicates that the devices should increase DO levels above the existing conditions in well over 90 percent of the estuary. In general the devices work by pumping water from the river and mixing it with oxygen pulled from the ambient air. The oxygen/water mixture is then put back into the river, where it mixes with the water column and is distributed by tidal currents.

- Because the pure oxygen dissolves into the water inside the devices, no bubbles will be present where the water returns to the river. Calling the devices “bubblers” as some have done, is inaccurate.

42) How would the harbor deepening affect the endangered shortnose sturgeon and other marine species?

- **[Updated]** The harbor deepening will adversely impact habitat for two endangered species – Atlantic sturgeon and shortnose sturgeon. Harbor deepening would allow additional saltwater to enter the harbor and travel further upstream into areas currently used by these species. The increased salinity would reduce the suitability of some of these areas. To compensate for those impacts, the project will modify or replace the first dam up the Savannah River (New Savannah Bluff Lock & Dam) to allow passage of large fish upstream of the current structure. This passage would restore access to historical spawning grounds for the sturgeon.

43) What will the Corps of Engineers do to make sure environmental mitigation projects are working as intended throughout construction and post-construction?

- The project includes a post-construction monitoring period of 10 years (increased from 5 years in the draft report) at the request of USEPA, USFWS, and NOAA Fisheries. During that period the Corps of Engineers monitor the various mitigation features to ensure they perform as intended. The project also includes adaptive management so that it can make adjustments to the mitigation as necessary. The cost for the 10-year monitoring period and adaptive management is estimated at \$60 million.

44) How will the longer, wider ships capable of transiting the expanded Panama Canal travel safely into and out of the Savannah Harbor?

- **[Updated]** We used an existing ship called the Susan Maersk as our design vessel. It measures 141 feet wide by 1,158 feet long. It can carry 8,200 20-foot equivalent units (TEUs), the international standard for shipping containers. Larger vessels such as the MOL Benefactor (10,100 TEU vessel) and ZIM Tianjin (10,000 TEU vessel) have called on the port already safely use the Port of Savannah today, but are light-loaded (not filled to weight capacity) and face tide restrictions.
- We designed the new channel and its navigation features using the specifications of the future shipping fleet, expected to call at Savannah after the Savannah Harbor Expansion Project.
- We designed a wider and deeper turning basin to accommodate the larger ships.
- We designed two reaches of the channel and three critical bends to allow wider turns to increase safety clearances.

45) What consideration did you give to just deepening to the site of the proposed Jasper Ocean Terminal? Why not just deepen to that point?

- We studied alternate port sites for Savannah, including a location that’s been proposed for a port in Jasper County. None had the level of completeness, effectiveness, efficiency, and acceptability of deepening to the Garden City Port.
- No port currently exists on the South Carolina side of the Savannah River. We can’t evaluate projects that do not exist.
- Should a port be built in Jasper County in the future, it will directly benefit from any deepening constructed on the Savannah River. The currently proposed site has an elevation too low for a port. Filling the site with dredged material from the deepening would preclude the need to bring fill material to the site from a much further distance. In addition, a deepening to the Garden City port would place a deeper channel directly adjacent to the proposed Jasper port.

- The states of South Carolina and Georgia have already formed a joint agency to develop a port in Jasper County, which would complement Savannah's Garden City Terminal. Should these plans continue, the first phase of the project could be scheduled to open no earlier than 2025.

46) [New] I understand a study is underway to grant permits to build a port on the Savannah River in Jasper County, S.C. and that this port is closer to the ocean than the Garden City terminal in Georgia. What is the status of this study?

- [New] In 2016 the Charleston District of the U.S. Army Corps of Engineers received a permit application to construct a marine container facility on the Savannah River in Jasper County, S.C. In early 2017 the Corps held scoping meetings in South Carolina to gauge public sentiment on environmental issues surrounding that proposal. The scoping meetings mark the earliest phases of public involvement in the National Environmental Policy Act (NEPA) process. The Corps will use information gathered during the public and agency scoping meetings and comment period to help identify issues that need to be analyzed in the draft Environmental Impact Statement. For additional information about this study, please consult the project website at www.JasperOceanTerminalEIS.com or contact the Charleston District's Public Affairs Office at 843-329-8123.

47) What direction did Congress give the Corps regarding the perpetual easements the Corps holds for the federal government at the proposed site of the Jasper Ocean Terminal?

- On behalf of the federal government, the Corps of Engineers holds a perpetual easement to land along the Savannah River in Jasper County, S.C., for disposal of material dredged from the river. These essential sites include the area proposed for a new port.
- Congress directed the Corps of Engineers to study the impact of releasing the easements on the current federal harbor project. So far, Congress has not appropriated funds to conduct the study.

48) What would be the differences in environmental impact if a Jasper County facility were constructed capable of taking ships requiring greater depth of water?

- There have been no studies on the impact to the environment of building all the facilities, roads, railroads, and other infrastructure for a port in Jasper County. In addition, we have not studied the detailed impacts of the loss of a major dredge disposal site where the Jasper port might be built.

49) Why not deepen other ports on the East Coast instead of Savannah?

- The Corps of Engineers was directed by Congress to study deepening the Savannah harbor, but we addressed alternative ports as part of the process. Our studies show that future shipping growth will require deepening Savannah and Charleston harbors, as well as creating a port in Jasper County, S.C. In fact, all major South Atlantic ports will need deepening or improvements to accommodate projected cargo growth from 2015 to 2050. No single port could accommodate all the growth in container volume expected in the region.
- We conducted a Regional Port Analysis to study current and projected port capacities, demands for growth, and environmental impacts for major South Atlantic ports. This analysis included the ports of: Charleston, S.C., Norfolk, Va., Wilmington, N.C., Savannah, Ga., Jacksonville, Fla., and the proposed Jasper Ocean Terminal site in Jasper County, S.C.
- We also conducted an alternative sites study that examined eight different locations along the Savannah River as potential alternative sites for deepening. This study included four sites in South Carolina and four sites in Georgia. As part of this study, the Corps did a thorough analysis on the Jasper Ocean Terminal proposed site.
- A third study, a Multi-Port Analysis, examined highway mileage and shipping cost efficiencies on the service lands and roads surrounding the five major South Atlantic ports (Charleston, S.C., Norfolk, Va., Wilmington, N.C., Savannah, Ga., Jacksonville, Fla.) This study concluded that the proposed deepening of the Savannah harbor would not take business from another port, because the shipping cost efficiencies would not outweigh the additional landside transportation costs.
- Our studies determined that expansion of any South Atlantic port or creation of a port along the Savannah River would cause environmental impacts, and that no one port is a feasible alternative to deepening the Savannah harbor at this time. It also concluded that building a Jasper Ocean Terminal in lieu of improving Savannah's harbor is not a feasible alternative, considering the tremendous cost associated with the project, environmental impacts, and timing.

50) What is South Carolina's role in the Savannah Harbor deepening?

- The Corps submitted its application for a Section 401 Water Quality Certification and a Coastal Zone Management Consistency Determination (CZM) to the South Carolina Department of Health and Environmental Control (SC DHEC) with the publication of the Draft Savannah Harbor Expansion Project (SHEP) Environmental Impact Statement (EIS) in November 2010. The SC DHEC issued both certifications almost a year later shortly before a legal deadline. After entering into the Settlement Agreement in May 2013, SC DHEC issued a new Section 401 Water Quality Certification and a Coastal Zone Management Consistency Determination for SHEP in June 2013.
- The Corps' application complied with its standard practices and was consistent with national environmental laws, which require the Corps to comply with state water quality certification and CZM whenever such compliance is practical.

51) Agencies and groups in South Carolina, including the legislature, have filed various actions to object to the deepening. What do you intend to do about these actions?

- There are no current actions delaying the continuation of the Savannah Harbor Expansion Project.

52) How can I review the Corps' study?

- View the reports at <http://www.sas.usace.army.mil/Missions/CivilWorks/SavannahHarborExpansion.aspx>

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